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Earnings management and R&D costs capitalization: evidence from Russian and German markets

Abstract

Purpose: The goal of the paper is to analyze the motives that determine the propensity of companies in both developed and developing countries to engage in earnings management on the basis of accounting treatment of R&D costs.

Methodology: The final sample analyzed in the paper is 47 Russian companies and 74 German companies for the period 2012-2013.

Findings: The results of the research show that managers of companies in Russia and in Germany are engaged in earnings management practices using R&D costs, although the incentives for these actions are different. In the case of Russian companies, managers enjoy discretion in accounting choices when trying to meet debt covenants by adopting those methods that increase financial results. German managers are focused more on the other type of earnings management incentives – earnings smoothing. There is evidence that the amount of capitalized R&D costs in German companies increases when financial results vary more.

Value: There is some evidence in favor of the presence of earnings management incentives in the decision to capitalize R&D costs in developed markets. However, this problem has rarely been studied in developing markets, and there is no comparison between the practices of developed and developing countries in the field. In this paper authors attempt to test the assumption that the contextual factors in developed and developing markets can differ, and thus they may provide different incentives for earnings management on the basis of R&D costs.

Keywords: earnings management, R&D costs, Russia, Germany, income smoothing, debt covenants.
JEL Classification: M10, M41.

Introduction

Over recent decades, earnings management has become one of the central topics in accounting research. Scientific interest in the problem of earnings manipulation has intensified since the early 2000s, following a series of corporate scandals connected with large US and European companies.

Research into earnings management has undergone several stages. At first, the focus was on the elaboration of powerful models to detect earnings management, and the investigation of different motives that were used by managers in order to manipulate earnings. Over the last 15 years the accent has shifted to the study of specific methods of earnings management and the conditions under which they are used. These methods can be accrual-based (i.e., come as a result of alternative accounting treatment of some items) or real (i.e., based on real transactions). As to the former, companies can use their discretion in expensing or capitalizing some particular types of costs. This paper addresses research and development (R&D) costs because some national as well as international accounting standards (IFRS) allow their different treatment, thus, potentially influencing companies' intention to use them as an earnings management tool.

Companies invest huge sums of money in order to develop and create new technologies that will potentially help them to receive future economic benefits. One of the most essential forms of investment in technology is R&D expenditure (Karl-Heinz, 2005). Thus, accounting and management of R&D costs are especially important for companies.

Despite the great importance of R&D costs for businesses, their accounting treatment remains one of the most controversial issues of financial accounting. There is no single point of view on the nature of R&D expenditure, either among researchers or the setters of accounting standard. The supporters of R&D capitalization claim that R&D expenditure is connected with future economic benefits and should therefore be treated as an asset (e.g., Sougiannis, 1994; Ballester et al., 2003). On the other hand, opponents of R&D capitalization point out that these economic benefits are uncertain and managers cannot be sure whether the project will be successful or not; for this reason, R&D costs should be treated as expenses in order to increase the objectivity of financial reports (Kothari et al., 2002; Cazavan-Jeny, 2011).

One of the main arguments against capitalization of R&D costs is earnings management. There is some evidence in favor of the presence of earnings management incentives in the decision to capitalize

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R&D costs (e.g., Halioui, 2013). Two main incentives are generally considered in this regard: income smoothing and meeting debt covenants. However, the major empirical evidence for using R&D costs as an earnings management tool has to date come from developed countries. The studies were conducted mainly with European samples including France, Germany and Italy (e.g. Markarian et al., 2008; Dinh and Schulze, 2009; Zicke, 2014). The problem has rarely been studied in developing markets, and, as a result, no comparison can be made between the practices of developed and developing countries in this field. For this reason, this paper takes the form of a cross-country comparison, testing our hypotheses on two samples of companies that represent emerging and developed markets: Russian and German firms. In doing so, we aim to test the hypothesis that companies from different countries can follow different earnings management incentives when making decisions on capitalizing R&D costs or treating them as expenses. In other words, we test the assumption that the contextual factors in developed and developing markets can differ, and, thus, may provide different incentives for earnings management on the basis of R&D costs.

