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AN ANALYSIS OF ACCRUAL-BASED EARNINGS MANAGEMENT IN LARGE SERBIAN COMPANIES

Analiza upravljanja obračunskim komponentama dobitka u velikim preduzećima Republike Srbije

Abstract

This study analyzes systematic differences in earnings management across 215 large companies operating in the real sector in the Republic of Serbia in the period from 2009 to 2017. To achieve the main goal of the study, we constructed an aggregate measure which covers several aspects of accrual-based earnings management. The results indicate that the accrual-based earnings management, which is immanent to economies with underdeveloped capital markets, weak investor protection and frequent changes in the regulatory framework coupled with inefficient judiciary, is widespread among large Serbian companies. Having found significant differences in the levels of earnings management across companies, we examined the mean values of the aggregate earnings management measure for numerous categorical variables in order to identify whether individual company characteristics are related to incentives for aggressive exploitation of accounting discretion.

Keywords: *earnings management, aggregate measure, accruals, accounting discretion, income smoothing.*

Sažetak

Studija analizira sistemske razlike u nivoima upravljanja računovodstvenim dobitkom među 215 velikih preduzeća realnog sektora Republike Srbije, u periodu od 2009. do 2017. godine. Za potrebe istraživanja konstruisana je agregatna mera koja obuhvata više aspekata upravljanja obračunskim komponentama dobitka. Rezultati ukazuju na to da je strategija upravljanja dobitkom računovodstvenim tehnikama, koja je imanentna privredama sa nerazvijenim tržištima kapitala, slabom zaštitom investitora, čestim izmenama zakonske regulative i neefikasnim sudskim sistemom, široko rasprostranjena među velikim srpskim preduzećima. Kako su razlike u nivoima upravljanja dobitkom među preduzećima značajne, prosečne vrednosti agregatnih mera upravljanja dobitkom izračunate su za mnogobrojne kategoričke promenljive, što je omogućilo identifikovanje individualnih karakteristika preduzeća koje se mogu dovesti u vezu sa povećanim podsticajima za agresivnim načinom eksploatacije računovodstvene diskrecije.

Cljučne reči: *upravljanje dobitkom, agregatna mera, obračunske komponente dobitka, računovodstvena diskrecija, uravnotežavanje dobitka.*

Introduction

In spite of the fact that regulatory bodies, practitioners and members of the academic community around the world pay considerable attention to earnings management, there is still no consensus about a universal definition which would cover all aspects of this process that is continually evolving and threatening to completely marginalize the fundamental postulate of financial reporting– faithful representation. Three years prior to the bankruptcy of Enron, one of the best known scandals in the history of the world economy, the long-standing Chairman of the U.S. Securities and Exchange Commission, Arthur Levitt Jr., warned the public about the rapid erosion in the quality of financial accounting information because managing earnings may be giving way to manipulation. Although all members of the accounting profession have become concerned about earnings management implications on reported earnings, authors have only managed to collect inconsistent documentation in literature and limited evidence of its negative effects. The causes of such discrepancy can be sought in the absence of a clear and applicable definition of earnings management, difficulties and limitations in the available measurement methodology, and meager results in identifying the practice of earnings management.

The global economy is nowadays characterized by heterogenous entities and their commercial activities, continual innovation, modern technologies, and daily appearance of new types of transactions. To maintain its universal, informational function in a turbulent economic environment, accounting is based on flexible principles that can be adapted and applied to new and changing circumstances. Any abuse of this flexibility jeopardizes one of the rare rigid rules of the accounting profession which concerns demonstrating objectivity and integrity in financial reporting processes. Misapplication of accounting flexibility and detraction from neutral accounting practice are at the root of every definition of earnings management. Below we present several frequently quoted definitions of earnings management:

- [30,p.92] “By earnings management I really mean “disclosure management” in the sense of a purposeful

intervention in the external financial reporting process, with the intent of obtaining some private gain (as opposed to, say, merely facilitating the neutral operation of the process). A minor extension to the definition would encompass “real” earnings management, accomplished by timing investment or financing decisions to alter reported earnings or some subset of it.”

- [2,p.3] “I define earnings manipulation as an instance where management violates Generally Accepted Accounting Principles (GAAP) in order to beneficially represent the firm’s financial performance.”
- [19,p.368] “Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers.”
- [29,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. The managed earnings result from taking production/investment actions before earnings are realized or making accounting choices that affect the earnings numbers and their interpretation after the true earnings are realized.”
- [21,p.18] “...using the flexibility in accounting within the regulatory framework to manage the measurement and presentation of the accounts so that they give primacy to the interests of the preparers not the users.”

From the above definitions it can be observed that the authors equate earnings management with lower or higher degrees of deviation from good (neutral) accounting practice, with the intention of achieving predefined objectives, and that it is the managers who initiate this process. These definitions are difficult to operationalize since managerial intent is unobservable. Also, none of the definitions set clear limits for differentiating “earnings manipulation... and the day-to-day struggles of managers to keep costs within budgets or to get revenues to meet desired sales targets” [12,p.1].

In defining earnings management, authors Ronen and Varda [29] start from the premise that there exists an objective and neutral earnings number which they call “short-term truth”. The management does not have to know the truth, but because of the superior information it holds its estimates of such amount can be taken as approximations of the “truth”. Earnings management occurs when reported earnings deviate (upwards or downwards) from the amount of objective and neutral earnings or approximation thereof. Such an assumption allows for establishing a broad definition of earnings management, which includes: beneficial earnings management – signaling long-term value; pernicious earnings management – concealing short or long-term value; neutral earnings management – revealing short-term true performance.

It is important to note that different opinions in literature do not a priori give a negative connotation to earnings management, but leave room for interpretations concerning communication of privileged information about a company’s future performance and prevention of informational confusion.

