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Institutional investors and real earnings management: A meta-analysis[1]

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Abstract: The aim of the article is to examine the influence of institutional investor ownership on real earnings' management (REM) practices through a meta-regression analysis (MRA) based on a sample of 225 estimations from 19 articles. Some of the available research suggests a mitigating role for institutional investors who can serve as external monitors and thus reduce earnings' management activities which could have a negative impact on the company's value. The results obtained from the basic model confirmed neither the hypothesis about the influence of institutional ownership on REM, nor the hypothesis about the existence of a significant publication bias. Using an augmented MRA model conclusions in different areas associated with structural and methodological heterogeneity were drawn. Differences in the impact of institutional ownership on real earnings' management in different regions of the world, a dependence of the results on different data characteristics and differences in the results depending on whether the article was published in a top journal or not were found.

Keywords: real earnings management, institutional ownership, meta-analysis, corporate finance.

JEL codes: G23, G32, C83.

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Introduction

Do institutional investors perceive earnings' management as activities that have a negative impact on a firm's value and limit these activities in companies in which they hold shares? It seems that an unequivocal answer to this question has not yet been found. Managers of companies can manipulate earnings using accounting techniques that affect discretionary accruals. These change current earnings but do not affect cash flows. These techniques are called accrual-based earnings management (AEM). Alternatively, the managers can make real "operational decisions". The decisions concerning cuts in research and development (R&D) spending, price discounts, overproduction (lowering the price of goods sold), or cuts in selling, general and administrative (SG&A) expenses—which typically affect both earnings and cash flows—are called real earnings' management (REM) (Roychowdhury, 2006). Cohen and Zarowin (2010) found that firms substituted accrual with real earnings' management. To some extent, at least as far as American companies are concerned, this can be explained by the appearance of a special law limiting the possibilities for accrual-based earnings' management (the Sarbanes–Oxley Act from 2002). With the above in mind this article focuses on REM.

Real-earnings' manipulation is mostly considered as an action arising from agency problems thus decreasing the shareholders' value (Roychowdhury, 2006; Cohen & Zarowin, 2010; Badertscher, 2011). Multiple tools and regulations that create corporate governance system are designed to limit negative impact of real earnings management practices. Many studies have shown an interdependence between the use of earnings' management and institutional setting characteristics (e.g. Leuz, Nanda, & Wysocki, 2003; Enomoto, Kimura, & Yamaguchi, 2015; Francis, Hasan, & Li, 2016). However, a problem worth considering is that the mere ownership of shares by institutional investors reduces the practice of earnings' manipulation. The academic importance of this problem derives from an existing ambiguity in research on that topic. Results of some empirical studies suggests that firms with higher institutional ownership are less likely to manage earnings because the presence of large institutional shareholdings inhibits managers from pursuing opportunistic earnings' management (Chung, Firth, & Kim, 2002). The institutional investors with large share ownership have higher incentives to actively monitor myopic managerial behaviour (Lemma, Negash, Mlilo, & Lulseged, 2018). However, in some cases institutional investors tend to be short-term oriented, myopic, or transient with excessive focus on current rather than long-term earnings in determining stock prices (Lemma et al., 2018).

Taking into account the ambiguity of the research results regarding the relationship between the presence of institutional investors and real earnings' management **the goal of this research is to examine the above mentioned relationship using a meta-analytical approach**. Using this approach allows the

synthesis of the results of overall studies and the detection of a possible publication bias. Therefore, **the hypothesis relating to the presence of publication bias in the selected studies is verified**. According to Stanley and Doucouliagos (2019), a very high heterogeneity from one reported effect to the next is the norm in economics. Following Geyer-Klingeberg, Hang and Rathgeber (2019) aspects of data, methods, and other study characteristics that may have an impact on the effect sizes were explored. Differences between the published research results were sought. It was expected that any differences may be due to country-specific conditions and regional variation (**structural heterogeneity**). It was also suspected that they may be caused by **methodological characteristics** including the way REM is measured or the characteristics of the data, estimation and publication. A novelty of this approach was the use of the meta-regression method to address the issue of a possible influence of institutional investors on limiting earnings' management practices.

No significant impact of institutional shareholders on real-earnings' management was found beyond the publication selection bias in the basic regression used. Based on an augmented model which controls the sources of publication selection bias such as regional and methodological differences between analysed studies significant mitigating role of institutional ownership was found which is in line with mainstream literature. The geographical differences indicate that there is a lower mitigating role of institutional investors in Europe and South Asia which could lead to some corporate policy implications. Additionally, methodological differences provide an insight that can be used not only by researchers but also by investors.

The contributions to the literature are: (1) a quantitative summary of results of studies undertaken by other researchers was performed which allows the researchers to come closer to the true impact of the presence of institutional investors on earnings management, (2) a publication bias consisting of a selective choice of results for publication was checked and (3) the impact of some differences in study design on the wide heterogeneity in empirical estimates was quantified. The remainder of the paper is organized as follows. Section 1 reviews the literature. Section 2 describes the research design including the sample composition, REM and institutional investors indicators. Section 3 presents the meta-analysis methodology applied in this paper. Section 4 describes the problem of heterogeneity together with its descriptive statistics, while Section 5 contains result of empirical analysis including both basic meta-regression and the augmented model. The last section concludes the paper.

1. Literature review

According to Ronen and Yaari (2008, p. 27) "earnings' management is a collection of managerial decisions that result in not reporting the true short-term value-maximizing earnings as known to management". Healy and Wahlen (1999) emphasize the negative role of earnings' management in misinforming stakeholders. Real transaction manipulation, which will be the subject of this research, gained in importance after the passage of the Sarbanes–Oxley Act. Following Roychowdhury (2006, p. 337) the real transaction manipulation (REM) is defined as "departures from normal operational practices motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." Such a definition suggests a rather negative influence of REM on a company's performance, that is its long-term operating performance and value. Many researchers share this view (e.g. Badertscher, 2011; Sakaki, Jackson, & Jory, 2017), however, it has to be admitted that according to other researchers usage of REM to simply meet the earnings benchmark allows firms to achieve relatively better future performance in comparison to firms that do not influence their accounting system results (Gunny, 2010).

Early studies on the association between institutional investor ownership and real earnings management focused on the possibility of increasing profits thanks to cutting R&D expenditures and institutional investors' R&D activities (Bushee, 1998; Bange, & de Bondt, 1998). Griffin, Hong, Liu and Ryou (2021) examined the role of CEO social capital as an important driver of the widespread practice of REM. They included institutional ownership percentage as a control because, in their opinion, firms with lower institutional holdings may be more inclined to cater to retail investors with less awareness of the mechanics of REM. Roychowdhury (2006) provided insight into the factors that affect the nature and extent of real activities' manipulation. He found a negative relation between institutional ownership and real activities' manipulation when abnormal production costs and abnormal discretionary expenses are used as proxies of REM. Similar results were obtained by Alhadab and Nguyen (2018), Alawag (2020). A negative correlation between institutional ownership and real earnings activity was also suggested by Liu and Tsai (2015), Sohn (2016) and Garcia Lara, Garcia Osma and Penalva (2020).

