

ACCRUAL-BASED AND REAL EARNINGS MANAGEMENT: THE RELATIONSHIP WITH FUTURE PROFITABILITY OF RUSSIAN COMPANIES

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Goal: the goal of the paper is to investigate the relationship between accrual-based and real earnings management and subsequent profitability of Russian companies. **Methodology:** the object of research are Russian public non-financial companies that prepare financial statements under International Financial Reporting Standards. The period of observation is from 2011 to 2020. The main method of research is panel-data regression analysis. Corporate profitability was assessed via return on assets adjusted for the industry median. Earnings management was measured with the binary variables that were assigned a value of “1” if the level of real or accrual-based earnings management for any firm-year was higher than the selected threshold. The effect on profitability was tested not only for the year next to the one when earnings manipulation occurred, but also for two and three years thereafter. **Findings:** results showed that real earnings management negatively influences next year profitability. However, no conclusion was made regarding accrual-based earnings management, since the results obtained were not robust to the selection of different thresholds. Companies that displayed higher levels of both accrual-based and real earnings management showed no significant difference in subsequent profitability compared with companies that display lower levels of both accrual-based and real earnings management. **Originality and contribution of the authors:** this research is the first study to investigate the association between earnings management and corporate profitability of Russian companies. Moreover, the paper provided additional evidence to the opportunistic view on earnings management, at least in regards to real earnings management. From the practical standpoint, the results obtained might be helpful for internal stakeholders of a company such as management and board members as well its external stakeholders. Managers are advised to consider that utilizing real earnings management might have deferred implications and negatively impact the next year company’s profitability. Board members can be given a recommendation to tighten oversight in relation to real earnings management practices. External stakeholders, e.g., current and potential investors, might also take into account potential effects of earnings management on profitability in course of their investment decisions.

Keywords: accrual-based earnings management, real earnings management, corporate profitability, Russian companies.

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INTRODUCTION

Earnings management is the “purposeful intervention in the external financial reporting process with the intent of obtaining some private gain” [Schipper, 1989, p.92]. This intervention is often performed by managers in order to shift the representation of the underlying economic performance of a company to the positive side¹. Managers may have different motives to manipulate earnings, for example, to ensure a higher compensation for themselves; to attract financing at favorable rates; to meet debt covenants; to inflate stock prices (particularly during stock issuances); to meet regulatory requirements, etc.

It should be noted that earnings management may encompass either lawful or unlawful actions. The extreme cases of earnings management (for instance, those that refer to well-known corporate scandals with US and European companies taking place at the beginning of 2000s) are associated with fraudulent actions by companies’ management. However, there are plenty of opportunities to engage in earnings management within the existing legal system as well. In other words, earnings management generally is a legal practice within the boundaries of accounting standards that provide a certain level of leeway for the accountants.

There are two main strategies for earnings management: accrual-based earnings management and real earnings management. The primary difference between them is the influence on company operations and cash flows. Accrual-based earnings management does not affect the operating activities and is of purely accounting nature, while real earnings management involves interference in business processes and transactions.

¹ The majority of motives for earnings management presume upward earnings manipulation, i.e. managers have incentives to inflate earnings. At the same time there can be motives for downward earnings management as well (see, e.g.: [Jones, 1991]).

Under each of these strategies, managers may employ a wide variety of techniques. For example, accrual manipulations may involve timing of recognition of revenues and expenses; change of accounting estimates, classification of assets, etc. Real earnings management typically includes overproduction, sale of assets and cutting down on certain expenses. Each of the strategies imply different costs and is accessible to different extent to companies [Zang, 2012].

Globally, research on earnings management started in the 1970s—1980s, and to date there are different lines of study in this domain. Up to 2000s the main goals of studies on earnings management were, first, to find empirical evidence on whether earnings management exists and, second, to explain motives that drive companies to engage in these activities [Healy, Wahlen, 1999]. During that period the main models for detecting earnings management were developed [Healy, 1985; DeAngelo, 1986; Jones, 1991; Dechow, Sloan, Sweeney, 1995]. After 2000 the research started to focus on specific instruments of earnings manipulation and on how they are used. Initially most attention was given to accrual-based earnings management [Marquardt, Wiedman, 2004], while the beginning of full-scale investigation of real earnings management practices refers to 2010s [Chan et al., 2015; Malik, 2015].

Among all the issues considered, specific attention should be given to the impact of earnings management on future profitability of a company. This is primarily due to the fact that the nature of this relationship remains an open question. One group of researchers concluded that earnings management, and particularly real earnings management, is opportunistic and leads to deterioration of subsequent firm profitability [Cohen, Zarowin, 2010; Legget, Parsons, Reitenga, 2016; Tabassum, Kaleem, Nazir, 2015]. In sharp contrast to them, the other group of researchers found a positive relationship between earnings management and corporate profitability, consistent with sign-

aling theory [Beyer, Nabar, Rapley, 2018; Gunny, 2010; Chen, Rees, Sivaramakrishnan, 2010]. As per this theory, managers, who are more informed about the true financial state of the company and its future prospects, use earnings management to give positive signals to the market when they believe that future results will improve. It implies that managers are well aware of side effects of earnings management and apply it only when they have an understanding of future business growth and have positive news to be signaled to the market.

Mixed empirical evidence on the relationship between earnings management and corporate profitability reflects the necessity of conducting additional studies. This is especially important for emerging markets, including Russia, where the topic of earnings management remains relatively unexplored as compared to the developed markets. The papers that investigate earnings management on Russian market started to appear only in the last several years (see, e.g.: [Leevik, 2017; Nikulin, Sviridov, 2019; Nikulin et al., 2022]).

Therefore, the goal of the paper is to investigate the impact of both accrual-based and real earnings management on subsequent firm profitability using the sample of Russian companies. The object of our research are all public Russian non-financial companies that publish financial statements prepared under International Financial Reporting Standards (hereinafter IFRS), and whose shares are traded on Moscow Stock Exchange as well as on foreign exchanges. Data are analyzed over a 10-year period from 2011 to 2020.

The rest of the paper is as follows. Section 1 includes brief overview of studies devoted to the relationship between earnings management and corporate profitability and provides justification of research hypotheses. Section 2 describes research methodology and sample. Section 3 reports and discusses the main results of the study. Section 4 concludes with brief overview of our contributions and directions for further research.