Earnings management strategies

The broader definition of earnings management according to which “earnings management that is a deliberate, systematic undertaking of activities aimed at reporting earnings in line with predetermined goals... and as such (in the context of whether they constitute permitted accounting practice) cannot be considered a black-and-white process” [27,p.128], means that earnings management strategies must also be placed in a broader context. Earnings management incentives are only one aspect that affects the preparation and use of accounting information. Although the storm of corporate scandals, in which creative accounting plays a major role, has undermined the trust of investors in financial statements, it should not be forgotten that managers also stand little to gain from investors relying on alternative sources of information which are not under management’s control. For these reasons, Hellman [20] believes that managers also have incentives to avoid manipulation of earnings.

The area of earnings management which attracted most attention from the professional and scientific communities is income smoothing, that is “...a game of “smoothing out” the peaks and valleys in a corporation’s income flow in order to reduce the apparent volatility in the corporation’s returns. Thus, managements characteristically attempted to hide “excess earnings” in “rainy day reserves” in order to use such funds later to smooth out undesired declines in the firm’s earnings” [7,p.22]. Income smoothing can have both positive and negative implications for the quality of financial statements, depending on the motivation it is induced by. According to Li and Richie[25], there are two schools of thought on what motivates managers to implement this strategy. The first one holds that income smoothing is an efficient way of communicating privileged information, given that it is easier for investors to make projections of future performance based on smooth earnings path. The second school of thought asserts that smoothing is an exercise undertaken by managers in an attempt to enhance their managerial careers or compensation. The results of a study carried out by Graham, Harvey and Rajgopal [18] are interesting because they interviewed more than 400 executives to determine the factors that drive reported earnings. They showed that overwhelming 96.9% of survey respondents prefer the strategy of earnings smoothing. While only 15.6% of CFOs admitted that bonus payments were one of the reasons why they opted for this earnings path, this result needs to be considered with caution because it can be difficult to elicit unambiguous responses when asking about respondents’ compensation in a survey. The study emphasizes the dominant role of investors’ reactions in deliberately choosing a policy of stable earnings, because smooth earnings result in lower risk of misinterpreting information presented in financial statements and underestimating the company’s market value.

Accounting principles have evolved, inter alia, with the aim of overcoming informational limitations of cash basis accounting (realized cash flows have timing and matching problems that cause them to be a “noisy” measure of firm performance). Properly formulated and implemented accounting policies should result in an earnings number that smooths irrelevant cash flow volatility in such a

way that the volatility of reported earnings reflects the underlying economic variation in the company's operations. There are opinions in literature that the basic function of earnings is the effective informational allocation of cash flows to reporting periods via the accrual process [15,p.969], and that cash flows are excessively volatile and do not reflect the current or future performance as well as earnings do [9,p.7]. Accrual components of earnings give them incremental informative value¹. The benefit of accruals comes in the shape of greater persistence and predictability of reported earnings, but accruals also introduce a new set of problems. To the extent that the management use their discretion and information advantage to opportunistically manipulate accruals estimation and recognition, earnings will become a less reliable measure of firm performance [8,p.5].

Managers can opportunistically manage accruals or the timing or structure of operations, investments or financial decisions. Both strategies are reflected in the amount of the reported earnings. Depending on whether manipulative behavior is focused on accrual components of earnings or predominantly on cash flows, the strategies of earnings management are classified into accrual-based earnings management and real earnings management.

In the first instance, companies do not alter their usual operational practices, but modify accounting policies and estimates, within the professional and regulatory frameworks (or outside of them), in order to communicate the desired amount of earnings. In the spirit of high-quality financial reporting, accounting policies should be the best reflection of the firm's economic reality and conducted economic transactions. Still, the flexibility²

inherent in accounting standards often places companies in such situations that they need to opt out of permissible accounting methods that have materially different implications for their financial positions, which allows for the managing of earnings that does not go outside of the regulatory framework.

In the second instance, managers conduct real activities and focus on actual transactions that not only impact the reported earnings, but also affect cash flows. Acceleration of sales through price discounts and relaxation of credit terms, reductions in discretionary costs and increases in production volumes in order to reduce the costs of sold goods are only some of the examples of real economic activities whose ultimate objective is to achieve the financial reporting goals. By contrast with accrual-based earnings management, real earnings management does not detract from professional and regulatory frameworks and remains beyond the judgement of the external auditors. In their study of the prevalence of these two earnings management strategies in 38 countries, Enomoto, Kimura and Yamaguchi [13] reveal that accrual-based earnings management is prevalent in economies with weaker outside investor protection and lower level of legal enforcement, while conversely, in countries with highly efficient judiciary, relatively concentrated ownership, strong investor protection and large stock markets, accrual-based earnings management is substituted by earnings management that is based on real transactions. Given that Serbia belongs to the first group of countries, this study is focused on accrual-based earnings management.

Research design

Following the methodology that Leuz, Nanda and Wysocki [23] developed for the purpose of investigating systematic differences in earnings management across thirty countries, below we present the structural elements of the aggregate measure used in our analysis as a proxy for earnings management in large Serbian companies. In this article, we made an effort to modify this country-level aggregate measure to the firm-level aggregate measure. Our descriptive evidence suggests that accrual-based earnings management is prevalent in Serbia, despite the lack of

1 Concurrent recognition of sales revenues and related accounts receivable is an obvious example of recognition of future cash flows that impact both the current period's income statement and statement of financial position (without affecting the cash flow statement), and matches the timing of accounting recognition with the timing of the economic benefits from sale. If the collected cash differs from the previously recorded amounts of revenues and receivables, the adjustments (subsequent corrections) arising from the estimation error will impact the quality of the accrual component of earnings; thus, the quality of earnings is decreasing in the magnitude of accrual estimation errors. It follows that the extent to which accrual components of earnings map onto cash flow realizations allows for direct assessment of earnings quality.

