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Earnings Management in Business Groups during the SARS-CoV-2 Pandemic

Abstract

This paper aims to assess the influence of the SARS-CoV-2 pandemic on the accrual-based earnings management patterns in non-financial business groups in the Warsaw Stock Exchange (WSE). This study contributes to the existing literature by considering earnings manipulation behaviours in assessing the reporting data quality, both in consolidated financial statements of business groups and individual financial statements of parent undertakings. The research methods are based on the Modified Jones Model with the simultaneous separation of individual subcategories of accruals via cross-sectional analysis and time-series data approach (separately for each business group). Empirical findings supported the presumption that earnings manipulation schemes in the SARS-CoV-2 transitional (2020) and crisis (2021) periods differed statistically compared to the previous 2019 and 2020 years, respectively. Moreover, this article proved that the company's potential financial distress could imply accrual-based earnings management behaviours and moderate the association between the SARS-CoV-2 pandemic and earnings manipulations activities. Finally, the obtained results confirmed that although business groups have an expanded set of balance sheet policy instruments, the quality of earnings reported in the individual financial statements of parent undertakings and the consolidated financial statements of business groups were similar during the SARS-CoV-2 pandemic.

Keywords

accrual-based earnings management | business group | parent undertakings | the SARS-CoV-2 pandemic

JEL Codes

G10, G32, M41

1. Introduction

Concentrated forms of business cooperation are characterised by a high degree of economic and organisational integration, creating a single decision-making centre that exercises control over the group of companies or partnerships constituting a collective. A business group is a typical example of a hierarchical cooperation structure between enterprises operating in various areas of the world.

The financial reporting system of a business group provides information on the comprehensive economic performance effects of all enterprises forming its structure. Accounting of business groups, the final expression of which is the preparation of consolidated financial statements, is characterised by a clear specificity reflected in an extended set of potential balance sheet policy instruments that might be used, among others, to alter earnings intentionally. Financial

results influence numerous groups of public company stakeholders, being the most important economic measure disclosed in income statements (Degeorge et al., 1999). As Ansoff (1979) noted, reported earnings can be considered an indicator of the business' economic efficiency, compensation for the risk incurred by investors and a factor attracting capital necessary to implement innovations and contribute to the company's future growth. However, due to its accrual nature, earnings are particularly susceptible to manipulation consistent with prior managers' intentions, while the appropriate selection of balance sheet policy tools affects both the size and structure of the financial result.

The accounting policy of a business group is influenced by a wide set of determinants, among which macroeconomic factors are regarded as essential (Glaum & Wyrwa, 2011). Periods of economic prosperities and downturns affect the implemented

solutions in the fields of the firm's value and its assessment, the valuation of capital attributable to minority shares and the changes in the size of the capital group (Remlein et al., 2021). Similarly, economic turbulences are frequently an incentive to modify current patterns of earnings management behaviours in public enterprises (Filip & Raffournier, 2014; Grabiński, 2016; Jahmani et al., 2016; Lisboa & Kacharava, 2018). The prior literature suggests that earnings management premises result from market forces as well as the assumptions of agency theory. Changes in market conditions of business activity in contraction years may encourage managers to manipulate earnings upwards to avoid accounting loss or earnings reduction and meet analysts' expectations (Maruszewska & Tuszkiewicz, 2024). On the other hand, during a financial crisis, firms are also suspected of managing earnings downward, primarily through further worsening the significant financial loss generated in the downturn period and transferring accounting items that would negatively impact the company's economic performance in the future (Burgstahler & Dichev, 1997; Ayers et al., 2006). Moreover, a negative effect of the information content of accounting data during economic turbulence can be tied to low incentives for opportunistic actions by managers who may strive to manipulate earnings to obtain bonuses stipulated in the contract and dependent on pre-determined results, which are more difficult to achieve in the course of ordinary business (Holthausen et al., 1995; Shuto & Iwasaki, 2014; Rudiawarni & Budianto, 2022). Inconclusive findings in the literature highlight the need for continuing earnings management amid financial crisis studies, especially since previous research concerned different crises examined in various periods and countries taking into account diverse types of companies (see, *inter alia*, Franceschetti, 2020).

This paper investigates the impact of the SARS-CoV-2 pandemic on the evolution of accrual-based earnings management patterns in non-financial business groups listed in the Main Market of the Warsaw Stock Exchange (WSE). Thus, this research relates to two important scientific issues. Firstly, as noted by Remlein et al. (2021), in the contemporary economy, there is a growing interest in business groups as accounting entities that significantly impact the development of the capital market. Secondly, the pandemic crisis affecting the global economy since 2019 has varied from previous economic downturns in relation to the runup period and its outbreak (Reinhart, 2022). Due to the specificity, the turmoil

caused by the SARS-CoV-2 pandemic could have shaped the manager's motivation to alter earnings during the greatest financial distress of the 21st century differently than before.

This study contributes to the existing literature in several ways. Due to the business groups being the central reference point of the research, this analysis enables the simultaneous comparison of reporting data contained in the consolidated financial statements of a group of companies or partnerships and individual financial statements of parent undertakings. This approach has a certain element of novelty considering prior studies. A direct comparison of the earnings reported in both types of financial statements is the core for understanding the roles of parent and subsidiary undertakings in the structures of business groups, the preferred methods of transferring incomes, and earnings redistribution in companies related by capital, personnel or contract. Hence, the applied approach allows for the judgement of whether earnings management behaviours implemented in the business groups are consistent with the patterns adopted in the parent firms that exercise control over other undertakings. Moreover, this study, alongside cross-sectional testing, considers the analysis of the time-series data approach specific to individual enterprises. The proposed research methodology involves the extraction of individual subcategories of discretionary accruals by creating equations separately for individual tested companies and not for a sample of enterprises. The main reason for choosing such a solution was the belief that earnings management patterns are specific to each company (and not the industry in which the company operates), which can be confirmed by, among others, assumptions of the upper echelons theory (Hambrick & Mason, 1984; Plöckinger et al., 2016; Taleatu et al., 2020). Therefore, although the main references in this research are observations from 2019–2021, the calculations necessary for grasping earnings manipulation behaviours were performed for companies whose shares were traded in WSE continuously in 2012–2021. Capturing earnings-altering patterns in companies whose shares have been traded on stock exchanges for long periods is another distinctive feature of this article.