THEORETICAL BACKGROUND AND HYPOTHESES

There is a significant number of studies that consider relationship between earnings management and subsequent corporate profitability. Those studies demonstrate mixed results that differ for two main types of earnings manipulation, i.e., accrual-based and real earnings management.

Since real earnings management entails interference in business operations, it should have implications for subsequent firm profitability. As was discovered by [Graham, Harvey, Rajgopal, 2005], managers are ready to give up positive net present value projects if this action helps to boost short-term earnings. It implies that real earnings management should negatively affect subsequent profitability. On the other hand, accrual-based earnings management is purely an accounting action, and thus it should have less prominent effect on corporate profitability compared with real earnings management. Consistent with this assumption, in [Cohen, Zarowin, 2010] the authors concluded that earnings manipulation around seasoned equity offerings (SEO) using real earnings management caused more severe decline in post-SEO company profitability as compared to manipulation with accruals. In [Legget, Parsons, Reitenga, 2016] the authors investigated the relationship between real earnings management and profitability conditional on the benchmarks that companies tried to beat. They found that companies using real earnings management to avoid a loss do worse than companies that did not use real earnings management and reported a loss. However, the effect of real earnings management on profitability is less prominent when companies tried to meet analyst forecasts, which suggests that managers take more drastic actions when they try to avoid a loss. The study by [Tabassum, Kaleem, Nazir, 2015] on the sample of Iranian companies also revealed a strong negative association between real earnings management

through sales manipulation and subsequent companies' profitability.

The results that were described above may be explained by the opportunistic nature of earnings management, i.e. that it is implemented for the sake of private gains at the expense of other stakeholders. However, there is an opposing theory which states that earnings management can be beneficial when performed for informational purposes [Wardani, Kusuma, 2012]. According to the informational perspective on earnings management, managers, who are more informed about the true financial condition of the company and company's future prospects, use earnings management to give positive signals to the market when they believe that future results will improve. Proponents of this theory believe that managers are well aware of side effects of earnings management and will apply it only when they have an understanding that future business growth will cover any accrual reversals [Wardani, Kusuma, 2012].

In accordance with this theory, a positive relationship between earnings management and corporate profitability was revealed in a number of studies (see, e.g.: [Gunny, 2010; Chen, Rees, Sivaramakrishnan, 2010; Beyer, Nabar, Rapley, 2018]. For example, the study by [Gunny, 2010] found that companies engaging in real earnings management have a better subsequent industry-adjusted profitability as compared to firms that restrained themselves from earnings management. In [Beyer, Nabar, Rapley, 2018] the authors provided additional insights into the informational perspective of earnings management, and found that companies use earnings management for signaling purposes when they have few incentives to meet short-term benchmarks; operate in less robust environments (e.g., high stock market volatility and few analysts following), and for which engaging in real earnings management is more costly (e.g., firms with poor financial health). In [Chen, Rees, Sivaramakrishnan, 2010] the authors compared the response of operating profitability indicators to both real and ac-

crual-based earnings management. According to their findings, profitable companies that used only real earnings management outperformed profitable firms that primarily engaged in accrual-based earnings management. These findings advocate that real earnings management is used only by the companies that have positive news to be signaled to the market.

Another explanation of positive relationship between earnings management and corporate profitability relates to one of the motives of earnings management which is to achieve smoother earnings. Smoother earnings may help to reduce cost of debt and to trade better terms with suppliers and customers [Dechow, Sloan, Sweeney, 1996]. In this case, earnings management might have positive cause-and-effect relationship with profitability. However, it is worth to say that positive effects will be observed until earnings management is revealed by the market, after which company risk premium might significantly increase [Dechow, Sloan, Sweeney, 1996].

Russia represents itself an emerging economy where disclosure requirements are relatively soft compared to developed markets. It can be also stated that "good" practices of corporate governance are not fully implemented in Russian companies yet, since the corresponding regulation is on the developing stage. For example, the Russian Code of Corporate Governance was enacted only in 2014 and the level of compliance with the code was relatively low in the subsequent years². Additionally, according to some authors, Russia can be characterized by relatively low level of enforcement of corporate legislation and, specifically, property rights protection (see, e.g.: [Enikopolov, Stepanov, 2013]).

² According to Russian National Council for Corporate Governance report [NCCG, 2018], in 2016 a bit more than half of Russian companies included into the list of top liquid shares at Moscow exchange (Quotation list 1) claimed full compliance to the Russian Code of Corporate Governance in its audit committee requirements.

In these circumstances, it is more probable that earnings management in Russian companies goes in line with opportunistic motives rather than with informational ones. Hence, it is more likely that the relationship between real earnings management and companies' profitability is negative. At the same time, accrual-based earnings management might have little or no effect on corporate profitability due to its accounting nature since in the case of accrual-based earnings management there is no direct interference in company's operations and cash flows, i. e. income and expenses are recognized upfront or with delay regardless of business operations that generated those income and expenses.

Consequently, the first two hypotheses of our study are formulated as follows:

hypothesis H1. Companies that display higher levels of real earnings management show lower future profitability compared with companies that display lower levels of real earnings management;

hypothesis H2. Companies that display higher levels of accrual-based earnings management show no significant difference in future profitability compared with companies that display lower levels of accrual-based earnings management.

The obvious question arises about the incentives for a company to use both accrual-based and real earnings management at the same time. If such an opportunity exists, then it seems reasonable to investigate the impact of earnings management on corporate profitability for this group of companies. The existing research shows that accrual-based and earnings management are not mutually exclusive [Zang, 2012]. Indeed, these two types of earnings management are often used sequentially, with accrual-based manipulations being used after the implementation of real earnings management instruments. In other words, managers first implement real earnings management because it is harder to detect and then, if necessary, additionally adjust certain accrual accounts in order to achieve the desirable effect on earnings.

Given the potential opposing nature of the relationship between accrual-based and real earnings management and corporate profitability, our final hypothesis is stated in null form:

hypothesis H3. Companies that display higher levels of both accrual-based and real earnings management show no significant difference in future profitability compared with companies that display lower levels of both accrual-based and real earnings management.