The choice of German companies is for two main reasons. First, German firms are characterized by large investment in R&D. According to the 2014 EU Industrial R&D Investment Scoreboard of the European Commission, Germany is third by the amount of R&D investments in the world after the US and Japan, accounting for more than 10% of global R&D investment (European Commission, 2014). In other words, Germany makes the largest R&D investments in Europe. Second, listed German companies are obliged to prepare financial reports according to IFRS regulations. The same requirement applies to listed Russian companies, so it is possible to do a cross-country comparison on the basis of accounting data prepared according to the same standards.

The rest of the paper is organized as follows. Section 1 introduces the concept of earnings management. Accounting of R&D costs as a potential tool for earnings management is described in Section 2. The research hypotheses are presented in Section 3. Section 4 is devoted to interpretation of the empirical model and sample description. And Section 5 provides research results and their implications. In the Final Section limitations and directions for further research are highlighted.

1. Earnings management: methods and motives

According to Schipper (1989, p. 92), earnings management is "a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain". In other words, managers can use their legal discretion in applying financial accounting standards in order to mislead external stakeholders about the true economic performance of the company. Earnings management is, therefore, the opposite of neutral accounting (Dechow and Skinner, 2000).

There are two main methods of earnings management, as stated above: accrual-based earnings management and real earnings management (Healy and Wahlen, 1999; Schipper, 1989; Roychowdhury, 2006).

Accrual-based earnings management takes place when managers manipulate accruals without direct impact on cash flows (Roychowdhury, 2006). In other words, they do not alter real business activities but rather use management discretion regarding accounting choices (Eldenburg et al., 2010). Examples of accrual-based earnings management are delaying expense recognition and accelerating income recognition (Franz et al., 2014).

As to real earnings management, Roychowdhury (2006, p. 336) defined this term as follows: "real activities manipulation is defined as management actions that deviated from normal business practices, undertaken with the primary objective of meeting certain earnings thresholds". Real earnings manipulation takes place when management makes decisions concerning the timing and scale of the underlying business activities in order to alter financial statements (Tan and Jamal, 2006). One example of real earnings management is the situation of overproduction, i.e., when a company produces more finished goods inventory than it can sell. In this case period costs of the company are spread over a larger number of units and, therefore, less of these costs are treated as expenses.

Managers have many incentives to manage earnings. These incentives vary from meeting debt covenants to obtaining desirable compensation for the managers themselves (Dechow et al., 1995; Lo, 2008). In the current paper, in line with previous research, we focus on two motives: meeting debt covenants and income smoothing.

Debt agreements are usually based on the financial ratios of the company. Managers are highly motivated to meet debt covenants and eliminate the opportunity for technical default (Franz et al., 2014). Previous research has indicated that the probability of earnings management increases when a company is near to the debt covenants violation. Some studies have also indicated that highly leveraged firms tend to make income-increasing accounting choices in order to avoid violation of debt covenants (Peltier-Rivest, 1999; Charitou et al., 2007).

Earnings smoothing considerations are also frequently discussed in the literature. Managers exercise discretion in accounting choices in order to reduce earnings fluctuations and show that the company's performance is stable and the company has less risk (Leuz et al., 2003). One of the ways to do this is to decrease earnings of successful years with the help of accrual-based earnings management techniques in order to have some reserves for the poor years (Leuz et al., 2003; Markarian et al., 2008; Oswald and Zarowin, 2007; Dinh and Schulze, 2009).

2. Accounting for R&D costs as a tool for earnings management

There is no consensus concerning treatment of R&D costs at the level of standard setters. The most widespread accounting systems, the International Financial Reporting Standards (IFRS) and US Generally Accepted Accounting Principles (US GAAP), give different instructions for R&D reporting.

In accordance with US GAAP (ASC 730-10), R&D costs are recognized as expenses. The only exception is the cost of computer software developed for internal use. In this case only costs incurred at the stage of application development can be capitalized (ASC 350-40).

IFRS, in contrast, makes a distinction between the research and the development phases. In accordance with IFRS (IAS 38-54), none of the intangible assets arising from research (or the implementation stage of the research phase within the framework of an internal project) should be recognized. Expenditure on research (or at the stage of research within the framework of an internal project) should be recognized as an expense when incurred. The explanation is that it is impossible to evaluate probable economic benefits at the stage of research, and thus the related costs are recognized as expenses when incurred.