On the other hand, the study by Wei and Chou (2018) based on data on Taiwanese companies indicated that the presence of institutional investors had no significant impact on the practices of REM. Similar results in terms of the impact of institutional investors were obtained by Li, Tseng and Chen (2016), who examined the effects of top management team expertise on real earnings management activities. Kałdoński, Jewartowski and Mizerka (2020) focused on institutional ownership stability in their research based on data from the Warsaw Stock Exchange. Their findings suggest that stable institutional inves-

tors played an important monitoring role in reducing real transaction manipulation by managers under capital market pressure. An in-depth analysis of the interdependence between REM and institutional ownership, based on US data was also carried out by Sakaki and others (2017). Their findings suggest that firms held by more stable institutional owners were engaged in less real activities' manipulation which is due to these firms not reporting abnormally high levels of production costs. Overall their results are consistent with the view that the presence of institutional investors acts as a monitor on target firms' use of real earning's manipulation activities. The study of the relationship between real earnings' management and institutional ownership often takes place when the main subject of research is the relationship between REM and another factor. An example of such research is the study by Farooqi, Jory and Ngo (2020). Their paper aimed to examine the association between the types of mutual funds (institutional investors), i.e. active versus passive (Cremers & Petajisto, 2009), and the level of earnings' manipulation in companies that comprise their stock portfolios. They found that the portfolio firms held by active fund managers exhibit lower levels of earnings' manipulation.

Other conclusions were reached by Debnath, Chowdhury and Khan (2021) in their research on companies from Bangladesh: they reported a positive association between institutional ownership and REM. Their study also found that firms which are dominated by institutional ownership were involved more in REM through more discounted, lenient credit terms and lowered discretionary expenses. According to Garel, Martin-Flores, Petit-Romec and Scott (2021, p. 13), "institutional investor distraction is positively associated with both accrual-based earnings management and real activities earnings-management, suggesting that managers exploit institutional investor distraction to engage in upward earnings' management." The positive relationship between the ownership of institutional investors in conjunction with the interactive management system and real earnings' management practices was confirmed by the research results obtained by Garcia Osma, Gomez-Conde and Lopez-Valeiras (2022).

On the other hand, the research performed by Dong, Wang, Zhang and Zhou (2020) indicated that Chinese firms with more influential majority shareholders were more prone to use REM and that firms with state control and higher managerial ownership were less likely to engage in REM. Min (2015) who investigated the REM phenomenon in state-owned enterprises obtained slightly different results. The results have shown that levels of real earnings' management in Chinese state-owned companies are significantly higher than those in non-state-owned companies. This may suggest that the role of institutional investors in inhibiting real earnings' management practices in state-owned enterprises may be limited.

Summarizing the literature review the following conclusions can be drawn:

a. The literature on the relationship between real earnings' management and institutional ownership in which institutional ownership is treated as the main factor that may have an impact on real earnings' management, is relatively scarce.
b. Quite often the variable illustrating the share of institutional investors is included in the models as a control variable to determine if it affects the relationship between REM and another factor.
c. Although most of the published research suggests a rather negative relationship between institutional ownership and real earnings' management, there are also research results showing a positive relationship.
d. Drawing more precise conclusions would require the drivers of heterogeneity to be specified.

2. The meta-regression data set

2.1. Search strategy

Thanks to the stepwise approach and publication filtering according to the adopted criteria it was possible to decide which publications should be included in the final database for this study. To select the initial pool of articles for review publications were searched for keywords in their titles and abstracts—mainly "earnings' management"—in databases such as Google Scholar, Science Direct, JSTOR, SSRN. Reviewing the preliminary database of 248 articles publications that met three criteria were searched for:

a. Concerned real earnings' management or both real and accrual-based earnings management.
b. Answered the question of which factors influenced real earnings management.
c. Contained the results of quantitative research in which a proxy for earnings' management was the explanatory variable.

After analyzing all 248 of the articles selected in the preliminary stage according to the above criteria 96 articles have been selected that fulfilled all three criteria and were accepted for the main study and detailed analysis. Further, those publications in which the dependent variable was real earnings' management measure consistent with the definition provided by Roychowdhury (2006) and institutional investors ownership was the explanatory variable were selected. This can be presented by the following equation:

$$REM = f(\text{Institutional Ownership, Other Variables in Question, Real Earnings Management Specific Control Variables, General Control Variables}) \quad (1)$$

All of the above conditions were met by 19 articles, from which 225 estimates were separated. The full process of gathering data is presented in Figure 1.

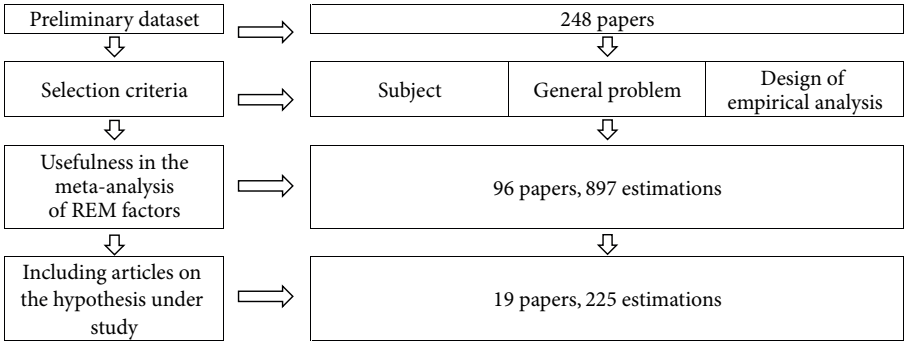

Figure 1. Search strategy for including publications in the research
Source: Own elaboration.

Figure 1 illustrates the algorithm for selecting the publications analyzed according to specific criteria.

2.2. REM indicators and variables for institutional investors

Proxies for REM that refer to the definitions given by Roychowdhury (2006) were considered. He focused on the following three manipulation methods and their effects on the abnormal levels of:

1. Sales' manipulation, that is, accelerating the timing of sales and/or generating additional unsustainable sales through increased price discounts or more lenient credit terms. The consequence of such manipulation may be a temporary increase in sales but it can lead to a drop in cash flow from operations (CFO). This manipulation is captured by abnormal operating cash flows (AbnCFO).
2. Reduction of discretionary expenditures (EXP) which are defined as the sum of advertising expenses, research and development expenses, selling, general, and administrative (SG&A) expenses. Such a reduction could lead to an increase in reported earnings. This aspect of real-earnings' management can be measured with abnormal discretionary expenditures (AbnEXP) and abnormal selling, general and administrative expenses (AbnSG&A).
3. Overproduction or increasing production (PROD) in order to report a lower cost of goods sold. With higher production levels, fixed overhead costs are spread over a larger number of units, lowering the fixed costs per unit. This process is measured with abnormal production costs (AbnPROD).