DATA AND METHODOLOGY

Data sample

The data sample comprises all public Russian non-financial companies, which publish financial statements prepared under IFRS, and whose shares are traded on Moscow Stock Exchange as well as on foreign exchanges. This research was performed using IFRS reporting in order to ensure comparability of the results with the studies performed on the datasets from other countries. The time period selected for analysis is from 2011 to 2020. However, since some models require the use of 1-year and 2-year lagged variables, additional data points for the years 2009 and 2010 were collected. In total, the sample includes 170 companies, out of which 18 are traded on foreign exchanges, namely London Stock Exchange (UK), The Nasdaq Stock Market (USA) and Euronext Stock Exchange (Netherlands). Since not all companies were preparing IFRS reports within the timeframe 2011–2020, the dataset is an unbalanced panel.

The breakdown of companies by industry sectors according to the Thomson Reuters Business Classification (TRBC) is presented in Figure below.

All data were collected from Refinitiv (Thomson Reuters) database. Datapoints, which were missing in database, were collected manually using official audited financial statements published by the com-

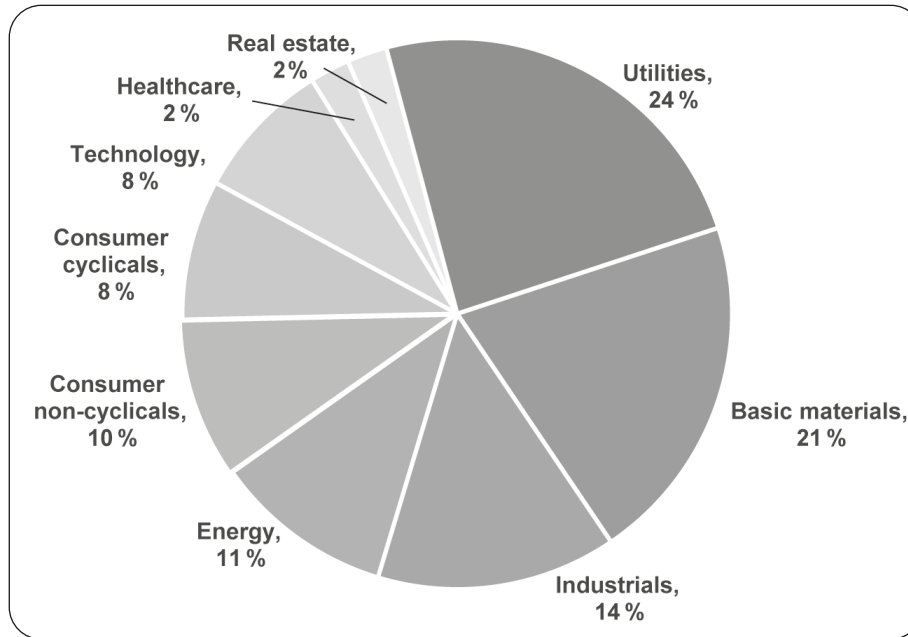


Figure. Breakdown of data sample by industry sectors
Based on: [Refinitiv, 2021].

panies at their corporate websites. As shown in Figure, the majority of companies in the sample is represented by the utilities sector.

Description of models and variables

Estimation of earnings management proxies

The first step of our research is the measurement of earnings management proxies, since earnings management is not an indicator that can be readily obtained from corporate reports or any other public sources. The level of earnings management of every company is generally estimated using regression models (see, e.g.: [Gunny, 2010; Cohen, Zarowin, 2010]). The basic idea behind such models is the homogeneity of the companies across industry peers and over time. Hence, if certain financial indicators, that are assumed to capture the effects of earnings management, are out of the league, these

deviations are treated as the outcomes of a potential earnings management.

Estimation of accrual-based earnings management proxies. To date, academics have made a lot of attempts to create a model that can properly estimate the proxies for accrual-based earnings management. One of the most popular models was proposed by [Dechow, Sloan, Sweeney, 1995] and is called a modified Jones model³. The model is aimed to separate discretionary and non-discretionary components of the accruals. In essence, the model presumes that changes in total assets, cash revenue, and gross property, plant and equipment are the determinants of non-discretionary accruals. Any other accruals, not explained by these factors, are referred to discretionary accruals which can be managed by the companies.

³ This model is based on the original Jones model [Jones, 1991].

The expression for the modified Jones model is as follows:

$$\frac{TACC_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta S_{i,t} - \Delta AR_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}, \quad (1)$$

where $TACC_{i,t}$ is the total accruals of a company i for a year t ; $PPE_{i,t}$ is the gross property, plant and equipment of a company i as of the end of a year t ; $\Delta S_{i,t}$ is change in revenue for a company i for a year t ; $\Delta AR_{i,t}$ is the change in accounts receivable for a company i for a year t ; $A_{i,t-1}$ is the total assets of a company i at the beginning of year t ; β_1 , β_2 and β_3 are regression coefficients, $\varepsilon_{i,t}$ is an error term.

Discretionary accruals are equal to the residuals from model (1):

$$AEM_{i,t} = \frac{DACC_{i,t}}{A_{i,t-1}} = \frac{TACC_{i,t}}{A_{i,t-1}} - \frac{\widehat{TACC}_{i,t}}{A_{i,t-1}}, \quad (2)$$

where $AEM_{i,t}$ is the proxy for accrual-based earnings management of a company i for a year t ; $DACC_{i,t}$ is the discretionary accruals of company i for a year t ; $\widehat{TACC}_{i,t}$ is the level of normal or non-discretionary accruals of a company i for year t estimated by the modified Jones model.

Total accruals are calculated using the cash flow approach as:

$$TACC_{i,t} = NI_{i,t} - CFO_{i,t}, \quad (3)$$

where $NI_{i,t}$ is net profit or loss after tax of a company i for a year t ; $CFO_{i,t}$ is the cash flows from operations of a company i for a year t .

Estimation of real earnings management proxies. The variety of models for the estimation of real earnings management is not as wide as in the case of accrual-based earnings management. The first explicitly formulated model for the measurement of real earnings management was the model

by S. Roychowdhury [Roychowdhury, 2006]. The author focused on the three methods of real earnings management, and for each of those he proposed a model for proxy estimation.

The first method is a manipulation with sales, such as generating additional sales through price discounts or more relaxed credit terms. The model to measure the proxy for sales manipulation is as follows:

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}, \quad (4)$$

where $CFO_{i,t}$ is the cash flows from operations of a company i for a year t ; $S_{i,t}$ is the revenue of a company i for a year t .

