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ScienceDirect

The International Journal of Accounting 45 (2010) 77–103

The
International
Journal of
Accounting

The value relevance of earnings in a transition economy: The case of Romania

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Abstract

We investigate the value relevance of earnings on the Bucharest Stock Exchange. We find that the association between accounting earnings and stock returns is comparable to the levels reported by studies conducted on more mature markets, and that it is higher for securities issued by small companies. Excluding losses from the analysis increases the value relevance of earnings, which confirms the transitory nature of negative earnings, already documented by prior studies. We also find that the regression coefficient of earnings changes is negative and we provide evidence consistent with the hypothesis that it is a consequence of the relative inefficiency of the market. Finally, the “prices lead earnings” hypothesis formulated for more mature markets is not supported by our results.

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Keywords: Value relevance; Transition economy; Eastern and Central Europe; Romania; Hyperinflation

1. Introduction

There is an abundant literature on the value relevance of accounting data, defined as the ability of accounting figures to capture or summarize information that affects firm value (Hung, 2001). Value relevance is traditionally viewed as a synonym for high correlation with market data: the more accounting data correlate to market prices or returns, the more “value relevant” they are considered to be.

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The conclusion of most empirical studies is that the association between earnings and contemporaneous security returns is relatively low, which suggests that reported earnings do not provide good summary measures of the events incorporated in stock prices during the reporting period (Dumontier & Raffournier, 2002). These studies are generally conducted in large and mature capital markets. Only a small number of authors have investigated the case of small or emerging markets. Among the exceptions in Europe are Vafeas, Trigeorgis, and Georgiou (1998), and Kousenidis, Negakis, and Floropoulos (2000) who study the Cyprus and the Athens stock markets, respectively.

There is also little evidence on the value relevance of accounting data in transition economies. Several studies have investigated the case of China (Bao & Chow, 1999; Chen, Chen, & Su, 2001; Chen, Gul, & Su, 1999), but little is known about value relevance on the new stock exchanges that appeared in Eastern and Central Europe after the accession of these countries to a market economy. Nevertheless, such emerging markets should attract the attention of investors who, after they have diversified their portfolios with stocks traded on mature markets, are in search of new investment opportunities.

Despite its common recent history, Eastern and Central European countries cannot be seen as a homogenous group. Each country has peculiarities stemming from its pre-communist history and cultural influences. Moreover, there is considerable variation in the level of economic development across countries that may influence the rapidity of the transition to a market economy.¹ As a consequence, the experience in a particular country cannot be generalized to the whole group and it is necessary to replicate analyses in these different environments to have a clear picture of the situation in Eastern and Central Europe.

For the time being, value–relevance studies have been conducted in Poland (Dobija & Klimczak, 2007; Gornik-Tomaszewski & Jermakowicz, 2001), the Czech Republic (Hellström, 2006; Jindrichovska, 2001) and the Baltic states (Jarmalaite Pritchard, 2002). We are not aware of similar research in other markets of Eastern and Central Europe although all transition countries now have a stock exchange.² The aim of this paper is to partially fill this gap by considering the case of Romania.

As most markets created in Europe after the collapse of the former communist system, the Bucharest Stock Exchange (BSE) is characterized by a small number of listed companies, low trading volumes, and relatively few disclosure requirements. But its emergence and development also took place in a political and economic context significantly different from those that prevailed in other countries of Eastern and Central Europe. One of these specificities is the particularly high level of inflation that characterized the Romanian economy in the 90s.³ Another difference with neighboring countries is that for a long time the Romanian government focused more on political issues than on decisions that would have permitted the economic change to take place (King, Beattie, Cristescu, & Weetman, 2001). As a result, the economic development of Romania lagged

¹ In 2006 for example the Gross Domestic Product per capita ranged from € 15,200 for Slovenia to € 2500 for the Republic of Macedonia (Source: Eurostat).

² Stock exchanges also exist in Hungary, Romania, Bulgaria, Slovenia, Slovakia, Croatia, Serbia, Bosnia-Herzegovina, Montenegro, Macedonia and Moldova.

³ From 1990 to 1999, the average annual inflation rate was 110.9% (source: Romanian National Institute of Statistics).

behind that of Poland, Hungary, and the Czech Republic (Petrakos, 1996), and Romania was, with Bulgaria, the latest country to enter the European Union.

In addition and despite its emerging nature, the BSE is not uniform. It is composed of two distinctive segments bound by different disclosure and liquidity requirements. The most stringent category, composed of shares issued by the largest companies, can be compared to several small but more mature European markets. The other segment, by contrast, is essentially composed of securities issued by local firms that generally have no counterpart in the financial markets of Western Europe. Because these segments probably do not exhibit the same level of efficiency,⁴ it is possible to assess the influence of market characteristics on the value relevance of accounting data.

This study investigates the value relevance of earnings of Romanian companies over the years 1998–2004. The sample includes all nonfinancial companies whose securities were listed during this period. Data were collected from their published financial statements and cross-validated with information available on the BSE website. The year 1998 was chosen as the starting point for our analyses because it marks the beginning of market stabilization and an increase in the number of listed companies. This period is also particularly suitable for the present study since most of the reforms preparing Romania for accession to the European Union originated at that time.

The results reveal that after exclusion of outlying observations and adjustments for inflation, the association between accounting earnings and stock returns is comparable to the levels reported by studies conducted on more mature markets. It is higher for securities issued by small companies, which supports the segmentation of the BSE in two categories of shares. Excluding losses from the analysis also increases the value relevance of earnings, which confirms the transitory nature of negative earnings, already documented in prior studies. A puzzling result is the negative regression coefficient of earnings changes. We provide evidence consistent with the hypothesis that it is a consequence of the relative inefficiency of the market, in as much as the anomaly disappears when returns are computed over a lagged period. Finally the “prices lead earnings” hypothesis formulated for more mature markets is not supported by our results.

This paper provides several contributions to the accounting literature. First it adds to the knowledge of transition economies in general and those of Eastern and Central Europe in particular by considering a market which has not been examined before. To our knowledge, it is also the first value relevance study that systematically controls for the effect of inflation on accounting earnings and stock returns. Furthermore, this paper proposes a new and appealing explanation for the negative-coefficient anomaly already reported in prior studies conducted in other European transitional economies. More fundamentally, this research contributes to the literature on value relevance by showing that the relationship between accounting numbers and market returns on such markets is comparable to those observed in more favorable environments. It also clearly highlights the influence of market segmentation on the association between accounting data and market valuation. These results, which suggest that value relevance is only marginally affected by national institutional and economic differences but is highly dependent on the segmentation imposed by market

⁴ Harrison and Paton (2004) find strong evidence of market inefficiency in the BSE from 1997 to 2002 but they do not investigate the two market segments separately.

authorities, should be useful to investors who are considering adding transition economies to their portfolios.

The paper is structured as follows. Section 2 formulates conjectures on the level of value relevance of accounting data in Eastern and Central Europe and provides a short review of prior empirical studies conducted in these countries. Section 3 presents the Romanian institutional setting, in particular the BSE and its regulatory environment. Section 4 describes the data and the adjustments made to take into account the hyperinflationary conditions that characterize the period under study. Section 5 is devoted to the models used in this research, Section 6 reports the empirical results, and Section 7 summarizes the findings and concludes the paper.

2. The value relevance of accounting data in Eastern and Central Europe

Several reasons suggest that the financial markets of European transitional economies should exhibit a lower level of value relevance than those of western countries.

First, these markets are probably less efficient.⁵ Although there has been no formal analysis of the impact of inefficiency on the association between accounting data and market values, it can reasonably be assumed that the lack of efficiency in emerging markets should result in lower value relevance of accounting data.

Second, despite the emergence of financial markets, the financial systems of Eastern and Central European countries remain bank-oriented, with a small number of banks providing the main part of firm financing. As these banks generally have direct access to company information, the assumption has been made that in such systems the demand for timely and value relevant information is lower than in market-oriented financial systems such as those of the United States or the United Kingdom. [Ali and Hwang \(2000\)](#) report evidence consistent with this hypothesis.