Table 1 contains definitions of variables and differences in measures of real earnings management.

Table 1. Definition of variables and differences in measures of real earnings management

Variable	Definition
REM	Abnormal levels of operating cash flow + Abnormal levels of discretionary expenditures + Abnormal levels of production costs
AbnPROD	Abnormal levels of production costs (COGS + a change in inventory)
AbnEXP	Abnormal levels of discretionary expenditures
AbnCFO	Abnormal levels of operating cash flow
AbnEXP&AbnPROD	Abnormal levels of discretionary expenditures + Abnormal levels of production costs
AbnCFO&AbnEXP	Abnormal levels of CFO + Abnormal levels of discretionary expenditures

Note: A list of variables prepared on the basis of the articles being the base for the study.

Source: Own elaboration.

Table 1 describes the set of variables selected for real earnings' management that were analyzed in the meta-regression analysis. The variable definitions were derived from the primary studies and unified. Following Badertscher (2011), prior to adding up multiplied AbnCFO and AbnEXP were multiplied by −1 so that higher levels of abnormal cash flow from operations (AbnCFO) and abnormal discretionary expenses (AbnEXP) could serve as proxies for higher levels of REM.

To capture institutional ownership the authors of the publications which were selected proposed different definitions as presented below:

1. $EQTHOLD_{t-1}$—a dummy variable representing the equity ownership of a mutual fund,
2. INST and $INST_{t-1}$—the percentage of institutional ownership (without a precise indication of the moment of measurement) and the percentage of institutional ownership at the beginning of the year respectively,
3. $INSTHOLD_{t-1}$—a dummy variable representing the presence of a fund owner in the firm's ownership,
4. I_OWN—the percentage of direct shares owned by institutional shareholders,
5. INST_OWN—aggregate ownership of at least five but no more than 50% as institutional investors,
6. INST_PROP—the average aggregate percentage of institutional shareholding over a three-year period in year $t-1$,
7. OINST—the percentage of outstanding shares owned by institutional investors including domestic and foreign financial institutions and trust funds,

8. PROP—the average aggregate institutional shareholding proportion across a five-year period.

Table 2 presents the proxies for real earnings' management and for institutional ownership proposed in the publications analyzed.

Table 2. Proxies for real earnings management and measures of institutional ownership

Authors	Proxies for REM	Measures of institutional ownership
Alawag, 2021	REM, AbnCFO, AbnPROD, AbnEXP	INST_OWN
Alhadab and Nguyen, 2018	REM, AbnCFO, AbnPROD, AbnEXP	$INST_{t-1}$
Debnath et al., 2021	REM, AbnCFO, AbnPROD, AbnEXP, AbnCFO&AbnEXP, AbnEXP&AbnPROD	INST
Dong et al., 2020	AbnEXP&AbnPROD	INST
Farooqi et al., 2014	AbnEXP&AbnPROD, AbnPROD, AbnEXP	$INST_{t-1}$
Farooqi et al., 2020	AbnEXP&AbnPROD	$EQTHOLD_{t-1}$ $INSTHOLD_{t-1}$
Garcia Lara et al., 2020	AbnPROD, AbnEXP, AbnEXP&AbnPROD	INST
Garel et al., 2021	REM, AbnCFO, AbnPROD, AbnEXP	INST
Griffin et al., 2021	REM, AbnCFO, AbnPROD, AbnEXP	INST
Kałdoński et al., 2020	REM, AbnCFO, AbnPROD, AbnEXP	INST_PROP
Lemma et al., 2018	REM	I_OWN
Li et al., 2016	REM, AbnCFO, AbnPROD, AbnEXP, AbnCFO&AbnEXP, AbnEXP&AbnPROD	INST
Liu and Tsai, 2015	REM	OINST
Min, 2015	REM, AbnCFO, AbnPROD, AbnEXP	INST
Roychowdhury, 2006	AbnCFO, AbnPROD, AbnEXP	INST
Sakaki et al., 2017	AbnEXP, AbnPROD, AbnEXP&AbnPROD	PROP
Shayan-Nia et al., 2017	AbnCFO, AbnEXP	INST
Sohn, 2016	REM	INST
Wei and Chou, 2018	REM, AbnCFO, AbnPROD, AbnEXP, AbnEXP&AbnPROD, AbnCFO&AbnEXP	INST

Source: Own elaboration.

The data in Table 2 show that a distinctive feature is that in each article there was more than one definition of REM. REM variables played the role of explanatory variables in the models used in the research.

3. Methodology

3.1. Effect size

The effect size is a value that reflects the strength of the relationship between the selected variables. The most commonly used effect size measures in economics and finance are elasticities, partial correlations and *t*-statistics. The coefficient of partial correlation as a measure of the effect size was adopted. The partial correlation was calculated as follows:

$$r_{ij} = \frac{t_{ij}}{\sqrt{t_{ij}^2 + df_{ij}}} \tag{2}$$

where t represents the level of t-statistics reported in the primary study, df stands for degrees of freedom, i is the subscript for the estimate ($i = 1, \ldots, m$), and j is the subscript for the study ($j = 1, \ldots, n$).

The standard error of the partial correlation is estimated as follows:

$$SE(r_{ij}) = \sqrt{\frac{(1 - r_{ij}^2)}{df_{ij}}} \tag{3}$$

Estimating the partial correlations and standard errors requires appropriate data to be obtained for each estimation from each article under study: the level of t-statistics as well as the degrees of freedom. The degrees of freedom are very rarely stated in articles so it is necessary to gather information on the number of observations and the number of explanatory variables present in a given estimation.

3.2. Meta-regression

3.3.1. Basic model

It should be noted as emphasized in Table 1 that the authors of the analyzed papers defined real-earnings' management in different ways which influences the direct interpretation of the beta index and leads to a lack of comparability between the studies. This makes it impossible to take regression coefficients as a measure of the effect size. Partial correlations were adopted as a measure of the effect size which meets the conditions set for the measures of effect size

(Stanley & Doucouliagos, 2012). The relationship between the effect size estimates and their standard errors was tested using a basic formula:

$$r_{ij} = \beta_0 + \beta_1 SE(r_{ij}) + \varepsilon_{ij} \quad (4)$$

where r is the partial correlation coefficient between the independent and the dependent variables, $SE(r)$ is the standard error of the partial correlation, ε is the error term, and i and j are estimate and study subscripts, respectively. If the null hypothesis that $\beta_1 = 0$ is rejected then it can be expected that there is a publication selection error (Egger, Smith, Schneider, & Minder, 1997). The β_0 measures mean partial correlation assuming that $SE(r)$ is close to zero. If the null hypothesis that $\beta_0 = 0$ is rejected then it could be said that there is an effect beyond the publication selection bias (Stanley, 2008).