An intangible asset arising from development (or at the implementation stage of development within the framework of an internal project) should be recognized if and only if the entity can demonstrate all of the following: a) the technical feasibility of completing the intangible asset so that it can be used or sold; b) the intention to complete the intangible asset and use or sell it; c) the ability to use or sell the intangible asset; d) how the intangible asset will generate future economic benefits; e) the availability of adequate technical, financial and other resources to complete the development, use for internal purposes or sell the intangible asset; f) the ability to adequately measure the costs incurred in the development phase. In all other cases costs should be expensed.

Overall, IAS 38 gives managers substantial discretion in estimating whether or not the conditions for capitalization of R&D costs are met (Markarian et al., 2008), and, therefore, provides room for earnings manipulation.

Several studies have found evidence of real earnings management in the field of R&D (Bushee, 1998; Mande et al., 2000; Guidara and Boujelbene, 2014), carried out using cuts in R&D investments. In the case of expensing R&D costs, a decrease in R&D investments leads to an increase in pre-tax earnings by the same amount. In the case of capitalization of R&D costs, current R&D expense is the sum of the amortized part of the previous R&D costs and the expensed part of current R&D costs. Thus, a reduction in R&D investments in the case of capitalization will not lead to the one-to-one effect on pre-tax earnings. Accordingly, real earnings management is a rather ineffective tool for capitalizers.

Accrual-based earnings management in the field of R&D refers to the subjective decision concerning accounting treatment of R&D expenditures. There is evidence of accrual-based earnings management through capitalization of R&D expenditures (Dechow et al., 1995; Fields et al., 2001; Kothari, 2001; Jaggi and Lee, 2002; Graham et al., 2005; Deng and Lev, 2006; Markarian et al., 2008; Oswald and Zarowin, 2008; Dinh and Schulze, 2009). Capitalization of R&D costs leads to improvement of a company's financial position, increasing assets and income, whereas expensing of R&D costs leads to an increase in expenditure and accordingly to a decrease in income. Managers can thus alter the financial results by R&D manipulation.

3. Hypothesis formulation

When accounting standards offer flexibility to managers in decisions concerning accounting treatment of R&D costs, the opportunity to use this discretion as an instrument for earnings management arises. A number of studies have attempted to explain the decision to capitalize R&D costs by earnings management incentives (Dechow et al., 1995; Fields et al., 2001; Kothari, 2001; Jaggi and Lee, 2002; Graham et al., 2005; Deng and Lev, 2006). Most of these authors have distinguished two main incentives of accrual-based earnings management in this context: smoothing motivation and debt-covenant incentive.

Income-smoothing incentives have been covered extensively in previous research. Managers are interested in reduction of the variability of financial results (Fudenberg and Tirole, 1995). They reduce peaks and decrease volatility by transferring the benefits of the productive years to the less

successful ones (Trueman and Titman, 1988). This manipulation leads to an improvement in the market valuation of the company as investors notice stable performance and less risk. As a consequence, the cost of capital decreases.

Previous research has shown that R&D capitalization is one of the ways in which earnings can be smoothed (Markarian et al., 2008; Oswald and Zarowin, 2008; Dinh and Schulze, 2009). Markarian, Pozza, and Prencipe (2008) revealed that Italian managers smooth earnings by manipulating the R&D capitalization level. Their results showed that when the current profitability of an Italian firm is lower than the profitability of the previous period, managers tend towards capitalization of R&D costs. Otherwise, they prefer to expense them. The results obtained in the Italian sample have also been confirmed in the German context. Dinh and Schulze (2009) conducted similar research using German listed firms over the 5-year period 2001-2006, and confirmed the opportunistic behavior of German managers, capitalizing R&D costs in order to smooth the financial results. Some recent research papers have also indicated earnings smoothing in the decision to capitalize R&D costs. For example, Halioui (2013) studied this question in the sample of French companies listed on the Euro-next Paris in 2007-2008, with results consistent with those of previous studies, i.e., managers increase the capitalization rate in troubled years and decrease it when the company shows good performance.