2. Literature review

2.1. The specificity of business groups as reporting entities

The business group operating in the Polish capital market (following the provisions of Art. 3 of the Polish Accounting Act referred to as capital group) includes parent undertakings with its subsidiary and jointly controlled subsidiary undertakings (Adamczyk, 2017). According to the balance sheet law, a characteristic feature of this formation is exercising control over another obligation, which means the ability of the parent company to direct the financial and operating policy of another undertaking to derive economic benefits from its operations. From the perspective of the regulatory sphere, business groups do not have legal personality but are only created by at least two enterprises with such a personality. However, in the light of balance sheet law, a business group is perceived as a separate accounting entity, and its functioning is related to, among others, the obligation to prepare consolidated financial statements, which rests with the parent company. The purpose of consolidation is to combine the financial statement of undertakings comprising a group of companies and partnerships by aggregating the respective items in the financial statements of the parent and subsidiary undertakings,

considering the necessary exclusions and adjustments (Adamczyk, 2017). The parent undertaking should prepare the annual consolidated financial statements of its group of companies or partnerships covering the data of the parent undertaking and subsidiary undertakings at all levels, presented in such a manner as if the groups constituted a single undertaking. Therefore, it is prepared in the same way as the company's separate financial statements. Consolidation of financial statements may be carried out using the full method, the proportional method or the equity method, and the selection of the appropriate procedure depends primarily on the scope of control exercised by the parent firm over subsidiary undertakings. For the sake of order, in exceptional situations, the parent company may not prepare consolidated financial statements, not include some subordinated undertakings in consolidation or exclude some undertakings that constitute the business group from consolidation.

Due to their peculiarities, business groups have broader opportunities for selecting balance sheet policies than individual economic units. In the case of a group of companies or partnerships, the accounting policy can be considered on two levels, taking into account both accounting solutions typical for a firm preparing financial statements on general principles, as well as accounting practices applicable only within business groups (Figure 1). The economic objectives

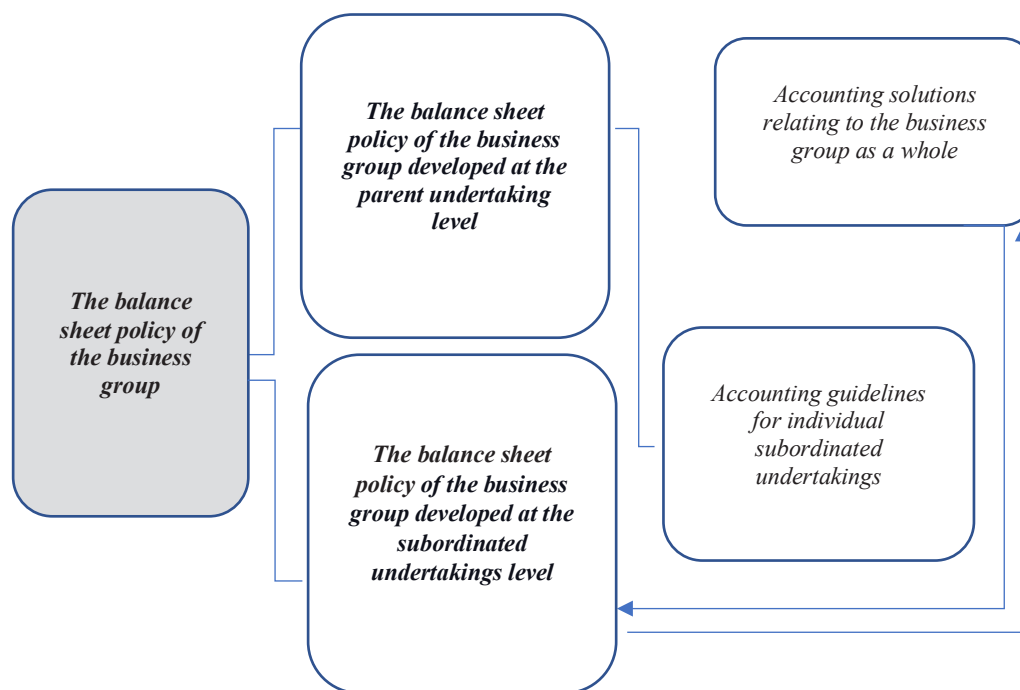


Figure 1. A two-dimensional approach to the balance sheet policy of a business group
Source: own elaboration based on Remlein (2021)

of lower-level parent undertakings and subsidiary companies are usually consistent with the main goal of the higher-level parent undertaking. The spectrum of the balance sheet policy tools within business groups concerns both instruments resulting from the accounting policy implemented by the parent company, as well as instruments applicable at the level of consolidation of individual financial statements (e.g., regarding the exceptions and exemptions from consolidation, the net asset valuation, the valuation of the non-controlling interest) and that embedded within the group's internal balance sheet policy (e.g., the transfer pricing policy, the cash-pooling transactions) (Remlein, 2021).

2.2. Earnings management patterns within business groups

Earnings management occurs when managers use judgment in financial reporting, flexibility and discretion in the selection of accounting policies, as well as timing and structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes (Healy & Wahlen, 1999). The insight above highlights that managers can manipulate earnings using two distinct approaches. The first of them, referred to as accrual-based earnings management, applies to the registration, recording and presentation of economic events by a creative and non-standard interpretation of legally permitted accounting principles, and these procedures may result in both direct management in terms of shifting revenue and cost streams over time and misreporting (Degeorge et al., 1999). The second, known as real earnings management, concerns implementing operational activities beyond the previously used patterns to convince the company's stakeholders that the set economic objectives have been achieved within the company's core activities (Roychowdhury, 2006).

