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WHY DO COMPANIES FROM EMERGING COUNTRIES MANAGE EARNINGS?

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Abstract

This paper provides evidence in terms of the incentives which lead managers from emerging European countries to manage earnings. In particular, we focused on four Eastern European countries: the Czech Republic, Poland, Hungary and Slovakia, as the majority of studies on earnings management in developing countries were based on the Asian emerging market. The market of developing European countries is still barely explored. After we confirmed that managers from emerging European companies manage earnings, we find that within the different incentives which lead managers to earnings management, the avoidance of debt covenants violations is a strong incentive for managers. Additionally, those firms considered as poor investments (with less value) have incentives to manage earnings down as a consequence to opt for market niche. Moreover, emerging Eastern European companies have incentives to flatten earnings of current periods in order to benefit in the future as the source of future non-manipulated earnings will be insufficient, as they may expect reduced, or at least lower future performance of their companies affected by increasing global competition. Finally, we confirm that privately-owned companies tend to maximize accounting earnings more than state-owned companies because they are in a weaker position related to a specific political and historical factors.

Keywords: Earnings Management, Discretionary Accruals, Emerging Countries, Eastern European Countries

1. Introduction

Earnings management is a well investigated phenomena, as research has been ongoing on this topic for more than two decades. Earnings management can be defined as a purposeful intervention in external financial reporting, to reach earnings targets, by varying the accounting practices; however, it is an action, which takes place without violating accounting regulations, and by taking benefits from the possibility of making certain choices in the policy and accounting system. This action can, but will not necessarily, mislead stakeholders into believing certain financial information (Callao *et al.* 2014b). Other definitions of earnings management can be

found in Schipper (1989), Apellaniz and Labrador (1995), and Healy and Wahlen (1999), Fields *et al.* (2001), Park and Ro (2004), among others.

Nevertheless, a key theme of the earnings management literature is to understand why managers manipulate earnings. Therefore, there has been extensive research on incentives for earnings management; however, papers concerning incentives mainly were published based on the US, or Western European samples. Additionally, taking into consideration emerging markets, there is a significant number of studies based on the Asian emerging market. However, earnings management in emerging European countries is still barely explored.

Therefore, this paper addresses the questions of whether developing Eastern European firms engage in earnings management, and if so, which incentives affect such practices. We find certain characteristics, such as the process of the transformation from the communist regime into new democratic countries, the constant and accelerate privatization, the institutional infrastructure, the culture, recently incorporated into European Union structures, they are less economically developed, etc. which leads us to think that there may be different sort of incentives for earnings management in these countries compared to Western European or other well-investigated countries, as observed the emerging Eastern European countries give the impression of having different conditions and circumstances.

We focus on four emerging Eastern European countries: Poland, Hungary, Slovakia and the Czech Republic, during the period from 2003 to 2009. These four countries are former Soviet Union (communism) countries. In 1989, they experienced important political, cultural and economic changes. They started the process of transformation. We think that communism heritage may have an influence on existence of earnings management in the managers' activities.

Moreover, the four countries are members of the Visegrad Group (also known as the "Visegrad Four" or simply "V4"), which reflects the efforts of the developing countries of the Central European region to work together in a number of fields of common interest within the all-European integration[1].

Based on discretionary accruals, the results obtained show that firms from emerging Eastern markets manage earnings and they do it to decrease them. Within the different incentives which lead managers to earnings management, we find that the avoidance of debt covenants violations is a strong incentive for managers. Additionally, those firms considered as poor investments (with less value) have incentives to manage earnings down as a consequence to opt for market niche.

Moreover, emerging Eastern European companies have incentives to flatten earnings of current periods in order to benefit in the future, as the source of future non-manipulated earnings will be insufficient, as they may expect reduced, or at least lower future performance of their companies affected by increasing global competition. Finally, we confirm that privately-owned companies tend to maximize accounting earnings more than state-owned companies because they are in a weaker position related to specific political and historical factors. Besides the incentives perceived by the managers, we confirm that firm age, size, being listed and association to industry have an important influence on the way of managing earnings by managers of developing Eastern European firms.

The layout of the paper is as follows: in the next section, we present the literature review focusing on possible existent incentives for earnings management. In the third section, we present the sample selection and explain the methodology we employed. The fourth section shows the results. Finally, we present the conclusions and the limitations of the study.

2. Literature Review

It is generally perceived by the business community that managers manipulate earnings (Bartov, 1993). It is because, the incentives for earnings management are always present in managers' daily activities. Some authors (such as Dechow and Sloan, 1991; Holthausen *et al.*

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[1] In February 1991, Czechoslovakia (Czech and Slovakia), Hungary and Poland met in the city of Visegrad (Hungary) and agreed on a "Declaration of Cooperation on the Road to European Integration"

1995; Shackelford and Shevlin, 2001) believe that managers always have an incentive to control information.

Literature on earnings management has widely focused on incentives for earnings management, as it is important to know why managers manipulate their earnings. Different authors propose different theories on why companies manage earnings, and propose different types of classifications of incentives for managing earnings. Therefore, based on the previous studies, we observe that there are incentives related to market expectation and valuation. Market pressure incentives are present in the managers' daily activities (DeAngelo, 1986; Easton and Zmijewski, 1989; Jiambalvo, 1996; Rangan, 1998; Teoh *et al.* 1998b; Healy and Wahlen, 1999; Skinner and Sloan, 2002; Lee, 2007). Market incentives arise when firms' managers perceive a connection between reported earnings and the company's market value. Operating in the global, competing and open market leads companies to a steady process of evaluation and assessment of their activities. Some circumstances (for example, management buyout transactions, a mergers and acquisition context) can lead managers to manipulate earnings, as a pressure of the market.

Second group of incentives are incentives related to contracts (contractual incentives). Watts and Zimmerman (1978) developed a Positive Accounting Theory where they explained that a firm can be viewed as a nexus of contracts and is inclined to minimize contracting costs associated with various contracted parties. They formulate theory around management compensation, debt covenant violations and political violations. They hypothesize that managers try to influence contractual outcomes of bonus plans and debt covenants and reduce political costs by exercising judgement over accounting variables. Broad literature evaluates earnings management influenced by contractual incentives, see for example, Healy (1985), Watts and Zimmerman (1986), DeAngelo *et al.* (1992), Sweeney (1994), DeFond and Jiambalvo (1994), Holthausen *et al.* (1995), Dichev and Skinner (2002), Ball and Shivakumar (2006), Chen (2010), among others.

Finally, there are political incentives when the managers may face the possibility of politically-imposed wealth transfers, such as taxes, price control, tariffs, import relief, etc. Earnings management practice influenced by political incentives is widely investigated by the literature, see studies of Watts and Zimmerman (1978), Jones (1991), Petroni (1992), Key (1997), Schipper (1989), Yin (2003), Desai and Dharmapala (2006), Gill-de-Albornoz and Illueca (2005), Van der Boom and Ung (2010), among others.