Third, Eastern and Central Europe countries in general have a code-law legal system. [Ball, Kothari, and Robin \(2000\)](#) argue that such a system weakens the demand for timely and conservative accounting income because of the political nature of the standard-setting process. In code-law countries, accounting standards are established and enforced by governments, influenced by representatives of major political groups such as labor unions, banks, and business associations, which all view accounting income as a pie to be divided among them. As a result, the demand for accounting income is influenced more by the payout preferences of agents for labor, capital, and government than by the demand for public disclosure. A practical consequence is that, in code-law countries, managers have greater discretion in deciding when economic gains and losses are incorporated in accounting income. The association between accounting data and market valuation should thus be lower than in common-law countries, which form the environment of most prior studies. This difference has probably decreased since several Eastern and Central European countries have adopted IFRSs⁶ as national accounting standards.

⁵ [Jindrichovska \(2001\)](#), for example, cites a study conducted on the Prague Stock Exchange, showing that for the period 1995–1997, this market did not satisfy the weak form of the efficiency hypothesis.

⁶ Standards issued by the IASC prior to its transformation were named IASs. For the purpose of ease of reading and following the IASB convention, the term IFRSs is used to designate IASs as well as actual IFRSs.

Another reason for lower value relevance of accounting data in Eastern and Central Europe is the influence of tax rules. As in other countries submitted to the Continental model of accounting (as opposed to the Anglo-Saxon one), accounting earnings and taxable income are strongly linked. In order to be deducted for fiscal purpose, an expense must generally be recognized in the accounts. Managers have thus an incentive to anticipate recognition of expenses and delay recognition of profits, which reduces the timeliness of earnings. Ball et al. (2000) define timeliness as the extent to which current period accounting income incorporates changes in the market value of equity. As timeliness and value relevance are strongly linked, accounting data are probably less value relevant in Eastern and Central Europe than in countries with the Anglo-Saxon model of accounting.

However, there are also arguments in favor of a higher value relevance of accounting data in these countries. The main reason is that in such emerging markets, financial statements are the primary and possibly unique source of information for investors. The financial-analysis industry is only at an early stage of development, the financial press is less developed than in Western countries, and companies do not disclose earnings forecasts. Most transactions are thus made by investors with limited access to information other than publicly available accounting data. Market prices should thus essentially reflect accounting numbers which, as a result, should appear as particularly value relevant. Second, all governments of Eastern and Central Europe have undertaken reforms to improve accounting and financial-reporting practices. These efforts which culminate with the mandatory application of IFRSs by all listed companies, probably have a positive impact on the confidence of investors in accounting numbers, and consequently on the value relevance of accounting information.

The empirical evidence on the value relevance of accounting data in Eastern and Central European countries is limited. In Poland, Gornik-Tomaszewski and Jermakowicz (2001) examine the relationship between accounting numbers and market values for a sample of 77 listed companies. Their study covers the years 1996 to 1998, i.e., after the implementation of the 1994 Act of Accounting, which had introduced full compliance of Polish accounting standards with European Union Directives. The results show that both earnings and book value of equity are positively and significantly related to stock prices, and that the strength of this relationship is comparable to that reported in more mature markets. The authors also note that the book value of equity has a higher impact on market prices than earnings. More recently, (Dobija & Klimczak, 2007) provide evidence that the value relevance of Polish accounting information is increasing in time (1997–2007) as a result of the development of the capital market. These results confirm that accounting earnings are a significant factor for stock valuation on the Warsaw Stock Exchange.

A similar study was conducted by Jindrichovska (2001) in the Czech Republic. The association between market returns and earnings per share was tested using several models over the period 1993–1998. A relationship was found between earning-to-price ratios and price relatives, whose significance increases as lagged variables and longer response windows are considered. In a more recent paper, Hellström (2006) investigates the value relevance of accounting information of Czech vs. Swedish companies. The results confirm that during the 1994–2001 period, accounting information was less value relevant in the Czech Republic than in Sweden. Nevertheless the value relevance of Czech accounting information increased through time as a result of improvements in the institutional and accounting environment of the country.

Jarmalaite Pritchard (2002) study the case of Baltic countries (Estonia, Latvia, and Lithuania). This research, covering the period 1995–2000, shows that the association between returns and earnings differs substantially among these countries, with Lithuania exhibiting the weakest and Estonia the highest value relevance. As Jindrichovska (2001) notes in the Czech Republic, stock prices lead earnings, i.e., information reflected in stock prices is richer than that in the past series of accounting earnings.

There is no Romanian research that can be compared to the studies mentioned above with regard to the quality of methodology. Nevertheless, some studies (Ciobanu, 2003; Vasilescu, 2003) on the determinants of markets' performance provide indications of the value relevance of accounting data, notwithstanding their rather basic methodology.

3. The Romanian institutional setting

Since 1990 rapid changes have taken place in Romania. As in other transition economies, state-owned companies have been privatized and a financial market created. Several economic reforms were also undertaken to attract foreign investment, comply with the requirements of the International Monetary Fund and prepare the accession to the European Union.

3.1. *The Bucharest Stock Exchange*

The stage of development of capital markets is an important factor that impact the value relevance of financial data. Kothari (2001) cites inefficient capital markets as one of the reasons that may explain the low earnings-response coefficients reported in previous studies. The BSE began trading operations on 20 November 1995 following a 50 year period, under the communist regime, when stock markets were nonexistent. Following the mass-privatization program, large, formerly state-owned companies with stable operations were listed on the BSE, while smaller, privatized companies were listed on the RASDAQ (secondary electronic securities market).

Listed companies are subject to restrictions, as well as discipline and specific rules of conduct imposed by the market authorities. Companies listed on the BSE are classified in two categories, according to the criteria reported in Fig. 1. The two-tier structure of the stock market establishes a difference between the so-called "stars" of the market (the most actively traded and liquid shares) and the rest of the shares traded on the BSE. The purpose of this segmentation was to prioritize the information provided to investors by highlighting the most important shares traded in the market. "Class A" companies are subject to higher disclosure requirements and probably closer scrutiny by investors.

In the early years of the BSE (1995–1996), few companies were listed, and equity prices were continuously declining. BSE valuations were regarded as irrelevant due to the low volume of shares traded. In 1997, the market began to stabilize and the number of companies listed on the BSE increased as the market matured. The positive development in the market value of some listed companies (especially those from the "Class A" group) was overshadowed by the low performance of the Romanian economy in general, and by the general instability of the financial environment, which had a significant impact on the capital markets.