From an instrumental point of view, business groups have a wider spectrum of instruments to influence their earnings result in a desired way. As Remlein et al. (2021) pointed out, one of the tools of real earnings management used in business groups is designing transactions of shares acquisitions in other companies in such a way as to obtain the desired capital relationship after the transaction. McKee (2005) indicated acquiring or spinning off new highly

profitable companies to a group of related entities, as well as selling shares in low-profit companies as important methods of earnings manipulation in business groups. The mentioned earnings management techniques are described in the literature, respectively, as the big bet on the future and the throw-out of a problem child, allowing the parent company to select the appropriate consolidation circle. Piosik and Strojek-Filus (2013), based on surveys conducted among representatives of the financial and accounting services, confirmed that apart from commonly used balance sheet policy instruments such as depreciation write-offs, write-offs for receivables and inventories, and recognising and releasing provisions, business groups manage earnings through goodwill write-offs, methods and estimates used to conduct goodwill impairment tests, and matching the conditions for conducting transactions between entities that constitute the business group. Referring to the last mentioned tool of influence reported earnings quality, Gavana et al. (2022) examined the relationships between related party transactions and different types of earnings management in Italian enterprises. Their research results lead to the conclusion that companies with highly related party transactions are less likely to raise earnings by overproduction and, consequently, the spread of fixed production costs over a larger number of manufactured goods and the reduction of fixed cost per unit sold. On the other hand, the significant positive relationships between related party transactions and abnormal levels of discretionary expenses suggest that firms striving to increase earnings might intentionally reduce selling costs, general and administrative expenses, or research and development expenditures to achieve the set objectives. Generally, Gavana et al. (2022) showed a statistically positive relationship between related party transactions and managing earnings downward but not in relation to manipulating earnings upward. As an aside, similar studies on the Chinese capital market were previously conducted by Cheung et al. (2009) and Hwang et al. (2013).

The prior literature indicates inclusive findings about the scope and directions of earnings management practices in companies with capital, personal or contractual ties. Referring to international comparisons, Beuselinck et al. (1999) investigated the determinants of earnings management practices within multinational corporations from 91 countries. They proved that companies conducting their operations through several foreign and domestic affiliates strive to alter earnings through

coordinated reporting strategies across subordinated undertakings. At the same time, parent companies established in countries with high-quality institutions tend to manage consolidated earnings more through subsidiaries in low-quality institutional environments. Alawang (2021), based on observations of business groups from 73 countries, revealed that earnings management patterns in parent and nonparent undertakings are statistically different. He noted that parent undertakings have lower abnormal production costs and abnormal discretionary expenses than subordinated firms, but, on the other hand, parent companies have higher abnormal cash flow from operations than other entities that constitute the business groups.

However, the vast majority of existing studies on undertaken issues have been prepared to take into account country-specific conditions of business activity and applicable accounting, commercial and tax law in the considered region. Kim and Cheong (2006) proved that affiliations to business groups are one of the important factors affecting earnings management behaviours in Korean firms. They statistically evidenced that integrated enterprises tended to alter earnings more intensely than independent firms and suggested that conducting business operations within the group of companies provides the controlling shareholders of subordinated firms with stronger incentives to engage in earnings manipulations to cover up their opportunistic behaviour. Beuselinck and Deloof (2014) showed that Belgian business groups alter their earnings more than non-integrated companies, explaining that group firms have more tools and opportunities to manage earnings than stand-alone enterprises. Furthermore, they found that fully-owned group firms implement earnings management to a greater extent, confirming the hypothesis that controlling shareholders face fewer constraints in managing the earnings of a fully-owned subordinated firm. Bonacchi et al. (2018) revealed that the accrual-based and real earnings management levels in first-level subsidiary undertakings in Italy are generally higher than in parent companies. Moreover, they discovered that parent undertakings use their subsidiaries in the area of earnings manipulation to beat a threshold and avoid financial losses but not to meet market analyst expectations. Khan and Kamal (2022), exploring earnings management patterns in business groups in the context of parent–subsidiary links, gathered evidence that Pakistani companies belonging to business groups reduces accrual-based earnings management. However, the same conclusion

concerning real earnings management activities in tested enterprises could not be confirmed. In turn, Muttakin et al. (2017) presented different conclusions regarding companies from Bangladesh, claiming that the level of discretionary accruals is positively associated with business group affiliation status.

2.3. Earnings management during the SARS-CoV-2 economic turbulences

The economic situation significantly impacts the functioning of enterprises in the capital market. The outbreak of the pandemic contributed to changing the conditions of the country's macroeconomic environment, affecting, among other things, the adopted earnings management behaviours (Kłysik-Uryszek & Uryszek, 2022). Lizińska and Czapiewski (2023), based on estimated values of discretionary accruals, showed that non-financial joint-stock companies operating in the WSE were less prone to raise earnings but more eager to manage earnings downward during the first year of the pandemic period. Moreover, they indicated that public companies tend to adopt a big bath strategy through accounting-type earnings manipulation in the pandemic years. On the other hand, they proved statistical differences in patterns of real earnings management for the pre-pandemic (2019) and the pandemic (2020) years computed by the mix of abnormal levels of discretionary expenses and abnormal levels of cash flow from operations. Generally, according to the authors, examined companies evolved into more aggressive income-increasing strategies *via* real transactions during the financial crisis caused by the SARS-CoV-2 pandemic. An international comparison of the impact of the pandemic on earnings management for 46 countries by Lee et al. (2024) based on quarterly financial statements showed that firms in countries more affected by COVID-19 outbreaks were more likely to manage earnings through real earnings management than firms in countries with less severe COVID-19 outbreaks. Additionally, the estimation results prepared for Poland indicate the occurrence of negative average values of discretionary accruals separated by various models, indicating a tendency to manage earnings downward by Polish companies in 2020. Yaşar and Yalçın (2024), focusing their attention on enterprises from four European countries (i.e., the United Kingdom, Italy, Spain, and Turkey), proved that during periods of high uncertainty, managers tended to engage in accrual-based earnings management

more than in pre-pandemic years. At the same time, the directions of managerial influence on the reported data might be varied (both for income-increasing and income-decreasing activities). These conclusions apply to all analysed countries. Different conclusions for 15 European countries were presented by Lassoued and El Mehdi (2021). They found that, indeed, during economic turbulences in 2020, examined companies tended to present lower-quality reported earnings. However, managers strive to obtain the set economic objectives by altering earnings upward, which can be explained by the desire to display an acceptable level of financial results in stakeholders' eyes and alleviate the negative effects of the pandemic on the company's economic performance. Ali et al. (2022), investigating public companies from the G-12 countries, discovered that examined enterprises seemed less involved in earnings management practices during the SARS-CoV-2 pandemic than in the pre-pandemic period. They also discovered that entities in countries strongly hit by the consequences of the SARS-CoV-2 pandemic did not report a significant decrease in earnings manipulation by accruals.