The present study extends the earnings management research, as we investigate incentives for earnings management in developing European countries. Taking into consideration the study based on the emerging countries, we point out a significant number of studies carried out on the Asian emerging market. However, there are almost no studies on European emerging markets.

The literature defines emerging market as a country that has some characteristics of a developed market, but does not meet standards to be a developed market (MSCI, 2012). Among the largest and developing economies Brazil, China, India, Russia, followed by Indonesia, Mexico, Korea, Malaysia, Bangladesh are mentioned as examples of emerging economies in the world. In Europe, the Czech Republic, Estonia, Greece, Hungary, Poland, Romania, Slovakia, Slovenia represent mainly emerging countries.

Therefore, we find important number of studies from developing Chinese market, see for example: Lee and Xue (2004); Yu *et al.* (2006); Lin (2006); Lin, Liu and Wang (2007); or Korean market Yoon and Miller (2002); Kim and Yi (2005); Malasian Saleh *et al.* (2005); Rahman *et al.* (2005); Bukit and Iskandar (2009); Bangladesh: Razzaque, *et al.* (2006), Callao, *et al.* (2014a), among others.

Since this gap in research on earnings management in emerging European countries needs to be filled, we have focused on these unexplored European markets.

3. Sample and methodology
3.1. Sample and analysis period

The sample comprises a total of 4,627 non-financial firms from the emerging European countries: Poland, Hungry, Slovakia and the Czech Republic. The analysis covers the period of 2002 to 2009. Within that period, Eastern European companies were developing, growing and making the transformation over more than 10 years after the collapse of communism regime. We do not include posterior periods to avoid the impact of world of financial crisis. Advanced economies were battling to maintain their activities and negotiations, shaken by the instability of the markets caused by the recession. Emerging economies were also impacted as the deterioration in the economic environment caused considerable concern around the globe (Bolli, 2009 cited in Kaluza, 2009, p. 29).

The AMADEUS database was used to generate the sample. We have only retained those firms for which data were available for the variables considered for all the years included in the study (2003-2009) and for the prior period (2002) used to calculate changes in certain variables, as explained below. For each variable, we eliminated outliers, which are observations falling outside the range set by the mean value plus/minus three times the standard deviation.

The picture of the securities exchanges and financial sectors in Eastern European countries is still relatively unfavorable and underdeveloped (Koke and Schroder, 2006). Kartal (2013) indicates that capital markets are insufficiently developed in emerging countries because of the structural and institutional obstacles and lack of capital. In our research, we have included following number of listed companies of the Eastern European countries: 16 listed companies from the Czech Republic, 65 listed companies from Poland, 8 listed companies from Hungary, and 39 listed companies from Slovakia. Therefore, our samples comprise mostly non-listed companies.

In Eastern European countries, the IFRS is required for consolidated financial statements of listed companies, since it is mandatory by EU. Some listed companies also apply IFRS to prepare separate financial statements because EU allowed member states to decide about it. We work with non-consolidated financial statements prepared under local GAAP to avoid the impact of the regulatory change on the results. Our final sample is presented in Table 1.

Table 1. Sample selection procedure

	Czech R.	*Poland*	*Hungary*	*Slovakia*	**Total**
Total number of firms available in Amadeus data base	3,006	2,609	183	398	6,196
Incomplete data (missing data)	(779)	(208)	(62)	(163)	(1,212)
Extreme values	(178)	(150)	(7)	(22)	(357)
Total sample firms	**2,049**	**2,251**	**114**	**213**	**4,627**
Number of observations	14,343	15,757	798	1,491	32,389

3.2. Methodology
3.2.1. Incentives for Earnings Management. Model specification

We employ a logistic regression model to determine which sort of incentives lead managers from Eastern European countries to manage earnings. Many previous studies on earnings management used logistic regression, see for example studies of Bartov *et al.* (2001), Richardson *et al.* (2002), Spathis (2002), Mosebach and Simko (2005), Cheng and Warfield (2005), McAnally *et al.* (2008), Shuto (2007), Kuang (2007).

We will therefore use a binary dichotomous dependent variable *SIGN(DA)* that take the value 1 for firms with negative discretionary accruals, and 0 for firms with positive discretionary accruals[2]. Independent variables are:

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[2] Additionally, we exclude highly correlated variables in order to avoid possible multicollinearity problems in the model.

- *DEBT* is leverage variable, which defines total amount of debt to assets of firm;
- *TAX* is the tax cost of the firms;
- *EQUITY* is the difference between assets and liabilities;
- *NDI* is non-discretionary income variable;
- *PUBLIC* is a dummy variable equals 1 if firm is a state-owned firm (public), 0 otherwise (private-owned firm);

and control variables:

- *YEARS* variable is age of the firm;
- *SIZE* is total assets scaled by assets from *t-1;*
- *LISTED* variable is a dummy variable equals 1 if firm is a listed company, 0 otherwise;
- *INDUSTRY* variable defines nine dummies variables according to one digit SIC code, it takes values 1 if firm belongs to correspondent industry (1, …, 9), otherwise 0.

The model is presented as follow:

$$SIGN(DA) = \beta_0 + \beta_1 DEBT_{it} + \beta_2 TAX_{it} + \beta_3 EQUITY_{it} + \beta_4 NDI_{it} + \beta_5 PUBLIC + \beta_6 YEARS_{it} + \beta_7 SIZE_{it}$$
$$+ \beta_8 LISTED + \beta_9 INDUSTRY_1 + ... + \beta_{17} INDUSTRY_9 \qquad (1)$$

3.2.1.1. Dependent variable

Since the discretionary and non-discretionary components of accruals are not directly observable, we used model employed in Yoon and Miller (2002)[3] in cross sectional version to estimate the DA:

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{\Delta EXP_{it} - \Delta PAY_{it}}{A_{it-1}} + \alpha_3 \frac{NCASH_{it-1} \times GPPEGRW_{it}}{A_{it-1}} + \varepsilon_{it} \qquad (2)$$

where, TA_{it} is total accruals in year *t* booked by firm *i* in period *t*; ΔREV_{it} is the change in net sales revenue; ΔREC_{it} is the change in receivable accounts; ΔEXP_{it} is the change in operating expenses excluding non-cash expenses; ΔPAY_{it} is the change in payables; $NCASH_{it-1}$ is previous period non-cash expenses, such as depreciation; $GPPEGRW_{it}$ is a rate of growth in gross property, plant and equipment; A_{it-1} is total assets from the previous period and is used as a deflator to avoid problems of heteroscedasticity)[4], ε_{it} is the error term.