The goal of this model is to estimate the level of normal cash flows from operations, which is a function of assets, current year revenue and change in revenue. If a company manipulates with sales by providing discounts or lenient credit terms, then cash flows would be lower than what would have been, had the company done business in a regular way. Hence, residuals from the model (4) represent a manipulation with sales.

The second method of real earnings management modelled by S. Roychowdhury is the reduction of discretionary expenditures such as selling, general and administrative expenses (hereinafter SG&A expenses). The model is as follows:

$$\frac{DISX_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}, \quad (5)$$

where $DISX_{i,t}$ is the discretionary expenditures for a company i in a year t ; $S_{i,t-1}$ is the revenue of a company i for a year $t-1$.

The model determines a normal level of discretionary expenditures which is a function of lagged sales. Residuals from model (5) represent manipulations with discretionary expenditures.

The third method described by S. Roychowdhury is overproduction, which might be used by the companies to spread fixed costs over a larger number of produced goods, and this way to reduce the costs per 1 unit, and consequently total costs of goods sold. The model to measure the proxy for real earnings management with overproduction is as follows:

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_0 + \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{S_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}, \tag{6}$$

where $PROD_{i,t}$ is the production costs of a company i for a year t (production costs calculated as the sum of the cost of goods sold ($COGS_{i,t}$) and the change in inventory for a company i for a year t ($\Delta INV_{i,t}$); $\Delta S_{i,t-1}$ is the change in revenue of a company i for a year $t-1$.

Following [Cohen, Dey, Lys, 2008; Cohen, Zarowin, 2010], the aggregate indicator of real earnings management is calculated as the sum of the proxies for all three real earnings management methods:

$$REM_{i,t} = R_PROD_{i,t} + R_SALES_{i,t} + R_DISX_{i,t}, \tag{7}$$

where $REM_{i,t}$ is the proxy for real earnings management of a company i in a year t ; $R_SALES_{i,t}$ is the proxy for manipulation with sales of a company i in a year t , i.e. residuals from model (4); $R_DISX_{i,t}$ is the proxy for manipulation with discretionary expenditure of a company i in a year t , i.e. residuals from model (5); $R_PROD_{i,t}$ is the proxy for manipulation with production levels of a company i in a year t , i.e. residuals from model (6).

By the construction of the model, $R_SALES_{i,t}$ and $R_DISX_{i,t}$ are taken with a negative sign (multiplied by -1) [Cohen, Zarowin, 2010]. $R_SALES_{i,t}$ is taken as negative because the higher the manipulation with sales, the less cash flows will

company receive in the current accounting period. Likewise, the higher the manipulation with discretionary expenditures, the larger part of them was cut to increase earnings, and the lower will they be as compared to the normal levels of discretionary expenditures.

To sum up, for the purposes of this research, the proxies for accrual-based earnings management were estimated with the modified Jones model [Dechow, Sloan, Sweeney, 1995] while the proxies for real earnings management were estimated with the Roychowdhury's model [Roychowdhury, 2006].

Research models

After estimating the proxies for earnings management, the next step is to proceed with further calculations and hypotheses tests. To eliminate extreme observations, all the continuous variables, including the variables used to calculate the proxies for earnings management, were winsorized at the 1st and 99th percentiles. The hypotheses were tested using panel data regression models. The models were also checked for heteroscedasticity of residuals using the Wald test and for autocorrelation using the Wooldridge test. In order to account for heteroskedasticity and autocorrelation, the cluster-robust standard errors were used.

All hypotheses were tested using the following regression model:

$$ROA_IndAdj_{i,t+p} = \beta_0 + \beta_1 REM_d_{i,t} + \beta_2 AEM_d_{i,t} + \beta_3 BOTH_d_{i,t} + \beta_4 ROA_IndAdj_{i,t} + \beta_5 LnAssets_{i,t} + \beta_6 Zscore_{i,t} + \beta_7 MtoB_{i,t} + \varepsilon_{i,t}, \tag{8}$$

where $p=1, 2, 3$; $ROA_IndAdj_{i,t+p}$ is the return on assets of a company i in a year $t+1, t+2$ or $t+3$ adjusted for industry median; $REM_d_{i,t}$ is the binary variable equal to "1" if a firm-year is above the 80th percentile in the REM distribution and below 80 percentile in AEM distribution ("0" — other-

wise); $AEM_d_{i,t}$ is the binary variable equal to “1” if a firm-year is above the 80th percentile in the AEM distribution and below 80 percentile in REM distribution (“0” — otherwise); $BOTH_d_{i,t}$ is the binary variable equal to “1” if a firm-year is above the 80th percentile in both REM and AEM distributions (“0” — otherwise); $ROA_IndAdj_{i,t}$ is the return on assets of a company i in a year t adjusted for industry median; $LnAssets_{i,t}$ is the natural log of the value of total assets of a company i at the end of year t ; $Zscore_{i,t}$ is the Altman’s Z score⁴ of a company i in a year t ; $MtoB_{i,t}$ is the Market-to-Book ratio of a company i at the end of year t .

Company’s profitability is measured via the return on assets (ROA), which is calculated as net income for a year t divided by average total assets at the beginning of year t and at the end of year t . In order to account for the specifics of different industries and to increase the power of the model, ROA was adjusted for the industry median. So, $ROA_IndAdj_{i,t}$ is the difference between $ROA_{i,t}$ and median ROA across the same TRBC sector in which company i operates. Industry adjusted ROA was used by [Chen, Rees, Sivaramakrishnan, 2010; Gunny, 2010; Cohen, Zarowin, 2010; Beyer, Nabar, Rapley, 2018], and established itself as a solid proxy for company’s profitability in the context of earnings management research. In order to verify the effect not only on the next year profitability, but for subsequent years as well, three versions of the models were calculated: for $t+1$, $t+2$ and $t+3$ periods.