Several studies based on qualitative research examine the impact of the SARS-CoV-2 pandemic on earnings quality. Usheva and Vagner (2021), using a standard questionnaire survey, found that due to restrictions on the company's operations during the pandemic disease, managers considered managing earnings by creating a certain reserve in the form of a savings account. Utilising the cookie jar reserves technique was supposed to help the company bargain with more critical conditions and evade bankruptcy. In turn, Comporek and Shchyrba (2024) showed that most finance managers and employees of financial and accounting services expressed that the pandemic has contributed to the intensification of earnings manipulation in the Polish capital market. The perception of the SARS-CoV-2 outbreak as a significant factor of changes in earnings management patterns in public companies was statistically related to such variables as the interviewees' previous experience with earnings management activities, assessment of the ethicality of earnings-focused decisions and the size of the company computed by sales revenues.

It is noteworthy that the number of publications on the links between the earnings management phenomenon and the SARS-CoV-2 pandemic is growing rapidly. The vast majority of them are concerned with the consequences of the impact of the pandemic on informativity and quality of reported

data from the perspective of selected countries (Jordan et al., 2021; Yan et al., 2022; Fu et al., 2022; Hsu & Jan, 2023; Garfatta et al., 2023) or specific types of enterprises under consideration (Taylor et al., 2022; Brannan et al., 2024, etc.).

3. Methodology

3.1. Research sample

The research sample used in this paper included 189 business groups whose shares were continuously traded in the WSE from 2012 to 2021. Capital groups conducting business in banking and insurance (codes 110 and 120 according to the WSE sector classification) and those that did not provide all the necessary financial data for calculations were removed from the research sample. The research sample selection, including stable companies listed on the stock exchange for at least ten consecutive years, was motivated by applying a time-series data approach in separating discretionary accruals and extracting abnormal accruals separately for individual business groups. The proposed research method allowed, among other aspects, to avoid presenting above-average discretionary accruals in connection with IPOs, which constitute an incentive to put forward the company's financial result in a better light in the eyes of its stakeholders and engaged managers in more aggressive income-increasing earnings management (Lizińska & Czapiewski, 2016).

3.2. Accrual-based earnings management measures

The impact of the pandemic crisis on accounting-type earnings manipulations was measured by analysing the extent and directions of discretionary accruals over the period 2019–2021. Accordingly, if SARS-CoV-2 does affect earnings manipulations, significant differences in the magnitude and sign of discretionary accruals were expected between the pre-pandemic period (2019), transitional period (2020) and the crisis year (2021). The separation of the transition period in the study is explained by the fact that the first confirmed cases of SARS-CoV-2 and the state of epidemic threat in Poland occurred in March 2020, and therefore, the entire year 2020 cannot be considered a pandemic.

The interpretation and assessment of the scope of the earnings management phenomenon in reporting entities depends significantly on the adopted method of extracting individual subcategories of accruals. In this research, the separation of discretionary accruals (DACC) was carried out by the Modified Jones model (Dechow et al., 1995). Thus, the value of abnormal accruals equals the random error in the examined regression model. When discretionary accruals deviate significantly from zero, it suggests a higher degree of accrual-based earnings manipulation in the company. The Modified Jones model adopts the following analytical formula:

$$\frac{TACC_t}{TA_{t-1}} = \alpha_1 \left(\frac{1}{TA_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_t - \Delta REC_t}{TA_{t-1}} \right) + \alpha_3 \left(\frac{PPE_t}{TA_{t-1}} \right) + \varepsilon_t \quad (1)$$

Where: $TACC_t$ – total accruals in period t (determined by the balance sheet approach or the cash flow approach); TA_t – total assets in year t ; REV_t – revenues from sales in year t ; REC_t – net receivables in year t ; PPE_t – gross property, plant and equipment in year t ; $\alpha_1, \alpha_2, \alpha_3$ – a firm-specific parameter (in the regression model); ε_t – a random error.

The calculation of total accruals refers to changes in non-monetary components of working capital (Garcia Lara et al., 2005; Mendes et al., 2012; Wróblewski et al., 2017). The balance sheet approach enables observing the aggregate effects of earnings management processes, such as accelerating the recognition of receivables or write-offs for receivables and inventories, calculating total accruals based on the following formula:

$$TACC_t = (\Delta CA_t - \Delta CASH_t) - (\Delta CL_t - \Delta) - DEP_t \quad (2)$$

Where: CA_t – current assets in period t ; $CASH_t$ – short-term investments in year t ; CL_t – current liabilities in year t ; STD_t – short-term debts in year t ; DEP_t – depreciation in the fiscal year t ; other designations – as above.

The proposed research approach allowed also obtaining an answer to the question of whether the applied methods of calculations of individual subcategories of accruals (cross-sectional *vs* firm-specific time-series approach) determine statistically the scale of the earnings management phenomenon in business groups during the SARS-CoV-2 pandemic. The time-series and cross-sectional approaches deliver conceptually diverse estimates of discretionary accruals. The first method uses

data from an estimation period during which no systematic earnings management is expected to occur. Its disadvantage is the assumption that the temporal model requires a sample that provides at least these observations for each company. Consequently, companies under investigation are usually mature business entities with greater reputational capital to lose if earnings manipulations are uncovered. Hence, this firm-specific time-series data approach could introduce a selection bias (Callao et al., 2017). In turn, the cross-sectional approach assumes homogeneity across firms in the same industry (Larker & Richardson, 2004), so the probability of detecting irregularities in reported data is lower if such accruals are correlated for several companies from the same industry. Jeter and Shivakumar (1999) even noticed that only enterprises whose accruals are negative relative to the industry benchmark could be identified as earnings manipulators. In turn, Bagnoli and Watts (2000) showed that companies are much more willing to manage earnings if their direct competitors in the sector also strive to alter financial results. Hence, when estimating discretionary accruals using cross-sectional regression, the value of nondiscretionary accruals may be overstated, and, in turn, the level of abnormal accruals may be underestimated.