Having estimated the parameters of equation (2), we applied the values obtained to predict discretionary accruals for the 2003–2009 study period. The prediction error is interpreted as the discretionary part of accruals, defined in equation (3):

$$\frac{DA_{it}}{A_{it-1}} = \frac{TA_{it}}{A_{it-1}} - (a_0 \frac{1}{A_{it-1}} + a_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + a_2 \frac{\Delta EXP_{it} - \Delta PAY_{it}}{A_{it-1}} + a_3 \frac{NCASH_{it-1} \times GPPEGRW_{it}}{A_{it-1}}) \qquad (3)$$

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[3] Previously, based on the adjusted R square, standard error of the estimated variables, and the p-value, which represents the statistical significance of the variables, we have evaluated the robustness and the effectiveness of thirteen models for measuring earnings management. We analysed following models; both for time-series and cross-sectional analysis: the models by Healy (1985); DeAngelo (1986); Jones (1991); Dechow *et al.* (Modified Jones Model) (1995); Kang and Sivaramakrishnan (1995); Shivakumar (1996); Key (1997); Teoh *et al.* (1998a); Kasznik (1999); Yoon and Miller (2002); Dechow *et al.* (2003); Larcker and Richardson model (2004); Kothari *et al.* (2005). The results indicate that the cross-sectional model by Yoon and Miller (2002) is an effective model for our Eastern European countries in detecting earnings management: higher level of adjusted R square, lower level of standard error, and more significant values of the parameters.

[4] We applied also the test by White (1980) to check the heteroscedasticity problem.

where, DA_{it} are discretionary accruals for firm *i* in period *t*, and a_0, a_1, a_2 and a_3 are the estimated values of *ai*.

3.2.1.2. Independent variables

We include three groups of variables associated to different managerial incentives. First variable, debt of the company, is related to the contractual incentives. Second variable considers the influence of tax environment on the company's politics (group of political incentives). We also include variables linked to the incentives related to market expectation and valuation (third group): equity variable which measures the relation between the current value of a company and its effect on earnings management; non-discretionary income variable which determines the value of the company in terms of the future expectation of the owners; public variable focusing on the holder of the company.

We also incorporate four control variables: age, size, being listed and industry. Following we present detailed definition of each variable.

3.2.1.2.1. Debt

We include the debt variable, which represents the level of the leverage of Eastern European firms. The literature suggests that debt structure plays an important role as a managerial incentive mechanism. Managers may manage earnings to meet certain debt covenant agreements, see for example, studies of DeFond and Jiambalvo (1994), Becker *et al.* (1998), Dichev and Skinner (2002), Jaggi and Lee (2002), Othman and Zhegal (2006), Ardison *et al.* (2012).

We consider that in Eastern European countries debt covenant incentives may be observed. Eastern European countries are still transitional economies. Their firms' environment still has a high amount of uncertainty. Emerging economies (our sample countries) will need resources for updating current technologies, for financing new investments, or for competing with strong Western European companies. They will need substantial inflows of capital from Western economies, looking for debt holders. Therefore, we think that debt covenants incentives can be an important influence on Eastern European managers' decisions, hence we include leverage variable. We define the variable as the total amount of debt to total assets of each company.

3.2.1.2.2. Tax

We also consider the *TAX* variable, which represents the tax costs in revenues of each firm. The tax environment in which a firm is involved is a strong stimulus for discretionary judgment by managers in financial statements (Da Silva Flores and Pessoa da Silveira, 2013). The large literature shows the importance of tax incentives on earnings management, as they found evidence of managing earnings for tax purposes, see for example, studies on emerging countries (mainly Asian markets) of Dhaliwal and Wang (1992), Chen and Daley (1996), Han and Wang (1998), Lin *et al.* (2004), Lin (2006), Badertscher *et al.* (2009), Rodrigues *et al.* (2011).

The Eastern European tax scenario has been the subject of many discussions. Companies in the former centrally planned economies (Eastern European companies) were largely unaware of the scale of taxes they paid through the turnover and payroll systems (Tanzi, 1999). Therefore, in the new environment Eastern European companies may have tax incentives. We define the variable as tax costs in revenues of each company.

3.2.1.2.3. Equity

The *EQUITY* variable is used as a proxy of the value of a company. It is introduced into the model because the literature confirms that the scope of earnings management may vary depending on the book value of the company, see for example: Xie (2001), Desai and Moel (2004), Kothari *et al.* (2005), Chi and Gupta (2007), Ronen and Yaari (2008), Lin (2011), Badertscher (2011), Raoli (2013), Wardani and Hermuningsih (2014).

The European market shows very tight competition. Western European companies are well-established and much stronger than Eastern European companies. Therefore, by introducing the variable, we measure whether emerging Eastern European companies opt for managing (perhaps decreasing) the value of their firms and fill in the "gaps" of the European markets. We measure the variable as the difference between assets and liabilities (scaled by assets from *t-1*) of each company.

3.2.1.2.4. NDI (non-discretionary income)

We introduce also *NDI* variable to the model to provide evidence that firms from emerging Eastern European countries may manage their earnings to "hide" and "save" some current earnings for possible use in the future. When current earnings are relatively high, but assumed future earnings are expected to be low, firms may flatten their earnings to use them in future periods, as prior research provides evidence that managers may have incentives "to mask" their earnings, see for example, Healy (1985), Fudenberg and Tirole (1995), DeFond and Park (1997), Frank and Rego (2006), Caylor (2010), Eisele (2012), Takasu and Nakano (2012).

Eastern European companies are less experienced. High competition may produce instability in terms of competition, employment, flow of capital, or technology, among others. Therefore, managers may have an incentive to manage current earnings to fulfil the future expectation of the owners. We measure the variable as a difference between net result of the company and the discretionary part of the accruals (estimated), scaled by the assets *t-1*, of each company.

3.2.1.2.5. Public

We include the *PUBLIC* variable into our model to control the effects related to the holder of the company (public companies are state-owned companies, and private companies are private hands companies). Literature on earnings management finds differences in managing earnings by state-owned companies and privately-owned companies. In state-owned companies, there is an extra agency relationship, as the controlling owner is state/government. We also observe lower concentration of ownership in state-owned firms and lower managerial ownership, among others characteristics, see studies of Watanabe (2002), Liu and Lu (2002), Ding *et al.* (2007), Hung *et al.* (2012), Chen *et al.* (2011), Li *et al.* (2011).

In Eastern European countries, a large-scale process of privatization of public companies was observed in the last thirty years. As Fudenberg and Tirole (1995) point out the transfer of state industrial property into private ownership is likely to be the most difficult element of the large-scale institutional and policy reform happening in Eastern Europe. Nevertheless, in Eastern European countries, we may still observe a large number of state-owned companies; consequently, we include this variable in our regression. We measure it as a dummy variable, which takes 1 when the company is state-owned (public) and 0 if it is private.