2 "An accounting choice is any decision whose primary purpose is to influence (either in form or substance) the output of the accounting system in a particular way" [14,p.256]

capital market incentives, induced by an underdeveloped stock exchange market³.

Defining the measures for earnings smoothing/ earnings volatility requires demarcation between the informational scope of earnings, on the one hand, and cash flows, on the other, in order to understand where the differences between them come from. Also, to prevent the misuse of accrual components of earnings for concealing relevant information, cash flows must not be bypassed in measuring volatility as a qualitative characteristic of earnings.

Consistent with a number of previous studies, Leuz, Nanda and Wysocki [23], Francis, et al. [15] and Gaio and Raposo [17], and considering all of the aforementioned, we have measured the earnings smoothness (first indicator of earnings management) as the ratio of the firm-level standard deviation of operating earnings to the standard deviation of operating cash flows:

$$EM_{1,i} = \frac{\sigma(PFO_{i,t})}{\sigma(CFO_{i,t})} \quad (1)$$

where: $EM_{1,i}$ – is earnings volatility/smoothness⁴ of company i measured as the ratio between standard deviations (σ) of operating earnings and operating cash flows; $PFO_{i,t}$ – is operating income⁵ of company i for period t scaled by lagged total assets, while $CFO_{i,t}$ – is net cash flow of company i for period t scaled by lagged total assets.

For the purpose of this study, cash flow from operations is computed indirectly by subtracting the accruals from earnings⁶, where accrual component of earnings is computed following the study by Dechow et al.⁷:

$$Acc_{i,t} = (\Delta CA_{i,t} - \Delta STP_{i,t} - \Delta Cash_{i,t}) - (\Delta CL_{i,t} - \Delta STD_{i,t} - \Delta TP_{i,t}) - Am_{i,t} \quad (2)$$

where: $Acc_{i,t}$ – is the total accrual component of earnings of company i for period t ; $\Delta CA_{i,t}$ – is the change in total current assets of company i for period t compared to period $t-1$; $\Delta STP_{i,t}$ – is the change in short-term financial placements of company i for period t compared to period $t-1$; $\Delta Cash_{i,t}$ – is the change in cash and cash equivalents of company i for period t compared to period $t-1$; $\Delta CL_{i,t}$ – is the change in current liabilities of company i for period t compared to period $t-1$; $\Delta STD_{i,t}$ – is the change in short-term debt of company i for period t compared to period $t-1$; $\Delta TP_{i,t}$ – is the change in income tax payable of company i for period t compared to period $t-1$; $Am_{i,t}$ – is depreciation and amortization expense of company i for period t . The changes in short-term financial placements and short-term debt are excluded from the calculation because they are associated with the company's financial (not operating) activities.

The standard deviation of earnings includes changes in actual company performance, but also reflects the impact of the company's implemented accounting policies and estimates. Scaling by cash flow from operations controls for differences in the variability of economic performance across companies. If a company uses accruals as an instrument for earnings management, the variability in earnings should be lower than the variability in cash flows. It follows that low values of $EM_{1,i}$ indicate that insiders exercise accounting discretion to smooth the reported earnings.

The assumption that one of the functions of reported earnings is the effective allocation of cash flows to reporting periods leads us to the conclusion that accrual components of earnings incorporate predictions of future cash flows. In this respect, opportunistic use of accruals presumes, for example, accelerated recognition of future revenues or deferred recognition of current expenses, in order to hide the undesirable decrease in current financial performance, or understatement of earnings using opposing techniques for the purpose of creating hidden reserves for future periods. In both cases, accrual components of earnings conceal shocks to the operating cash flow, resulting in negative correlation between changes in accruals and

3 At the end of 2017, the total number of shares listed on the regulated market in Serbia was 33 [4,p.5].

4 Due to the dichotomous nature of volatility, there is no consensus among researchers about whether low volatility is a desirable attribute of earnings, which would be logical, if the management obey the spirit of faithful representation, or whether it is an undesirable attribute of earnings that implies earnings numbers that detract from the actual firm performance.

5 This indicator is derived from Serbian statutory financial statements, specifically items ADP 1030 – Operating profit, and ADP 1031 – Operating loss. Given that the majority of items that are subject to management's discretion (such as, for instance, impairment of assets or write-off of uncollectible receivables) in Serbian statutory financial statements are classified under other expenses, in order to facilitate comparison with international studies the difference between other income and other expenses has been added to operating earnings.

6 ADP 1054 and ADP 1055.

7 The original model and calculations are adjusted to statutory financial statement forms effective in the Republic of Serbia.

changes in cash flows. As a result, the second measure of earnings smoothing is defined as the Spearman's coefficient of correlation between these variables [22],[23]:

$$EM_{2,i} = \rho(\Delta Acc_{i,t}, \Delta CFO_{i,t}) \quad (3)$$

where: $EM_{2,i}$ – is earnings smoothness of company i measured as the firm's Spearman's correlation (ρ) between change in accruals and change in cash flows from operations; $\Delta Acc_{i,t}$ – is the change in total accruals of company i for period t compared to period $t-1$, scaled by lagged total assets; $\Delta CFO_{i,t}$ – is the change in cash flows from operations of company i for period t compared to period $t-1$, scaled by lagged total assets.

Although the negative correlation between the change in accruals and the change in cash flows naturally results from the accrual basis of accounting, unusually high negative correlation (with a value close to -1) suggests a higher level of smoothing of reported earnings in order to neutralize the changes in cash flows that, without such an intervention, would be reflected in the amount of reported earnings [28,p.269]. In this case, a lower value of $EM_{2,i}$ indicates a higher level of earnings management.