The first hypothesis of this study is, therefore, formulated as follows:

H1: The reported amount of capitalized R&D costs is negatively related to the company's change in pre-managed profitability.

Managers also enjoy discretion in accounting choices when trying to meet debt covenants. They adopt those methods that improve financial results and help to avoid violating restrictive debt covenants. As a consequence, more leveraged companies should be more interested in R&D capitalization (Halioui, 2013). Companies that capitalize their R&D costs move from the boundaries of violations of debt agreements. There is some evidence that high-debt companies tend to capitalize more R&D as this helps to increase accounting profit and decrease the debt ratio (Aboody and Lev, 1998).

Hence, the second hypothesis of this research is:

H2: The reported amount of capitalized R&D costs is positively related to the company's pre-managed leverage ratio.

4. Methodology

In accordance with both research hypotheses, the dependent variable is the R&D capitalization variable, *Capitalization*. Capitalization is calculated as the capitalized amount of R&D costs divided by the total assets of the firm.

$$Capitalization = Capitalized\ R\&D\ cost\ /$$
$$Total\ Assets \times 100\%. \quad (1)$$

The capitalized amount of R&D costs for the period is the difference between the R&D assets of the current and previous years.

Following the work of previous authors (Jones, 1991; Markarian et al., 2008) total assets were chosen as a deflator.

There are two independent variables in the research: changes in ROA and leverage. To test the income-smoothing hypothesis of the research variable *ChROA* was calculated (Markarian et al., 2008; Halioui, 2013; Guidara and Boujelbene, 2014). This variable stands for change in return on assets over the average of the previous two years.

$$ChROA_n = pre-managed\ ROA_n -$$
$$(ROA_{n-1} + ROA_{n-2})/2. \quad (2)$$

For calculation of the variable *ChROA*, pre-managed return on assets was used. This means the return on assets before the effects of R&D capitalization. In accordance with the previous research (Markarian et al., 2008; Halioui, 2013; Guidara and Boujelbene, 2014), ROA is calculated as operating income to average assets.

In order to test the second hypothesis the variable *Leverage* was introduced. Leverage is a proxy for debt-covenants incentive (Markarian et al., 2008; Halioui, 2013; Guidara and Boujelbene, 2014). The research also assumes pre-managed leverage, which is calculated as total debt to pre-managed assets, in other words, assets before the effects of capitalization of R&D costs.

$$Leverage = Total\ debt\ /\ Pre-managed\ assets. \quad (3)$$

In previous research, several additional factors that may influence the accounting choices concerning R&D treatment were indicated. As a result, four control variables are included in the research.

The first control variable is *Size*. The natural logarithm of the total assets is used as a proxy of the company's size. Large companies are subject to a greater amount of examination by different analysts (Wiedman, 1996; Opler et al., 1999; Othman and Zeghal, 2007). In other words, large companies are more visible in the market and it is harder for managers to manipulate the financial results. They also have more resources for conduct basic research, so that a great part of R&D costs fall on them (Aboody and Lev, 1998; Cazavan-Jeny, 2011).

Some researchers argue that large companies tend towards expensing of R&D costs (Mande et al., 2000; Percy, 2000; Halioui, 2013), so the expected relationship between R&D capitalization and firm's size is negative.

The next control variable used in the research is *R&D intensity*, calculated as the total R&D expenditure undertaken by the company divided by the total assets of the company.

$$R \& D \ intensity = total \ R \& D \ expenditures \ / \ total \ assets \times 100\%. \tag{4}$$

R&D intensity is logically connected to the amount of R&D costs capitalized. The higher a company's total expenditures on R&D, the higher is the probability that there are more projects that satisfy the conditions for capitalization of R&D costs, and that the company will capitalize more R&D costs (Markarian et al., 2008). However, even if all the requirements for R&D capitalization are met it is not obligatory for the company to capitalize these costs. Managers may decide to expense R&D costs for a number of reasons, for instance, to decrease taxes. Another direction of the relationship between R&D intensity and R&D capitalization might be as follows. Companies with high R&D intensity usually have a large number of R&D projects. To check all these projects for compliance with the requirements for R&D capitalization is very time-consuming, and managers of such companies tend simply to expense R&D costs (Markarian et al., 2008). So, the variable R&D intensity is included in this research with no predictions concerning its relationship to capitalization.