3.3. Empirical models specification

To examine the influence of the SARS-CoV-2 pandemic on earnings management patterns in business groups and parent undertakings, we use the ordinary least square (OLS) with robust standard errors on the pooled panel sample. The formula of the adopted model is as follows:

$$DACC_t = \alpha_0 + \alpha_1 YEAR + \sum_{i=1}^{n=9} CONTROL\ VARIABLES + \varepsilon_t \quad (3)$$

The main variable *YEAR* tests the effect of the SARS-CoV-2 pandemic on the variance of discretionary accruals (Aljughaiman et al., 2023; Yaşar & Yalçın, 2024). As control variables describing firm-specific attributes that potentially affect the magnitude of accrual-based earnings management in the tested sample, we used assets structure (*TANG*), growth opportunities (*GO*), company profitability (*ROA*), the level of retained earnings (*RET*), long-term liabilities (*LTL*), leverage (*LEV*), operational risk (*EVOL*), effective tax rate (*ETR*) and non-debt tax shield

Table 1. Calculation methodology for variables

Variable	Descriptions	Literature background
Dependent variable		
DACC	Discretionary accruals separated by the Modified Jones model using time-series ($DACC_{TS}$) or cross-sectional data approach ($DACC_{CS}$)	Dechow et al. (1995)
Independent variables		
YEAR	Dummy variable for the year of interest. It was coded as 1 for observations in the 2020 pandemic year (2021 recovery year) in the 2019–2020 (2020–2021) regression and 0 for the 2019 (2020) observation in the 2019–2020 (2020–2021) regression.	Aljughaiman et al. (2023); Hsu & Jan (2023); Yaşar & Yalçın (2024)
DIST	Variable measured by the Z-score Altman model for public companies	Altman (1968); Prayanthi & Kakunsi (2017)
Control variables		
TANG	The share of property, plant and equipment in total assets in year t	Elkemali (2024)
GO	The ratio of intangible assets to total assets in year t	Teoh et al. (1998)
ROA	Return on assets (ROA) in year t	Lassoued & Khanchel (2021)
RET	The sum of supplementary capital and retained earnings to total assets in year t	Comporek (2022)
LEV	The ratio of firm's interest-bearing debt to total assets in year t	Khahn & Thu (2019)
LTL	The share of long-term liabilities to total assets in year t	Rey et al. (2020)
EVOL	Relative chain increase in operating profits in year t	Jang & Kim (2017)
ETR	The ratio of income tax paid to gross profit in year t	Blaylock et al. (2012)
NDTS	The ratio of depreciation to total assets in year t	Gregova et al. (2021)

Source: Own elaboration

(*NDTS*). The calculation methodology and a reference to the relevant literature describing the relationship between earnings management and control variables are provided in Table 1. The data meet the test assumptions (normality of errors, heteroscedasticity and multicollinearity) for the OLS model.

Following Aljughaiman et al. (2023), this paper investigates the potential effect of a company's financial distress during the SARS-CoV-2 pandemic on the implemented schemes of accrual-based earnings management. To provide a more comprehensive picture of earnings manipulation practices during 2019–2021, we add additional variables to the regression model, namely *DISTRESS* and interaction terms between *DISTRESS* and *YEAR* (Equation 4).

$$DACC_t = \alpha_0 + \alpha_1 YEAR + \alpha_2 DIST + \alpha_3 YEAR * \\ * DIST + \sum_{i=1}^{n=9} CONTROL\ VARIABLES + \varepsilon_t \quad (3)$$

3.4. Research hypotheses

Based on the existing research gap, this study examined the following hypotheses:

- H.1. The quality of earnings reported in parent companies' financial reports differs statistically from those reported in the consolidated reports of business groups during the SARS-CoV-2 pandemic.
- H.2. Accrual-based earnings management patterns in business groups operating in the WSE in the crisis (transitional) years varied significantly compared to the transitional (pre-pandemic) years, respectively.

4. Results

4.1. Variation of earnings quality reported by business groups and parent undertakings

The first step of empirical research aimed to assess the direction and extent of accrual-based earnings management in business groups operating in the Polish capital market. Table 2 presents the descriptive statistics of discretionary accruals estimated separately for groups of companies or partnerships and parent undertakings in 2019–2021, respectively. The decomposition of total accruals into discretionary and nondiscretionary accruals leads to the conclusion that in the period under consideration, examined business groups tend to manage earnings downward in the pre-pandemic (2019) period (Figure 2). In the crisis year (2021), the mean values of discretionary accruals estimated for groups of companies or partnerships were positive, while the transitional year (2020) calculations were ambiguous.

Parallel conclusions regarding earnings management behaviours may be drawn from the analysis

of mean values of discretionary accruals computed for the parent undertakings in 2019–2021 (Table 2). In the pre-pandemic year (2019) tested enterprises exercising control over another undertaking within the business groups tended to reduce financial results and manipulate earnings downward. Findings for the transitional year (2020) are inconsistent and depend on the selection of the applied method of extracting individual subcategories of accruals. In turn, in the crisis year (2021) parent undertakings were characterised by positive values of discretionary accruals, which may indicate an intentional altering of reported earnings upward (Figure 2).

Table 3 shows the percentage share of business groups reporting positive and negative discretionary accruals in particular years 2019–2021. It is worth mentioning that purely in the crisis year (2021), there was a predominance of companies reporting positive abnormal accruals values separated by the Modified Jones Model. In 2019 and 2020, business groups altering earnings downwards predominated in the tested sample. Similar conclusions came from the analysis of the percentage of parent undertakings, which reported positive and negative values of discretionary accruals in the period 2019–2021.