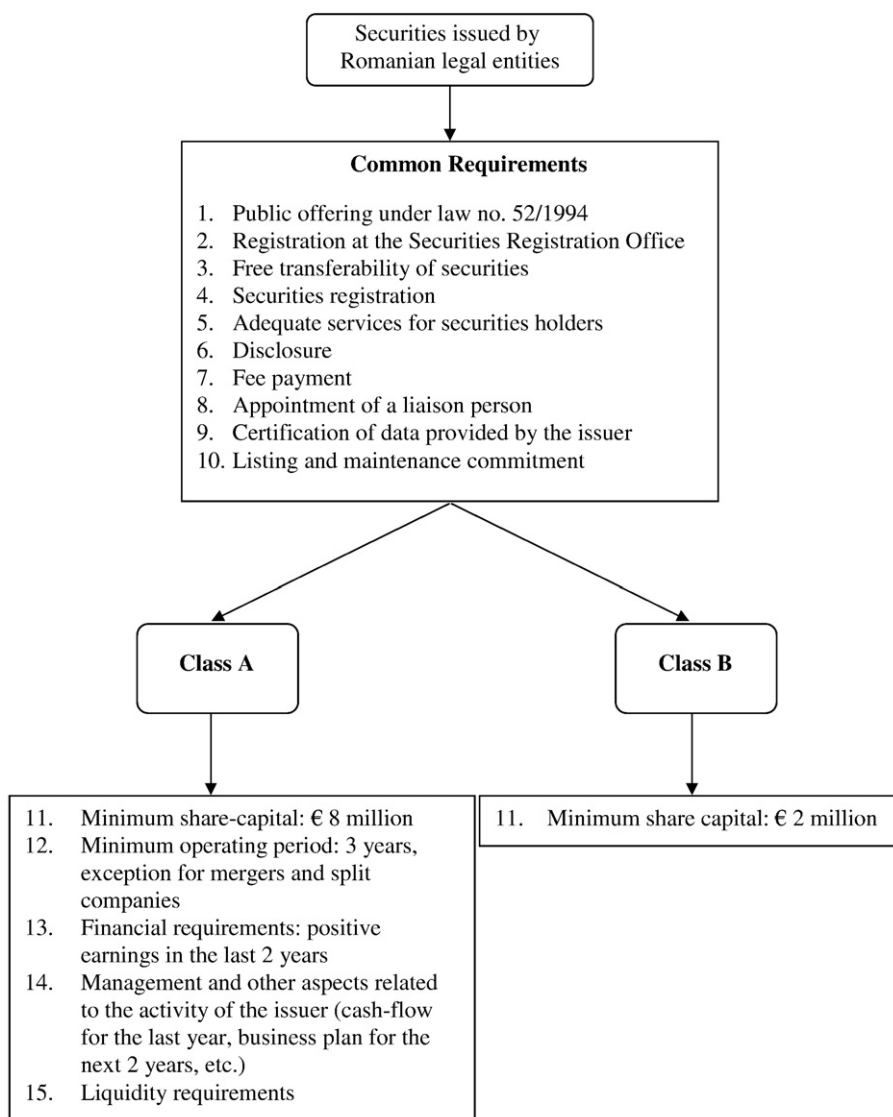


Fig. 1. BSE listing requirements. Source: BSE web site (www.bvb.ro).

The turning point for the BSE was the year 2000, with the arrival of foreign investors. At that time, the market capitalization began to increase, following the inflow of capital into the Romanian equity market. As shown by Pasol (2001), this capital inflow was driven by the impressive results of other Central European markets. Numerous foreign investment funds entered the Romanian market, which resulted in the stock market index increasing at a rate superior to the growth rate of the Romanian economy in general. Once the market

became more established, illiquid shares were delisted due to more stringent regulatory requirements.

By the end of 2004, the BSE reached a market capitalization of EUR 8819 millions, which was still below the regional average (as can be seen in [Table 1](#)). However, the trend was positive and strongly supported by the prospect of Romania joining the European Union (1 January 2007). It could thus be expected that the Romanian equity market would experience explosive growth in the period preceding the accession to the European Union and immediately thereafter. This trend is supported by current data indicating that the BSE market capitalization reached EUR 24,600 million by the end of 2007.

As most newly established stock exchanges ([Alexander & Bailey, 2003](#)), the BSE is characterized by short-term trading based on market-price fluctuations rather than long-term investment considerations. Given the low level of domestic savings in Romania, the stock-exchange activity has been dominated by foreign capital. In these conditions, the demand for information should be concentrated on past performance and current price data.

3.2. *The Romanian accounting reforms*

After the fall of the communist regime, Romania started a transition process from a centralized economy towards a market-based economy. The reforms have proved to be difficult and complex, affecting multiple economic areas, including accounting (the main characteristics of accounting reforms are presented in [Table 2](#)). After the 1989 revolution, there has been an evident need for change in accounting regulation. The communist accounting system was characterized by centralized public accounts used mainly for national budgeting purpose. The emphasis was on cost accounting because costs were used to determine the price of goods. Analyzing the financial position of companies was difficult due to the lack of financial statements (the only financial statement prepared by companies

Table 1
Market capitalizations of selected stock exchanges by the end of 2004.

	Market capitalization (millions EUR)
London Stock Exchange	2,071,775
Euronext	1,796,036
German Stock Exchange	878,806
Warsaw (Poland)	51,888
Budapest (Hungary)	21,039
Prague (Czech Republic)	21,720
Bucharest (Romania)	8819
Ljubljana (Slovenia)	7115
Vilnius (Lithuania)	4755
Tallinn (Estonia)	4563
Bratislava (Slovakia)	3239
Riga (Latvia)	1068
Sofia (Bulgaria)	703

Source: stock exchanges websites.

Table 2
The Romanian accounting reforms.

	Phase one	Phase two
Period	1990–2001/2002	2001/2002–2005
Influence	French influence due to cultural and legal ties	Fourth European Directive IFRSs
Consultants	French	Institute of Chartered Accountants of Scotland
Law	Accounting Law no. 82/1991 Regulations for the application of the Accounting Law (1993 — “the Green Book”) Yearly regulations for the preparation of financial statements	Order no. 403/1999 for the approval of accounting regulations harmonized with the Fourth European Directive and International Accounting Standards Yearly regulations for the preparation of financial statements
Financial statements	Balance sheet Income statement Notes	Balance sheet Income statement Cash flow statement Statement of changes in equity Notes
Origin of accounting principles	French chart of accounts	IASB conceptual framework
Taxation	Very strong link	Strong link
Revaluation of assets	Only for tax reasons	In conformity with IAS 16
Substance over form	No	Yes
Importance of professional judgment	Low	Low
Impairments and provisions	Extremely rare (in practice, only if tax deductible)	Extremely rare (in practice, only if tax deductible)

was the balance sheet) and comparability (due to the way prices were fixed, inflation was hidden).

As noticed by [King et al. \(2001\)](#) in the early stages of the accounting reform in Eastern and Central Europe the focus was on European directives rather than on IFRSs. The process of accounting regulation was and still is a public one, deriving from a legislative process where the main actor is the Ministry of Finance. Due to cultural and economic similarities, the Romanian authorities considered that the French system was the most suitable model, and that through it the European Directives will be automatically implemented ([Feleaga, 2000](#)). The Romanian Ministry of Finance played the role of standard setter and developed a new set of regulations under technical French support. The process of accounting change began in the early 90’s with the adoption of the Accounting Law and the General Chart of Accounts that applied to all commercial companies. Throughout the 90s, the Romanian economy experienced constant growth, while the companies were trying to gain access to global markets. The Ministry of Finance, this time under influence of Scottish advisors, issued several directives which were finally implemented in 2001/2002. The financing was provided by the British Know-How Fund and the consultants were from the Institute of Chartered Accountants of Scotland. As pointed out by [Ionascu, Ionascu, Olimid, & Calu \(2007\)](#), the regulation attempted to harmonize incompatible accounting frameworks, at a time when the European Union was only investigating the possibility of adopting IFRSs for

consolidated accounts of listed companies. The regulation reflects a reorientation of the Romanian standard setters towards Anglo-Saxon accounting, via the IASB.

Previously, the financial reporting system of French inspiration was primarily intended to provide information for governmental statistics, tax authorities, and creditors (Feleaga & Malciu, 2002). Under the new accounting paradigm, investors are considered as the primary users of financial information. The main differences between the two systems are summarized in Table 2.

The implementation of IFRSs was conceived as a gradual process. During the period 2001–2005, the companies that applied the new regulations were chosen gradually based on a decreasing size criterion, with the goal of including all large companies before the end of 2005. Due to their large size, listed companies (especially the “Class A” shares) applied the new regulations from 2001 or 2002 onwards.

The new accounting system followed several principles: the full enactment of the Fourth European Union Directive, the full enactment of the IASB framework, an adapted chart of accounts, and the application of IFRSs. Surprisingly, the standard setters decided, in a first step toward the adoption of IFRSs, to reform the familiar General Chart of Accounts (of French origin). This mixture of accounting philosophies, that is superposing an Anglo-Saxon accounting system on a legalistic one, with a national chart of accounts and a strong fiscal connection, was evaluated as a “*cultural intrusion*” (Roberts, 2000 cited by Ionascu et al., 2007).