The last control variable is *lagCapitalization*, basically the previous year's capitalization. It is calculated as the previous year's capitalized amount of R&D costs divided by the previous year's total assets of the firm. This variable stands for a company's consistency in the treatment of R&D expenditure (Markarian et al., 2008; Dinh and Schulze, 2009; Zicke, 2014). However, there are also no ex-ante predictions for this variable. First, the R&D activities are by their nature unpredictable and the results of R&D investments can vary significantly from year to year. Secondly, it is hard to speak about their consistency when companies are engaged in earnings management.

Table 1 summarizes the variables used in this research.

Table 1. Research variables

Variable name	Description, units of measurement
Dependent variable	
Capitalization	Capitalized amount of R&D costs to total assets, %

Independent variables	
ChROA	Change in return on assets over the average of the previous two years, %
Leverage	Total debt to pre-managed assets, %
Control variables	
Size	Natural logarithm of the total assets, -
R&D intensity	Total R&D expenditure undertaken by the company to the total assets, %
lagCapitalization	Previous year's capitalization, %

A multiple regression model was used for the analysis. This model explains the decision concerning the amount of capitalized R&D assets as a function of changes in profitability (H1), leverage (H2) and other control variables.

The statistical equation has the following general form:

$$Capitalization_i = b_0 + b_1 \times ChROA_i + b_2 \times Leverage_i + \ +b_3 \times Size_i + b_4 \times R \& D \ intensity_i + \ +b_s \times lagCapitalization_i + u_i, \tag{5}$$

where, *i* stands for each company in the sample, *t* – for each time period.

4.1. Sample. On 27 July 2010 the Russian Federal Law № 208 − FZ "On Consolidated Financial Statements" was enacted, according to which the consolidated financial statements of all socially significant companies in Russia are required to apply International Financial Reporting Standards (IFRS).

Therefore, all Russian non-financial companies listed on the MICEX Stock Exchange from 2012 to 2013 were selected. In order to collect the information the DataStream database was used. The total number of companies matching our criteria was 479. Out of these only 59 companies report either R&D assets or R&D expenditure. However, some companies report no information concerning R&D expenditure, or do not specify the amount of R&D costs capitalized. The final sample comprises 47 companies over two years. That is the maximum possible sample size for the Russian market.

In order to compare the results obtained in the Russian market with international practice, the German sample was selected. As the Russian sample includes information only from 2012 to 2013 the German sample was also limited to this period. The 2,657 German companies listed on the Frankfurt Stock Exchange were selected. As in the Russian sample, only those companies reporting either R&D assets or R&D expenditure were included, and the final sample consisted of 74 companies. The samples were checked for homogeneity with the help of parametric and non-parametric statistical tests.

Information about the samples is represented in Table 2.

Table 2. Summary of Russian and German samples

Characteristic	Russian sample	German sample
Initial sample	479 companies	2657 companies
Reporting R&D asset or R&D expense	59 companies	74 companies
(-) do not report any information concerning R&D expenditures or R&D capitalization	12 companies	0 companies
Final sample	47 companies	74 companies

The comparative aspects of descriptive statistics for the sample are represented in Table 3.

Table 3. Comparative descriptive statistics of the sample

Characteristic	Capitalization, (%)		Pre-managed ROA, (%)		R&D intensity, (%)		Size, (%)		Leverage, (-)	
Country	Rus	Germ	Rus	Germ	Rus	Germ	Rus	Germ	Rus	Germ
Mean	0.4	0.7	1.6	5.9	1.05	9.6	17.7	14.8	0.4	0.2
Minimum	0	0	-107.8	-28.2	0.01	0.04	13.7	11.5	0	0
Maximum	8.1	8.7	46.2	38	12.3	292.5	23.3	19.6	0.7	0.5

As the statistics show, Russian companies tend to capitalize fewer R&D costs than do German firms. Russian companies, on average, have 0.442% of capitalized R&D in their balance sheet, whereas capitalized R&D assets in Germany reach on average 0.686% of their total assets. This can be explained in several ways. First, German companies may have potentially more successful projects than Russian ones. Secondly, German companies are more profitable and have more resources to engage in R&D activities. Finally, German companies might invest in R&D more than Russian firms and, as a consequence, also capitalize more R&D costs and have more successful projects.

