

## THE VALUE RELEVANCE OF EARNINGS IN A TRANSITION ECONOMY: EVIDENCE FROM ROMANIAN STOCK MARKET

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*ABSTRACT: The paper examines the value relevance of accounting information in Romanian capital market between 2005 and 2010. Value relevance can be interpreted as the usefulness of accounting data for decision making process of investors and usually its existence is given by a positive correlation between market and book values. The paper main focus is the variation of value relevance over the 6 years period and the influence Romania's adhesion to EU and consequently IFRS implementation had on it. Additionally issues like transition process, accounting reforms and conservatism of financial reporting are taken into consideration as potential explanatory factors for the variation of this fundamental quality of accounting.*

*Key words: value relevance, transition economy, accounting earnings, equity valuation*

*JEL codes: C23; M41*

### Introduction

IASB in the conceptual framework describes the main objective of financial statements in terms of useful information for capital providers in making investment decisions. Furthermore they establish 2 fundamental characteristics of accounting that drives its usefulness: relevance and faithful representation. According to Conceptual framework (IASB, 2001) 'information is relevant when it influences the economic decisions of users by helping them evaluate past, present or future events or confirming, or correcting, their past evaluations'. Relevance is cited as a primary qualitative characteristic that should be considered prior to other characteristics because it is concerned to the pertinence of economic events for the decisions of investors. Faithful representation refers to the manner in which descriptions of phenomena correctly transpose the relevance of the economic event.

The formal recognition of relevance for useful financial statements is one of the motives behind the impressive growth of value relevance literature. Beaver (1998) (cited in Hellstrom, 2009, p. 100) names a series of economic consequences of financial reporting such as the effect on the distribution of wealth and risk among individuals, allocation of resources among firms and the rate of capital and the management incentives to take on certain projects that will enhance their competitive advantage in the face of investors. Consequently financial information role was very much acknowledged and accounting research has flourished in the mature markets.

Conversely, emerging countries were less explored, but their unique settings provide us the opportunity to approach new perspectives that will enhance or on contrary challenge the knowledge so far acquired. One particularly interesting example is Central Eastern Europe that encloses a group of countries with a common history that have undergone a transition process from centrally planned economies to fully functional market economies. Despite the broad similarities in their transition process such as massive privatizations, creation of capital markets and the objectives to align national economies to EU requirements, there are still many differences between them, which urges toward adoption of a case study. The existent disparities make difficult the generalization of the findings. Moreover Beaver (2002) emphasize the role of institutional factors in the results

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interpretations, which also stands in favor of case studies where the researcher has more possibilities to acquire the necessary information about the institutional setting and accounting regulation.

The topic of this paper is value relevance of accounting in Romania. This country was chosen for various reasons. Firstly the transition process lagged behind other emerging countries such as Czech Republic, Poland and Hungary. This was due to the strong emphasis on political aspects instead of the economic priorities. Secondly, the manner in which the reforms were implemented was cumbersome with attempts to implement in the national legislation contradictory philosophies, the continental system in early stages followed by Anglo Saxon approach in the later ones. Also Romania was the last one to join EU in 2007, fact the offers a good opportunity to observe how the value relevance changes when an accounting system designed to satisfy the requirements of state and creditors by focusing on tax appliances and macroeconomic data is replaced by an investor oriented system with demanding disclosures that emphasize transparency and competitiveness as well as shareholders protection.

Lastly, Romania became an open economy that experienced in early 2000s an infusion of foreign capital. The adherence to EU enhanced its attractiveness for international investors leading to increasing capitalization and wider sources of funding. The listing and governance requirements were improved and there are reasons to believe that Bucharest stock exchange (BSE) became an informational efficient market, an optimum framework for a value relevance study.

### **Literature review**

Value relevance literature represents an important part of market based accounting research, relying on the assumption that accounting numbers provide information to investors. The main focus of this research is the relation between capital markets and financial statements, and changes in prices are used as an objective measure of the accounting information usefulness. Kothari (2001) and Beaver (2002) provide two comprehensive surveys of the recent papers, focusing on their key issues and characteristics. Association and event studies are the main empirical methods employed. Event studies evaluate if an accounting announcement represent new information to the market by analyzing the variability of prices and trading volumes around the announcement date.

In what concerns association studies the common element emphasized by the majority of definitions is that the accounting number is value relevant if it is positively correlated with the market variable. According to Kothari (2001) the main objective of these studies is 'to test whether and how quickly accounting measures capture changes in the information set that is reflected in security returns over a given period'. While event studies focus on the incremental information provided by accounting data over a short period of time, the association studies test if accounting is a good summary of the events affecting the company, implying that a value relevant accounting number is close to the market value.

Beaver (2002) goes a bit further by trying to determine the specific characteristics that distinguish the value relevance research from other accounting research. Thereby, in order to conduct such a project one should acquire a broad knowledge about the accounting institutions, the objectives and criteria of standard setters, details of how the accounting number is determined. The second characteristic is that the research design of association studies does not assume that accounting information should be timely. According to the author 'level studies identify drivers of value that may be reflected in price over a longer time period than assumed in event studies'.