Due to the multitude of goals, several conflicts resulted, and auditors often noted that companies were not fully compliant with IFRSs. The Ministry of Finance tightly controlled the implementation of IFRSs through annual instructions. According to these rules, annual financial statements had to be prepared based on IFRSs, except where a national regulation stipulated a different treatment. The main deviations related to the treatment of hyperinflation (IAS 29), the consolidation requirements (IAS 27), and the revaluation of assets (IAS 16). According to the 2003 World Bank Report, conformity was also partial with respect to IAS 1, IAS 2, IAS 7, IAS 12, IAS 17, IAS 18, IAS 21, and IAS 39. The link between accounting and taxation remained strong, leading some authors (Ionascu et al., 2007) to conclude that actually a “tax application” of IFRSs was made. Professional judgments often were limited to tax provisions, and international standards were applied only if they did not contravene tax regulations.

For all other nonfinancial and nonlisted companies considered to be small, the Ministry of Finance issued simplified regulations, harmonized with the European Directives only. Specific regulations were also issued for different industry sectors: banking (2001), insurance (2001) and brokerage (2002).

In June 2005, the Ministry of Finance decided to review its approach to accounting regulation. It separated European Directives from IFRSs and in November 2005 issued new regulations conforming to the European Directives only. All entities must now prepare financial statements in accordance with these new regulations. The concept of a “public-interest entity” was introduced, defined as including among others banks, insurance companies, listed companies, and members of groups preparing consolidated financial statements according to IFRSs. For the financial year 2006, banks are the only entities that were required to prepare an additional set of financial statements conforming to IFRSs. Other public-interest entities may prepare IFRSs financial statements if they have implementation capability. The decision to adopt IFRSs in full was postponed since the order suggested that 1 January 2007 was the earliest possible date of application, and only for public-interest entities.

3.3. *The control and enforcement mechanisms*

As noted by (Hellström, 2006), “accounting standards might be of high quality and still, the value relevance of accounting information might be low if they are not followed. In other words, such regulation and control mechanism must exist that secure that the companies follow the accounting regulation and reveal financial information to its external users.”

As for the Romanian context, control mechanisms were scarcely missing before the second wave of accounting reforms. The accounting reform was accompanied by a reform of the auditing profession. The Chamber of auditors was created and the “big four” entered the Romanian market. At present the majority of companies listed on the BSE are audited by a “big four” company. Better control of companies’ financial-information disclosure should naturally lead to an increased value relevance of accounting information.

An important indicator of the effective enforcement of accounting standards is the influence and independence of the accounting profession. The Body of Expert and Licensed Accountants of Romania (CECCAR — Corpul Expertilor Contabili si Contabililor Autorizati din Romania) is the organization representing the Romanian accountancy profession. Organized along European models, it experienced a rapid growth in the last decade to become a solid organization with more than 50,000 accountancy professionals,⁷ of which about 10,000 work as accountants or auditors. The constant development of the accounting profession leads us to predict an increase of the quality of financial reporting in Romania during the period under study.

3.4. *The impact of hyperinflation*

The rapid development of Romania in the 1990s was accompanied by a high level of inflation and even hyperinflation (Table 3).

The impact of inflation results in an overstatement of earnings per share mainly due to the understatement of the depreciation of fixed assets valued at historical cost. At the same time, market returns are overstated due to the inflation in price levels. Several studies have investigated the impact of inflation on these relationships.

The abundant U.S. literature on the link between earnings and share prices incited Board and Day (1989) to investigate the strength of this relationship for a sample of U.K. manufacturing companies that traded over an 18-year period (1961–1977), making use of three measures of earnings. In the light of the widespread view that historical cost earnings become unreliable during periods of inflation, the authors expected that its information content would decline during such times and, therefore, regressed the *R*-squares on the inflation rates. However formal support for the hypothesis that inflation has a material effect on the information content was found.

Board and Walker (1990) provide evidence on the influence of inflation on the regression coefficients of market returns and accounting data. Their study examines the relation between the unexpected accounting rates of return and abnormal market returns for U.S. firms over 18 years. The results suggest that there is a significant variation in this relation, and that the inter-temporal variation can be explained partly by inflation. More concretely, a significant negative association between inflation and the cross-sectional mean of the slope coefficient from the regression model is observed. Further evidence

⁷ According to CECCAR’s website www.ceccar.ro.

Table 3
Inflation rates in Romania.

Year	Inflation rate (%)
1997	154.8
1998	59.1
1999	45.8
2000	45.7
2001	34.5
2002	22.5
2003	15.3
2004	11.9

Source: National Institute of Statistics (www.insse.ro).

shows that this influence is due to the anticipated part of inflation, while the association becomes insignificant for the unanticipated part. Otherwise stated, inflation (and especially the anticipated inflation) is biasing the slope coefficient downwards.

Nissim and Penman (2003) find that changes in nominal interest rates have a negative effect on market values independent of whether they are due to changes in expected inflation or changes in real interest rates. The authors point out that compared with real interest rates, changes in expected inflation have a relatively delayed, less negative, and less significant relationship with expected residual earnings. On the other hand, the unexpected changes in interest rates are positively related to present and future unexpected earnings. This relationship is due to a large positive effect on revenues, which is partially offset by a positive effect on operating expenses. However, this effect seems to be offset by the negative-value effect of the change in discount rates since the results show that changes in interest rates are negatively and significantly related to residual earnings.

4. Data collection and inflation adjustments

As of 31 December 2004, 60 companies were listed on the BSE. As banks and other financial companies are subject to specific accounting rules, they are excluded from the present analysis, reducing the sample to 48 firms. All firms included in the sample are listed only on the BSE. Table 4 shows the industry distribution of the sample.

Year-end stock prices, annual earnings, and dividends for the period 1998–2004 were collected from individual financial statements and cross-validated with data available on the BSE website.⁸ Firms were not required to disclose consolidated financial statements during the period under study. Group accounting was not a common practice among Romanian firms because most companies did not have subsidiaries. Even after the accounting reform, consolidation requirements was one of the areas where national regulations stipulated a different treatment from the IFRSs (mainly due to taxation reasons). Mandatory consolidation requirements were introduced explicitly only in 2007.

⁸ Bucharest Stock Exchange Web site: www.bvb.ro.

Table 4
Breakdown of companies by industry.

Industry	Number of companies
Heavy industry	21
Chemicals	10
Energy equipment, sources and services	7
Food and household products	4
Construction, building materials and components	3
Health and personal care	2
Tourism services	1
Total	48

Several firms were not listed for the whole period and had to be eliminated, bringing to a 280 year-observations. The early years of the BSE (1995–1997) were excluded from the analysis because the low volume of shares traded could make market valuations irrelevant. The year 2004 was chosen as a cutoff for the research period because, after this date, the Romanian economy entered a new phase of development — the government implemented reforms as a prerequisite for accession to the European Union.⁹ Whereas convergence with IFRSs was an affirmed priority until 2004, the decision to postpone the adoption of IFRSs gave companies more discretion in the measurement of earnings. In order to avoid a possible bias due to the mixing of data obtained under different accounting regimes, we decided to end the research period in 2004.

In an emerging economy, firms are often characterized by considerable variations in the number of shares outstanding. As noted by Pajuste (2002), the mass privatization in Eastern and Central Europe has resulted in the listing of a large number of companies whose shares are not regularly traded. As the markets and regulatory environment developed, several companies were delisted, while others made frequent stock splits and new issues. Data were adjusted for changes in the number of shares resulting from these operations.

The first examination of data revealed an abnormal level of dispersion of market returns and earnings per share. The average market return was 115.0% with a standard deviation of 608.7%. The average earnings per share represented 12.9% of the share price at the beginning of the year with a standard deviation of 451.6%. A closer examination of data made it apparent that these high values were mainly due to a small number of observations. Outlying values (over twice the standard deviation), representing 13 out of 280 annual observations, were thus excluded from the sample. Another reason for this exclusion is the transitory nature of extreme earnings variations. As such variations are not expected to persist, their association with market returns should be lower than for moderate earnings surprises (Kothari, 2001). As a result of these adjustments, the average market return decreased to 71.9% with a standard deviation of 136.4%, while the corresponding values for the average earnings per share were 31.9% and 113.6%, respectively.