3.3.2. Augmented model

The basic model of meta-regression indicates whether a publication selection bias is present. However, it does not explain whether this bias is due to sampling errors only or whether it depends on various aspects of study design that caused excess heterogeneity beyond sampling error. The augmented model of meta-regression can take into account important factors of heterogeneity (explanatory variables) that are suspected to be responsible for the variation in the observed results and takes the following form:

$$r_{ij} = \beta_0 + \beta_1 SE(r_{ij}) + \sum_{l=1}^{L} \gamma Z_{ijl} + \varepsilon_{ij} \quad (5)$$

where Z denotes the vector of variables capturing heterogeneity in the partial correlations and the other variables are the same as in the basic model. The coefficient γ reflects the effect of the particular study characteristic on the effect size. β_1 is interpreted as in the basic regression and β_0 indicates a mean partial correlation corrected for publication selection but conditional on $Y = 0$.

Due to heteroscedasticity, in all estimations of the model the weighted least squares (WLS) method was used with the inverse of the squared standard errors as weights (Stanley, 2008). This approach can solve the heteroscedasticity problem resulting from the different sample sizes of the primary studies and can also take into account the quality of the studies because primary studies with lower standard errors (more precise results) receive larger weights. It is worth noting that the models were estimated with robust errors clustered at the study level (to avoid the risk of within-study dependencies) and region level (to take into account the correlation between studies resulting from similar data sets).

4. Heterogeneity

Two sources of heterogeneity were taken into account. The first is called structural heterogeneity and focuses on geographical differences in the datasets of primary studies. The second source is related to methodological issues.

4.1. Structural heterogeneity

In structural heterogeneity attention is paid to the geographical areas of the datasets in the primary studies as is presented in Table 3.

Table 3. Definition of explanatory variables for structural heterogeneity

Variable	Definition of a dummy variable
North America (NA)	1 if an estimate refers to data from North America or equals 0 otherwise
Europe and Central Asia (ECA)	1 if an estimate refers to data from Europe and Central Asia or equals 0 otherwise
East Asia and Pacific (EAP)	1 if an estimate refers to data from the East Asia and Pacific or equals 0 otherwise
South Asia (SA)	1 if an estimate refers to data from South Asia or equals 0 otherwise
International (INT)	1 if an estimate refers to international data or equals 0 otherwise

Source: Own elaboration.

Table 3 shows that the datasets from primary studies were clustered into five geographical areas. In all the analysed papers empirical analysis was performed for different industries. It is worth noting that in the structural heterogeneity analysis North America is left out as the base category which indicates that the impact of all other regions on mean effect sizes have to be interpreted conditional on North America.

4.2. Methodological heterogeneity

In this source of heterogeneity there was the need to cover differences in the methodologies of primary studies—differences in dependent variables, different data characteristics, different econometric approaches to models and different publication statuses as it is presented in Table 4—in order to capture a study quality that was not included by the other variables.

As mentioned in Section 2 the authors of primary studies most often use measures of REM based on Roychowdhury (2006) to indicate the actions taken by managers that deviate from normal business practices in order to achieve

Table 4. Definition of explanatory variables for methodological heterogeneity used in augmented models

Variable	Definition
REM	1 if the real earnings management measure (dependent variable) refers to REM or 0 otherwise
AbnPROD	1 if the real earnings management measure (dependent variable) refers only to AbnPROD or 0 otherwise
AbnEXP	1 if the real earnings management measure (dependent variable) refers only to AbnEXP or 0 otherwise
AbnCFO	1 if the real earnings management measure (dependent variable) refers only to AbnCFO or 0 otherwise
AbnEXP&AbnPROD	1 if the real earnings management measure (dependent variable) refers to AbnEXP&AbnPROD or 0 otherwise
AbnCFO&AbnEXP	1 if the real earnings management measure (dependent variable) refers to AbnCFO&AbnEXP or equals 0 otherwise
Avg. Year	The average year of the data under examination (2006 was set as the base)
Timespan	Time period under examination, in years
Fixed effects	1 if industry, year, or country fixed effects were included or 0 otherwise
Endogeneity	1 if the model accounts for reverse causality or 0 otherwise
AEM substitution	1 if AEM included as explanatory variable or 0 otherwise
Top journal	1 if the SJR for the publication is higher than 1 or 0 otherwise

Source: Own elaboration.

certain targets. In the collected primary studies the authors used seven different measures of REM. Therefore, dummy variables capturing these differences between dependent variables in the primary studies were included.[5] Additionally in some studies the authors included a "performance-matched procedure" when measuring REM—a dummy variable was also included to address this issue.

There were differences in the period of research among the selected studies. This was accounted for by including the average year of the time period covered in the primary studies (2006 was set as the base) and the time span of the datasets. To capture the differences in approaches to model estimation a dummy variable reflecting a fixed effects approach and a dummy variable for endogeneity was included. To capture the trade-off between real earnings management and accruals-based earnings' management the control variable (AEM substitution) was also taken into account. Previous studies argued that managers cannot use both approaches at the same time (Zang, 2012; Shah, Rashid, & Malik, 2020) and used REM and AEM as substitutes. The last explanatory variable was related to the status of publication. The SCImago Journal Rank (SJR)

[5] Similarly to structural heterogeneity, REM as a sum of abnormal production costs, abnormal discretionary expenses and abnormal cash flows from operating activities has been left out as the base category.

indicator was collected for papers to measure the quality/prestige of publications—dummy variable for publications with an SJR higher than 1 was used. All variables capturing methodological heterogeneity are presented in Table 4.

4.3. Heterogeneity statistics

Table 5 provides the basic descriptive statistics of the variables used in the meta-regression.

Table 5. Descriptive statistics of meta-regression variables based on 225 estimations

Structural heterogeneity	**Mean effect size**	**Standard deviation of effect size**
North America	0.26	0.438
Europe And Central Asia	0.21	0.411
East Asia and Pacific	0.42	0.495
South Asia	0.05	0.216
International	0.06	0.234
REM measurement	**Mean**	**Standard deviation**
AbnEXP&AbnPROD	0.19	0.391
AbnPROD	0.10	0.304
AbnEXP	0.10	0.304
REM	0.43	0.496
AbnCFO	0.09	0.285
AbnCFO&AbnEXP	0.09	0.292
Performance-matched REM	0.04	0.196
Data characteristics	**Mean**	**Standard deviation**
Average year	1.676	4.1803
Time span	11.59	7.196
Estimation characteristics	**Mean**	**Standard deviation**
Fixed effects	0.96	0.196
Endogeneity	0.39	0.488
AEM substitution	0.43	0.496
Publication characteristics	**Mean**	**Standard deviation**
Top journal*	0.38	0.486
Total number of articles	19	
Total number of observations	225	

* Top journal variable was also set to 0 when it was not possible to obtain the SJR index. This was the case of two articles (Alawag, 2021; Min, 2015) which accounted for 12 estimations.