As pointed out by Beaver (2002) the theoretical motivation for value relevance research is the valuation theory, such as Ohlson model<sup>2</sup> combined with accounting arguments that allow

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<sup>2</sup>Beaver (2002) describes the key features of Feltham-Ohlson model, which is considered an important development in the accounting theory. The author defines it as 'a representation of the value of equity in terms of accounting numbers, relying on the present value of expected dividend and clean surplus relation assumptions'. The model is used in various

researchers to establish connections between accounting value and market value. Another often quoted objective is related to the implications of these studies for standard setting process.

The efficient market hypothesis is prevalent in the positive accounting research. The justification of using changes in prices as an external objective indicator of financial reporting usefulness relies on capital markets being efficient, meaning that the new accounting information will be instantly reflected in stock prices. Whether markets are truly efficient has an impact on results interpretation. Aboody et. al (2002) address the subject of market inefficiency effects. In their view market inefficiency appears when price is different of intrinsic value. When semi strong form of efficiency is violated price earnings regression estimates are biased because accounting data and the measurement error are correlated.

Easton and Harris (1991) assess various empirical models used in association studies. There is one type of equation in which market prices are expressed as a function of book value of equity and earnings, equation derived from Ohlson model. The second type of equations expresses market value as a multiple of earnings. The authors categorize the variables as stock variables (price and book value) reflecting the wealth of stockholders at a certain moment in time and flow variables such as returns or earnings divided by the beginning of the period price. These flow variables are usually used in equations that relate security returns with earnings. In some models changes in earnings are used as an additional variable that capture unexpected earnings. Easton and Harris (1991) conclude that multivariate equations that have as independent variables earnings as well as changes in earnings produce coefficients that are significantly different from 0 inferring that both variables can be used in a valuation model.

The regression analysis uses as indicators for value relevance of earnings  $R^2$  that measures the overall relationship between market and book value, explaining what percentage in the variation of former is influenced by the variation in the latter, and response coefficients of independent variables.

Brown et.al (1999) name some econometrical issues of the coefficient of variation as a measure of value relevance, issues that should have an impact on the choices of empirical model and their interpretations. For instance, equations in which prices are regressed against earnings and book values of equity suffer of a scale effect,  $R^2$  being upwardly biased. More specifically, the authors show that ' $R^2$  will be higher in periods in which the cross-sectional distribution of the scale factor has a larger variance relative to its mean'. So  $R^2$  is positively associated to variation of the scale factor, meaning that if the scale factor increases over time it will induce an increase in  $R^2$  even if the value relevance of accounting data may not be changing.

There are major implication for time series research and comparisons of  $R^2$  across time because the variation in dependent variable is due not only to variation in other variables but to the changes in the initial conditions.

Researchers tried to overcome this limitation by replacing variables that represent aggregate data at the firm level, which reflect the size of the entities, with values per share. But even so the scale effect is not completely eliminated because there is a huge variation in the size of different companies' shares. One recommendation or possible solution is to use the lagged price as a deflator for values per share.

The response coefficients represent the second important element in the relation of market and accounting data, therefore many papers were dedicated to examine the economic determinants of them and factors affecting their magnitude. Kothari (2001) identify several causes for the low values of coefficients in association studies and groups them in 4 main hypotheses: price lead earnings, inefficient capital markets, noise in earnings and deficient GAAP and transitory characteristic of earnings.

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empirical studies such as market efficiency tests and association studies as a theoretical base that expresses valuation through accounting numbers.

'Price lead earnings' hypothesis suggests that the prices incorporate richer information from more timely sources than earnings. It is well documented that earnings are based on the revenue realization and expense matching principles, whereas investors are looking for future net revenues. Prices change each time there is a market revision of future cash flows expectations, thus the market predict to a certain degree the earnings change. Econometrically, this hypothesis translates into a lower coefficients and explanatory power of earnings for prices due to the fact that only a portion of present earnings can be considered as a cause of price changes.

The second explanation offered in the literature is related to inefficient markets that fail to correctly assess earnings surprise fact that leads to a gradual recognition of earnings information.

The presence of transitory earnings is believed to be determined by the existence of a type of transaction that produces one time gains or losses. Also, because of the information asymmetry and potential litigation consequences, managers are motivated to disclose bad news more quickly than good news, action known as conservative reporting. So losses can be considered transitory earnings. Earnings management is another way of producing transitory earnings.

#### *Implications of value relevance literature for standard setters*

One major objective stated by the majority of the accounting papers is the relevance of their findings for standard setting process. For instance it is considered that standards that produce better accounting numbers are the ones for which the association between accounting and market data is higher. In this way regulators may find out which directive is more relevant for the users, particularly the investors.

Because of the huge impact these accounting standards have on the whole economy, there is a strong debate of whether these studies can truly show which regulation produce better accounting numbers. Holthausen and Watts (2001) and Barth et.al (2001) represent two opposing opinions about this topic, providing in the same time a comprehensive approach of the issue.

Holthausen and Watts (2001) consider that if the association research is not based on a descriptive theory that allows us to predict and explain the accounting and standard setting, it has limited power in assisting the standard setting process. Consequently 'the authors have to specify the objective of standard setting and how using the association criterion helps standard setters achieve this objective'. So far the most claimed accounting theories used to motivate value relevance research are 'direct valuation' and 'inputs-to-equity valuation' theory. Based on the first theory standard setters would take into consideration the association between market values and alternative accounting earnings. For the second theoretical approach accounting variables are treated as inputs to valuation models used by investors in evaluating companies. In this case the authors argue that standard setter would be more interested in the link between accounting numbers and the variables used in a valuation model.