The inflationary and, at times, hyperinflationary conditions that existed in Romania during the period under examination (1998–2004) had a significant impact on financial

⁹ The Accession of Romania to the European Union took place on 1 January 2007. The Treaty of Accession was signed on 25 April 2005.

data. Various methods have been developed to adjust accounting figures for the impact of inflation. They can be classified into two categories: methods based on current monetary units which take into consideration the evolution of a general price index; and methods based on current value which replace historical costs by current market (or fair) values.

The objective of these methods is to ensure that capital invested in the firm is maintained and to provide stakeholders and other users of financial statements with information relevant to their decision making. Under the hyperinflationary conditions that existed in Romania during the period under study, financial reporting standards promulgated by the IASB require the use of the current monetary-unit method to restate financial statements.

During the period of hyperinflation, Romanian companies did not restate their financial statements into current monetary units, contrary to the IAS 29 requirement. It was not possible for us to make this restatement because necessary information was not available. Nevertheless, in order to take into account the impact of inflation, financial data used in this study were adjusted by applying the general price index published by the National Institute of Statistics.¹⁰ The underlying principle is that by applying the general price index, accounting data are restated to a constant purchasing power (in our adjustments, to the level at the beginning of the year), which should result in a more meaningful basis for inter-temporal comparisons.

5. The empirical model

Different empirical models have been used by prior studies to assess the value relevance of accounting data.¹¹ All consist in regressing accounting data with corresponding measures of market performance. Data may be absolute (price models) or relative (return models).

The simplest price model can be written as follows:

$$P_{jt} = \alpha_0 + \alpha_1 BV_{jt} + \varepsilon_{jt}$$

where

P_{jt} year-end market price of firm j ;
 BV_{jt} year-end book value of firm j .

whereas the equation of a typical return model is:

$$R_{jt} = \alpha_0 + \alpha_1 \frac{E_{jt}}{P_{jt-1}} + \varepsilon_{jt}$$

with

R_{jt} market return of firm j in year t ;
 E_{jt} earnings of firm j in year t .

¹⁰ National Institute of Statistics web site: www.insse.ro.

¹¹ For a discussion of these models, see Holthausen and Watts (2001).

Within this framework, an accounting figure is said to be value relevant if its regression coefficient (α_1 in the equations above) is statistically significant. Globally, the R -square coefficient of the regression measures the value relevance of the set of accounting items included in the equation.

Both price and return models have been used in prior studies despite the fact that they suffer from some unresolved econometric problems. Kothari and Zimmerman (1995) provide empirical evidence that price models produce better specified estimated earnings–response coefficients. Their results show that the slope from price regressions is substantially less biased, more in line with the observed rate of return in the market. However, as pointed out by Brown, Lo, and Lys (1999), statistical associations inferred from price regressions suffer from a spurious effect of scale because large security prices tend to be mechanically related to large book value and large earnings per share. In the context of accounting research, these authors suggest that level regressions are not a reliable measure of value relevance because scale effects in accounting data are both substantial and vary over time.

In contrast, return regressions are not affected by scale problems because stock data and accounting figures per share are scaled by beginning-of-period stock prices. However, as shown by Kothari & Zimmerman (1995), when prices lead earnings, the dependent variable contains information about current and future earnings arriving over the current period. On the other hand, the independent variable contains both a surprise component and an anticipated component. Since the anticipated component cannot explain returns, the independent variable in the return model measures the variable of interest with error. The errors in variables problem biases the earnings response coefficients toward zero.

To summarize, price models seem to perform better, producing less biased regression coefficients, but due to an uncorrelated, omitted-variable problem and to the spurious effect of scale, the explanatory power of these models is biased. Return regressions are not affected by scale and produce less biased R -squares, but an error in variables problem bias the earnings response coefficient. In measuring the value relevance of accounting data, return models seem to suffer less from econometrical problems. As the purpose of the present study is to analyze the value relevance of earnings in a transition economy (as measured by cross-sample differences in R -squares), the focus should be on whether R -squares capture, indeed, the intuitive notion of value relevance. Therefore, following Alford, Jones, Leftwich, and Zmijewski (1993), Ali and Hwang (2000) and many others, we used the following return model:

$$R_{jt} = \alpha_0 + \alpha_1 \frac{E_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta E_{jt}}{P_{jt-1}} + \varepsilon_{jt} \quad (1)$$

where

$R_{jt} = \frac{P_{jt} - P_{jt-1} + D_{jt}}{P_{jt-1}}$ is the market return of share j in year t ;

P_{jt} and P_{jt-1} are the year-end price of share j for t and $t-1$;

D_{jt} is the dividend attached to share j in year t ;

E_{jt} and ΔE_{jt} are, respectively, the earnings per share and the change in earnings per share of firm j in year t .

Although association studies do not imply any underlying valuation model, Eq. (1) is often presented as deriving from the Feltham–Ohlson model (Ohlson, 1995; Feltham & Ohlson, 1995).¹²

During the period under study, Romania was a hyperinflationary economy. According to the IASB (IAS 29), an indicator of hyperinflation is the fact that the cumulative inflation rate over three years is approaching or exceeds 100%. This condition was largely met during the period 1997–2002 (see Table 3). However, IAS 29 does not establish an absolute rate at which hyperinflation is deemed to arise. Most of the characteristics of a hyperinflationary economic environment are largely met during the whole period under study.¹³

This makes it difficult to assess the value relevance of accounting data because inflation does not equally affect both sides of Eq. (1). Whereas variations in price levels are fully reflected in market returns, accounting earnings are less affected in as much as they are based on historical cost. As a consequence, the association between accounting figures and market returns should be biased. As summarized by Cormier (1989), in an inflationary environment the information content of current cost data is distorted. Thus, in order to take into account the impact of inflation, financial data used were adjusted as follows (i_t denotes the inflation rate in year t):

- End-of-period prices were multiplied by $\frac{1}{1+i_t}$ in the calculation of market returns;
- Assuming for simplicity that earnings and dividends occur in the middle of each period, these items were multiplied by $\frac{1}{1+\frac{i_t}{2}}$. Similarly, earnings changes were defined as $E_t \left(\frac{1}{1+\frac{i_t}{2}} \right) - E_{t-1} \left(1 + \frac{i_{t-1}}{2} \right)$.

Based on these adjusted data, Eq. (1) becomes:

$$AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{jt-1}} + \varepsilon_{jt} \quad (2)$$

(Table 5).

¹² For a formal description of the relationship between Eq. (1) and the Feltham–Ohlson model, see Dumontier and Raffournier (2002), pp. 129–131.

¹³ According to IAS 29, “hyperinflation is indicated by characteristics of the economic environment of a country which include, but are not limited to, the following:

- (a) the general population prefers to keep its wealth in non-monetary assets or in a relatively stable foreign currency;
- (b) the general population regards monetary amounts not in terms of the local currency but in terms of a relatively stable foreign currency;
- (c) sales and purchases on credit take place at prices that compensate for the expected loss of purchasing power during the credit period, even if the period is short;
- (d) interest rates, wages and prices are linked to a price index; and
- (e) the cumulative inflation rate over three years is approaching, or exceeds, 100%” (IAS 29, par. 3).

Table 5
Adjustments for inflation.

Item	Unadjusted data	Adjusted-for-inflation data
Market price	P_{jt}	$AdjP_{jt} = \frac{P_{jt}}{1 + i_t}$
Dividend	D_{jt}	$AdjD_{jt} = \frac{D_{jt}}{1 + \frac{i_t}{2}}$
Market return	$R_{jt} = \frac{P_{jt} + D_{jt} + P_{j,t-1}}{P_{j,t-1}}$	$AdjR_{jt} = \frac{AdjP_{jt} + AdjD_{jt} - P_{j,t-1}}{P_{j,t-1}}$
Earnings per share	E_{jt}	$AdjE_{jt} = \frac{E_{jt}}{1 + \frac{i_t}{2}}$
Earnings changes	$\Delta E_{jt} = E_{jt} - E_{j,t-1}$	$\Delta AdjE_{jt} = AdjE_{jt} - E_{j,t-1} (1 + \frac{i_{t-1}}{2})$

6. Results

Table 6 reports the results of regressions for pooled data and each class of shares. In almost all cases, coefficient α_1 is positive and significant, indicating some correlation between earnings and market returns. In contrast, coefficient α_2 is negative, which denotes an inverse relationship between earnings changes and market returns. The most striking observation is that the explanatory power of the model (as measured by the adjusted R -square) is highly sensitive to the type of data used. For rough data, i.e. before any elimination and adjustment, the adjusted R -square amounts to 40.4%, a relatively high

Table 6
Results of regressions — whole sample.