Descriptive statistics confirm the second assumption concerning the profitability of Russian and German firms. The average pre-managed (before the effects of capitalization) return on assets of Russian firms is 1.634%. The same ratio is 5.887%. As for the volume of investments in R&D activities, it can be concluded that German companies invest much more than do Russian ones. The average R&D intensity in Russia is 1.052%, while German companies invest nine times more and their average R&D intensity reaches 9.610%.

The sample German and Russian companies are on average of almost the same size, with the slight superiority of German firms. Russian companies are more leveraged than the German ones. The average leverage ratio is 0.35 for Russian firms, 0.19 for German.

5. Research results

Panel diagnostics (including Breusch-Pagan test and Hausman test) compare three different types of model: pooled OLS model, fixed effects model, and random effects model. The results of the tests for both samples are in favor of the fixed effects alternative.

The fixed effects model, explaining the decision concerning the amount of capitalized R&D assets as a function of changes in profitability (H1), leverage (H2) and other control variables, better described the results on both Russian and German samples.

In order to interpret and compare results obtained on the Russian and German samples the comparative table (Table 4) was prepared.

Table 4. Comparative research results

Sample Characteristic	Russian sample	German sample
	Coefficient	Coefficient
const	−11.6465**	−13.9155
ChROA	0.0108428***	−0.0508850***
Leverage	0.0140315***	0.00856285
Size	0.611037**	0.859825
R&D intensity	0.809176***	0.162018***
lagCapitalization	0.0141218	0.12045***
Model significance	R-squared = 92%	R-squared = 40%

Notes: * significant at 10%, ** significant at 5%, *** significant at 1%.

The first hypothesis (H1) stated that the reported amount of capitalized R&D costs is negatively related to the company's change in pre-managed profitability. This hypothesis is rejected in the Russian sample. In other words, Russian managers do not use the opportunity to capitalize R&D costs in order to smooth the financial results. This result is not in line with the findings of most researchers (Markarian et al., 2008; Oswald and Zarowin, 2008; Dinh and Schulze, 2009; Halioui, 2013). However, the coefficient before the variable ChROA is significant and the relationship is positive. This means that Russian managers do pay attention to changes in profitability when making decisions concerning R&D costs, but for other reasons. In cases where the current profitability is higher than the profitability of the previous year they capitalize more costs. This is consistent with the results obtained by some researchers (Guidara and Boujelbene, 2014). When the financial result of the company increases there are more available

resources to finish the R&D project successfully. So, the probability that the project will be successful increases and Russian managers increase the reported amount of capitalized R&D costs. The results do not confirm the opportunistic behavior of Russian managers.

Regarding the German sample, the results are opposite. The first hypothesis is supported, meaning that German managers smooth earnings by manipulating the R&D capitalization level. In cases where the current profitability of German firms is lower than the profitability of the previous period, managers tend towards capitalization of R&D costs. Otherwise, they prefer expensing of R&D costs. The results obtained from the German sample were also confirmed in the Italian (Markarian et al., 2008) and a previous German context (Dinh and Schulze, 2009).

The second hypothesis, stating that the amount of capitalized R&D costs is positively related to the pre-managed leverage ratio, was confirmed only in the Russian sample; this is in line with previous research (Aboody and Lev, 1998; Holiloui, 2013). When the leverage ratio is increased, more R&D costs are capitalized. Russian managers tend towards the capitalization of more R&D costs when they are close to the boundaries of debt agreements. The activation of R&D costs leads to a decrease in the company's financial leverage. To conclude, Russian managers of high-debt companies choose activation of R&D costs and exercise earnings management. German managers do not manipulate the leverage ratio by the treatment of R&D costs.