3.2.1.3. Control variables

Finally, we include also several control variables that may explain the magnitude of earnings management.

3.2.1.3.1. Years

We also include the firm age variable (*YEARS*), as the literature points out the important effect of age of company and earnings management (Anthony and Ramesh, 1992; Petersen and Rajan, 1997; Liu, 2006; Fan, 2007; Stubben, 2010; Lee and Masulis, 2011; Chiraz and Anis , 2013). A firm's age has an impact on executives' decision-making process and how they manage different situations. Previous studies point out that a firm's age is correlated to managerial decisions and in effect on earnings management. Some authors show that there is a variation of the use of earnings management between companies of different ages. They explain it because companies act and make their decisions based on their cognitive base.

We also observe a different organizational growth, different market ability in companies with different operating years on the market. Hence, we include the age of the company to observe whether the age of Eastern European companies is indeed an important factor, which may explain the existence of earnings management. We measure *YEARS* variable as the number of operating years of the company on the market (age of each firm) to the mean age of all four Eastern European countries.

3.2.1.3.2. Size

To control for size effect, we include firm size (*SIZE*) because studies on earnings management confirm that the size of the company has an impact on the existence of earnings management (see Watts and Zimmerman, 1990; Burgstahler and Dichev, 1997; Young, 1999; Barton and Simko, 2002; Dechow and Dichev, 2002; Kim *et al.* 2003; Othman and Zhegal, 2006; Hsu and Lin, 2016). There is empirical evidence that both large- and small-sized firms manage earnings. Some authors point out that difference in the way of earnings management may be found depending on the size of company. We measure the variable by the relation of the total assets in each company in each sample, by year scaled by total assets from *t-1*.

3.2.1.3.3. Listed

The third control variable is the *LISTED* variable. The *LISTED* variable represents firms listed on the Czech, Polish, Hungarian, or Slovakian Stock Exchanges. Previous studies suggest that listed and non-listed companies differ in managing earnings (Fama and Jensen, 1983; Rangan, 1998; Erickson and Wang, 1999; Vander Bauwhede and Willekens, 2003; Ball and Shivakumar, 2006; Burgstahler *et al.* 2006; Skarda, 2010). We measure it as a dummy variable taking the value 1 if the company is listed and 0 if not. The coefficient on *LISTED* captures the difference in the way of managing earnings between listed and non-listed firms of Eastern European countries.

3.2.1.3.4. Industry

We also include the *INDUSTRY* variable. According to the literature, see for example Verrecchia (1983), Watts and Zimmerman (1986), McGahan and Porter (1997), Godfrey and Koh (2001), Beneish (2001), Palepu *et al.* (2004), Lin (2006), Lee (2007), Callao and Jarne (2011), firm's industry is seen as an important variable in determining accounting choices. A firm operating within one industry may manage earnings distinctly from one operating in another. Following the literature, we measure firm's industry as a multiple dummy variable (nine dummies), which receives 1 if the company belongs to a certain industry (*Nr*=1, …,9), otherwise 0. Industry classification and the percentage of the distribution of the companies in each industry within our four countries are described in Table 2. Additionally, in Table 3, we present all variables definition.

Table 2. Industries classification based on the first digit of the Standard Industry Code (SIC-code), and the percentage of the distribution of the companies in each industry

| | INDUSTRY | | | | | | | | | | TOTAL |
	0	1	2	3	4	5	6	7	8	9	
Czech R.	6.5%	9.7%	29.1%	7.5%	30.8%	2.4%	5.3%	4.5%	3.3%	0.7%	**100%**
Poland	2.2%	10.3%	16.9%	9.4%	35.4%	2.4%	8.0%	3.1%	11.5%	0.8%	**100%**
Hungary	0.9%	9.6%	27.2%	4.4%	43.9%	4.4%	2.6%	1.8%	4.4%	0.9%	**100%**
Slovakia	5.2%	20.2%	24.9%	8.0%	32.9%	3.3%	0.9%	1.4%	2.3%	0.9%	**100%**
TOTAL	**4.2%**	**10.5%**	**22.9%**	**8.4%**	**33.5%**	**2.5%**	**6.3%**	**3.6%**	**7.2%**	**0.8%**	**100%**

According to SIC-code:

1 - agriculture, forestry and fishing industries,

2 - manufacturing, mining and quarrying and other industry,

3 - construction,

4 - wholesale and retail trade, transportation and storage, accommodation and food service activities,

5 - information and communication industry,

6 - financial and insurance activities,

7 - real estate activities,

8 - professional, scientific, technical, administration and support service activities,

9 - public administration, defense, education, human health and social work activities,

0 - other services (group "other" comprises establishments engaged in providing services not specifically in previous category of public services, for example, Hunting, trapping and related service activities; Marine services).

Table 3. Variables definition

Variable	Definition
Dependent variable:	
SIGN(DA)	Dichotomous variable that takes 1 if firm's discretionary accruals are negative, and 0 otherwise
Independent variables:	
DEBT	Debt variable measured as total debt to total assets of each company $$\frac{TotalLiabilities_t}{TotalAssets_t}$$
TAX	Tax costs to revenues of each firm $\frac{TaxCosts_t}{Revenues_t}$
EQUITY	Difference between assets and liabilities, scaled by assets from *t-1* $$\frac{Assets_t - Liabilities_t}{Assets_{t-1}}$$
NDI	Non-discretionary income. It is the difference between net income of firm and discretionary accruals (estimated), scaled by assets *t-1* $$\frac{NetIncome_t - DiscretionaryAccruals_t}{Assets_{t-1}}$$
PUBLIC	Dummy variable equals 1 if firm is a state-owned firm (public), 0 otherwise (private-owned firm)
Control variables:	
YEARS	Age of the firm. It is the number of years of each firm operating on the market to the mean of Eastern European companies age $\frac{NrYears_t}{MeanNrYears_t}$
SIZE	Total assets scaled by assets from *t-1* $\frac{Assets_t}{Assets_{t-1}}$
LISTED	Dummy variable taking the value 1 if the company is listed and 0 otherwise
INDUSTRY	Nine dummy variables according to one digit SIC code, it takes values 1 if firm belongs to correspondent industry (Nr=1, …, 9), otherwise 0, industry classification is described in Table 2.

Note: * where *t* is a period from 2003 to 2009.

4. Empirical results
4.1. Existence of Earnings Management in emerging Eastern European countries

The results of regression of Yoon and Miller model confirm that our samples of firms from emerging countries manage their earnings. Table 4 presents the descriptive statistics for discretionary accruals. The detailed results of the regression parameters (2) are reported in Appendix 1.