Independent variables $REM_d_{i,t}$, $AEM_d_{i,t}$, and $BOTH_d_{i,t}$ are the binary variables (see e.g.: [Chen, Rees, Sivaramakrishnan, 2010]). The detailed way of their calculation is as follows:

- $REM_d_{i,t}$ is equal to “1” if:
 - a firm-year is above the 80th percentile in the REM distribution, i.e., when all $REM_{i,t}$ values within a year and industry sector are sorted in the descending order, the value of REM of the corresponding firm-year is in the top 20% of the distribution, **AND**;
 - the same firm-year is below the 80th percentile of the respective AEM distribution;
- $AEM_d_{i,t}$ is equal to “1” if:
 - a firm-year is above the 80th percentile of the AEM distribution, **AND**;
 - a firm-year is below the 80th percentile of the REM distribution;
- $BOTH_d_{i,t}$ is equal to “1” if:
 - a firm-year is above the 80th percentile of the AEM distribution, **AND**;
 - a firm-year is above the 80th percentile of the REM distribution.

Hence, for every year and industry sector a threshold at the 80th percentile was determined against which the REM/AEM values were compared in order to assign a value of “1” or “0” to the binary variables $REM_d_{i,t}$, $AEM_d_{i,t}$ and $BOTH_d_{i,t}$. In addition, as a robustness check, the models are recalculated using the of 67th percentile⁵.

80th percentile is associated with a higher level of earnings management as compared to 67th percentile, so the baseline calculations are completed using the 80th percentile threshold. The following scheme is used to make a conclusion on the association between earnings management and profitability:

- if the variable ($REM_d_{i,t}$, $AEM_d_{i,t}$ or $BOTH_d_{i,t}$) is significant in both 80th and 67th percentile models, the obtained result allows to make a conclusion on the association between earnings management and profitability;
- if significance is observed only for the 80th percentile, the result would also al-

⁴ The specification of Altman’s Z score model was selected after [Altman, 1968]. Altman’s Z score model was originally created to predict corporate bankruptcies and its different modifications are often used as a proxy for financial health of a company (see, e.g.: [Zang, 2012; Tabassum, Kaleem, Nazir, 2015; Gunny, 2010]).

⁵ K. Gunny used a threshold of 80th percentile [Gunny, 2010], while the study by [Chen, Rees, Sivaramakrishnan, 2010] used a threshold of 67th percentile.

low to make a corresponding conclusion, since in the case of the 80th percentile, the level of earnings management is higher than that for the 67th percentile; — if the variable ($REM_{i,t}$, $AEM_{i,t}$ or $BOTH_{i,t}$) is significant for the 67th percentile but not significant for the 80th percentile, it means that significant association is observed only in the range between 67th and 80th percentiles and not above the 80th percentile. In this case, it is not feasible to make any conclusions on the association between earnings management and profitability.

The coefficients β_1 , β_2 , β_3 measure the difference in future industry-adjusted operating profitability of the REM , AEM and $BOTH$ groups relative to the baseline group with a lower level of earnings management.

In accordance with hypotheses, it is expected that the coefficient β_1 in front of $REM_{i,t}$ would be significant and negative, while the coefficients β_2 in front of $AEM_{i,t}$ and β_3 in front of $BOTH_{i,t}$ would be insignificant.

The control variables $ROA_{IndAdj_{i,t}}$, $LnAssets_{i,t}$, $Zscore_{i,t}$ and $MtoB_{i,t}$ are used to

control for current financial profitability, company size, overall financial health and growth opportunities. The choice of control variables was based on [Chen, Rees, Sivaramakrishnan, 2010; Gunny, 2010; Beyer, Nabar, Rapley, 2018; Legget, Parsons, Reiten-ga, 2016].

EMPIRICAL RESULTS

Descriptive statistics

Descriptive statistics of the data sample is presented in the Table 1, while the correlation matrices are shown in Tables 2 and 3.

The statistics, presented in Table 1 was calculated for the data that were winsorized at the 1st and 99th percentiles. The maximum number of observations for any variable is 1423. It includes a 10-year period for 170 companies. The number of observations is less than 1700 (170 companies multiplied by 10 years) due to data availability, e.g. since not all companies prepared IFRS reports every year, especially until 2014.

The average size of total assets of the companies included in the sample is 474 bn

Table 1

Descriptive statistics

| Variable | Mean | Standard deviation | Minimum value | 25 th percentile | Median | 75 th percentile | Maximum value | Number of observations |
|------------------------------|---------|--------------------|---------------|-----------------------------|---------|-----------------------------|---------------|------------------------|
| $AEM_{i,t}$ | -0.0013 | 0.1044 | -0.3511 | -0.0484 | 0.0038 | 0.0488 | 0.3124 | 1423 |
| $REM_{i,t}$ | -0.0006 | 0.3318 | -1.0847 | -0.1895 | 0.0436 | 0.2178 | 0.6675 | 1343 |
| $Assets_{i,t}$ (bln. Rub) | 474.11 | 1 785.47 | 0.01 | 14.41 | 81.31 | 280.78 | 23 352.19 | 1423 |
| $LnAssets_{i,t}$ | 18.0267 | 2.0586 | 13.3550 | 16.4833 | 18.2138 | 19.4531 | 23.0769 | 1423 |
| $ROA_{i,t}$ | 0.0358 | 0.1170 | -0.4736 | 0.0009 | 0.0381 | 0.0854 | 0.3557 | 1423 |
| $ROA_{IndAdj_{i,t}}$ | -0.0023 | 0.1114 | -0.5510 | -0.0363 | 0.0000 | 0.0401 | 0.3446 | 1423 |
| $MtoB_{i,t}$ | 1.4703 | 2.4511 | 0.0000 | 0.2142 | 0.6045 | 1.5799 | 14.2435 | 1336 |
| $Zscore_{i,t}$ | 2.1057 | 2.1414 | -4.1157 | 1.1010 | 1.7896 | 2.7768 | 11.1859 | 1423 |