Source: Own elaboration.

The descriptive statistics regarding structural heterogeneity included in the Table 5 revealed that most estimations (42%) referred to South Asia and Pacific countries which included China (10 estimations), Malaysia (2 estimations) and Taiwan (83 estimations). North American countries (the USA) constituted 26% of the entire sample, but at the same time represented results from eight different papers. Europe and Central Asia region represented 21% of a full sample and referred to only one country examined in single paper: Poland. South Asia and international sample were in the minority (5% and 6% of the full sample, respectively). South Asia was represented by research performed on data from Bangladesh (one paper). International sample included thirteen estimations from two articles.

The authors of the selected papers presented different approaches to measuring REM, as shown in Table 6. Data presented in Table 6 reveal different proxies. The most common was an aggregate measure that included abnormal cash flows, abnormal production costs and abnormal discretionary expenses (REM). This measure accounted for 43% of all estimations. Another quite common approach was to add abnormal discretionary expenses to abnormal production costs (AbnEXP&AbnPROD) which accounted for 19% of total sample. Measuring each aspect of REM with only one dimension (i.e. AbnPROD, AbnEXP or AbnCFO) or calculating the sum of abnormal cash flows from operating activities and abnormal discretionary expenses was also used. Each of these proxies was used in around 9%–10% of estimations. A performance-matched procedure for measuring the dependent variable was used in around 4% of the sample. It is worth noting that in the majority of the research undertaken the authors used several proxies for REM which are presented in Table 6. According to the data presented there, when a single article lists different proxies for REM an aggregate measure that captures all three proxies and each proxy separately were usually also used. In some papers two aspects of REM, such as AbnEXP&AbnPROD or AbnCFO&AbnEXP, were used. There is also a high variation in sample sizes in the analyzed research with the average number of firm-year observations of 14,051, minimum number of 331 (Kałdoński et al., 2020) and maximum of 139,879 firm-year observations. It is worth noting that estimations from robustness checks are also included which often cover only a part of initial research timespan which impacts the minimum number of firm-year observations. Nevertheless, the high average sample size should provide reliable conclusions. The authors of this study are also aware that there are important differences between the number of estimations within different publications. More than 50% of all estimations included in the research sample come from just two articles (Kałdoński et al., 2020; Li et al., 2016). The average number of estimations per single article is 12 which accounts for around 5.33% of all estimations. This disparity is included by applying the procedure of clustering at the study level.

When looking at the characteristics of the data the focus was on the average year of the datasets used in different research and the time span of the data

Table 6. Proxies for real earnings management used in the selected paper

Authors and year of publication	Number of firm-year observations	Number of estimations	Number of proxies of REM	Proxies used by authors
Alawag, 2021	14.964–28.808	4	4	REM, AbnCFO, AbnPROD, AbnEXP
Alhadab and Nguyen, 2018	5.659	8	4	REM, AbnCFO, AbnPROD, AbnEXP
Debnath et al., 2021	851–2.195	11	6	REM, AbnCFO, AbnPROD, AbnEXP, AbnCFO&AbnEXP, AbnEXP&AbnPROD
Dong et al., 2020	7.143	2	1	AbnEXP&AbnPROD
Farooqi et al., 2014	38.526–38.836	7	3	AbnEXP&AbnPROD, AbnPROD, AbnEXP
Farooqi et al., 2020	9.126–83.324	6	1	AbnEXP&AbnPROD
Garcia Lara et al., 2020	52.849	3	3	AbnPROD, AbnEXP, AbnEXP&AbnPROD
Garel et al., 2021	26.838	6	4	REM, AbnCFO, AbnPROD, AbnEXP
Griffin et al., 2021	5.666–24.224	9	4	REM, AbnCFO, AbnPROD, AbnEXP
Liu and Tsai, 2015	971–5.788	4	1	REM
Kałdoński et al., 2020	331–1.204	48	4	REM, AbnCFO, AbnPROD, AbnEXP
Lemma et al., 2018	97.441–139.879	9	1	REM
Li et al., 2016	340–4.690	69	6	REM, AbnCFO, AbnPROD, AbnEXP, AbnCFO&AbnEXP, AbnEXP&AbnPROD
Min, 2015	5.200	8	4	REM, AbnCFO, AbnPROD, AbnEXP
Roychoudhry, 2006	17.338	2	3	AbnCFO, AbnPROD, AbnEXP
Sakaki et al., 2017	49.807	11	3	AbnEXP, AbnPROD, AbnEXP&AbnPROD
Shayan-Nia et al., 2017	1.180	2	2	AbnCFO, AbnEXP
Sohn, 2016	32.211	5	1	REM
Wei and Chou, 2018	3.708	10	6	REM, AbnCFO, AbnPROD, AbnEXP, AbnEXP&AbnPROD, AbnCFO&AbnEXP

Note: Authors used different names for proxies which are defined the same way; therefore, we standardized the names of the variables.

Source: Own elaboration.

taken into consideration. On average the research papers included twelve years of observations covering different time periods. The variable for average year shows the average year of the research data with the year 2006 set as the base. This year was chosen for two reasons: firstly Roychoudhry's paper published in 2006 was the first to include the definitions of REM in the way that were used in this research and secondly this paper was the earliest published paper included in this research sample. In order to establish the value of this variable for each observation the difference between the simple average of the first and last year of the research period and the year 2006 was calculated. The higher the value of this variable, the more recent the data were.

Table 7 provides more insight into the composition of the sample including information about its structural heterogeneity. According to the data in Table 7 most of the analysed papers had research periods constructed in a way that included the financial crisis of 2008. One of exceptions was the early study by Roychoudhry (2006), in which the research period spanned from 1987 to 2001 or even before the Sarbanes–Oxley Act, from 2002. Also included is the late study

Table 7. The geography and research periods in the selected papers

Authors and year of publication	Country/countries of research	Region	From	To	Time span
Alawag, 2021	73 countries	INT	2015	2019	5
Alhadab and Nguyen, 2018	USA	NA	2001	2012	12
Debnath et al., 2021	Bangladesh	SA	2000	2017	18
Dong et al., 2020	China	EAP	2003	2014	12
Farooqi et al., 2014	USA	NA	1990	2010	21
Farooqi et al., 2020	USA	NA	1990	2009	20
Garcia Lara et al., 2020	USA	NA	1990	2018	29
Garel et al., 2021	USA	NA	1994	2016	23
Griffin et al., 2021	USA	NA	1999	2015	17
Liu and Tsai, 2015	Taiwan	EAP	2006	2010	5
Kałdoński et al., 2020	Poland	ECA	2007	2016	10
Lemma et al., 2018	41 countries	INT	1995	2016	22
Li et al., 2016	Taiwan	EAP	2006	2010	5
Min, 2015	China	EAP	2011	2013	3
Roychoudhry, 2006	USA	NA	1987	2001	15
Sakaki et al., 2017	USA	NA	1990	2012	23
Shayan-Nia et al., 2017	Malesia	EAP	2001	2011	11
Sohn, 2016	USA	NA	1983	2012	30
Wei and Chou, 2018	Taiwan	EAP	2007	2012	6

Source: Own elaboration.

of Alawag (2021) with a research period spanning between 2015 and 2019 and Min (2015) covering research period between 2011 and 2013. When it comes to geographical differences high proportion of regions such as South Asia, North America and Europe and Central Asia presented in Table 5 combined with the dominance of North America and East Asia & Pacific countries in examined publications (Table 7) was addressed by clustering at the region level.