Extensive use of reporting discretion is reflected in the magnitude of accruals; therefore, our third indicator approximates the level of earnings management to the ratio between the absolute value of firm's accruals and the absolute value of firm's cash flows from operations⁸ [22],[23]:

$$EM_{3,i} = - \frac{|Acc_{i,t}|}{|CFO_{i,t}|} \quad (4)$$

where: $EM_{3,i}$ – is the magnitude of accruals of company i , computed as the company's negative median of the absolute value of accruals scaled by the absolute value of cash flows from operations; $|Acc_{i,t}|$ – is the absolute value of accruals of company i for period t ; $|CFO_{i,t}|$ – is the absolute value of cash flows from operations of company i for period t . Due to the uniform model for interpreting earnings management measures, indicator $EM_{3,i}$ is transformed into a negative median, so that its lower value implies a higher degree of earnings management.

Finally, based on a sample of annual reports obtained from the Compustat database for the 1976-1994 period,

Burgstahler, David and Dichev [6] provided compelling empirical evidence of unusually low frequencies of small decreases in earnings and small losses and unusually high frequencies of small increases in earnings and small positive income, from which they concluded that firms engage in earnings manipulations to avoid reporting earnings decreases and losses. Degeorge, Patel and Zeckhauser [11] documented earnings management driven by three thresholds: reporting positive profits, however small, sustaining recent performance, and meeting analysts' expectations. Although there is relatively little room for maneuver with regard to using discretionary rights to report positive results in the periods of high real losses, it appears that small real losses can easily be translated into small reported profits by exploiting accounting flexibility. That is why, in international studies, the ratio of small reported profits to small reported losses is often used as a measure for earnings management (see, for instance, [5],[23]).

The ratio of small reported profits to small reported losses, however, can only be computed at an aggregate level (when sub-samples being compared contain more than one company). Given that in this study earnings management measures must be computed on the firm level, this indicator cannot be computed for companies that during the analyzed period did not sustain small losses. As an alternative to this indicator which implies a specific perspective of accounting manipulation (exercising discretion to increase earnings when the level of earnings is slightly below zero), the frequency of small positive results in the analyzed period is taken into account (a similar indicator was also used by Lang, Raedy and Yetman [22,p.374], where a higher frequency of small reported profits indicates a potentially higher extent of accounting discretion to influence earnings reported in financial statements). A firm-year observation is classified as a small profit if net income⁹ scaled by lagged total assets is in the range [0,0.1].

$$EM_{4,i} = - \frac{\#SmPosNI_i}{\#AFS_i} \quad (5)$$

8 The scaling controls for differences in company size and profitability.

9 ADP 1064 in statutory financial statement forms in Serbia.

where: $EM_{4,i}$ – is the negative value of the relative frequency of small profit of company i ; $\#SmPosNI_i$ – is the number of (small) profits of company i , scaled by lagged total assets in the range $[0,0.1]$; $\#AFS_i$ – is the number of available consecutive annual financial statements for company i .

Indicator $EM_{4,i}$ was also transformed into negative value of the relative frequency of small reported profits, because we wanted each individual earnings management measure to have the same direction of relationship with the aggregate measure. After the transformation, lower value of indicator $EM_{4,i}$ points to a higher level of earnings management (around zero) and vice versa.

Finally, we constructed an aggregate measure as an overall summary measure that sublimates various aspects of earnings management in a way that allows for its unambiguous interpretation (each of the four earnings management measures have the same sign of association with the earnings management score). The aggregate measure of earnings management is derived from the algorithm described below [16].

Companies are ranked according to each of the four individual earnings management measures in such a way that the lowest indicator value is assigned the lowest rank, while the highest indicator value is assigned the highest rank. After generating rankings, in the next step the rankings for four individual earnings management indicators are aggregated at the firm level. The aggregate earnings management measure for an individual company in the sample is computed by averaging the rankings of four individual earnings management measures as set out in equation (6).

$$AEM_i = \frac{RANK(EM_{1,i}) + RANK(EM_{2,i}) + RANK(EM_{3,i}) + RANK(EM_{4,i})}{4} \quad (6)$$

where: AEM_i – is the aggregate earnings management measure for company i ; $RANK$ – is the ranking function defined in such a way that the lowest rank corresponds to the lowest numerical value, while the highest rank corresponds to the highest numerical value; $EM_{1,i}$, $EM_{2,i}$, $EM_{3,i}$ and $EM_{4,i}$ – are individual indicators for earnings management measures of company i , as defined by equations (1), (3), (4) and (5), respectively.

Sample selection

Our data set consists of historical financial data from annual reports of large companies operating in the real sector in the Republic of Serbia. In 2016, economic activity in the Republic of Serbia was carried out by 97,543 entities (excluding entrepreneurs). However, our sample includes only large companies due to several reasons. Although in 2016 305 large companies constituted merely 0.31% of the total number of companies, their dominant position in the Serbian economy provides justification for placing them in the center of our analysis. In the year of sampling, large companies engaged 44.5% of total assets, participated with 57% of net equity, generated 41% of total operating income and 39% of net income, while their participation in accumulated losses amounted to around 40%¹⁰. Furthermore, IFRS reporting is mandatory for large Serbian companies, which implies homogeneity in terms of the regulatory framework for financial reporting. Finally, large companies are considered public interest entities (due to a large volume of invested capital, large number of employees, high turnover or extensive business operations in sectors of strategic importance for the national economy) and are placed under greater external scrutiny by political and regulatory bodies. As a result, they are expected to devote more attention and resources to the quality of financial statements and internal control systems, which should reduce the risk of procedural errors and errors in estimation, as well as of different types of manipulations.

To be included in the sample, the companies had to meet the criteria related to annual revenues and the value of total assets, as required by the Law on Accounting effective at the time of sample selection.¹¹ Thus, the number of companies in the sample was reduced to 223. The sample includes companies whose total assets in 2016 exceeded EUR 17,500,000 and whose annual revenues in the same

10 Indicators were prepared by authors according to the Financial Statements Annual Bulletin for 2016 (Serbian Business Registers Agency).