Table 2

Correlation matrix (80th percentile threshold)

| Variable | $ROA_IndAdj_{i,t+1}$ | $ROA_IndAdj_{i,t+2}$ | $ROA_IndAdj_{i,t+3}$ | $ROA_IndAdj_{i,t}$ | $REM_d_{i,t}$ | $AEM_d_{i,t}$ | $BOTH_d_{i,t}$ | $LnAssets_{i,t}$ | $Zscore_{i,t}$ | $MtoB_{i,t}$ |
|-----------------------|-----------------------|-----------------------|-----------------------|---------------------|----------------|----------------|-----------------|------------------|----------------|--------------|
| $ROA_IndAdj_{i,t+1}$ | 1 | | | | | | | | | |
| $ROA_IndAdj_{i,t+2}$ | 0.526** | 1 | | | | | | | | |
| $ROA_IndAdj_{i,t+3}$ | 0.371** | 0.519** | 1 | | | | | | | |
| $ROA_IndAdj_{i,t}$ | 0.528** | 0.379** | 0.366** | 1 | | | | | | |
| $REM_d_{i,t}$ | -0.182** | -0.149** | -0.095** | -0.273** | 1 | | | | | |
| $AEM_d_{i,t}$ | 0.109** | 0.055 | 0.03 | 0.307** | -0.186** | 1 | | | | |
| $BOTH_d_{i,t}$ | 0 | 0.008 | -0.01 | 0.086** | -0.140** | -0.118** | 1 | | | |
| $LnAssets_{i,t}$ | 0.113** | 0.124** | 0.146** | 0.131** | -0.136** | -0.036 | -0.203** | 1 | | |
| $Zscore_{i,t}$ | 0.399** | 0.339** | 0.289** | 0.520** | -0.093** | 0.093** | 0.123** | -0.057* | 1 | |
| $MtoB_{i,t}$ | 0.149** | 0.112** | 0.105** | 0.140** | -0.042 | 0.008 | -0.016 | 0.005 | 0.307** | 1 |

Notes: ** — significance at the 1 % level; * — significance at the 5 % level.

Table 3

Correlation matrix (67th percentile threshold)

| Variable | ROA_IndAdj _{i,t+1} | ROA_IndAdj _{i,t+2} | ROA_IndAdj _{i,t+3} | ROA_IndAdj _{i,t} | REM_d _{i,t} | AEM_d _{i,t} | BOTH_d _{i,t} | LnAssets _{i,t} | Zscore _{i,t} | MtoB _{i,t} |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|---------------------------|----------------------|----------------------|-----------------------|-------------------------|-----------------------|---------------------|
| ROA_IndAdj _{i,t+1} | 1 | | | | | | | | | |
| ROA_IndAdj _{i,t+2} | 0.526** | 1 | | | | | | | | |
| ROA_IndAdj _{i,t+3} | 0.371** | 0.519** | 1 | | | | | | | |
| ROA_IndAdj _{i,t} | 0.528** | 0.379** | 0.366** | 1 | | | | | | |
| REM_d _{i,t} | -0.189** | -0.167** | -0.125** | -0.305** | 1 | | | | | |
| AEM_d _{i,t} | 0.123** | 0.086** | 0.093** | 0.329** | -0.251** | 1 | | | | |
| BOTH_d _{i,t} | -0.005 | -0.016 | -0.021 | 0.079** | -0.245** | -0.219** | 1 | | | |
| LnAssets _{i,t} | 0.113** | 0.124** | 0.146** | 0.131** | -0.063* | 0.033 | -0.168** | 1 | | |
| Zscore _{i,t} | 0.399** | 0.339** | 0.289** | 0.520** | -0.136** | 0.144** | 0.063* | -0.057* | 1 | |
| MtoB _{i,t} | 0.149** | 0.112** | 0.105** | 0.140** | -0.038 | 0.036 | -0.057* | 0.005 | 0.307** | 1 |

Notes: ** — significance at the 1% level; * — significance at the 5% level.

RUB. Such a large value is explained by the fact that all companies are publicly traded and many of them are the locomotives of the industries that they represent or even have a state-wide strategic importance. However, the range is rather wide and includes the companies whose total assets within 2010–2020 showed the figures as little as 0.01 bn RUB and as large as over 23.4 tn RUB. Nevertheless, such a variation does not pose any threat to the validity of research, since all continuous variables were scaled either by total assets or by revenues.

The median Z score, an indicator of financial health, is 1.8, which is around the threshold of 1.81, the level below which companies are suspected of having financial difficulties. Hence, roughly a half of the firm years belong to a subsample of companies that had moderate financial health. 75th percentile corresponds to the value of 2.78, denoting that 25% of firm-years are associated with a solid financial profitability.

The mean and median ROA of the sample is just under 4%, showing that companies generally demonstrate good profitability. Zero value is at the 25th percentile, and minimum is -47.4%, from which it can be concluded that in roughly 25% of the firm-years, companies were showing losses.

Regression results

Hypotheses were tested using multivariate regression models and the results of testing model (8) are presented in Tables 4 and 5. Table 4 demonstrates the regression results when 80th percentile was selected in order to determine the independent binary variables $REM_{d_{i,t}}$, $AEM_{d_{i,t}}$ and $BOTH_{d_{i,t}}$, while Table 5 presents the corresponding results for the 67th percentile threshold. Based on the results of the F-test, the Breusch-Pagan test and the Hausman test, regressions with fixed effects were selected. The variables were checked for the multicollinearity with the help of variance inflation factors (VIF), and the multicollinearity was not revealed.

All three models for dependent variables $ROA_{IndAdj_{i,t+1}}$, $ROA_{IndAdj_{i,t+2}}$, and $ROA_{IndAdj_{i,t+3}}$ are significant at 0.001, 0.05 and 0.05 significance levels respectively.

According to the regression results presented in Table 4 (80th percentile threshold), there is a significant and negative relationship between real earnings management and next year corporate profitability, measured with return on assets adjusted for industry median. The coefficient in front of $REM_{d_{i,t}}$ can be interpreted as follows: companies, for which real earnings management proxy was above the 80th percentile in the industry-year REM distribution, had the next year industry-adjusted ROA lower by 0.0216 as compared to industry-adjusted ROA of the companies which were below the 80th percentile in REM distributions. Industry-adjusted ROA can be interpreted as the position in the industry relative to peers. For subsequent periods ($t+2$, $t+3$), no significant relationship was revealed.

The coefficients in front of $AEM_{d_{i,t}}$ and $BOTH_{d_{i,t}}$ are not significant, suggesting that profitability of the companies which had higher levels of accrual-based earnings management or higher levels of both real and accrual-based earnings management was not statistically different from the profitability of the companies with lower levels of respective earnings management.

As can be seen from the regression results presented in Table 5 (67th percentile threshold), the variable $REM_{d_{i,t}}$ remains significant for $ROA_{IndAdj_{i,t+1}}$ and also it becomes significant in $ROA_{IndAdj_{i,t+2}}$ equation. In terms of the association between real earnings management and one year ahead profitability, results are robust to the selection of a threshold. Therefore, it can be concluded that real earnings management negatively affects subsequent profitability, at least in the year next to the year when real earnings management was applied.