When it comes to estimation characteristics most of the studies used a fixed effects model. In less than half the estimations the endogeneity problem has been addressed (39%), usually by using the two-step Heckman correction. Taking into consideration the fact that real activities intended to manage earnings have become more frequent since the Sarbanes–Oxley Act was passed by the US Congress. In other words, REM has become a substitute for AEM. 43% of the research sample included independent variables that directly referred to AEM substitution in their regressions.

Publication characteristics by using dummy variable "Top journal" are also included. Less than 50% of the observations came from journals with an SJR index higher than 1. Detailed information about these characteristics is presented in Table 8.

Table 8. Publication characteristics for the selected papers

Authors	Year of publication	SJR index	Top journal
Alawag	2021	0.00	No
Alhadab and Nguyen	2018	0.20	No
Debnath et al.	2021	0.15	No
Dong et al.	2020	1.26	Yes
Farooqi et al.	2014	0.30	No
Farooqi et al.	2020	0.30	No
Garcia Lara et al.	2020	1.26	Yes
Garel et al.	2021	1.89	Yes
Griffin et al.	2021	1.89	Yes
Liu and Tsai	2015	0.55	No
Kałdoński et al.	2020	1.27	Yes
Lemma et al.	2018	2.05	Yes
Li et al.	2016	0.45	No
Min	2015	0.00	No
Roychoudhry	2006	6.94	Yes
Sakaki et al.	2017	0.48	No
Shayan-Nia et al.	2017	0.55	No
Sohn	2016	1.57	Yes
Wei and Chou	2018	0.28	No

Note: The authors considered journals to be "Top journals" if their SJR index was higher than 1.00.

Source: Own elaboration.

According to information in Table 8 eight articles were included in the "Top journal" group (Dong et al., 2020; Garel et al., 2021; Griffin et al., 2021; Kałdoński et al., 2020; Garcia Lara et al., 2020; Lemma et al., 2018; Roychoudhry, 2006; Sohn, 2016).

5. Empirical results

Before presenting the meta-regression results the funnel plot, which is presented in Figure 2 should be discussed. This funnel plot is a scatter diagram of all values of the effect size against these effects' precision (as measured by the inverse of the effect sizes' standard errors). The funnel plot is used to show publication bias in the literature. The diagram (Figure 2) shows a slight left-skewness indicating that there could be a modest publication bias.

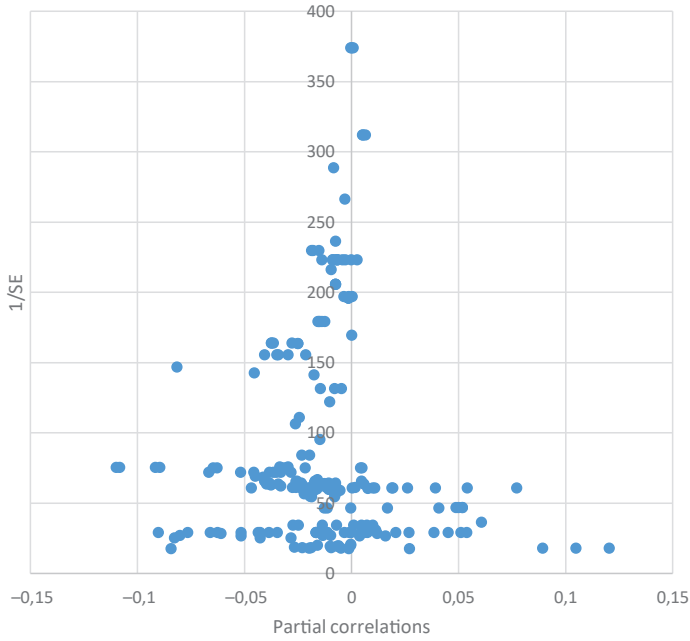

Figure 2. Funnel plot of partial correlations of real earnings management
Source: Own elaboration.

Table 9 reports the results obtained for the basic MRA model presented in Equation 4.

In order to limit the heteroscedasticity problem the weighted least squares (WLS) procedure was applied using inverse squared standard errors as weights (Doucouliagos & Stanley, 2013). The coefficient β_1 refers to publication selec-

Table 9. Results of the basic meta-regression analysis model

Parameter	Coefficient	Standard error	*t*-statistic	*p*-value
β_0	–0.006	0.005	–1.159	0.262
β_1	–0.693	0.480	–1.444	0.166

Notes: In the process of model estimation, the authors used a WLS procedure with inverse squared standard errors as weights. The *t*-statistics are based on robust standard errors clustered at the study and region levels.

Source: Own elaboration.

tion bias, its presence and its magnitude (Geyer-Klingeberg et al., 2019). Based on Doucouliagos and Stanley (2013) the strength of publication selection bias can be classified into one of three groups: (1) little or modest if β_1 is insignificant or $|\beta_1| < 1$, (2) substantial if β_1 is significant and $1 < |\beta_1| < 2$, or (3) severe if β_1 is significant and $|\beta_1| > 2$. The intercept (β_0) captures the importance of effect size beyond publication selection bias. The model has been estimated using robust standard errors clustered at the study level and region level which is a common approach used by other researchers (Geyer-Klingeberg, Hang, & Rathgeber, 2020). The results in Table 9 suggest that institutional shareholding measured with the different variables presented in Section 2 did not have a significant impact on REM beyond the publication selection bias as β_0 coefficient is not statistically significant. This conclusion is generally in line with many previous findings (Lemma et al., 2018; Shayan-Nia, Sinnadurai, Mohd-Sanusi, & Hermawan, 2017; Farooqi, Harris, & Ngo, 2014). The lack of a significant impact from institutional ownership on REM could suggest the need to distinguish the characteristics of institutional ownership such as its stability or a dual-class ownership structure (Kałdoński et al., 2020) when examining the relationship between institutional ownership and real earnings' management. At the same time modest or little publication selection bias can be observed, as β_1 coefficient is insignificant with its absolute value lower than 1. This conclusion confirms observation that could be derived based on the funnel plot presented above.