Furthermore the authors compare these theories with FASB statements and conclude that direct valuation contradicts the purpose of financial statements as designated by FASB, and inputs to valuation represent merely one of the desired functions of financial statements. Besides the questioning theoretical approach behind these studies, the authors found three other assumptions that contradict FASB objectives.

Firstly, these studies set equity investors as the dominant group of users of accounting information, whereas FASB consider a wide range of groups of potential users such as creditors, customers, suppliers etc. and the main purpose of financial statement is to provide general information as inputs for different types of decisions and not solely for valuation. Given the wide range of users there is no absolute relevance and reliability. For example, the inferences drawn from studies using equity values may be relevant for investors but not for lenders.

The second assumption is that prices correctly reflect investors' valuations and the information used to derive these valuations, reflecting an aggregate measure, while FASB's focus is on individual investors on grounds related to costs of accessing the information. As a consequence

this approach raises the question if value relevance studies appropriately respond to individual demands of information.

The third issue discussed in this paper is the capability of these relevance studies to attest the relevance and reliability of accounting information, qualities described in the same manner as FASB's approach. The critique brought to this assumption is that testing accounting data for the above mentioned qualities is really difficult to achieve if the methods used to derive the numbers are not yet part of the accounting standards and researchers have to estimate them.

Barth et. al. (2001) represent a response to critics mentioned in previous paper. In their view 'value relevance represents an empirical operationalisation of FASB's criteria of relevance and reliability because an accounting amount will be value relevant only if the amount reflects information relevant to investors in valuing the firm and is measured reliably enough to be reflected in the share prices'. Moreover, the definition of relevance and reliability provided in the conceptual frameworks of FASB and IASB are too broad and complex, which is why, it is impossible for empirical test to capture all the aspects of these qualities. For this reason value relevance studies 'do not draw normative conclusions or make specific policy recommendations' (Barth et. al., 2001, p.12). They can be used by standard setters as a source of information and evidence in their deliberations.

The response given to first critique is that value relevance studies do not intend to provide evidence related to all the existing groups of users. As an evidence there are positive accounting papers that specialise in distinct subject such as agency theory, debt contracting and compensation. Besides this value relevance research does not assume that association with market values can be used to infer about other problems than equity valuation.

One accepted point about value relevance studies is that it requires knowledge about financial reporting mechanisms and the institutions involved as well as details about deriving accounting numbers and the construct of a research design capable to avoid econometric problems and respond to the necessary questions.

#### *Value relevance in emerging markets*

Value relevance studies have been conducted at an international level for a long time because different types of institutional factors and regulation have a different impact on the properties of accounting earnings. For instance, Dumontier and Raffournier (2002) in their survey of European accounting studies mentioned that earnings in bank oriented economies are lower than in market oriented countries. Ball et al., (2009) study the timeliness and conservatism of accounting data in different institutional contexts, especially the influence of political environment. Based on this criterion they divided the sample into code-law and common law countries. One of the findings is that earnings in code law countries are less timely and conservative and agency costs are higher.

Although neither of the authors treats emerging economies particularly the general international studies are a good starting point for inferring about different characteristics of the legal and economic environment and their possible effects on the qualities of accounting information, connections that can be further extrapolated to transition economies.

Harrison and Paton (2004) define transition as 'the process of transforming an economy from plan to market and implies simultaneous dislocations in economic behavior and major changes in multiple aspects of the economic system'. Some of the typical patterns are the legal recognition of private property, followed by large privatization of state companies and establishments of equity markets.

There are various reasons for choosing emerging markets as subjects for accounting research. Hellestrom (2006) considers that by choosing a unique accounting setting where the results are fairly predictable one might validate or reject a research approach by comparing the actual results with the predicted ones. Transition economies are indeed useful in the attempt to emphasize and develop the theoretical side of value relevance research.

It is believed that transition economies should exhibit low relevance of accounting because of the immature markets, incomplete accounting regulation and undeveloped institutions. Nevertheless one may anticipate an improvement of accounting qualities once the necessary reforms take place. Another reason as mentioned by Dobija and Klimczak (2010) is that the gradual process of adoption and implementation of new regulations allows researchers to conclude, based on empirical tests, to what extent the relevance of accounting data for market valuations is improved by the regulatory developments.

The focus on developing markets is also driven by their recent attractiveness to international investors that seek new investments as well as the opportunity to diversify their portfolios. Filip and Raffournier (2010) describe transition countries in Central and Eastern Europe as following the continental model of economies such as France and Germany, in which the main source of finance is given by the banking system and stakeholder approach of governance is predominant. In these conditions the demand for accounting is lower than in market based economies which will eventually lead to a less relevant accounting data.

One interesting element about these countries is related to the recent implementation of IFRS. Taking into consideration that IFRS was elaborated under the influence of accounting practices in market based economies such as UK and USA and transition economies are typical continental economies with a code law influence it would be interesting to analyze the degree of convergence achieved and the change in relevance of accounting for investors.