Table 2. Descriptive statistics of discretionary accruals estimated for business groups and parent undertakings

Business groups							
Calculation approach	Year	Mean	Median	Std. Deviation	Variance	Percentile 25	Percentile 75
<i>Time-series data approach</i>	2019	-0.030	-0.021	0.129	0.017	-0.064	0.026
	2020	0.001	-0.005	0.121	0.015	-0.047	0.031
	2021	0.028	0.020	0.102	0.010	-0.014	0.062
<i>Cross-sectional approach</i>	2019	-0.041	-0.017	0.248	0.062	-0.082	0.033
	2020	-0.006	-0.005	0.156	0.024	-0.052	0.031
	2021	0.029	0.033	0.162	0.026	-0.015	0.088
Parent undertakings							
Calculation approach	Year	Mean	Median	Std. Deviation	Variance	Percentile 25	Percentile 75
<i>Time-series data approach</i>	2019	-0.058	-0.012	0.758	0.575	-0.050	0.020
	2020	0.000	-0.008	0.144	0.021	-0.050	0.028
	2021	0.026	0.011	0.131	0.017	-0.015	0.062
<i>Cross-sectional approach</i>	2019	-0.063	-0.012	0.815	0.664	-0.058	0.034
	2020	-0.001	-0.002	0.200	0.040	-0.046	0.051
	2021	0.012	0.019	0.187	0.035	-0.029	0.081

Source: own elaboration

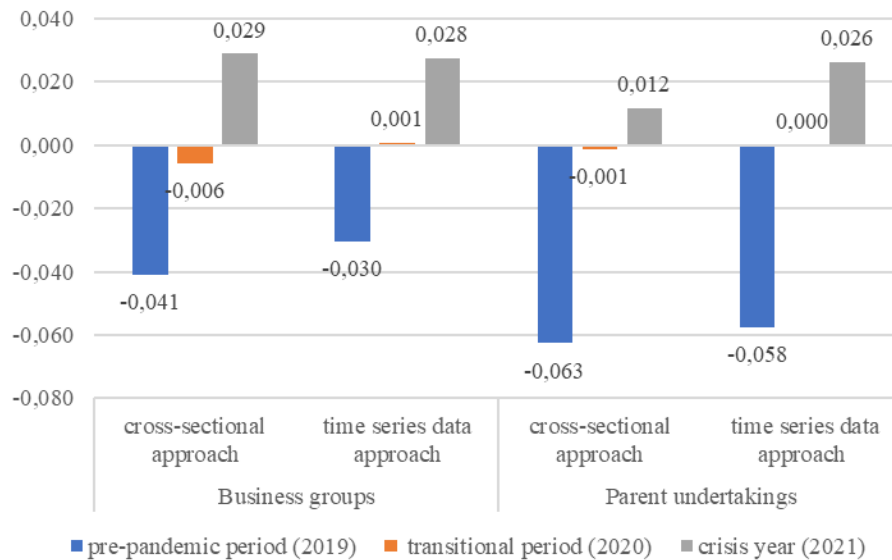


Figure 2. The mean values of discretionary accruals computed for business groups and parent undertakings
Source: own elaboration

Table 3. The percentage of business groups and parent undertakings reporting positive and negative discretionary accruals in 2019–2021

Business groups			
Year	DACC values (%)	Time-series data approach	Cross-sectional approach
2019	Positive	35.98%	40.74%
	Negative	64.02%	59.26%
2020	Positive	44.44%	43.92%
	Negative	55.56%	56.08%
2021	Positive	66.14%	67.72%
	Negative	33.86%	32.28%
Parent undertakings			
Year	DACC values (%)	Time-series data approach	Cross-sectional approach
2019	Positive	37.04%	39.68%
	Negative	62.96%	60.32%
2020	Positive	42.86%	47.09%
	Negative	57.14%	52.91%
2021	Positive	61.38%	58.20%
	Negative	38.62%	41.80%

Source: own elaboration

statements of parent undertakings in 2019–2021 varied statistically. The Paired Samples T-Test (Related-Samples Wilcoxon Signed Rank Test) null hypothesis assumes that the mean (median) of differences between tested variables equals 0.

The analysis of the results of empirical research shows that statistical differences in shaping discretionary accruals values from the perspective of both types of financial statements were evidenced only concerning 2021, while the extraction of individual subcategories of accruals was carried out through a cross-sectional approach (Table 4). In other cases, applying the balance sheet approach in separating total accruals into discretionary and nondiscretionary subcategories causes the null hypothesis of the Paired Samples T-Test (Related-Samples Wilcoxon Signed Rank Test) must be retained. During the research, it turned out that during the outbreak of the pandemic and the year immediately preceding it, managers of business groups did not use additional earnings management instruments specific to these economic structures and related to links between the business units that constitute them. Earnings manipulation behaviours in business groups replicate patterns adopted in parent undertakings in 2019–2021. Thus, the first of the research hypotheses was negated.

In-depth empirical studies have been aimed at answering whether quality of earnings reported in consolidated financial statements of a group of companies or partnerships and individual financial

Table 4. The comparison of earnings quality reported in consolidated financial statements of business groups and in individual financial statements of parent undertakings during 2019–2021

Parametric Test			
Year	Test Summary	Time-series data approach	Cross-sectional approach
2019	Mean (St. Dev.)	-0.010 (0.416)	-0.011 (0.391)
	Asymptotic Sig.	0.285	0.243
2020	Mean (St. Dev.)	-0.001 (0.186)	0.005 (0.233)
	Asymptotic Sig.	0.463	0.396
2021	Mean (St. Dev.)	-0.001 (0.146)	-0.018 (0.164)
	Asymptotic Sig.	0.458	0.076
Non-parametric Test			
Year	Test Summary	Time-series data approach	Cross-sectional approach
2019	Test Statistic (St. Test Stat.)	7905 (-1.424)	7821 (-1.536)
	Asymptotic Sig.	0.154	0.125
2020	Test Statistic (St. Error)	9100 (0.163)	8692 (-0.379)
	Asymptotic Sig.	0.871	0.705
2021	Test Statistic (St. Error)	9258 (0.372)	10621 (2.182)
	Asymptotic Sig.	0.710	0.029

Source: own elaboration

4.2. Diversity of earnings management proxies during SARS-CoV-2 pandemic

Since previous investigations proved that earnings management practices in business groups and companies exercising control over the groups in 2019–2021 were comparable, the next part of the scientific exploration focused on the factors affecting earnings manipulation only within the capital groups. Table 5 presents the correlation matrix for the variables used in the research. The correlation coefficients between independent variables are considerably low and could indicate no multicollinearity problem among the tested variables.