Table 4. Statistics on discretionary accruals over the years

	2003	2004	2005	2006	2007	2008	2009
Panel A: Czech Republic sample							
Mean	-0.0318	-0.0210	-0.0279	-0.0043	-0.0059	-0.0388	-0.0580
Standard deviation	0.1478	0.1599	0.1409	0.1389	0.1663	0.1348	0.1220
Median	-0.0422	-0.0310	-0.0401	-0.0206	-0.0200	-0.0464	-0.0587
Panel B: Polish sample							
Mean	-0.0323	-0.0059	-0.0325	-0.0248	-0.0190	-0.0470	-0.0544
Standard deviation	0.1799	0.1625	0.1531	0.1760	0.1427	0.1404	0.1143
Median	-0.0380	-0.0221	-0.0399	-0.0362	-0.0316	-0.0461	-0.0529
Panel C: Hungarian sample							
Mean	0.0470	-0.0242	-0.0259	0.0201	-0.0315	-0.0567	-0.0564
Standard deviation	0.3247	0.1783	0.1158	0.1905	0.1054	0.1143	0.1020
Median	-0.0244	-0.0495	-0.0444	-0.0159	-0.0348	-0.0486	-0.0558
Panel D: Slovakian sample							
Mean	-0.0478	-0.0069	-0.0494	-0.0294	-0.0618	-0.0551	-0.0972
Standard deviation	0.1098	0.1113	0.0841	0.1233	0.1643	0.1477	0.1058
Median	-0.0508	-0.0286	-0.0480	-0.0424	-0.0708	-0.0608	-0.0969

Additionally, to confirm the test, we generated a fictitious sample whose discretionary accrual results are equal to zero (no earnings management). We used this fictitious sample to represent the situation of no manipulation of earnings. We then used the non-parametric Mann-Whitney test to confirm a statistically significant difference in manipulation among all the countries and our non-earnings management sample. This means that, in fact, all our sample countries –the Czech Republic, Poland, Hungary and Slovakia–manipulate earnings.

The results of the means also demonstrate the negative values of the discretionary accruals, which suggest earnings are decreased to avoid reporting earnings. Table 5 reports the correspondence (percentage) of positive and negative discretionary accruals for the samples over the years.

Table 5. Results of earnings management: positive vs. negative discretionary accruals

	2003	2004	2005	2006	2007	2008	2009	Mean
Panel A: Czech Republic sample								
Zero or small positive %	30.01%	36.26%	32.21%	40.95%	38.21%	27.38%	21.47%	**32.36%**
Negative %	69.99%	63.74%	67.79%	59.05%	61.79%	72.62%	78.53%	**67.64%**
Panel B: Polish sample								
Zero or small positive %	30.96%	39.63%	29.05%	30.83%	35.14%	24.21%	22.30%	**30.30%**
Negative %	69.04%	60.37%	70.95%	69.17%	64.86%	75.79%	77.70%	**69.70%**
Panel C: Hungarian sample								
Zero or small positive %	42.11%	28.95%	32.46%	37.72%	35.09%	23.68%	23.68%	**31.95%**
Negative %	57.89%	71.05%	67.54%	62.28%	64.91%	76.32%	76.32%	**68.05%**
Panel D: Slovakian sample								
Zero or small positive %	22.07%	36.62%	23.47%	27.70%	23.00%	24.88%	12.21%	**24.28%**
Negative %	77.93%	63.38%	76.53%	72.30%	77.00%	75.12%	87.79%	**75.72%**

The percentage of the observations with negative discretionary accruals ranges from about 59% to 78% for the Czech Republic sample; for the Polish sample, from 60% to 78%; the Hungarian sample between 58% and 76%, and for the Slovakian sample it ranges from 63% to 88%.

Therefore, obtained results indicate that two thirds of the cases show the negative sign of discretionary accruals, which indicates a decrease in earnings. This distribution clearly suggests that European emerging firms tend mainly to manipulate their earnings downwards to avoid reporting earnings.

4.2. Results of logistic regression. Incentives for Earnings Management

Table 6 reports the results of the logistic regression model. The parameters of each variable in logistic regression are estimated by the method of maximum likelihood. The logistic regression analysis method allows us to test the significance of the impact of previously included variables (incentives) on the probability of Eastern European managers either decreasing earnings management or increasing earnings management. Hosmer-Lemeshow test is known as the most robust test for the case of logistic regression. Based on the "Hosmer-Lemeshow" test of goodness-of-fit, we confirm that the model is correctly specified, note a degree of significance equal to high 1%. Therefore, the distance between what is observed and what is predicted by the model is very small, which indicates a good fit to the data. To check the strength of association of the model, we also have considered the coefficient R² of Nagelkerke. In our case, the pseudo R-squared of 33.1%, is considered satisfactory compared to other studies in the same area (Caramanis and Lennox, 2008; Triki-Damak and Halioui, 2013; Chalouati et al. 2014). It indicates that the model explains 33.1% of the variance in the dependent variable. Finally, to assess the predictive ability of the logistic model, we established a classification table using the approach of the successive exclusion of observations. We found an overall rate of correct classification, rising to 79.6%, so the error rate rises to 20.4%. This is a very good result indicating correct classification according to the literature.

4.2.1. Contractual incentives

The coefficient of leverage variable (*DEBT*) is negative (-1.095) and significant at the 1% level. It indicates that in more leveraged companies, there is a higher probability that the companies will manipulate earnings to increase them. The avoidance of debt covenants violations is a strong incentive for managers. This evidence is widely confirmed by the literature. Press and Weintrop (1990), Dichev and Skinner (2002), and Beatty *et al.* (2002) provide evidence that high leverage is positively associated with the likelihood of violating debt covenants. Sweeney (1994) and DeFond and Jiambalvo (1994) also explain that firms near default employ income - increasing accounting changes in order to delay their technical default. Watts and Zimmerman (1990) and Mohrman (1996) support this view by arguing that firms with higher leverages are expected to adopt accounting procedures that increase current income. Likewise, Becker *et al.* (1998) noted that managers of highly leveraged firms have incentives to report discretionary accruals strategically in order to increase reported earnings in their efforts to avoid debt covenant violation. Moreover, Gu *et al.* (2005) reported that variability of accruals is positively related with leverage.

For Eastern European companies to be able to compete in the highly competitive and changing European market, they need to develop and expand. Efficient funds allocation and at the same time earning money is very important. In these circumstances, efficient use of capital also requires a certain level of debt (leverage). Prewysz-Kwinto and Voss (2014) explained that developing dynamically and issuing of debt financial instruments by companies has become an important source of funding their business activity. Therefore, increases in debt provide the incentives for managers to manipulate earnings (to decrease or increase) (Rodriguez-Perez and van Hemmen, 2010), as managers have to make a decision as to the sort of debt selection.