11 Entities are classified by size according to the criteria laid down by Serbian legislative framework. The criteria are related to the average number of employees, annual revenues, and value of total assets. Companies must satisfy at least two criteria in order to be classified into a specific size category.

year amounted to more than EUR 35,000,000. In the last phase, companies founded after 2013 were excluded from the sample in order to ensure that each considered company in the database had financial statements for at least five consecutive reporting periods. The number of companies in the sample dropped to 215 companies that met the specified criteria. The financial statements from the sample period from 2009 to 2017 (9 reporting periods) were collected for all companies in the sample, generating a final sample of 1,884 firm-year observations.

Large companies in the real sector of the Serbian economy are mainly focused on trading and manufacturing, as around 74% of them were registered in these two sectors alone. The largest number (around 93%) are organized as limited liability companies, which reflects the rudimentary level of development of the national capital market, given that the largest companies in Serbia do not have a legal form that allows them to issue shares in order to collect capital from qualified investors.

Empirical results

Table 1 presents descriptive statistics of individual earnings management indicators ($EM_1 - EM_4$) computed for each large Serbian company in the sample and of the $EM_1 - EM_3$ indicators taken from the study conducted by Leuz, Nanda and Wysocki [23] on a sample of annual financial statements of 8,616 companies in 31 countries for the 1990-1999 period. The differences in methodologies for measuring EM_4 do not allow for the comparison of results.

The international cluster analysis demonstrated that earnings management is less prevalent in outsider economies that are characterized by low ownership concentration, extensive outsider rights and large stock markets [23,p.525].

The results for large Serbian companies are in line with these conclusions and confirm that an unstimulating business environment, plagued by infrastructural problems associated with an underdeveloped capital market and poor regulatory quality, leads to an alarming situation in financial reporting. Namely, the statistics of earnings smoothing, after controlling for the volatility of cash flows, shows that earnings are smoother in Serbia than in other countries because the mean EM_1 value of 0.317 is below the lowest value calculated by the aforementioned authors for Austria (0.345). The negative correlation between the changes in accruals and changes in cash flows indicate that earnings smoothing is more pervasive in Serbia than in other countries (the mean value of EM_2 for Serbia is -0.966, which is behind Greece where the largest recorded negative correlation was -0.928). Regarding the aggressive use of discretionary rights, approximated by the magnitude of accrual components of earnings, Serbia is also behind the country with the lowest recorded value of the EM_3 indicator (the mean value of this indicator for Serbia is -0.948, compared to the lowest value of -0.848 recorded in Germany). Although the methodology limitations present potential weaknesses of the results comparison, which is why we shall take conclusions with reserve, we can still consider them as warning signals of an impaired accounting practice among large Serbian companies caused by the opportunistic use of discretion in earnings measurement.

Table 2 presents correlations among firm-level individual earnings management measures in order to verify whether combining them into the aggregate measure is appropriate. The earnings management measures are positively correlated, and the correlation is statistically significant at the 5% level. As expected, the highest correlation exists between the EM_1 and EM_2

Table 1: Descriptive statistics of individual earnings management measures

	EM_1		EM_2		EM_3		EM_4
	Serbia	Other countries	Serbia	Other countries	Serbia	Other countries	Serbia
Mean	0.317	0.541	-0.966	-0.849	-0.948	-0.558	-0.500
Standard Deviation	0.285	0.100	0.105	0.056	0.138	0.128	0.132
Median	0.239	0.539	-0.995	-0.861	-0.985	-0.552	-0.444
Min.	0.002	0.345	-0.999	-0.928	-1.522	-0.848	-1.000
Max.	1.656	0.765	0.005	-0.722	-0.399	-0.297	-0.111

Variables EM_1 , EM_2 , EM_3 and EM_4 are defined by equations (1), (3), (4) and (5), respectively. The columns referring to Serbia present descriptive statistics of individual earnings management measures computed at firm level. The columns referring to other countries present descriptive statistics of individual earnings management measures computed at country level based on [23,p.515].

Source: prepared by the authors.

indicators (0.635 Pearson correlation and 0.688 Spearman's correlation), given that they capture different aspects of earnings smoothing. Moderately positive Pearson and Spearman's correlations between EM_1 and EM_3 (0.329 and 0.245) indicate that companies that had higher magnitude of accruals (compared to cash flows) also have lower volatility of earnings, meaning that they opted for such accounting practices that enabled a smooth earnings path. In addition, correlation analysis reveals that companies with higher magnitude of accruals more often exhibit small profits, as indicated by positive and statistically significant correlations between EM_3 and EM_4 .

Furthermore, the factor analysis (analysis of the principal component factors) suggested that it was appropriate to present four earnings management measures with a single factor and that each variable had a certain degree of uniqueness that it did not share with the other variables. Factor loading and uniqueness are presented in Table 3.

Given that the correlation and factor analysis suggested that it was appropriate to combine the four measures into a single summary score, the aggregate

earnings management measure was computed at firm level using the equation (6). The following tables present the mean values of the aggregate earnings management measure by different categorical variables. Lower rankings of the aggregate measure suggest higher levels of earnings management and vice versa.

The mean value of aggregate earnings management score for all companies in the sample is 108; there are striking differences across firms, as the aggregate earnings management measure has large cross-sectional variation (43.61). The lowest recorded aggregate measure score is 18.87 (it symbolizes the highest level of earnings management), while the highest recorded score is 207.25 (lowest level of earnings management). Table 4 presents the structure of companies according to their commercial activity¹². Given that only a small number of companies belong to certain sectors, similar sectors with a small number of companies were grouped together. The sectors that recorded the most

12 Companies doing business in Serbia are classified according to the national standards for classification of entities as set out in the Regulation on Classification of Commercial Activities.