To test the second hypothesis (H.2), we run regression models for the outbreak of the pandemic period (2019–2020) and the full crisis period (2020–2021) separately. The intercepts for the 2019–2020 regressions were negative, consistent with the previous results (Table 6). However, the obtained negative amounts were not statistically different from zero after controlling for firm-specific attributes in the regression analysis. Only for the analysis based on the time-series data approach did the research show a statistical impact of the SARS-CoV-2

pandemic outbreak on the characteristics of earnings manipulations in the pooled sample. However, these observations were made with a probability of a test statistic of 0.1. Regression concerning the endogenous variable *DACC* extracted by the cross-sectional method did not reveal a similar relationship. Regardless of the adopted methods of separating individual subcategories of accruals, this study indicated positive relationships between discretionary accruals and *ROA* coefficient and negative relationships between abnormal accrual and retained earnings in 2019–2020.

As for the full crisis period, from 2020 to 2021, the results in Table 6 show the significant and positive association of the *YEAR* variable with accounting-type earnings manipulation proxies. Depending on how accruals are calculated, during the SARS-CoV-2 full crisis year (2021), business groups increased their discretionary accruals by 27% (37%) on the previous year. Before, earnings management *via* accruals boost was statistically related to the profitability of capital groups (positive links). On the other hand, our investigation suggests that companies with lower operational risk (*EVOL*) tended to alter earnings to a greater extent than others.

Table 5. The correlation matrix between tested variables

Variables	DACC _{TS}	DACC _{CS}	TANG	GO	ROA	LEV	LTL	ETR	NDTS	EVOL	DIST
DACC _{FS}	1										
DACC _{CS}	0.785**	1									
TANG	-0.049	-0.002	1								
GO	-0.118**	-0.097*	0.123**	1							
ROA	0.095*	0.190**	0.0260	0.0289	1.0000						
LEV	-0.062	-0.078	-0.069	0.009	-0.200**	1					
LTL	-0.062	-0.087*	-0.114**	0.058	-0.223**	0.555**	1				
ETR	-0.047	-0.026	0.054	0.025	0.135**	0.081	-0.029	1			
NDTS	-0.092*	-0.139**	0.396**	0.467**	-0.047	-0.003	-0.004	-0.050	1		
EVOL	-0.034	0.013	0.049	0.059	0.396**	-0.060	-0.045	0.243**	-0.0789	1	
DIST	0.093*	0.196**	-0.043	-0.087*	0.625**	-0.498**	-0.497**	0.122**	-0.214**	0.264**	1

****/* Correlation is significant at the 0.01 level/0.05 level (2-tailed).**

Source: own elaboration

The next stage of the research was aimed at assessing the effect of the SARS-CoV-2 pandemic on accrual-based earnings management in the event of a risk of losing the financial security of the capital group. An enterprise's financial security is identified with an economic entity's ability to create and use favourable conditions for the effective conduct of current business activities, its continuation and development. It is reflected both in generating an appropriate level and dynamics of sales, as well as in the profitability and solvency of the enterprise, investments made and financial reserves created. Following Aljughaiman et al. (2023), we expected that potential business group financial distress (*DIST*) was likely to mitigate the association between the SARS-CoV-2 pandemic and the magnitude of earnings manipulation. We also tried to capture the moderating effect of financial distress on the links between the pandemic and accrual-based earnings management in the tested sample (*YEAR***DIST*).

Regarding the 2019–2020 comparison, this study confirmed that business groups with better financial standing (higher value of the Altman Z-score indicator) were more engaged in earnings management practices (Table 7). Calculations based on the time-series data method showed also a negative and significant coefficient of interaction between the SARS-CoV-2 pandemic and financial distress on accrual-based earnings manipulation. Considering

the cross-sectional approach, we noted a negative but insignificant coefficient for the *YEAR***DIST* variable. On the other hand, the regression analysis results for 2020–2021 are inclusive and depend largely on the use of accepted concepts of abnormal accruals estimation. For example, the negative and significant coefficient for the *DIST* variable while adopting a time-series approach suggests a strong reversal of how companies in financial distress manage earnings in the crisis year (2021). Meanwhile, carrying out analyses *via* the cross-sectional method, we found that financial distress has no role in the impact of the pandemic on earnings management behaviours.

5. Discussion

The empirical research contributed to the negative verification of the first hypothesis, stating that the quality of earnings reported in parent companies' financial reports varied from statistics of those reported in the consolidated reports of business groups during the SARS-CoV-2 pandemic. Thus, the earlier observations of Comporek (2023), who discovered that in 2011–2021, discretionary accruals computed based on consolidated statements of business groups were significantly lower than abnormal accruals appearing in the separate statements of the business units

Table 6. The effect of the SARS-CoV-2 pandemic on accrual-based earnings management patterns

Variables	Time-series data approach				Cross-sectional approach			
	2019-2020		2020-2021		2019-2020		2020-2021	
	B	(St. Error)	B	(St. Error)	B	(St. Error)	B	(St. Error)
<i>Intercept</i>	-0.010	0.013	0.000	0.012	-0.018	0.018	-0.002	0.017
<i>YEAR</i>	0.019*	0.011	0.027**	0.011	0.008	0.016	0.037**	0.015
<i>TANG</i>	0.000	0.026	-0.033	0.026	0.009	0.037	-0.027	0.035
<i>GO</i>	-0.021	0.069	-0.093	0.068	0.138	0.097	0.082	0.094
<i>ROA</i>	0.291***	0.026	0.287***	0.045	0.642***	0.037	0.410***	0.062
<i>RET</i>	-0.019***	0.004	-0.021***	0.003	-0.011**	0.005	-0.001	0.004
<i>LTL</i>	-0.018***	0.005	-0.014***	0.004	-0.008	0.008	-0.007	0.005
<i>LEV</i>	-0.001	0.001	0.000	0.001	0.000	0.001	-0.002**	0.001
<i>EVOL</i>	-0.001	0.000	-0.003**	0.001	-0.001**	0.000	-0.008***	0.001
<i>ETR</i>	0.003	0.006	0.000	0.001	0.001	0.009	-0.001	0.001
<i>NDTS</i>	-0.185	0.150	0.205	0.163	-0.477**	0.212	-0.249	0.224
<i>R</i>	0.544		0.448		0.697		0.507	
<i>R</i> ²	0.296		0.201		0.486		0.257	
<i>Adj. R</i> ²	0.277		0.179		0.472		0.237	
<i>D-W</i>	1.894		2.013		1.866		1.934	
<i>Sig</i>	<0.001		<0.001		<0.001		<0.001	
<i>CI</i>	5.39		6.017		5.39		6.017	
***/**/* indicate significance at the 0.01/0.05/0.10 levels, respectively								