#### **Romania- institutional background and accounting system**

Institutional and cultural factors play an important role in this type of studies, which is why one should include them when analyzing the results. While studies conducted at an international scale try to quantify these influences in the empirical models, the case studies, such as this one follow a mixed method approach, starting with a qualitative description and continuing with statistical tests.

Hellestrom (2006) identifies the main factors that influence the value relevance of accounting information in a country. These are: development of accounting regulation, control mechanisms, business climate change, business cycle and internationalization, economic development and industry structure. I will use these factors as the guiding pillars in my description of Romanian economic environment, so it will be prepared in a systematic manner.

#### *Development of national accounting system*

Transition process implies a series of reforms that helps a country have a totally functional market economy. In Romania the process began in 1991 with the adoption of Accounting law, which represent the formal recognition of the continental model of accounting and more specifically the French model. 'The accounting model of French inspiration was the basic model effectively applied starting 1 January 1994 as a result of the long and close historical, economic, political and social relationships built up between the two countries over a long period.' (Albu et al., 2010). Besides this, the objective of Romanian authorities was the compliance with the European directives as a part of the overall political aim of joining EU and adopting a continental model was the safe thing to do.

This stage lasted until 2000 when there was a shift in the objectives toward the implementation of IAS. In 1997 Romanian authorities accepted the formal advice given by a team of consultants from ICAS, UK regarding the development of Romanian accounting system, which eventually led to a series of directives implemented in 1999, 2001 and 2002 that formally acknowledged the interest toward IASs. Roberts (2000) provides some explanations for such a radical change toward Anglo-Saxon ideology. Among the reasons mentioned, were the increasing foreign investments. Also education started to adopt an international perspective, and the international accountancy firms established offices in the country. Another factor was the increasing

role of IASC at the European level. The companies, except the small ones were required to implement the new regulations that tried to combine the law of accounting 1991 with the EU directives, IASB framework and IFRS.

The overall effect was not necessarily the expected one. As concluded by Albu et al., (2010) and Filip and Raffournier (2010) in the attempt to harmonize two incompatible systems authorities faced a series of conflicting and confusing situations. It is indeed problematic to reconcile a French oriented system based on the legal form with the Anglo Saxon principles of economic substance, a strong emphasis on taxation with high information requirements of investors and lastly two types of financial systems, a bank oriented one with the newly created capital market. This combination of conflicting principles was defined by Roberts (2000) as a 'cultural intrusion'.

In 2005 authorities tried a new approach meaning that the Minister of Finance issued new regulation conforming only to European directives. From 2006 all entities had to adopt the European directives and additionally credit institutions also applied IFRSs as well as other public interest companies, if they have the implementation capacity. In what concerns IFRS the legislation adopted in 2006 imposed IFRS for consolidated financial statement of listed companies starting with 2007, the year Romania joined EU.

Obviously the reforms had several drawbacks that are worth mentioned. Firstly, the regulators tried to impose both directives and IASs at a time when European Union itself did not stated an official position regarding the IAS. However this was mainly influenced by the demand of World Bank in the loan agreement it had with Romania to adopt international standards as a means to modernize the accounting system and business environment. Secondly the change of strategy in 2005, through which the regulators focused firstly on directives and postponed the mandatory implementation of IFRS to 2007, slowed the process of harmonization. Lastly these regulations were imposed to a great number of companies without taking into consideration their capacity and costs involved.

#### *Accounting profession*

Romania followed the necessary steps that aligned the national accounting system to the international standards. However, as Hellestrom (2006) point out the fact that the accounting rules are of a high quality does not necessarily imply that the accounting relevance will increase. Control mechanisms through which companies are forced to implement and respect the regulation are also important.

Accounting profession through its institutions represents the system in charge with supervising the business environment with respect to the financial reporting process. The national body of chartered accountants became a legal entity in 1992, having the mission to strengthen the accounting practice and to promote and enforce the professional standards. It has some major contribution to the development of accounting in Romania. Tudor and Mutiu (2007) list some of them. For instance the body as a member of IFAC issued the national ethical code of professional accountants. It implemented the standards of quality control and translated in Romanian IFRSs.

Other organisms were created like National association of evaluators, National Union of Practitioners in Reorganization and Liquidation. It was believed that creation of multiple similar associations with blurred boundaries between their functions and objectives hinders the activities of the professionals. In 2002 a law was issued that determined the birth of another association, the chamber of auditors, in charge with the financial audit work organization according to international standards of audit and the 8<sup>th</sup> Directive. This function was split from the main accounting body. In the end the accountancy profession is represented by two large institutions: the Body of expert and licensed accountants of Romania and the Chamber of financial Auditors.

### Methodology

The theory behind association studies cited by previous papers is the inputs to valuation theory or direct valuation according to which accounting data is or not a relevant input to investors' valuations. A transition economy was chosen as the context of research and because the Central and Eastern Europe is such a heterogeneous region, I selected a country and pursue a case study. Based on the secondary data in the form of academic journals I was able to draw a profile of the country and highlight the social factors that will be further used in deducting the hypothesis. Although this will not help determine the exact amount it will help me to at least establish the direction of influence. For instance, it is proven that in bank-oriented economies the accounting is used for the fiscal purposes of the state and as information for creditors, suggesting a lower demand of accounting information, higher incentives for managers to manipulate the data, thus lower conservatism and timeliness. Obviously this will have a negative effect on value relevance but the exact extent cannot be quantified. While I agree of the importance of economic and political context the research maintains a positivistic approach, testing the relationship between accounting information and market values, both reduced to variables and using statistical analysis for inference. The quantitative analysis is based on secondary data and represents a longitudinal study over a period of 6 years, analyzing the most recent stage in the transition process.