Using the 67th percentile, the variable $AEM_{d_{i,t}}$ becomes significant with a negative sign (Table 5). However, since this result was not confirmed using the 80th percentile,

Table 4

Regression results: earnings management and ROA for 80th percentile threshold

| Variable | <i>ROA_IndAdj_{i,t+1}</i> | <i>ROA_IndAdj_{i,t+2}</i> | <i>ROA_IndAdj_{i,t+3}</i> |
|---------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <i>REM_d_{i,t}</i> | -0.0216* (0.0092) | -0.0204 (0.0119) | 0.00503 (0.0099) |
| <i>AEM_d_{i,t}</i> | -0.0115 (0.0098) | -0.00543 (0.0101) | -0.0153 (0.0086) |
| <i>BOTH_d_{i,t}</i> | -0.00889 (0.0109) | 0.0061 (0.0095) | 0.0127 (0.0142) |
| <i>ROA_IndAdj_{i,t}</i> | 0.153* (0.0603) | -0.0934 (0.0676) | 0.0839 (0.0556) |
| <i>LnAssets_{i,t}</i> | -0.0349** (0.0133) | -0.0370* (0.0179) | -0.0439** (0.0141) |
| <i>Zscore_{i,t}</i> | 0.00631 (0.0057) | 0.002 (0.0063) | -0.0115* (0.0056) |
| <i>MtoB_{i,t}</i> | 0.00315 (0.0025) | 0.00172 (0.0025) | 0.00398 (0.0021) |
| <i>Intercept</i> | 0.614* (0.2416) | 0.660* (0.3282) | 0.807** (0.2579) |
| Model characteristics | | | |
| Number of observations | 1168 | 1006 | 856 |
| <i>R2 within</i> ,% | 7.0 | 3.1 | 3.1 |
| <i>R2 between</i> ,% | 0.7 | 4.9 | 7.8 |
| <i>R2 overall</i> ,% | 0.6 | 2.7 | 4.3 |
| <i>F-statistic</i> | 8.167*** | 2.576* | 2.168* |

Notes: standard errors are in parentheses; *, ** and *** significance at 5, 1 and 0.1 % levels, respectively.

no conclusion can be made with regards to accrual-based earnings management.

The obtained results in regards to real earnings management are in line with the set forth hypothesis and economic theory. As discussed in the theoretical part of the paper, the most widely used real earnings management techniques are manipulation with sales, provision of discounts / lenient credit terms, and cutting of marketing, research and development and SG&A expenses.

These instruments have high probability of impacting corporate profitability in a negative way. For instance, cutting marketing or R&D expenses will surely boost short term earnings, but it may have its negative implications in the long-run when a company loses competition due to selling an outdated product or insufficient advertising. Similar conclusion was achieved by [Cohen, Zarowin, 2010; Tabassum, Kaleem, Nazir, 2015; Legget, Parsons, Reitenga, 2016]. Thus, it can

Table 5

Regression results: earnings management and ROA for 67th percentile threshold

| Variable | <i>ROA_IndAdj_{i,t+1}</i> | <i>ROA_IndAdj_{i,t+2}</i> | <i>ROA_IndAdj_{i,t+3}</i> |
|---------------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <i>REM_{d_{i,t}}</i> | -0.0218* (0.0099) | -0.0270* (0.0132) | -0.0044 (0.0132) |
| <i>AEM_{d_{i,t}}</i> | -0.0203** (0.0075) | -0.00945 (0.0088) | -0.00763 (0.0094) |
| <i>BOTH_{d_{i,t}}</i> | -0.0143 (0.0102) | -0.0158 (0.0104) | -0.00545 (0.0115) |
| <i>ROA_IndAdj_{i,t}</i> | 0.166** (0.0565) | -0.0875 (0.0687) | 0.0711 (0.0593) |
| <i>LnAssets_{i,t}</i> | -0.0344* (0.0132) | -0.0364* (0.0180) | -0.0433** (0.0145) |
| <i>Zscore_{i,t}</i> | 0.00618 (0.0055) | 0.00207 (0.0060) | -0.011 (0.0056) |
| <i>MtoB_{i,t}</i> | 0.0032 (0.0025) | 0.00167 (0.0025) | 0.00395 (0.0021) |
| <i>Intercept</i> | 0.610* (0.2389) | 0.655* (0.3272) | 0.798** (0.2638) |
| Model characteristics | | | |
| Number of observations | 1168 | 1006 | 856 |
| <i>R2 within, %</i> | 7.3 | 3.3 | 2.8 |
| <i>R2 between, %</i> | 0.8 | 4.4 | 7.6 |
| <i>R2 overall, %</i> | 0.7 | 2.3 | 4.3 |
| <i>F-statistic</i> | 11.59*** | 3.715** | 1.915 |

Notes: standard errors are in parentheses; *, ** and *** significance at 5, 1 and 0.1% levels, respectively.

be concluded that real earnings management in Russia is of opportunistic nature, and not informational as per signaling theory.

The results on the accrual earnings management are less obvious. If 80th percentile threshold is selected, there is no significant association between accrual-based earnings management and profitability. However, in the case of 67th percentile, the association becomes significant and negative.

One explanation for this result might be in different reaction of profitability to accrual-based earnings management for different firm-years. The association is significant for the firm-years between the 67th percentile and the 80th percentile in AEM distribution, but the significance disappears above the 80th percentile. This difference might be explained by the patterns in which accrual-based earnings management is used.

The peculiar feature of accrual-based earnings management is a reversal of accruals. For example, if the recognition of operational expenditures is postponed, in the next accounting period the double amount will have to be recorded, what might have a drag on earnings. However, if actual earnings grow and this growth covers accruals reversals, and/or if the magnitude of accrual-based earnings management is stable over the years, so that comparable amount of earnings is recognized ahead, results should not deteriorate significantly due to accruals reversals.

This concept might explain the difference in the results for different thresholds. For firm-years above the 80th percentile, the level of accrual-earnings management is higher than for firm-years above the 67th percentile. Probably, in these companies, accrual-based earnings management is used on the regular basis or managers use it only when they are sure that future earnings growth would cover any reversals. However, for companies with a lower level of discretionary accruals (below 80th percentile but above 67th percentile), this strategy may be used sporadically so that next year results become sensitive to reversals.