Source: own elaboration

performing a superior function within individual capital groups were not confirmed. On the other hand, this study confirmed the second research hypothesis that accrual-based earnings management patterns in business groups operating in the WSE in the crisis (transitional) years varied significantly compared to the transitional (pre-pandemic) years, respectively. Our investigations indicate that in 2019–2021, earnings manipulation behaviours in tested samples were differentiated. In the pre-pandemic year, business groups particularly engaged in earnings manipulation downward, while in the full pandemic crisis year, they tended to manage earnings upward. The estimates for the transitional year were ambiguous, but they indicate the smallest magnitude of earnings manipulation in the considered period. These conclusions are inconsistent with, among others, the observations of Lizińska and Czapiewski (2023), who discovered that abnormal accruals reported for nonfinancial firms listed in the largest capital market and the CEE region significantly decreased from 2019 to 2020.

It is worth mentioning that research on the earnings-manipulating phenomenon is subject to significant measurement error because, in every company, there is a certain level of accounting conservatism, and earnings management practices are implemented to a greater or lesser extent (McNichols, 2000). Another problem area in assessing the impact of the SARS-CoV-2 pandemic on earnings management patterns in tested entities is the selection of appropriate regression models to estimate the scale of earnings manipulation. The Modified Jones model used in this study is characterised by high explanatory power (Callao et al., 2017; Metzker & Siekelova, 2021) and ensures comparability with empirical conclusions presented by other researchers (Ali et al., 2022; Lizińska & Czapiewski, 2023; Uddin, 2023). The use of the Altman model to assess the financial standing of capital groups may also be questionable, although, as noted by Kitowski (2011) and Bugeja (2015), this proxy seems to still be the most frequently used measure to assess the financial health of enterprises.

Table 7. The effect of the SARS-CoV-2 pandemic and financial distress on accrual-based earnings management

Variables	Time-series data approach				Cross-sectional approach			
	2019-2020		2020-2021		2019-2020		2020-2021	
	B	(St. Error)	B	(St. Error)	B	(St. Error)	B	(St. Error)
Intercept	-0.008	0.013	0.024*	0.013	-0.035	0.020	-0.016	0.018
YEAR	0.039***	0.011	0.028***	0.010	0.018	0.016	0.035**	0.014
DIST	0.002**	0.001	-0.002***	0.001	0.003***	0.001	0.001	0.001
YEAR*DIST	-0.004***	0.001	-0.001*	0.000	-0.002	0.001	0.001**	0.000
TANG	-0.004	0.025	-0.039	0.025	0.011	0.037	-0.023	0.035
GO	-0.064	0.067	-0.075	0.066	0.088	0.098	0.069	0.093
ROA	0.250***	0.026	0.317***	0.044	0.609***	0.038	0.390***	0.062
RET	-0.015***	0.005	-0.013***	0.003	-0.023**	0.008	-0.006	0.005
LTL	-0.041***	0.007	-0.033***	0.005	-0.006	0.011	0.005	0.007
LEV	-0.001	0.001	0.000	0.001	-0.001	0.001	-0.002	0.001
EVOL	-0.001	0.000	-0.003**	0.001	-0.001**	0.000	-0.008***	0.001
ETR	0.004	0.006	0.000	0.001	0.002	0.008	-0.001	0.001
NDTS	-0.147	0.148	0.039	0.162	-0.351	0.216	-0.150	0.227
R	0.594		0.503		0.705		0.522	
R²	0.353		0.253		0.497		0.272	
Adj. R²	0.331		0.228		0.481		0.248	
D-W	1.951		2.000		1.852		1.938	
Sig	<0.001		<0.001		<0.001		<0.001	
CI	7.774		9.393		7.774		9.393	

***/**/* indicate significance at the 0.01/0.05/0.10 levels, respectively

Source: own elaboration

6. Conclusions

The earnings management phenomenon highlights the importance of managers' discretionary influence on reporting data quality. The implemented earnings manipulation practices depend not only on the adopted accounting principles but also on applied accounting estimates, professional judgment and stakeholders' expectations regarding the future financial standing of the company (Grabiński, 2016).

The impact of macroeconomic factors on business groups' financial situation is not obvious and completely predictable. On the one hand, the economic crisis may encourage managers to report high losses per the assumptions of the big bath technique to demonstrate improvement in the company's standing in subsequent periods. On the other hand, firms hoping to defend

their expected financial results may have a stronger incentive to increase their financial results. This situation has been demonstrated, among others, in the tested sample about the crisis year (2021). The striving of capital groups operating in the WSE to alter earnings upward may be important information for auditors, who pay much more attention to the practice of intentional overstatement of reported earnings due to the risk of company bankruptcy or the risk of loss of reputation (Krishnan et al., 2011).

The empirical research cannot be generalised to all companies from the Polish capital market. However, they draw attention to the need for further studies on the issue of earnings quality in business groups during economic turmoil, including the crisis caused by the SARS-CoV-2 pandemic. The direction for further empirical observations may be the assessment

of earnings management by considering reporting information taken from quarterly or half-yearly financial statements, which will contribute to more precise judgments in recognising the time profile of undertaken accrual-based earnings management activities.

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