Table 2: Correlation matrix of earnings management measures

	EM_1	EM_2	EM_3	EM_4
EM_1	1.000	0.688	0.245	0.332
EM_2	0.635	1.000	0.249	0.377
EM_3	0.329	0.172	1.000	0.233
EM_4	0.267	0.149	0.189	1.000

Variables EM_1 , EM_2 , EM_3 and EM_4 are defined by equations (1), (3), (4) and (5), respectively. This table presents Pearson correlations below the diagonal, and Spearman's correlations above it. The presented coefficients are significant at the 5% level.

Source: prepared by the authors.

Table 3: Factor loading and uniqueness of earnings management measures

	$Factor_1$	Uniqueness
EM_1	0.875	0.235
EM_2	0.781	0.389
EM_3	0.556	0.691
EM_4	0.491	0.759

Variables EM_1 , EM_2 , EM_3 and EM_4 are defined by equations (1), (3), (4) and (5), respectively. The presented factor loading and uniqueness are the result of the performed analysis of principal component factors.

Source: prepared by the authors.

Table 4: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by industrial sectors

Sector code	Sector name	Number of companies	Mean
C	Manufacturing	93	114.95
G	Wholesale and retail trade	66	104.91
J+ M+R	Information and communication + Professional, scientific and technical activities + Art, entertainment and recreation	12	127.80
H	Transportation and storage	10	106.42
F	Construction	13	67.11
D+E	Electricity, gas, steam supply + Water supply and sewerage	10	108.94
B	Mining	5	82.85
A	Agriculture, forestry and fishing	6	105.19
	Total	215	108.00 (SD 43.61)

AEM is the aggregate earnings management measure for company i .

Source: prepared by the authors.

favorable aggregate measure score (127.8) comprise non-manufacturing, quaternary economic activities, while manufacturing also scored above the sample mean (114.95). The highest level of earnings management occurred in construction and mining where the mean values of the aggregate measure were 67.11 and 82.85, respectively.

Table 5: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by legal form

Legal form	PE	LTD	JSC	BFE	
Number of companies	12	157	42	4	215
Mean <i>AEM</i>	99.56	109.83	108.89	52.00	108.00

PE is a public sector entity; LTD is a limited liability company; JSC stands for a joint-stock company and BFE is a branch office of a foreign entity, while *i* is the aggregate earnings management measure for company *i*.

Source: prepared by the authors.

Table 5 presents mean values of the aggregate earnings management measure for companies classified according to their legal form. The results which show that the mean value of the aggregate measure of public sector enterprises is below the values of LTDs and JSCs by nearly 10 ranks are not surprising. Namely, it is well-known that public sector enterprises, besides their strategic importance and participation in infrastructural activities, also show lower efficiency in using resources and have poorer financial performance compared to private sector companies. Besides the fact that they are associated with high operational and financial risks that spill over into one part of the economy, the indicators (for the 2007-2013 period) also point to the presence of substantial financial reporting manipulation risks (for more on this topic, see). In line with such conclusions is the fact that, out of all large public enterprises in the sample, in the last two years of the sample period only one third got unmodified audit opinions, providing reasonable assurance that their financial statements present their financial position and financial performance truly and objectively, in all materially significant aspects, in accordance with the accounting regulations effective in the Republic of Serbia. In the remaining eight public sector enterprises, in the last two years of the analyzed period auditors predominantly issued modified opinions (for seven companies), while for one public sector enterprise the auditor issued a disclaimer of opinion because of the going concern issue. Bearing in mind that public sector

enterprises are controlled by the political establishment, which is putting personal and political objectives above the financial and public interests, and that already lenient requirements for transparent financial reporting are further relaxed in public enterprises, it is clear why the aggregate measure signalizes that their financial statements should be taken with a grain of salt.

On the other hand, it could be expected that JSCs would have the highest aggregate measure score, signifying the lowest level of earnings management, given the global practice which shows that listed companies are required to satisfy rigorous criteria in terms of the quality of their financial statements. The mean value of the aggregate measure for JSCs (108.89) is somewhat lower than the mean value of the aggregate measure for LTDs (109.83), which can be explained by the fairly lax legislation that regulates this area in Serbia, on the one hand, and the presence of small number of JSCs on the capital market, on the other. The regulated market on the Belgrade Stock Exchange consists of Prime Listing, Standard Listing and Open Market segments, where the Rules on Listing specify stricter criteria for listing securities on the Prime Listing segment. One of the requirements that is relevant for enhancing the quality and transparency of financial statements concerns audit opinions, where companies that wish to be on the Prime Listing are required to have an unmodified audit opinion on their financial statements for the year preceding the year of filing the application for such listing, while companies that wish to be on the Standard Listing are permitted to have modified opinions. However, during the security listing period a modified audit opinion is also permitted for companies that are on the Prime Listing . By contrast with the indolence of regulatory bodies verifying the financial statement quality, that is immanent to economies with underdeveloped capital markets, the SEC (in the USA) does not accept any financial statement for which auditors issued anything other than unmodified opinions (for more on this topic, see). In addition, in 2016 a total of 4 Serbian companies appeared on the Prime Listing of the Belgrade Stock Exchange, with just as many on the Standard Listing, while 43 companies were listed on the Open Market segment, out of which only 9 companies were included

in our sample. The mean value of aggregate measure for companies in the sample that were listed on the organized capital market in 2016 ranged from 127.37 (Open Market) to 141.25 (Standard Listing), which indicates that even weak regulatory requirements reduce the risk of earnings management. Namely, relatively low score of the aggregate measure for JSCs is a consequence of a higher degree of earnings management in joint stock companies that are not listed on the regulated capital market.

Tables 6a, 6b and 6c present the mean values of the aggregate measure by categorical variables that are linked to financial performance. According to the results presented in Table 6a, companies that reported losses in at least one year of the sample period had greater incentives for accruals management and earnings smoothing than companies that did not report losses. At the same time, companies that reported losses frequently, in six or more periods, had a higher aggregate measure (108.2) than companies in which losses occurred sporadically (up to five times), which indicates that the companies that have serious financial difficulties are less likely to resort to accounting techniques for the purpose of presenting better financial performance than it actually is.