	N	α_0	α_1	α_2	F	Adjusted R^2
<i>Before elimination of outlying observations and adjustments for inflation (model 1)</i>						
Pooled data	280	1.023** (3.641)	1.265** (7.203)	-0.440* (-2.548)	95.516**	0.404
Class A shares	59	0.649** (5.003)	0.403* (2.225)	-0.075 (-0.331)	5.304**	0.129
Class B shares	221	1.174** (3.323)	1.310** (6.540)	-0.477* (-2.430)	77.223**	0.409
<i>After elimination of outlying observations but before adjustments for inflation (model 1)</i>						
Pooled data	267	0.565** (7.341)	0.690** (8.576)	-0.493** (-5.598)	37.039**	0.213
Class A shares	59	0.649** (5.003)	0.403* (2.225)	-0.075 (-0.331)	5.304**	0.129
Class B shares	208	0.547** (5.957)	0.718** (7.803)	-0.537** (-5.501)	31.704**	0.229
<i>After elimination of outlying observations and adjustments for inflation (model 2)</i>						
Pooled data	267	0.225** (3.668)	0.474** (7.358)	-0.320** (-5.588)	34.041**	0.199
Class A shares	59	0.271* (2.659)	0.387** (3.033)	-0.160 (-0.993)	5.230**	0.127
Class B shares	208	0.215** (2.925)	0.480** (6.275)	-0.333** (-5.261)	27.933**	0.206

Model 1 (unadjusted for inflation): $R_{jt} = \alpha_0 + \alpha_1 \frac{E_{jt}}{P_{j,t-1}} + \alpha_2 \frac{\Delta E_{jt}}{P_{j,t-1}} + \varepsilon_{jt}$.

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{j,t-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{j,t-1}} + \varepsilon_{jt}$.

R_{jt} = market return of share j in year t .

E_{jt} = earnings per share of share j in year t .

$P_{j,t-1}$ = market price of share j at the end of year $t-1$.

$AdjR_{jt}$ = market return adjusted for inflation.

$AdjE_{jt}$ = earnings per share adjusted for inflation.

t -statistics into brackets.

*, ** indicates significance at the 0.05 and 0.01 level respectively.

value. This result should lead to the conclusion that earnings and earning variations have high value relevance in Romania. In fact, when outlying observations (i.e., earnings per share that deviate from their mean value by more than two times the standard deviation) are excluded, the explanatory power of the model decreases to 21.3%, a more usual level. In the rest of the paper we only report results obtained with data after elimination of outlying observations, as previously defined.

As mentioned above, high levels of inflation that characterize the Romanian economy during the period under study can adversely affect the value relevance of accounting earnings. First, they may alter the relationship between earnings and market returns because of their different impact on the two sides of the regression equation. But inflation may also increase *R*-squares because of the scale effect it induces on earnings and market returns. The two effects seem to compensate each other since the adjusted *R*-square obtained with and without inflation-adjusted data do not differ significantly (19.9% vs. 21.3%). Given the lack of other sources of information in the Romanian environment, the value relevance of accounting earnings seems to be high even if compared to other results from Eastern and Central Europe (Dobija & Klimczak, 2007; Gornik-Tomaszewski & Jermakowicz, 2001; Hellström, 2006).

The influence of market segmentation is clearly established. As expected, Class A shares issued by larger companies, more actively traded, and, therefore, more visible to the market, exhibit lower value relevant earnings and earnings changes than other securities listed on the BSE (adjusted *R*-square = 12.7% vs. 20.6% for inflation-adjusted data). This finding suggests that each class of shares includes securities with different characteristics. It also partially justifies the two-tier structure of the market.

Table 7 reports changes in the adjusted *R*-square over time. Results are similar to the ones obtained in more mature markets, in the sense that the value relevance appears to be highly volatile from year to year. The adjusted *R*-square ranges from 10.6% (2000) to 44.4% (2001), with an average of 25.4% for the whole period.

Prior to 2001, all listed companies were following the former accounting system of French origin. As soon as 2001, large companies (especially “Class A” firms) began to apply the new more market-oriented regulation, whereas other listed companies delayed its application until 2002. Thus, 2001 is a transitory year, with some firms already applying the new regulation, and others still using the old rules. Because of this duality of standards, the market probably had difficulty in assessing the performances of companies, which may explain the abnormal adjusted *R*-square obtained in this particular year. To properly estimate the impact of the new regulation on the value relevance of accounting data, it is thus preferable to treat 2001 as a “grey year” and exclude it from comparisons. For the 2002–2004 period, the average adjusted *R*-square is 23.3%, vs. 21.2% for the three years preceding the reform. Accordingly, it seems that the replacement of the former accounting system by a more market-oriented and IFRSs-based regulation had only a limited impact on the value relevance of accounting data. This is not surprising given the mixture of accounting philosophies that characterized this reform. Despite its claimed IFRSs orientation, the new regulation did not abandon the traditional features of a Continental European accounting system: the Ministry of Finance controlled the implementation of IFRSs through annual instructions; only standards that were not in conflict with national rules had to be applied; and the link between accounting and taxation was as strong as

Table 7
Results of regressions — changes over time.

	Former regulation				IFRSs-based regulation			
	1998	1999	2000	2001	2002	2003	2004	
Years								
Number of observations	25	41	39	36	41	46	39	
Adjusted R^2	0.351	0.179	0.106	0.444	0.301	0.162	0.237	
Average adjusted R^2	0.212				0.233			

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{jt-1}} + \varepsilon_{jt}$.

P_{jt-1} = market price of share j at the end of year $t-1$.

$AdjR_{jt}$ = market return adjusted for inflation.

$AdjE_{jt}$ = earnings per share adjusted for inflation.

before. In these conditions, and given the frequency of partial IFRSs compliance reported by auditors or independent observers (World Bank, 2003), many market participants probably felt that the reform had only a limited impact on accounting quality, which may explain the low increase in value relevance observed after 2001. However, all these results should be interpreted with prudence because of the high volatility of R -square in time already documented and because of the small number of observations for each period. In addition, the increase in the value relevance of accounting data may also be due to other substantial changes and reforms that occurred in Romania at that time.

6.1. The value relevance of positive vs. negative earnings

Transitory earnings are commonly presented as an explanation for low earnings-response coefficients (Kothari, 2001). Because of their transitory nature, extreme earning variations were excluded from the sample, which considerably improved the association between accounting data and market returns (Table 6). According to Hayn (1995), losses also are transitory. Given that shareholders have an option to liquidate the firm, negative earnings cannot persist indefinitely. Several studies document that accounting losses have smaller earnings–response coefficients than profits (Collins, Pincus, & Xie, 1999; Hayn, 1995; Martikainen, Kallunki, & Perttunen, 1997).

Due to the small number of losses in the sample (40 observations only), the value relevance of negative earnings cannot be measured separately. Nevertheless, it is possible to indirectly assess the influence of these transitory earnings by comparing the results of regressions involving positive earnings only (Table 8) to those of Table 6 which include all observations (positive as well as negative earnings).

As shown in Table 8, the explanatory power of the models increases significantly when losses are excluded from the analysis. The adjusted R -square moves from 21.3% to 32.4% for unadjusted data and from 19.9% to 27.1% for inflation-adjusted figures. Similar observations were made by previous studies conducted in Eastern and Central Europe (Gornik-Tomaszewski & Jermakowicz, 2001; Jarmalaite Pritchard, 2002). These findings are consistent with the idea that losses are more transitory than positive earnings. It is worth noting that both categories of shares exhibit an increase of R -square (+9.5% for Class A and +6.7% for Class B with inflation-adjusted data).