#### *Empirical model and data collection*

There is a wide set of equations that illustrate the association between market value and accounting data, varying according to the specific purpose of the study. Market values can be used either as absolute value in the form of stock prices or as relative values like returns. Correspondingly, accounting data can be book value of equity, earnings and even cash flows. The Ohlson valuation model, that expresses market value as a function of both book value and abnormal earnings is cited as the source for the use of the following equation:

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 E_{it} + \varepsilon_{it}$$

$P_{it}$  - price per share  $i$  at the end of year  $t$   
 $BV_{it}$  - book value of equity per share  $i$  at year  $t$   
 $E_{it}$  - earnings per share  $i$  at year  $t$

Alternatively, researchers use a model based on stock returns and earnings divided by the previous period stock price. While prices and book value are considered "stock" measures showing the value at a certain moment in time, by using relative or "flow" measures one can infer how a change in accounting values determined a change in market values. Easton and Harris (1991) introduced in the equation a third variable the earnings change divided by the previous period price to capture the influence of unexpected earnings.

The return model is represented by the next equation:

$$R_{it} = \alpha_0 + \alpha_1 \frac{E_{it}}{P_{it-1}} + \alpha_2 \frac{\Delta E_{it}}{P_{it-1}} + \varepsilon_{it}$$

$R_{it}$  - return of stock  $i$  in the year  $t$   
 $E_{it}$  - earnings per share of stock  $i$  in the year  $t$   
 $\Delta E_{it}$  - change in earnings per share from year  $t-1$  to year  $t$

So far, there are two types of models used in association studies that persisted along time. However each type has particularities that eventually will influence the results. Filip and Raffournier (2010) offer a thorough explanation of the related issues. For instance, in price models  $R^2$  will be upwardly biased due to scale effects. The good side of it is that these equations produce



better response coefficients. In what concerns return models, these have the advantage to eliminate the scale effect because the variables are divided by the previous period price. The downside is related to small response coefficients, in the presence of transitory earnings or when price lead earnings.

Both equations will be used in the analysis of accounting relevance for Romanian capital market, its evolution across time and the segmentation of capital market and size effects on it.

The first objective is to assess the overall relationship between market values and accounting information, leaving from the assumption that accounting information is less relevant in a transition economy. The general factors that also exist in Romanian context are: a low capitalized and possibly inefficient market; incomplete legal and economic reforms. In this case the evidence is the low degree of compliance achieved by the companies with the international requirements, and faulty legal guidance and measures. Also the main source of finance being the banking system, there is low demand of accounting information or fewer groups of users. Finally, the continental model of accounting system whose major objectives is to provide information to state for tax purposes and to creditors favors the secretive nature and gives managers the opportunity to use the data in their own interests. There is small focus on the investors' protection. Specifically, the statistical analysis involves running a pooled regression over the 6 year period, for each empirical model. In order to determine the regressions coefficients and  $R^2$  ordinary least squares method is used.

The second objective is linked to the accounting reforms implemented by Romania. By observing how value relevance changed over time, one can infer about the effect of the accounting reforms on the qualities of accounting information. 2005 was the beginning of the last stage of reforms meant to align the national system to international requirements. It was the moment in which public interest companies were forced to comply with European directives. Additionally some of them had to issue a second set of financial statements complying with IFRSs. However only from 2007 all of the listed companies were obliged to produce accounting data conforming to IFRS. So in the first part of the period one should expect a gradual increase in value relevance. The analysis should also be based on other types of factors like the stage of business cycles and the alternative sources of information available to investors. Although this study does not research the relationship between business cycle and the value relevance of accounting, the previous evidence indicated that in economic growth periods investors are inclined to value the firms higher while in recession the fundamental analysis based on actual performance dominates. This stage of analysis requires running cross sectional regressions for each of the six years and compare the  $R^2$  obtained.

The sample consists of the companies listed on Bucharest stock exchange from 2005 to 2010, less financial institutions which apply different regulations. More specifically, the sample will be represented by the companies in the first and second categories, which are most traded. The international category is rejected because it contains only two companies and RASDAQ is similar to an OTC market, less regulated, with smaller companies, riskier and illiquid. The sample consists entirely of secondary data, which is collected from Thomson one banker database and Bucharest stock exchange website.

### **Results of the analysis**

Tables 1 and 2 report the descriptive statistics of the variables after removing outliers. The method used to detect the outliers is Cook distance and the cut off value was established to  $4/n$ . One interesting aspect indicated by the numbers is that the maximum price, book value of equity and earnings are found in the second category with the smaller companies. There were negative earnings on both categories as well as negative equity book values which may indicate the existence of strong losses for some companies.

Table no.1.