Further results (see Table 10) represent effect sizes detected by the basic models and estimated for different geographical regions which were established based on the World Bank classification.[6] The results presented in Table 10 indicate that there were differences in the relationship between REM and institutional ownership depending on which region was being considered. Thus drawing conclusions about the relationship between institutional shareholding and REM without accounting for geographical differences could lead to incorrect conclusions.

[6] The geographical regions are classified by the World Bank's Country and Lending Groups scheme (World Bank, 2016).

Table 10. Basic meta-regression analysis model estimated for different geographical regions

Region	β_0	β_1	Number of articles	Number of observations
NA	0.015** (2,616)	–5.345*** (–5.487)	9	58
ECA	–0.055 (–1.048)	1.224 (1.048)	1	48
EAP	–0.031** (–2.619)	0.800 (1.333)	6	95
SA	–0.002 (–0.038)	1.342 (0.798)	1	11
INT	0.024 (3.495)	–7.589 (–3.292)	2	13

Notes: The coefficients, standard errors, *t*-statistic and *p*-values are presented for the mean effects corrected for publication selection (β_0) and coefficients representing publication selection bias (β_1). Again a WLS procedure with inverse squared standard errors as weights was applied. The *t*-statistics are based on robust standard errors clustered at the study level and are presented in parentheses. The number of asterisks represent the level of statistical significance, where * indicate statistical significance at the level of 10%, ** at the level of 5% and * at the level of 1%. In order to avoid small-sample bias clusters with fewer than ten observations were excluded.

Source: Own elaboration.

Interesting results are obtained for North America. Positive and statistically significant β_0 indicate that there is a positive and significant relationship between institutional ownership and real earnings' management which contradicts many of previous findings (Alhadab & Nguyen, 2018; Alawag, 2021) and is typical for transient institutional investors. At the same time there is severe publication selection bias in North America sample. Based on Doucouliagos and Stanley (2013) the strength of publication selection bias can be classified as severe when β_1 is significant and $|\beta_1| > 2$. Similar results regarding the relationship between institutional ownership and real earnings' management has been found in the international sample but this time results are not statistically significant.

In case of other regions (Europe & Central Asia, East Asia & Pacific and South Asia) there is a negative association between examined variables which is in line with the basic model presented in Table 9. Nevertheless, only in case of East Asia and Pacific countries β_0 is statistically significant with little or modest publication selection bias. This could mean that institutional shareholders in East Asia and Pacific countries limited REM activities due to their monitoring role leading to limitation of corporate misbehavior. The basic MRA model assumes that the variation of the partial correlations across studies is associated with sampling error. In order to include various aspects of study design

that cause excess heterogeneity beyond sampling error an augmented model was created which accounts for both structural and methodological heterogeneity (Geyer-Klingeberg et al., 2019). The model is described in Equation 5. Dummy variables referring to the regions used in the different studies and the set of methodological heterogeneity variables described in Section 4 were included once again using a WLS approach with inverse squared standard errors as weights and robust standard errors clustered at the study and region levels. The adopted procedure provides results that are robust to publication selection bias (Geyer-Klingeberg et al., 2020).

The results of regression are presented in Table 11. When comparing the results presented for the basic MRA model (Table 9) with those of the augmented model (Table 11) it can be seen that the influence of institutional ownership on REM remains negative and becomes statistically significant. In the augmented model no significant publication selection bias was observed, which could mean that the variation of the effect size was explained by structural and methodological heterogeneity variables. All above allow the conclusion that in this sample the relationship between institutional ownership and real earnings' management is negative and significant beyond the publication selection bias.

When it comes to structural heterogeneity it is worth noting that North America has been left out as the base category so every other region has to be interpreted conditional on North America. Taking this into consideration it can be stated that there are no significant differences in mean effect sizes for East Asia and Pacific countries when compared with base category. In case of other regions (Europe & Central Asia, South Asia and international sample) significantly higher mean effect sizes can be observed which indicate that the mitigating effect of institutional shareholders in these regions is weaker when compared with North America. This could be explained by the short-term approach of transient institutional shareholders aiming to meet or exceed short-term targets which could empower earnings' manipulation (Kałdoński & Jewartowski, 2017).

The potential explanation for the higher mitigating effect in North America and East Asia & Pacific countries can be summarized in three points:

1. Long-term, stable institutional investors discipline non-entrenched managers and mitigate real earnings' management contrary to transient investors (Kałdoński et al., 2020).
2. Firms from countries with a market-based financial system, a common law system, strong shareholder protection, law enforcement and judicial efficiency and high accounting transparency attract more long-term institutional investors (Döring, Drobetz, El Ghoul, Guedhami, & Schröder, 2021). The USA is such a country.
3. The average length of the investment horizon is by far the longest in the USA (Döring et al., 2021).

Table 11. Analysis of structural and methodological heterogeneity

Parameter	Coefficient	Standard error	*t*-statistic	*p*-value
β_0	–0.038	0.014	–2.740	0.013
β_1	–0.591	0.850	–0.695	0.496
Structural heterogeneity (NA left out as the base category)				
ECA	0.058	0.031	1.898	0.074
EAP	0.030	0.019	1.614	0.124
SA	0.071	0.017	4.265	0.000
INT	0.028	0.007	3.885	0.001
Real earnings management measurement				
AbnEXP&AbnPROD	0.004	0.006	0.651	0.523
AbnPROD	–0.001	0.007	–0.176	0.862
AbnEXP	0.003	0.005	0.578	0.570
AbnCFO	0.012	0.009	1.356	0.192
AbnCFO&AbnEXP	–0.001	0.006	–0.215	0.832
Performance matched REM	–0.008	0.007	–1.148	0.266
Data characteristics				
Average year	–0.003	0.001	–4.177	0.001
Time span	0.001	0.001	0.859	0.402
Estimation characteristics				
Fixed effects	0.001	0.009	0.089	0.930
Endogeneity	0.005	0.002	2.756	0.013
AEM substitution	0.001	0.005	0.179	0.860
Publication characteristics				
Top journal	–0.010	0.004	–2.295	0.034
Total number of articles	19			
Total number of observations	225			

Notes: In the process of model estimation a WLS procedure with inverse squared standard errors as weights was used. The *t*-statistics are based on robust standard errors clustered at the study and region levels.

Source: Own elaboration.

In case of different proxies used for real earnings management measurement no significant impact on mean effect sizes is found when compared with aggregate measure (REM) that has been left out as the base category and there is no significant impact of the application of performance matched procedure in measurement of REM on effect sizes found. When looking at the characteristics of the data it can be observed that research based on more recent data provides a more significant negative relationship between institutional ownership and real earning's management. On the other hand the time span of performed research seems not to have any impact on mean effect sizes.