Table 8
Results of regressions — positive earnings only.

	<i>N</i>	α_0	α_1	α_2	<i>F</i>	Adjusted <i>R</i> ²
<i>Data unadjusted for inflation (model 1)</i>						
Pooled data	227	0.219* (2.193)	1.271** (10.407)	-0.642** (-6.364)	55.136**	0.324
Class A shares	49	0.140 (0.796)	1.743** (3.836)	-1.246* (-2.077)	13.895**	0.349
Class B shares	178	0.219 (1.826)	1.255** (8.947)	-0.633** (-5.856)	42.236**	0.318
<i>Data adjusted for inflation (model 2)</i>						
Pooled data	227	-0.008 (-0.101)	0.898** (8.324)	-0.394** (-5.922)	42.981**	0.271
Class A shares	49	-0.036 (0.242)	1.026** (3.513)	-0.651 (-1.527)	7.832**	0.222
Class B shares	178	-0.011 (-0.109)	0.899** (7.147)	-0.390** (-5.490)	34.224**	0.273

Model 1 (unadjusted for inflation): $R_{jt} = \alpha_0 + \alpha_1 \frac{E_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta E_{jt}}{P_{jt-1}} + \varepsilon_{jt}$.

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{jt-1}} + \varepsilon_{jt}$.

R_{jt} =market return of share *j* in year *t*.

E_{jt} =earnings per share of share *j* in year *t*.

P_{jt-1} =market price of share *j* at the end of year *t*-1.

$AdjR_{jt}$ =market return adjusted for inflation.

$AdjE_{jt}$ =earnings per share adjusted for inflation.

t-statistics into brackets.

*, ** indicates significance at the 0.05 and 0.01 level, respectively.

6.2. The value relevance of positive vs. negative earnings changes

As noted by Basu (1997), the conservatism principle requires that bad news be incorporated into earnings more readily than good news. Because of this asymmetric treatment, earnings increases are more transitory than earnings declines (Collins, Maydew, & Weiss, 1997). Accordingly, earnings increases should be less associated with market variations than earnings decreases. In order to test this prediction, separate regressions were run for positive and negative earnings changes (Table 9). To avoid ambiguity, the analysis was restricted to companies that reported positive earnings in the preceding year.

The results do not confirm that earnings declines are more value relevant than earnings increases. In the former case, the adjusted *R*-square increases to 28.9% whereas, in the latter case, it drops to 24.1%.¹⁴ An interesting point to note is that this fall is entirely due to Class A shares, for which adjusted *R*-square decreases by 17.4%, whereas Class B securities are practically not affected by the exclusion of positive earnings changes (-2.4%).

6.3. The negative earnings change coefficient — a possible explanation

A puzzling result is the negative coefficient of earnings changes in almost all regressions, which suggests that investors react negatively to earnings increases and positively to earnings declines. A similar result was reported by Hellström (2006) in an article that investigates the value relevance of accounting information in the Czech Republic. The author claims that “the negative coefficient suggests, assuming random walk

¹⁴ Table 9 reports results obtained with inflation-adjusted data. The same analysis was conducted with unadjusted data. The results, not shown here, are similar.

Table 9
Positive vs. negative earnings changes (positive earnings only).

	<i>N</i>	α_0	α_1	α_2	<i>F</i>	Adjusted <i>R</i> ²
<i>Positive earnings changes ($\Delta AdjE_{jt} > 0$)</i>						
Pooled data	106	-0.005 (-0.035)	0.856** (6.319)	-0.341** (-3.590)	22.351**	0.289
Class A shares	26	-0.116 (-0.588)	0.881* (2.522)	-0.310 (-0.542)	6.254**	0.296
Class B shares	80	0.035 (0.196)	0.846** (5.200)	-0.349** (-3.301)	16.355**	0.280
<i>Negative earnings changes ($\Delta AdjE_{jt} < 0$)</i>						
Pooled data	121	-0.051 (-0.452)	0.921** (3.179)	-0.502** (-3.684)	20.030**	0.241
Class A shares	23	0.026 (0.096)	1.509* (2.232)	-0.119 (-0.103)	2.535	0.122
Class B shares	98	-0.071 (-0.542)	0.847* (2.609)	-0.532** (-3.711)	17.662**	0.256

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{jt-1}} + \varepsilon_{jt}$

P_{jt-1} = market price of share *j* at the end of year *t*-1.

$AdjR_{jt}$ = market return adjusted for inflation.

$AdjE_{jt}$ = earnings per share adjusted for inflation.

t-statistics into brackets.

*, ** indicates significance at the 0.05 and 0.01 level, respectively.

in earnings, that the market can see whether the change is transitory and that the earnings will revert to a normal level in the next accounting period.” (Hellström, 2006, p. 345).

For us, this explanation is not convincing. We argue that the negative earnings changes coefficient is a consequence of the relative inefficiency of the market. On efficient markets, returns anticipate most of the information contained in earnings before the annual report is released (Ball & Brown, 1968; Beaver, Lambert, & Morse, 1980 among others). On the contrary, emerging markets, the Romanian one in particular, are generally characterized by low transparency and the lack of information sources about companies. Interim reports are at a pioneer stage, and companies do not appear to favor external reporting. Accordingly, the main source of information for investors is the annual report, which is released around March or April. When returns are measured on the fiscal period (from January 1 to December 31), they probably reflect more the previous year’s accounting figures that were released during the period, than the current year’s earnings that will be disclosed next year.

In order to test this conjecture, market returns were regressed simultaneously on the current and the previous years’ earnings. As shown in Table 10, the earnings-response coefficient for the previous year ($\alpha_2=0.320$) is twice its amount for the current year ($\alpha_1=0.154$). This result suggests that because the annual report is the main source of information available on the BSE, market returns reflect past year more than current year’s performance. Nevertheless, these differences seem entirely attributable to the influence of Class B shares, which suggests that there exists other sources of information for the most actively traded securities.

6.4. The “prices lead earnings” hypothesis

Several authors have pointed out that conventional association research methods that study returns over the fiscal 12-months period seriously bias the degree of association between market returns and earnings (Beaver, Griffin, & Landsman, 1982; Collins & Kothari, 1989;

Table 10
The timeliness of earnings.

	<i>N</i>	α_0	α_1	α_2	<i>F</i>	Adjusted <i>R</i> ²
Pooled data	267	0.225** (3.668)	0.154* (2.087)	0.320** (5.588)	34.041**	0.199
Class A shares	59	0.271* (2.659)	0.228 (1.758)	0.160 (0.993)	5.230*	0.127
Class B shares	208	0.215** (2.925)	0.147 (1.654)	0.333** (5.261)	27.933**	0.206

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{AdjE_{jt-1}}{P_{jt-1}} + \varepsilon_{jt}$.

P_{jt-1} = market price of share *j* at the end of year *t* - 1.

$AdjR_{jt}$ = market return adjusted for inflation.

$AdjE_{jt}$ = earnings per share adjusted for inflation.

t-statistics into brackets.

*, ** indicates significance at the 0.05 and 0.01 level, respectively.

Easton, Harris, & Ohlson, 1992 among others). The fact that market returns computed on an annual basis are more highly associated with previous year’s earnings than with the current year’s performance has motivated us to change the beginning of the annual return window from January to July. Therefore we re-computed market returns on an annual basis starting on the 1st of July. The results of regressions are reported in panel A of Table 11. They cannot be compared with those reported above due to differences in sample size.

The first finding is that the sign of the earnings-changes coefficient α_2 is no longer negative when market returns are computed with a six-month lag. This result is consistent with the hypothesis that for most companies, investors react to the information contained in the annual report when it is released (around March–April) and that prices do not anticipate earnings. On the whole, *R*-squares are lower than when returns are computed over the fiscal 12-month period, probably because earnings and market returns are not computed over the same window: earnings reflect events that occurred from January to December *N*, whereas returns take into account events that took place between July *N* and June *N* + 1. However

Table 11
The “Prices lead earnings” hypothesis.