**Descriptive statistics for price model**

Category		mean	SD	min	max
1	price	3,253	6,838	0,071	40
	BVS	3,506	7,386	-1,695	32,133
	EPS	0,137	0,764	-2,745	4,012
2	price	2,859	6,278	0,014	48
	BVS	3,987	8,525	-0,751	51,945
	EPS	0,041	1,313	-10,640	6,200
Total	price	2,946	6,399	0,014	48,000
	BVS	3,880	8,278	-1,695	51,945
	EPS	0,063	1,212	-10,640	6,200

For the second equation the variables are divided by the previous period price. The average returns as well as the maximum values are registered by second tier companies. However the earnings are higher in the first category with an average value of 0,49 comparing to 0,02 in the second category. The changes in earnings per share have a negative average value which suggests that overall companies performed worse from period to period.

Table no. 2

**Descriptive statistics for return model**

category	variable	mean	SD	min	max
1	returns	0,476	1,702	-0,965	9,294
	EPS	0,495	4,039	-4,635	36,317
	Δ EPS	-0,369	2,912	-26,842	0,995
2	returns	0,603	5,534	-0,998	91,539
	EPS	0,020	0,550	-3,010	4,068
	Δ EPS	-0,030	1,460	-20,753	7,170
Total	returns	0,574	4,930	-0,998	91,539
	EPS	0,128	1,986	-4,635	36,317
	Δ EPS	-0,107	1,891	-26,842	7,170

Because the negative values induce bias in the estimators of the relationship between returns and earnings and as descriptive statistics indicate the presence of a relatively large number of losses the second equation is performed again after eliminating the losses. Obviously the average values of EPS and difference in EPS raised but there are still negative differences in EPS. The returns also have smaller mean values.

The following table summarizes the regression analysis results, based on which the inferences are drawn. The power of the relationship between market and accounting data is given by the coefficient of variation. The overall aim was to start with getting a general idea about the level of value relevance of accounting in Romania and then go deeper by analyzing some specific aspect such as the influence of accounting reforms on the trend of value relevance, particularly the adoption of IFRS . The main assumption was that the accounting was less relevant in an emerging country, although there is no formal ranking system that explains what is meant by low or high, mainly because these studies are mostly empirical. As a matter of fact different models produce different ranges of  $R^2$ . In this case  $R^2$  for pooled data for the price regression has a relatively high value of 44%. On the other hand the return model indicate a very low value of 0,68%. After the elimination of negative earnings it raised up to 15%, which is a more appropriate value and pretty

similar to the results obtained on analyses conducted in other more mature<sup>3</sup> countries. The higher value obtained from price regression is due to a certain degree to the scale effect. In what concerns the return equation the focus will be on the version with positive earnings because losses are transitory. The results should not be surprising since the period under study covers the most recent stage of transition, in which many of the required changes to achieve the status of a market economy are almost achieved.<sup>4</sup>

Table no. 3

**R<sup>2</sup>**

	price model			price model positive EPS			return model			return model positive EPS		
	N	R <sup>2</sup>	R <sup>2</sup> adj	N	R <sup>2</sup>	R <sup>2</sup> adj	N	R <sup>2</sup>	R <sup>2</sup> adj	N	R <sup>2</sup>	R <sup>2</sup> adj
<b>pooled data</b>	373	44,6	44,3	292	44,7	44,4	383	0,7	0,2	283	15,9	15,3
<b>without 2007</b>	313	46,5	46,2	240	49,0	48,6	319	2,3	1,7	231	24,2	23,5
<b>2005-2006</b>	123	41,3	40,3	105	52,2	51,3	122	18,0	16,6	96	23,4	21,8
<b>2008-2010</b>	190	52,8	52,3	135	43,7	42,8	197	1,2	0,1	135	21,5	20,3
<b>2005</b>	62	33,2	30,9	53	28,0	25,2	58	23,0	20,2	47	28,6	25,3
<b>2006</b>	61	80,2	79,5	52	79,0	78,0	64	12,2	9,4	49	20,0	16,6
<b>2007</b>	60	68,8	67,7	52	68,7	67,4	64	42,8	40,9	52	21,3	18,0
<b>2008</b>	65	37,0	35,0	49	31,2	28,2	67	0,7	-2,4	50	12,6	8,8
<b>2009</b>	63	77,0	76,3	44	86,4	85,7	65	0,7	-2,4	44	16,7	12,7
<b>2010</b>	62	83,5	82,9	42	87,6	87,0	65	8,7	5,7	41	14,0	10,0

The second objective was to observe the evolution of value relevance across time paying attention to those critical moments in which major changes occurred in the accounting regulation. The assumption was that there is an increasing trend in accounting relevance for investors due to improvements in regulation and due to the effects of transition process. We can distinguish two important periods in 2005-2010 time frame. The period before 2007 indicated the beginning of the preparation to integrate into EU, in which the compliance with the laws was made gradually. 2008 - 2010 are the first years after the integration when every listed company had to respect the IFRS requirements. The pooled regression was executed a second time after eliminating the implementation year 2007, in order to eliminate possible biases. The R<sup>2</sup> is higher for both models. When comparing the sub periods price regression indicates an increase in R<sup>2</sup> from 44% to 52% whereas for return model with positive earnings it is constant. For a more detailed view of the trend cross sectional regressions were executed for each year. The figures indicate variation between the years with no particular pattern. The initial conditions changed every year and because the adoption of IFRS could not be isolated from other factors such as business cycle, inferences about the efficiency of IFRS on value relevance are hampered. Both models exhibit a drop in R<sup>2</sup> in 2008 right after the implementation of IFRS, but the decrease may also be due to the huge negative impact of financial crisis on BSE. 2009 indicate an increase for both models and then the value remained approximately constant for 2010.