When looking at variables of the estimation characteristics the choices with regard to the use of fixed effects models are not important in the selected studies probably because huge majority of estimations (96%) was based on fixed effects models. On the contrary significant and positive coefficient of endogeneity variable indicate that in studies in which the endogeneity problem is being controlled authors tend to report a weaker mitigating role of institutional ownership. This could mean that some of conclusions derived from the literature are influenced by multicollinearity problem.

Another factor that could affect the relationship between institutional ownership and real earnings' management is the inclusion of a variable capturing accrual-based earnings management. According to other studies managers treat real manipulations and accrual earnings' manipulation as a substitution (Zang, 2012). One explanation for switching from AEM to REM could be the pressure of auditor scrutiny and regulations (Ghaleb, Kamardin, & Tabash, 2020). As reported by Ewert and Wagenhofer (2005) tighter accounting standards result in a simultaneously increased REM and reduced AEM. Another relationship between REM and AEM presented in the literature shows that institutional ownership was positively correlated with accruals and not correlated with real activities (Lemma et al., 2018). REM is more expensive so transient institutional investors "prefer" to manipulate short-term results by using accruals. This study however shows that the inclusion of the variable for AEM does not impact the mean effect sizes which could mean that there is no substitution effect between REM and AEM. This could be caused by the fact that most of the analyzed research covers post Sarbanes-Oxley periods.

Lastly research published in top journals seems to empower the negative relationship between institutional ownership and REM. This could mean that the authors wishing to publish in well-recognized journals tend to report results that are in line with the conclusions from mainstream research. As far as the robustness test is concerned the Fisher transformation was used as a remedy for the drawback of the partial correlation coefficient (Stanley & Doucouliagos, 2012). The results do not indicate any significant differences between the basic results of the meta-analysis and the results obtained with the use of Fisher's z-transformation.

Conclusions

Many authors of studies on the relationship between earnings' management and institutional ownership point to the fact that institutional investors in the ownership structure tend to restrict the practices of real earnings' management however, the literature review delivers some evidence for the ambiguity of this relationship. In this study in which an attempt was made to generalize the state of research with a meta-analysis taking into consideration this ambiguity the goal was set to examine the nature and significance of this relationship. The results from a basic MRA model confirm that institutional shareholding did not have a significant impact on REM beyond publication selection bias. At the same time it was not possible to confirm the hypothesis that publication bias exists in the literature. Perhaps the lack of significant relationship between institutional ownership and real earning's management supports the rather widespread view in the literature on this topic. After estimating the augmented model it was found a significant negative relationship between institutional ownership and real earnings management with little or modest publication selection bias. Thanks to the analysis of heterogeneity using the augmented model the conclusion can be drawn in different areas associated with structural and methodological heterogeneity.

Among other things this study examined differences in the impact of institutional ownership on real earnings' management in different regions of the world. Following the procedure presented by Geyer-Klingeberg and others (2019) a basic MRA model was estimated for different geographical regions identified based on the World Bank classification. It was found that there were significant mean effects corrected for publication selection bias in the case of North America. Nevertheless, the nature of this relationship was positive which contradicts much of previous research. It is worth noting that in case of this region it was discovered that there was a severe publication selection bias. A significant and negative relationship between institutional ownership and real earnings management beyond the publication selection bias was noticed for East Asia (mostly China and Taiwan) which could mean that institutional shareholders in these countries limited REM practices. At the same time no significant effects for other regions were found. The observed differences suggest that geographical differences should be taken into account when analyzing the relationship between REM and institutional ownership.

When looking at the results from the augmented model which allowed the capture different aspects of study design it was found that the lower mitigating effect of institutional ownership in case of Europe and Central Asia (Poland), South Asia (Bangladesh) and the international sample when comparing with the base category (USA), possibly due to lower quality of corporate governance mechanisms or the short-term approach taken by transient institutional investors. When looking at the results from the augmented model lower mitigating

effect of institutional ownership in case of Europe and Central Asia (Poland), South Asia (Bangladesh) and the international sample when comparing with the base category (USA) was found. This could be due to lower quality of corporate governance mechanisms or the short-term approach taken by transient institutional investors. Results of the study do not show dissimilarities in the results depending on the definition of real earnings' management. There are no significant differences in the mitigating effect of institutional ownership depending on how authors measure real earnings' management. It is worth noting that in the augmented MRA model an aggregate measure of REM has been left out as the base category.

Dependence on different data characteristics in the results is worth noting. It was found that more recent studies tend to indicate a stronger negative relationship between REM and institutional ownership. At the same time a longer research period seems not to have any substantial effect on these phenomena. There was no significant impact on the effect sizes from the usage of fixed effects models or substitution between REM and AEM. Interestingly the mitigating role of institutional ownership was weaker in the case of research where the endogeneity problem was addressed which could indicate that conclusions about the negative association of variables in interest reported by studies without endogeneity control are to some extent exaggerated. This study also looked at differences in the results depending on whether an article was published in a top journal. Research published in top journals seems to present a stronger negative relationship between institutional ownership and REM which is more in line with mainstream research.

It has been shown that there is the existence of ambiguity in the research on the relationship between institutional ownership and real earnings' management which could be the effect of modest publication selection bias in this research. Future researchers but also investors and corporate policy makers should take into account that the mitigating effect of institutional investors varies not only geographically but also in terms of publication characteristics such as its up-to-dateness or quality measured by the SJR index. Discovered geographical differences can be important for corporate policymakers in Europe and South Asia as a weaker negative relationship between institutional ownership and REM in these regions has been found which can be associated with higher agency problems. Appropriate steps should be taken in order to make it more difficult for managers to engage in real earnings' management practices.

Researchers, corporate policy makers and investors should be aware that research published in top journals tends to show stronger mitigating effect of institutions on REM practices. From one point of view this finding is reassuring as in most cases top journals provide a professional reviewing process. On the other hand researchers could take into account that this mitigating effect is in line with mainstream literature and thus hope to discover the same relationship in their research in order to increase the probability of being published

in top journals. In other words it can be difficult to publish non-mainstream results in top journals.

Another issue is that it was found that a stronger negative relationship between institutional ownership and REM can be associated with an endogeneity problem. The authors believe that this has a strong research implication which is the need to address the problem of endogeneity. The authors are aware that the relationship between institutional investors and real earnings' management can be approached from many angles. It was decided to focus on research concentrating on the presence of institutional investors which was usually measured by the size of their shareholdings. As this is only one of the possible measures further questions arise. One interesting issue seems to be the stability of institutional investors' ownership in the context of REM practices. Identifying other factors that may be suspected of affecting real earnings' management practices and examining the impact of these factors seems to be a much larger research challenge. This is the authors' plan for future research.

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