Nevertheless, this issue needs a more thorough analysis. Results in other publications in regards to accrual-earnings management are contradictory as well. The study by [Chen, Rees, Sivaramakrishnan, 2010] found a statistically insignificant association between accrual-based earnings management and future profitability, however, according to [Cohen, Zarowin, 2010], earnings manipulation around seasoned equity offerings (SEO) using accrual earnings management caused a decline in post-SEO company profitability but it was less severe as compared to real earnings management.

The coefficient in front of $BOTH_{d_{i,t}}$ is not significant in either 80th percentile case or the 67th percentile case, suggesting that profitability of the companies which had higher levels of both real and accrual-based earnings management is not statistically different from the profitability of the companies

with lower levels of respective earnings management. This might be due to the opposing effects of real and accrual-based earnings management on corporate profitability, as shown previously.

To sum up, the *hypothesis H1* is accepted, and we can conclude that companies displaying higher levels of real earnings management show worse future profitability compared with companies that display lower levels of real earnings management.

The *hypothesis H2* is neither accepted nor rejected, and we cannot confidently state that companies displaying higher levels of accrual-based earnings management show no significant difference in future profitability compared with companies that display lower levels of accrual-based earnings management.

The *hypothesis H3* is accepted: companies that display higher levels of both accrual-based and real earnings management show no significant difference in future economic profitability compared with companies that display lower levels of both accrual-based and real earnings management.

CONCLUSION

The results of the study reveal a statistically significant negative relationship between real earnings management and future corporate profitability measured via *ROA* adjusted for industry median. This finding generally support the notion that real earnings management is detrimental for future profitability. However, no conclusion could be made regarding accrual-based earnings management. Companies that display higher levels of both accrual-based and real earnings management show no significant difference in subsequent profitability compared with companies that display lower levels of both accrual-based and real earnings management.

This research was the first attempt to investigate the association between earnings management and corporate profitability of

Russian companies. Moreover, the work provided additional evidence to the opportunistic view on earnings management and partly resolved an ongoing debate, whether earnings management is beneficial or detrimental to the company, at least in regards to real earnings management.

This study is not free of limitations which offer a number of opportunities for future research. Firstly, the sample included only publicly traded companies and hence the results should not be extrapolated to all Russian companies, since public companies are under much closer oversight by various stakeholders and their attitude towards earnings management might be different from that of non-public companies. At the same time, it would be interesting to investigate the relationship between earnings management and profitability of private companies, especially considering that their number is far greater than that of public companies.

Secondly, corporate profitability was measured with ROA adjusted for industry median, however the study may be repeated with other metrics that measure corporate profitability as well as company's value.

Thirdly, this study focused on accrual and real earnings management in aggregate, however studying the specific instruments of either strategy would have significant prac-

tical importance for the managers, boards, investors, auditors and regulators. For example, it is possible to decompose real earnings management into manipulation with sales, production and discretionary expenditures following S. Roychowdhury [Roychowdhury, 2006]. Meanwhile, accrual earnings management can potentially be decomposed into manipulation with working capital accounts such as accounts receivable, accounts payable or inventory and manipulation with fixed capital i.e. depreciation. Studying the impact of different components of earnings management on corporate profitability may provide additional insights into the nature of this relationship.

Overall, the results obtained might be helpful both for internal stakeholders of a company (such as management and board members) and for its external stakeholders, e.g. current and potential investors. Managers are recommended taking into account the potential negative effect that real earnings management can exert on a company's future profitability. Board members might be inclined to tighten oversight in relation to real earnings management practices. Current and potential investors might also consider potential impact of earnings management on profitability in course of their investment decisions.

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Учетное и неучетное манипулирование прибылью: взаимосвязь с рентабельностью российских компаний будущих периодов

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Цель исследования: исследование взаимосвязи учетного и неучетного манипулирования прибылью и рентабельности российских компаний будущих периодов. **Методология исследования:** объектом исследования выступают российские торгуемые нефинансовые компании, которые составляют свою отчетность в соответствии с Международными стандартами финансовой отчетности. Период наблюдения — с 2011 по 2020 г. Основной метод исследования — регрессионный анализ по панельным данным. Рентабельность компаний оценивалась с помощью показателя рентабельности активов, скорректированного на его медианное значение по отрасли. Манипулирование прибылью измерялось с помощью бинарных переменных, которые принимали значение «1» в том случае, если уровень учетного или неучетного манипулирования для определенного «фирма-года» был выше, чем установленное пороговое значение. Влияние на рентабельность было оценено не только для года, следующего за тем, в котором было обнаружено манипулирование прибылью, но также и для двух последующих лет. **Результаты исследования:** исследование показало, что неучетное манипулирование прибылью негативно влияет на рентабельность компании в следующем отчетном году. Относительно учетного манипулирования определенного вывода сделать нельзя, поскольку результаты оказались неустойчивы к выбору пороговых значений показателей. **Компании с высоким уровнем одновременно и учетного и неучетного манипулирования прибылью не продемонстрировали существенных различий в значениях рентабельности активов в будущие отчетные периоды по сравнению с компаниями с низким уровнем манипулирования прибылью.** **Оригинальность и вклад авторов:** в работе представлено первое исследование взаимосвязи между манипулированием прибылью и рентабельностью российских компаний. В дополнение к этому в ней содержится эмпирическое подтверждение оппортунистического характера манипулирования прибылью, по крайней мере, в отношении неучетного манипулирования. С практической точки зрения результаты исследования могут быть полезны как внутренним (например, менеджменту и членам советов директоров), так и внешним стейкхолдерам. Менеджерам рекомендуется учитывать то, что использование манипулирования прибылью может иметь отложенные последствия и влиять на рентабельность компании в следующем отчетном периоде. Членам советов директоров целесообразно усилить контроль над практиками манипулирования прибылью в компаниях. Внешние стейкхолдеры (например, текущие и потенциальные инвесторы) могут также учитывать потенциальное влияние манипулирования прибылью на рентабельность компании при принятии своих инвестиционных решений.

Ключевые слова: учетное манипулирование прибылью, неучетное манипулирование прибылью, рентабельность, российские компании.

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