Tables 4, 5, 6 and 7 in the appendices report the response coefficients of the explanatory variables in the equations. For the price model, the book values of equity coefficients are statistically significant in pooled regression as well as in cross sectional regressions which confirms how powerful indicators are book values for market prices. For the second variable, earnings per share have a significant influence on prices in the first three years of analysis 2005-2007 and in

<sup>3</sup> Dumontier & Raffournier (2002) survey the literature and they report for UK 10%, Germany 17%, Denmark 29% etc.

<sup>4</sup> According to EBRD transition reports (2005 and 2010) the transition indices for Romania varied in 2005 between 2+ to 4+ and in 2010 from 3- to 4+. The index ranges from 1, meaning little or no change from a rigid centrally planned economy to 4+ representing the standards of an industrialized market economy

2009. In 2009 it has a negative value which indicates that investors react adversely to earnings improvements. In what concerns the importance of earnings data for investors, it is significant only for the companies in the first category. Elimination of losses makes all the earnings coefficients significant.

For the return model earnings are value relevant in the first part of the period and in the pooled data after the elimination of 2007. Looking at the second period results, one easily would conclude that the adoption of IFRS did not achieve its objectives of improving the quality of accounting data. And considering the description in section 3 of the steps and decisions adopted by the authorities, the figures would come as a confirmation. However the initial conditions also changed. For instance there are more intermediaries and alternative timely sources of information that diminishes the role of accounting reports. On the other side the 2008 marked the beginning of international financial crisis that induced negative effects on BSE such as extreme volatility declining capitalization and illiquidity

After eliminating the negative earnings, coefficients improved and became statistically significant for pooled data as well as for cross sectional regressions. The puzzling results are given by the second variable, changes in earnings which have negative values, implying that investors do not take into consideration the variations in earnings. This type of result was also found by Hellestrom (2006) in her study of Czech market and her argument was based on the existence of transitory earnings, investors expecting the situation to reverse in the following period. The response coefficients are significant only for the second category companies.

### **Concluding remarks**

This paper addresses the quality of accounting information from the perspective of its relevance for capital investors. The temporal and spatial coordinates define a longitudinal case study, explicitly Romanian capital market from 2005 to 2010. The association study indicate a moderate level of relevance similar to values reported for mature markets, which seems right taking into consideration that the analysis was conducted in the most recent stage of a 20 years transition period marked by several radical changes.  $R^2$  for pooled regression is 15% in the case of returns earnings equation and 45% for price earnings regression.

Time series analysis of  $R^2$  indicates major fluctuations of value relevance across years. In the case of price equation value relevance increase from 25% in 2005 to 78% in 2006. In 2008 drops to the value of 28% and then increases drastically to a value of 86% in 2010. For the return equation the values are much lower. In 2005 the value is 25%, it drops to its minimum value of 8% in 2008 and then increases slowly to 10 % in 2010. 2008 the first year after the IFRS mandatory implementation exhibits the lowest value of the period. Based on these results IFRS adoption had a negative effect on accounting information from the market perspective. The fact that it overlaps with the first year of financial crisis and the bias it induces on investors' valuations, requires a deeper analysis of the phenomena.

For price book value earnings relation book value coefficients are statistically significant and positive for pooled data as well as cross sectional regression. Earnings coefficients are not significant for 2008 and 2010 but after the elimination of losses they become significant positive. In the case of returns-earnings equation the puzzling result is given by the negative coefficients of the variable changes in earnings which mean that markets react incorrectly to earnings surprises. Market inefficiency or the presence of transitory earnings could explain such a result.

Market efficiency assumption, common to all type of value relevance studies is perceived as a possible limitation of the results interpretation. Barth et al., (2001) present a different approach of this matter. Accordingly market efficiency is not necessarily an implicit condition of these studies. The assumption that prices reflect investors' consensus beliefs is enough, conclusions being drawn in this case on the degree of association between accounting measures and the amounts assessed by

investors and impounded in prices. However, when comparing coefficients to values theoretically driven from a valuation model than informational efficiency of the market becomes important.

Secondly, it may be argued that the results are affected to a certain degree by the relatively small sample size. Even so, it comprises the majority of companies listed on BSE, except the financial institutions and a small number of unavailable data. The fluctuation in the number of observations between years may be a source of bias related to undiscovered economic situations.

These conclusions and limitations correspond to interesting prospects for future research. A possible approach may consist in a more focused study of market efficiency and its real impact on the behavior of price earnings relationship. Also the relation between relevance and other characteristics like conservatism, timeliness or predictability deserve a greater consideration. The analysis of changes in value relevance across time may be improved by trying to determine to what extent this is due to policy changes or because of variations in economic conditions. Lastly the knowledge of value relevance of accounting in a transition setting could be further enhanced by an international study designed to capture the differences between transition countries, particularly those factors directly affecting the relevance of accounting information.