	<i>N</i>	α_0	α_1	α_2	<i>F</i>	Adjusted <i>R</i> ²
<i>12 months returns (01.07.N – 30.06.N + 1)</i>						
Pooled data	266	0.219** (3.772)	0.246** (2.753)	0.197* (2.089)	10.658**	0.068
Class A shares	56	-0.002 (-0.020)	0.807* (2.278)	0.310 (0.635)	17.682**	0.378
Class B shares	210	0.251** (3.713)	0.171 (1.759)	0.170 (1.702)	5.020*	0.037

<i>18 months returns (01.01.N – 30.06.N + 1)</i>						
Pooled data	258	0.414** (5.191)	0.198* (2.152)	0.236** (2.612)	7.440**	0.048
Class A shares	56	0.280 (1.487)	0.800* (2.008)	0.143 (0.234)	6.093**	0.156
Class B shares	202	0.407** (4.465)	0.137 (1.385)	0.220* (2.341)	4.509*	0.034

Model 2 (adjusted for inflation): $AdjR_{jt} = \alpha_0 + \alpha_1 \frac{AdjE_{jt}}{P_{jt-1}} + \alpha_2 \frac{\Delta AdjE_{jt}}{P_{jt-1}} + \varepsilon_{jt}$.

P_{jt-1} = market price of share *j* at the end of year *t* - 1.

$AdjR_{jt}$ = market return adjusted for inflation.

$AdjE_{jt}$ = earnings per share adjusted for inflation.

t-statistics into brackets.

*, ** indicates significance at the 0.05 and 0.01 level, respectively.

the degree of association between earnings and returns remains particularly high for Class A shares (37.8%), which can be interpreted as reflecting a higher level of market efficiency in this segment.

In a second step the return window was expanded to 18 months by measuring market returns from January 1, N to June 30, $N+1$. By so doing we make it possible for market returns to cover the entire period over which earnings are computed plus six additional months during which earnings are disclosed. The results of regressions for this expanded market return window are reported in panel B of Table 11.

As expected, earnings–change coefficient α_2 are positive, which puts an end to the anomaly observed when returns are computed over the 12-month fiscal period, and does not validate the “prices lead earnings” hypothesis.

In line with previous research, several other models have been considered to test this latter hypothesis. Results (not reported here) confirm that in the Romanian context, market returns are not correlated with next year’s earnings. Accordingly, it cannot be asserted that prices lead earnings.

7. Discussion and conclusion

The focus of this paper is to measure the value relevance of earnings and earning changes in Romania, an emerging market in a transitional economy. Several conclusions can be drawn from its findings.

First, the strength of the association between accounting data and market returns is highly dependent on the type of data considered. When no adjustment is made, the correlation between earnings and market returns is particularly high, with adjusted R -squares around 40%. After exclusion of outlying observations, the association is comparable to levels reported by studies conducted on more mature markets. When data are adjusted for inflation, a necessary adjustment given the hyperinflationary nature of the Romanian economy during the period, the explanatory power of the model decreases but remains at usual levels. These results show that value relevance studies cannot be conducted on emerging markets without adapting usual methodologies to the specificities of such markets.

Second, the association between earnings and market returns is higher for securities issued by small companies (Class B shares). This finding supports the segmentation of the BSE in two categories of shares subject to different listing requirements. By selecting a limited number of companies whose shares are submitted to disclosure and liquidity requirements comparable to those in use in more mature financial markets, the stock exchange authorities of emerging markets can “signal” these securities to the attention of foreign investors and thus reduce the information asymmetry that characterizes emerging markets. Therefore, the Class A shares are probably closely scrutinized by investors who are getting information from other sources. This finding also suggests that in such markets, results can be extremely sensitive to the characteristics of shares included in the sample, in particular to trading volumes.

Third, the association between earnings and market returns is significantly increased when losses are excluded from the analysis. Positive earnings changes (i.e., good news) also are more highly associated with changes in share prices than earnings decreases (bad news). This result confirms the transitory nature of negative earnings, already documented

by studies conducted on more developed markets. It is not surprising given the high level of inflation that characterized Romania during the period under study. In such an environment, earnings based on historical cost should naturally be positive and exhibit a positive trend. Reporting losses should thus be more exceptional (i.e. transitory) than in less inflationary economies.¹⁵

Fourth, a puzzling result is the negative coefficient of earnings changes in almost all regressions, which suggests that investors react negatively to earnings increases and positively to earnings declines. We provide evidence consistent with the intuition that negative earnings change coefficients are a consequence of the relative inefficiency of the market. Due to the lack of alternative information sources, prices are based mainly on earnings which are disclosed several months after the end of the accounting period. As a consequence, when returns and earnings are measured over the same period, returns appear more highly correlated with previous year's earnings than with current year's performance. But the anomaly disappears when returns are computed over a lagged period. As a whole, these results do not support the "prices-lead-earnings" hypothesis formulated for more mature markets.

As most empirical studies, this one is subject to several limitations. First, the sample is small (267 inflation-adjusted observations) compared to previous studies. This objection is common to all studies dealing with emerging economies, especially those of Eastern and Central Europe. Because these markets are recent, the number of listed companies is small and it is not possible to collect data sets as large as those of studies conducted in highly developed countries. Nevertheless, in the particular case of this study, this criticism should be mitigated given that the sample includes all Romanian companies listed on the BSE, banks and insurance companies excepted.

Another limitation relates to market inefficiency. As most emerging markets, the BSE is probably less efficient than more mature stock markets. Prior value-relevance studies are generally silent on whether the market is efficient or not. Nevertheless, several authors have expressed concern regarding the interpretation of the results of studies that use contemporaneous prices or returns as dependent variable, when the market is not efficient (Abdel-khalik, Wong, & Wu, 1999; Holthausen & Watts, 2001; Aboody, Hughes, & Liu, 2002). For Abdel-khalik, Wong, & Wu (1999), for example, "unless markets are taken to be informationally efficient, the unexpected variation in market return reflects the joint effect of two hypotheses: market efficiency and information content. Testing for the information content of accounting numbers, or any other news, is contingent on satisfying market efficiency." Nevertheless, market inefficiency is probably more a concern for event studies than for association analyses. Event studies measure abnormal market returns induced by an event or an information release over a short time period (a few days or weeks around the event or the announcement). As such, they are direct tests of market efficiency, defined as the capacity of market prices to instantaneously reflect all available information. By contrast, association studies examine the relationship between yearly accounting measures of performance and yearly market returns. As long-term analyses, they are much less sensitive to market inefficiency (Barth, Beaver, & Landsman, 2001). However, market efficiency is important for interpreting the results in terms of causality (i.e., for answering

¹⁵ The small number of companies reporting losses (40 of 267 observations) is consistent with this assumption.

the question: Are market prices *derived* from accounting numbers?). But for investors who are trying to value securities on emerging markets where accounting data is the main and in some cases the only source of information, the relevant question is simply “are market prices and accounting numbers *correlated*?” and answering this question does not require any hypothesis on market efficiency as already noted by Hellström (2006).¹⁶

Our results may also be influenced by the hyperinflationary conditions in the period under study. In recent years, inflation rates have continuously decreased, due to the economic reforms implemented by the government with a view to prepare the accession of Romania to the European Union. Thus, the hyperinflationary conditions that prevailed during the period under study were probably transitory. They are not representative of the current Romanian economy, and will probably not re-occur in the foreseeable future.

There are several directions that future research could take. First, it would be interesting to replicate our analysis with data from 2005 and subsequent years. This would allow a comparison of earnings response coefficients in hyper- and moderate inflationary conditions. Another valuable exploration would be to compare the value relevance of earnings before and after implementation of the new accounting regulations that will require compliance with IFRSs for all Romanian companies. Such a study would measure how much the value relevance of accounting data is increased when a permissive accounting regulation directed mainly towards the needs of the State and creditors is replaced by a set of highly demanding investor-oriented standards.

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¹⁶ According to Hellström (2006, p. 328), “market efficiency is not required as long as we interpret only the explanatory power of the statistical test. However, as soon as the coefficients are interpreted based on theoretical benchmarks derived from a valuation model, the assumption of market efficiency becomes important”.

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