From our evidence on the mean values of the aggregate earnings management measure by share of net

income in total assets (Table 6b), it can be observed that the pervasiveness of earnings management is the greatest in companies that exhibit positive, yet small net income whose share in total assets is up to 5%. The low score of their aggregate measure (83.76) signalizes that discretionary rights were exercised extensively in the strategy of loss avoidance by shaping small losses into small profits. It is symptomatic that 40% of these companies (23 out of the total of 57), which did not report losses in the nine-year period, recorded the mean aggregate measure value of 77.65, while the mean value of the aggregate measure of 29 companies whose share of net income in total assets was up to 5% and that reported losses at least once or twice in the sample period was higher by 10 ranks (87.65). Companies whose net income moves significantly in the positive direction and away from zero (share of net income in total assets greater than 10%) have an aggregate measure that is higher than the aggregate measure recorded for the riskiest category by 50 ranks on average. The results presented in Table 6c which show the mean value of the aggregate earnings management measure according to the frequency of small profits confirm the conclusions of the previous studies that high frequency of small profits is an indicator of earnings smoothing, given that the mean value of the aggregate measure for companies in which small

Table 6a: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by frequency of net losses

Number of years in which $NI < 0$	0	1-2	3-5	>5	Σ
Number of companies	109	56	28	22	215
Mean <i>AEM</i>	116.34	99.69	92.00	108.20	108.00

NI is net income before tax, scaled by average total assets of company *i*; *AEM* is the aggregate earnings management measure for company *i*.

Table 6b: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by share of net income in total assets

<i>NI</i> share in total assets	<0	Up to 5%	5%-10%	10%-15%	15%-20%	>20%	Σ
Number of companies	51	57	57	25	16	9	215
Mean <i>AEM</i>	99.54	83.76	114.02	134.86	144.94	131.01	108.00

NI share in total assets is the mean value of net income before tax, scaled by total assets of company *i*; *AEM* is the aggregate earnings management measure for company *i*.

Table 6c: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by frequency of small losses

$\#SmPosNI_i$	<4	4	>4	Σ
Number of companies	23	137	55	215
Mean <i>AEM</i>	136.61	116.59	74.64	108.00

Where: $\#SmPosNI_i$ is the number of (small) profits of company *i*, scaled by total assets, in the range [0,0.1]; *AEM* is the aggregate earnings management measure for company *i*.

Source: prepared by the authors.

profits appeared up to three times is higher by nearly 62 ranks than the mean value of aggregate score of companies in which small profits appeared five or more times.

Higher sales volatility (approximated by the standard deviation of sales revenues) highlights the volatile nature of a company's core business and increases the level of uncertainty in accounting estimates. It seems related to lower predictability, lower persistence of earnings, lower accruals quality and greater room for maneuver as regards earnings smoothing. The mean values of the aggregate measure presented in Table 7 suggest that the increase in sales volatility increases the pervasiveness of manipulative accrual management.

Capital intensive companies are characterized by a high share of fixed assets in total assets and a high level of operating leverage expressed as fixed to variable costs proportion, which makes them especially sensitive to market fluctuations and changes in sales. Although a high share of long-term assets creates room for opportunistic accounting choices in terms of classification of assets, selected depreciation method, estimates of useful life, measurement for impairment purposes, etc., the results presented in Table 8 reveal that the exploitation of discretionary rights linked to long-term assets is not a

prevalent way of earnings management in large Serbian companies. Companies with the lowest mean value of the aggregate earnings management measure (87.19) have the lowest share of fixed assets in total assets, while an increase in the level of capital intensity is accompanied by an increase in the aggregate measure. Exceptions are companies with the highest share of fixed assets (over 70%) whose mean value of the aggregate measure is somewhat above the mean value of the aggregate measure for the entire sample (108.5); however, we should not forget the fact that this group of companies includes 8 public enterprises (the mean aggregate measure value of those 8 public enterprises whose share of fixed assets is above 70% amounts to 75.3), which has significant implications for the aggregate measure score of this category of companies.

The length of the operating cycle, computed as the sum of days inventory and days accounts receivable, depends on the nature of the company's core commercial activity, but also on the efficiency of asset management. Table 9 shows that the increase in the length of the operating cycle is accompanied by the decrease in the average earnings management score, which means that the risks of manipulating earnings are higher in companies with longer operating cycles. The transportation, media,

Table 7: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by sales volatility

<i>vol_SALES</i>	0-0.1	0.1-0.2	0.2-0.4	0.4-0.7	>0.7	Σ
Number of companies	35	50	53	36	41	215
Mean <i>AEM</i>	123.61	120.39	102.17	105.88	88.96	108.00

Where *vol_SALES* is sales volatility of company *i* measured as the standard deviation of sales revenues (scaled by total assets); *AEM* is the aggregate earnings management measure for company *i*.

Source: prepared by the authors.

Table 8: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by capital intensity

<i>CI</i>	0-0.3	0.3-0.5	0.5-0.7	>0.7	Σ
Number of companies	62	63	61	29	215
Mean <i>AEM</i>	87.19	116.39	120.30	108.50	108.00

CI is capital intensity of company *i* measured as the mean ratio of long-term assets over total assets; is the aggregate earnings management measure for company *i*.

Source: prepared by the authors.

Table 9: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by length of operating cycle

<i>OPERCYCLE</i>	up to 90 days	91-180 days	over 180 days	Σ
Number of companies	68	98	49	215
Mean	114.74	111.84	90.96	108.00

OPERCYCLE is the length of operating cycle of company *i*, computed as the mean value of the sum of days inventory and days accounts receivable; is the aggregate earnings management measure for company *i*.