Table 6. Results of logistic regression

	Coefficient	St. Error	Wald Chi Square	Significance
Contractual incentives:				
DEBT	-1.095	0.110	98.976	0.000***
Political incentives:				
TAX	-0.003	0.012	0.081	0.776
Incentives related to market expectations and valuation:				
EQUITY	-1.332	0.101	173.360	0.000***
NDI	9.045	0.148	3735.132	0.000***
PUBLIC	0.234	0.032	52.412	0.000***
Control variables:				
YEARS	0.047	0.014	11.825	0.001***
SIZE	-2.765	0.065	1788.923	0.000***
LISTED	0.594	0.136	18.959	0.000***
INDUSTRY1	-0.607	0.092	43.929	0.000***
INDUSTRY2	-1.030	0.084	149.108	0.000***
INDUSTRY3	-0.124	0.096	1.686	0.194
INDUSTRY4	-1.326	0.083	252.723	0.000***
INDUSTRY5	-0.426	0.125	11.636	0.001***
INDUSTRY6	-0.910	0.095	91.721	0.000***
INDUSTRY7	-0.900	0.108	69.110	0.000***
INDUSTRY8	-0.007	0.099	0.005	0.946
INDUSTRY9	-0.173	0.202	0.733	0.392
Constant	5.047	0.173	848.570	0.000***
Hosmer-Lemeshow				654.742***
Nagelkerke R²				33.10%
Total of % correct classification				79.60%
Number of observations				32,389

Note: The dependent variable, *SIGN(DA)*, is a dichotomous variable that takes 1 if firm's discretionary accruals are negative and 0 otherwise (positive sign of discretionary accruals). *DEBT* is a leverage variable defining total amount of debt to assets of firm. *TAX* is a tax cost of the firms. *EQUITY* is a difference between assets and liabilities. *NDI* is non-discretionary income variable. *PUBLIC* is a dummy variable equals 1 if firm is a state-owned firm (public), 0 otherwise (private-owned firm). *YEARS* is age of the firm. *SIZE* is a total assets scaled by assets from *t-1*. *LISTED* is a dummy variable equals 1 if firm is a listed company, 0 otherwise. *INDUSTRY* variable defines nine dummy variables according to one digit SIC code, it takes values 1 if firm belongs to correspondent industry (Nr=1, …, 9), otherwise 0.
*, **, *** represent the significance level at 10%, 5% and 1%, respectively.

4.2.2. Political incentives

We may observe that the coefficient on tax variable (*TAX*) is not significant. This may indicate that tax incentives do not explain managers' behavior as regards managing earnings. It seems that emerging Eastern European companies are not stimulated by tax determination.

4.2.3. Incentives associated to market expectations and valuation

The coefficient on Equity variable (EQUITY) (book value of the firm) is significant at the 1% level. This indicates that the scope of earnings management varies depending on the current value of the company. The coefficient shows negative value (-1.332). This shows that weaker companies with less value opt for decreasing their earnings, and in effect reducing the value of their companies. We may explain such behavior as those firms considered as poor investments have incentives to manage earnings down (Abarbanell and Lehavy, 2002) and as a consequence to opt for market niche.

When a firm is regarded as a good investment, the firm has an incentive to manage reported earnings to ratify the market's confidence in the firm (increasing earnings). This earnings management behavior will result in a high incidence of reported earnings that meet or slightly exceed market expectations (Plummer and Mest, 2001). In contrast, when a firm is regarded as a poor investment, it has little to gain from managing earnings up and has little to lose if it reports low earnings (i.e., the firm is already regarded as a poor investment). These poor-investment firms have incentives to decrease reported earnings and create accounting slack for the future (Plummer and Mest, 2001).

Eastern European companies in comparison to well-developed European countries have low book value. Therefore, they may further decrease their earnings and reduce the outward value of the company. In these circumstances, Eastern European companies may appear weaker than they are in reality. These companies from countries of recent incorporation into the open European market are not currently able to compete directly with well-established Western European companies. However, this global and open European market leaves space to develop, increase and expand companies' activities. Indeed, Skorupinska (2015) explains that Eastern European countries received influx of foreign direct investment of multinational enterprises in those countries. Nevertheless, companies from Eastern European markets may have more opportunities into enter to the market niche rather than directly compete with stronger, well-established Western European companies.

In these circumstances, companies from new emerging markets (Poland, the Czech Republic, Slovakia, and Hungary) may take advantage and try to fill in these "gaps" in the highly competitive European markets. Negative sign of the coefficient of the variable supports this observation (and additionally reduces the book value). Raoli (2013) points out that managers of companies characterized by a decrease in the firm's market value engage in decreasing earnings management, demonstrating that managers of undervalued companies may sustain the undervaluation in order to help themselves. Therefore, managers may "help themselves" by finding a niche and avoiding direct competition with strong and well-established Western European companies.

Finally, Eastern European companies may manage earnings to decrease them taking into consideration possible future worse periods as can be expected in a highly competitive and overcrowded market. Doing business is increasingly complicated and highly demanding, especially for new "players" from Eastern European markets. By decreasing earnings developing companies may try to keep some of the not reported earnings for the future periods.

The coefficient of non-discretionary income variable (NDI) is positive (9.045) and significant. It indicates that there is a higher probability that firms will understate earnings if pre-managed earnings are high, and will overstate if pre-managed earnings are low. Companies that have relatively high current non-discretionary earnings (which have not been manipulated) may opt for decreasing earnings to flatten them and to use them in future periods, especially if future earnings are expected to be low.

Eastern European firms are vulnerable in the question of reaching their earnings. They may try to follow other developed economies. Nevertheless, they still have less experience and the probability of failure is still high. Additionally, they have underdeveloped technology or infrastructure. Distribution channels are weak. The emerging countries are as well influenced by high unpredictability, as the environment is highly demanding.

Increased and tight competition in European market may drive managers to expect reduced, or at least lower future performance of their companies. Therefore, Eastern European companies may have incentives to flatten earnings of current periods in order to benefit in the future, as the source of future non-manipulated earnings will be insufficient (positive predicted sign). Goel and Thakor (2003) accentuate that this situation is highly probable when earnings are expected to be low in the future and their marginal impact will be greater. The open European market will provide unquestionably significant economic benefits for European companies. However, it also creates a more dynamic, innovative and competitive economy at the European level that has not been met (Ilzkovitz *et al.* 2007). Similar situation showed Lee and Xue (2004) for developing Chinese market. They found that, before the loss year, firms increase the earnings manipulation to cover the occurrence of losses.