Size is also significant only in the Russian sample. The relationship between the reported amount of capitalized R&D costs and a company's size is positive, which is not consistent with previous research (Aboody and Lev, 1998; Zicke, 2014). Large Russian companies tend to activate more R&D costs. This can be explained in the following way. Large companies have more resources to exercise R&D activities and finish the projects. So, the greater part of R&D projects is assumed to be successful and can be capitalized. Another explanation might be that managers of large companies usually undertake a greater number of risky projects. This happens because their compensation is based on the stock options and there is a positive relationship between the stock options and the risk of underlying assets (Daves et al., 2000; Landry and Callimaci, 2003), leading to the fact that larger companies are riskier. The managers of such firms have to choose those practices that improve the financial position of the company and might be engaged in earnings management practices. One of the possible solutions for large risky firms, then, is to increase the reported amount of capitalized R&D costs.

At the same time, size is not significant in the German sample, and a similar result was obtained in the Italian context (Markarian et al., 2008).

The next control variable *R&D intensity* is significant in both samples. The reported amount of capitalized R&D costs is positively related to the intensity of R&D investments. This result is consistent with the theory and with previous research (Markarian et al., 2008). The higher a company's total expenditure on R&D, the higher is the probability that there are more projects that satisfy the conditions for capitalization of R&D costs, and that the company will capitalize more R&D costs. This relationship and interpretation is applicable in both the Russian and German markets.

LagCapitalization, a proxy for the company's consistency in the treatment of R&D expenditure, is significant only in the German sample. The relationship is positive, which is in line with previous results (Markarian et al., 2008; Dinh and Schulze, 2009; Zicke, 2014). The amount of activated R&D costs for the current year is positively related to the amount of reported capitalized R&D expenditures for the previous year. This variable is not significant in the Russian market, and can be explained by the high variability and unpredictability of the results of R&D projects of Russian companies.

Conclusions

The goal of the current paper was to analyze the motives that determine the propensity of companies of both developed and developing countries to engage in earnings management on the basis of accounting treatment of R&D costs.

The results of our research show that managers of companies in both countries analyzed (Russia and Germany) are somehow engaged in earnings management practices using R&D costs. At the same time, however, the incentives for these actions are different. In the case of Russian companies, managers enjoy discretion in accounting choices when trying to meet debt covenants by adopting those methods that increase financial results and help to avoid violating restrictive debt-covenants. The Russian companies with the higher leverage ratio are more interested in R&D costs capitalization and activate a greater amount of R&D costs. By activating their R&D costs they move away from the boundaries of violation of debt agreements.

German managers, on the other hand, are not interested in the debt-covenants earnings management practices, but focus on the other type of earnings management incentives: earnings smoothing. They are interested in the reduction of the variability of financial results, reducing peaks

and decreasing volatility by expensing a greater amount of R&D costs and reporting more capitalized R&D costs in the unsuccessful years. It can be concluded that German managers are more concerned about the attitude of investors, because this manipulation leads to the improvement of the market valuation of the company and investors see stable performance and less risk. So, there is evidence that the amount of capitalized R&D costs in German companies increases with the increase of variability of financial results.

Despite its contribution to the understanding of earnings management incentives in the decision to capitalize research and development costs, the current paper does have some limitations.

The first potential limitation is the size of the Russian sample compared to the German one. The Russian sample consists of only 47 companies observed over a two-year period, which gives a total number of 94 observations. In comparison, the German sample has 148 observations. As a result, the number of factors included in the model is rather low, in accordance with the number of observations. However, this represents the maximum possible number of observations on the Russian market since the initial sample included all the companies listed on the Moscow exchange.

Secondly, the analysis of some additional factors such as a manager's compensation might enhance the research and its results. However, these factors could not be taken into consideration because of the absence of corresponding data in the annual reports of the companies.

Thirdly, it was mentioned that earnings management incentives are determined more by contextual factors such as accounting and financial environment, the level of regulation and control, and not by the accounting principles themselves. However, the link between these contextual factors and earnings management incentives was only suggested but not proved. This might be an interesting question for follow-up research.

Despite these limitations, our results are reliable and can be used by different types of stakeholder including managers, debt-holders, analysts and regulators. The research also contributes to the global dispute around the appropriate R&D accounting treatment.

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