Source: prepared by the authors.

communications, science and art and electricity and water supply sectors have the shortest operating cycles. The longest operating cycle belongs to the construction sector (178 days). The operating cycles of two sectors with the largest number of sampled companies, the manufacturing and trade sectors, have nearly the same length of around 160 days, yet the differences in the nature of their core businesses are reflected in their capital intensity (the average share of long-term assets in the manufacturing sector is nearly 50%, while in trading companies this share is 32%) and sales volatility (average standard deviations in sales revenues in the manufacturing and trade sectors are 0.33 and 0.65, respectively). Since the difference in their average earnings management scores is 10 ranks in favor of the manufacturing industry, we can assume that the incentives and possibilities for managing earnings by implementing aggressive accounting policies and estimates, are partially determined by a number of factors that define the nature of the company's core business, not only the length of its operating cycle.

A closer examination of the relation between earnings management and leverage is important for several reasons. On the one hand, highly leveraged firms may be riskier because of their financial difficulties and may have a need for more additional financing, higher agency costs, and even an increased risk of bankruptcy. The managers of companies that are close to breaching loan covenants are inclined to distort particular financial indicators, which may contribute negatively to earnings quality and jeopardize the decision usefulness of earnings. The previous research has documented that total debt to total assets is significant in seven out of nine earnings management strategies, where firms with more debt are more constrained by their debt covenants and, hence, attempt to loosen these constraints by choosing accounting policies which increase their net income. The fact that companies with pronounced earnings management activities have a high level of financial leverage

was also confirmed by a study carried out in 37 countries covering the 1989-2009. On the other hand, a high level of financial leverage does not have to, by definition, jeopardize the quality of earnings, as under such circumstances creditors demand more transparent information and pay more attention to whether financial ratios are at the expected level. It appears that the examination of the influence of leverage on earnings management is especially important in emerging markets where the primary group of financial statement users are not investors. In Table 10, companies are divided into four categories according to their average financial leverage level. The mean values of the aggregate measure by leverage support the hypothesis that highly leveraged firms have greater incentives for aggressive use of accounting flexibility. A difference of 44 ranks between the mean values of the aggregate measure of the group of the least and most leveraged companies indicates that the quality of financial accounting information of highly leveraged companies is questionable, as there is high risk of earnings distortion. A particularly worrisome fact is that 89% of companies in the highest leverage category reported small profits at least four times in the sample period.

Conclusion

Earnings management is a globally widespread practice that takes different forms in the developed and developing economies. Its increasingly aggressive character jeopardizes the quality of financial accounting information and undermines public trust in the financial reporting system. Also, it presents an incredibly challenging area for researchers, as earnings management is hardly observable and difficult to measure. Furthermore, the absence of consensus regarding its definition and the extent to which it is desirable as a way of communicating privileged insider information hinders setting a clear path for researchers to follow.

Table 10: Mean values of the aggregate earnings management measure for large companies in the Republic of Serbia by leverage

<i>LEV</i>	0-0.5	0.5-0.8	0.8-1	>1	Σ
Number of companies	31	57	38	89	215
Mean <i>AEM</i>	137.10	114.98	109.20	92.88	108.00

LEV is the financial leverage of company *i* measured as the mean ratio of total liabilities to total assets; aggregate earnings management measure for company *i*. Source: prepared by the authors.

The methodology for assessing the level of earnings management, used in our empirical analysis, includes four firm-level proxies that capture the outcomes of management activities focused on circumventing the stated accounting rules to avoid showing the firm's actual economic performance. In addition, the four-component earnings management measure captures various aspects of exercising discretion to manage the reported earnings. Our work contributes to the literature on national specificities in corporate financial reporting and to increasingly extensive literature on reported earnings characteristics in emerging markets. Descriptive statistics of the aggregate earnings management measure, based on 215 large Serbian companies that operated in the real sector from 2009 to 2017, suggests that the Serbian economy is not immune to earnings distortion practice and that capabilities and incentives for misrepresentation of the firm's true performance are affected by firm's characteristics. Namely, the nature of company's core business determines the length of its operating cycle, level of capital intensity, sales volatility, and the industry it belongs to. The results indicate that the sales volatility and length of operating cycle significantly influence earnings management. After analyzing the mean values of the aggregate measure by categorical variables, it can be concluded that large Serbian companies use accounting discretion in sales revenues more than in depreciation cost estimations. The mean values of the aggregate measure by legal forms suggest that the quality of corporate governance and the rigor of the regulatory framework significantly impact the pervasiveness of earnings management across companies. Our findings reveal that the companies listed on the Belgrade Stock Exchange and operating under the supervision of the Securities Commission have far higher aggregate measure score than the public sector enterprises. These results are expected since it is difficult to control the management appointed on the basis of political, not professional and ethical suitability.

This paper shows that earnings management is driven by loss avoidance and that high incidence of small profits may be the red flag for earnings manipulations. The assessment of financial statement quality requires constant vigilance in companies with low profitability because low positive earnings could be the result of earnings management activities rather than economic reality.

Finally, our empirical findings highlight an important link between leverage and earnings management and document systematic pattern showing that high leveraged firms have strong incentives to use accounting discretion to mask their economic performance. Although a relatively organized banking sector in Serbia performs an annual financial statement review as part of the risk control system, the fact that the average financial liabilities to total assets ratio amounted to around 30% supports the conclusion that large Serbian companies manage to avoid this type of supervision by financing a large portion of their assets through their operating liabilities.

To the best of our knowledge, there is a limited number of empirical studies that had thoroughly examined earnings management practice in Serbia. Although this issue has been extensively theoretically discussed in Serbian academic circles, there is no reliable evidence necessary to draw conclusions about its prevalence. The purpose of this study is to present additional evidence about earnings management in Serbia and to raise awareness among domestic investors and regulatory bodies about its pervasiveness in spite of the lack of capital market incentives. Additionally, we revealed a systematic pattern between the aggregate measure and categorical variables, contributing to our understanding of the relation between individual characteristics of companies and incentives for earnings management.

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