Public variable (*PUBLIC*) has a significant positive coefficient (0.234). This indicates that there is a higher probability that Eastern European state-owned companies manage their earnings to decrease them, and private Eastern European companies manage earnings to increase them. This is consistent with the study of Ding *et al.* (2007) on emerging Chinese market. They show that privately owned companies tend to maximize accounting earnings more than state-owned companies do, because privately owned firms are in a weaker position related to specific political and historical factors. Therefore, they are thus under pressure to report a better-than-real financial performance to reassure the market (Ding *et al.* 2007). Moreover, managers of private companies are worried about the way of running their companies, as the success or failure of the company directly influences their remuneration or even work duration and stability. So, it is predictable that managers of private companies increase earnings to secure the success (and good image) of their companies.

On the other hand, the property rights of state-owned enterprises belong to the public/ government. Because of their special relationship, state-owned companies gain more protection from the government. Generating profit is not the only goal of state-owned enterprises. State-owned enterprises also undertake various social responsibilities, such as maintaining social stability and providing employment (Li and Zhou, 2005). By the special connection with the government, state-owned companies gain more financial and political support (Qian, 1994). This is because the government can also gain many resources to improve their political capital and promotional opportunities from the success of state-owned companies (Li and Zhou, 2005). Faccio (2006) points out that firms can benefit financially through their political ties in the form of direct and indirect government subsidies. Hence, state-owned companies manage earnings to decrease them, and to benefit from it.

4.2.4. Control variables

Finally, taking a look at the control variables, we observe that most of them are significant. Variable related to firm age (*YEARS*) shows positive (0.047) and significant sign. It indicates that the number of operating years of a company on the market has an influence on managers' decisions. Our results confirm that younger and less established Eastern European companies manage earnings to improve them (increasing earnings), and older and more experienced companies manage earnings to decrease them. Lee and Masulis (2011) explain that younger companies have less developed management and accounting systems, which play an important role in supplying information for making decisions. Seiler (1966) claimed that accounting and management systems supply important financial data to business. Poor systems may provide inadequate data. Second, it is well known that young, early stage companies are more likely to be liquidated due to their poor financial performance or weak earnings and limited resources (Lee and Masulis, 2011). Therefore, they may improve their earnings to seem stronger.

Finally, in younger companies, usually younger managers are in charge. On the contrary, in older companies, more experienced managers are in charge. Talbi (2014) states that while young managers are more concerned with their careers, and to boost the earnings (increasing earnings), they are able to incur to great risks strategies by adopting myopic behavior. They are, as well, less risk averse (Hambrick and Mason, 1984; MacCrimmon and Wehrung, 1990; Joos *et al.* 2003). Hence, they are more likely to engage in increasing earnings (Davidson *et al.*, 2007). On the other hand, when managers are approaching the age of retirement (in other words, older managers), they became more risk averse (Gibbons and Murphy, 1992; Matta and Beamish, 2008), and consequently, they opt for less risky strategies. Older managers have, as well, less ability to generate new ideas and are more concerned about future financial security (Hambrick and Mason, 1984). Therefore, they may opt for decreasing earnings. They prefer to save unmanaged earnings for future periods rather than take a risk to boost earnings and improve the companies' earnings. As Vroom and Pahl (1971) and Sundaram and Yermack (2007) point out, older executives are more conservative than younger ones.

Our Eastern European companies are young firms, as the process of privatization transformed big state-owned conglomerates into private companies in just the last thirty years.

Therefore, managers of younger and less experienced firms have stronger incentives to manage earnings to increase them (Chiraz and Anis, 2013).

The coefficient on the relation between firm size *(SIZE)* and earnings management is negative and significant at 1%. It suggests that there is a higher probability that big Eastern European companies manage earnings to increase them, and small Eastern European companies manage earnings to decrease them. Previous literature confirms these results. The authors show different reasons for such behavior, for example, to reduce political attention (Watts and Zimmerman, 1978, 1986, 1990), or large-sized firms face more pressures to meet or beat analysts' expectations when small-sized have lower pressure (Barton and Simko, 2002), larger firms present higher information asymmetries than smaller companies, and managers can use this advantage to intensify earnings management (Othman and Zhegal, 2006; Zhong *et al.* 2007).

The coefficient on LISTED variable is positive and highly significant (significant at 1%). It captures the difference in the way of managing earnings between listed and non-listed firms. The positive sign indicates higher probability that listed Eastern European firms manage earnings to decrease them, and non-listed Eastern European firms manage earnings to increase them. Tseng and Lai (2007), based on the Taiwan emerging market, point out that decreasing earnings in listed companies is not a very popular way to manipulate reported earnings. Nevertheless, we find some possible reasons to do so by the listed companies, as well by the Eastern European listed companies. Abarbanell and Lehavy (2003), for example, explain that decreasing earnings management may result in reducing extremely optimistic analyst forecasts in listed companies. Cheng and Warfield (2005) demonstrate that companies try to avoid reporting earnings quantities, which may significantly exceed analysts' predictions and in consequence influence the future forecasts prospects. These prospects a firm may have no ability to meet in the future. Companies opt for earnings decreasing and reserve higher current potential positive earnings.

Burgstahler and Eames (2003) obtain evidence of downward forecast management to achieve zero and small positive earnings surprises easily. Additionally, Bohren and Haug (2006) confirm that firms take into account their concern about visibility. They explain that companies may decrease rather than increase their earnings in connection to the firm's visibility.

As shown in Table 6, the variable INDUSTRY shows itself to be significant. It indicates that companies' association to industry has an important influence on the way of managing earnings by managers of developing Eastern European firms. Literature on earnings management supports these findings. One of the possible explanations comes from the different level of intensity of rivalry in each sector. Porter (1980) points out that one of the main factors that shape the intensity of rivalry in an industry is the number of firms in a sector. Balakrishnan and Cohen (2013) confirm that since firms in an industry compete not only for economic profits but also for funds from capital markets, the number of firms in an industry reflects competition for limited funds, and in effect may result in the management of accounting numbers.

5. Conclusions

Earnings management is a well investigated phenomena. Many aspects have been learned, but many interesting questions remain unanswered. The study specifically aimed to provide answers in terms of the incentives, which lead managers of developing European companies to earnings manipulation, as one of the questions still barely explored is the issue of earnings management in these markets. The majority of studies on earnings management in developing countries are based on the Asian emerging market. Therefore, we focused on four Eastern European countries: the Czech Republic, Poland, Hungary and Slovakia.

Therefore, the results indicate the negative values of the discretionary accruals, indicating that companies from emerging Eastern European countries manage earnings to decrease them. Within the different incentives, which lead managers to earnings management, we find that the avoidance of debt covenants violations is a strong incentive for managers. Emerging Eastern European companies to be able to compete in the highly competitive and

changing European market, they need to develop and expand, and in effect a certain level of leverage.