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## Appendix : Regressions response coefficients

Table 1: Coefficients of explanatory variables for the price model

	$\alpha_0$			$\alpha_1$			$\alpha_2$		
	value	t	P>t	value	t	P>t	value	t	P>t
pooled data	0,95	3,48	0,001	0,51	16,9	0	0,39	1,9	0,059
2007 excluded	0,76	3,13	0,002	0,43	16,31	0	0,14	0,86	0,392
2005-2006	1,4	2,85	0,005	0,43	7,53	0	0,12	0,37	0,715
2008-2010	0,38	1,61	0,11	0,39	11,65	0	-0,21	-0,85	0,396
2005	1,57	2,99	0,004	0,27	5,2	0	-0,92	-3,37	0,001
2006	1,19	2,32	0,024	0,38	4,23	0	3,19	5,26	0
2007	1,41	1,7	0,095	0,63	5,52	0	8,93	4,32	0
2008	0,6	1,01	0,317	0,41	5,84	0	0,95	1,46	0,15
2009	0,44	1,76	0,084	0,28	6,37	0	-1,16	-4,84	0
2010	0,03	0,14	0,88	0,49	14,97	0	-0,16	-0,55	0,584

Table 2: coefficients of explanatory variables for price model with positive earnings

	$\alpha_0$			$\alpha_1$			$\alpha_2$		
	value	t	P>t	value	t	P>t	value	t	P>t
pooled data	0,95	2,88	0,004	0,41	8,53	0	1,94	4,13	0
without2007	0,77	2,78	0,006	0,26	6,01	0	2,35	6,16	0
2005-2006	1,34	2,63	0,01	0,14	1,98	0,05	2,81	5,06	0
2008-2010	0,03	0,11	0,913	0,34	7,13	0	6,56	4,05	0
2005	1,41	2,722	0,009	0,07	0,99	0,328	1,21	2,14	0,037
2006	1,26	2,08	0,043	0,36	3,69	0,001	3,26	4,8	0
2007	1,12	1,14	0,261	0,62	4,97	0	9,62	4,07	0
2008	0,23	0,31	0,759	0,24	2,11	0,041	8,18	2,85	0,007
2009	-0,2	-1,32	0,194	0,32	11	0	12,5	5,11	0
2010	0,21	1,02	0,316	0,51	16,08	0	-3,97	-	0,039
								2,13	

Note: price equation is:

$$P_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 E_{it} + \epsilon_{it}$$

$P_{it}$ -price per share i at the end of year t;  $BV_{it}$ - book value of equity per share i at year t;  $E_{it}$ -earnings per share i at year t

Table 6: Coefficients of explanatory variables for return model

	$\alpha_0$			$\alpha_1$			$\alpha_2$		
	value	t	P>t	value	t	P>t	value	t	P>t
pooled data	0,56	2,22	0,027	0,27	1,61	0,108	0,2	1,13	0,257
pooled-2007	0,19	2,49	0,013	0,13	2,67	0,008	0,11	2,21	0,021
2005-2006	0,41	2,37	0,019	0,88	5,11	0	-0,03	-0,38	0,703
2008-2010	-0,06	-1,13	0,26	0,04	0,84	0,4	0,08	1,27	0,206
2005	0,36	1,16	0,251	0,9	3,9	0	-0,34	-1,45	0,152
2006	0,49	2,79	0,007	0,91	2,71	0,009	0,04	0,57	0,568
2007	1,21	1,08	0,285	22,89	6,61	0	-12,02	-2,81	0,007
2008	-0,64	-17,49	0	0,08	0,67	0,502	0,11	0,67	0,505
2009	0,39	3,95	0	-0,03	-0,21	0,833	0,06	0,64	0,526
2010	0,1	1,5	0,139	0,18	1,37	0,175	0,22	0,72	0,471

Table 3: Coefficients of explanatory variables for returns model with positive earnings

	$\alpha_0$			$\alpha_1$			$\alpha_2$		
	value	t	P>t	value	t	P>t	value	t	P>t
pooled data	0,260	2,480	0,014	1,250	7,120	0,000	-0,070	-0,240	0,812
pooled-2007	0,080	0,830	0,400	1,230	8,290	0,000	-0,100	-0,400	0,600
2005-2006	0,400	1,840	0,060	1,120	5,090	0,000	-0,120	-0,320	0,753
2008-2010	-0,300	-4,020	0,000	3,500	5,910	0,000	-2,100	-3,510	0,001
2005	0,230	0,620	0,540	1,230	3,730	0,001	0,180	0,290	0,770
2006	0,270	1,050	0,297	3,240	3,270	0,002	-2,930	2,580	0,013
2007	0,140	0,330	0,740	10,730	3,560	0,001	-3,250	-1,630	0,109
2008	-0,700	-15,540	0,000	1,320	2,480	0,017	0,380	0,390	0,696
2009	0,130	0,800	0,428	3,090	2,840	0,007	-1,030	-1,130	0,266
2010	0,030	0,260	0,793	2,520	1,830	0,070	-1,790	-1,270	0,213

Note: return equation is:

$$R_{it} = \alpha_0 + \alpha_1 \frac{E_{it}}{P_{it-1}} + \alpha_2 \frac{\Delta E_{it}}{P_{it-1}} + \varepsilon_{it}$$

$R_{it}$  - return of stock i in the year t;  $E_{it}$  - earnings per share of stock i in the year t;  $\Delta E_{it}$  - change in earnings per share from year t-1 to year t