Furthermore, we observe that the scope of earnings management varies depending on the current value of the company. We observe that weaker companies with less value opt for decreasing their earnings. In consequence, they opt for market niche. Moreover, emerging Eastern European companies have incentives to flatten earnings of current periods in order to benefit in the future, as the source of future non-manipulated earnings will be insufficient, as they may expect reduced, or at least lower future performance of their companies affected by increasing global competition.

Finally, we confirm that privately owned companies tend to maximize accounting earnings more than state-owned companies because they are in a weaker position related to specific political and historical factors.

Besides the incentives perceived by the managers, we confirm that firm age, size, being listed and association to industry have an important influence on the way of managing earnings by managers of developing Eastern European firms. We confirm that mainly older and smaller companies within Eastern Europe manage earnings to decrease them. In these companies, managers prefer to squash and report lower earnings rather than increase the reported earnings. These companies may struggle in the highly competitive European market. Hence, being smaller and more experienced may enable them to find a way to succeed in the competitive European market. Therefore, they may try preferably to find a market niche rather than face competitors directly by decreasing their firm's value outwardly and seeming to appear weaker than they are in reality.

In addition, the picture of the security exchanges and financial sectors in Eastern European countries is still relatively unfavorable, underdeveloped and less important than their Western counterparts. Nevertheless, the results indicate that those few listed Eastern European firms manage earnings to decrease them. Finally, we observe that Eastern European state-owned companies manage their earnings to decrease them, as they are not under pressure to report better-than-real financial performance, because of their specific political and historical heritage.

Our findings contribute to the recent debate among practitioners, regulators and academics about the determinants of earnings management in developing countries. Investors and analysts try to look for clues and new tendencies in earnings manipulation. New emerging economies may help to understand how managers cope with the pressure in highly competitive European markets. It is important for investors to obtain a true and fair view of this reality, as no longer Europe is only designated by Western European countries. Opportunities for manipulation will appear and the investor needs to fulfil their information needs. The change in the underlying business reality (incorporation of Eastern European countries into the global European market) is accompanied by the possible new ways and incentives for earnings management.

Although we have filled in some gaps in our knowledge, other issues are still pending. A potential future line of research could include a comparative study of earnings management between Eastern and Western Europe to understand both markets. The issue of earnings management in Europe as a whole has so far remained unanswered. Future studies could compare the different emerging countries and verify if the developing European countries manipulate in the same or different way. Another possible future research could focus on developing a model that can better explain non-discretionary accruals in emerging Eastern European countries to obtain a more adjusted measurement of discretionary accruals and earnings management. Lastly, future research could be carried out based on consolidated financial statement of listed companies to compare the results with those obtained for separate financial statements. Moreover, it would allow us to test the effect of IFRS adoption on the quality of financial reporting.

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Appendix 1. Parameters of the estimation of regression (1)

Measurement model: Yoon and Miller (2002) Model				
$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{\Delta EXP_{it} - \Delta PAY_{it}}{A_{it-1}} + \alpha_3 \frac{NCASH_{it-1} \times GPPEGRW_{it}}{A_{it-1}} + \varepsilon_{it}$$				
	Intercept	ΔREV-ΔREC	ΔEXP-ΔPAY	NCASH-1xGPPEGRW	Adjusted R²
2003					
Czech Republic Sample	-0.0318	-0.3742***	0.4279***	0.2374***	28.59%
Poland Sample	-0.0323	-0.7323***	0.7842***	0.2216***	56.05%
Hungary Sample	0.0470	-0.4969***	0.4995***	-0.8691	13.99%
Slovakia Sample	-0.0478	-0.5429***	0.5828***	-0.0184	42.43%
2004					
Czech Republic Sample	-0.0210	-0.3074***	0.3648***	0.5451***	23.62%
Poland Sample	-0.0059	-0.4313***	0.4891***	-0.5023***	25.51%
Hungary Sample	-0.0242	-0.1388***	0.1683***	0.1884	10.01%
Slovakia Sample	-0.0069	-0.3651***	0.4044***	-1.1767***	29.54%
2005					
Czech Republic Sample	-0.0279	-0.4382***	0.4755***	-0.0350	32.59%
Poland Sample	-0.0325	-0.2957***	0.3342***	-0.1812***	13.25%
Hungary Sample	-0.0259	-0.4737***	0.4810***	-0.6858	24.58%
Slovakia Sample	-0.0494	-0.4790***	0.5229***	-0.2642	38.67%
2006					
Czech Republic Sample	-0.0043	-0.4720***	0.5084***	-0.8119***	35.98%
Poland Sample	-0.0248	-0.2802***	0.3315***	-0.0920	15.52%
Hungary Sample	0.0201	-0.3080**	0.3170**	-0.8287	2.97%
Slovakia Sample	-0.0294	-0.4716***	0.5129***	-0.5811	25.18%
2007					
Czech Republic Sample	-0.0059	-0.4599***	0.4798***	0.2435**	33.72%
Poland Sample	-0.0190	-0.4379***	0.5055***	-0.1710*	29.67%
Hungary Sample	-0.0315	-0.4723***	0.5106***	-0.6981	24.78%
Slovakia Sample	-0.0618	-0.0290	0.2173***	-0.5867	39.05%
2008					
Czech Republic Sample	-0.0388	-0.2026***	0.2369***	0.0220	8.81%
Poland Sample	-0.0470	-0.5176***	0.5940***	0.0061	32.71%
Hungary Sample	-0.0567	-0.3012***	0.3350***	0.4139	9.19%
Slovakia Sample	-0.0551	-0.2823***	0.2823***	1.2831**	24.13%
2009					
Czech Republic Sample	-0.0580	-0.3586***	0.3868***	-0.3894***	18.41%
Poland Sample	-0.0544	-0.5182***	0.5708***	-0.0037	42.31%
Hungary Sample	-0.0564	-0.4916***	0.5066***	0.6417	47.10%
Slovakia Sample	-0.0972	-0.5427***	0.5483***	0.4064	41.67%

Note: *, **, *** represent the significance level at 10%, 5% and 1%, respectively.

NDA_{it} - Non-discretionary accruals in year t; A_{it-1} - Total Assets in year t -1; ΔREV_{it} - Annual change in revenues in year t; ΔREC_{it} - Annual change in receivables accounts in year t; ΔEXP_{it} - Change in operating expenses excluding non-cash expenses in year t; ΔPAY_{it} - Change in payables accounts in year t; $NCASH_{it-1}$ - Non-cash expenses such as depreciation in year t-1; $GPPEGRW_{it}$ - A rate of growth in gross property, plant and equipment in year t.