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WERE WINDFALL PROFITS AND THEIR TAX REGULATION IN 2022 A TRIGGER FOR EARNINGS MANAGEMENT? ANALYSIS OF CROATIAN MANUFACTURING COMPANIES

Abstract

Purpose: This research, conducted on a sample of Croatian manufacturing companies, investigates whether windfall profits and their tax regulation in 2022 triggered earnings management.

Methodology: This research uses a company-level difference-in-differences design within the FE panel model for the period 2021–2023. Two interaction variables are designed to capture broader and direct effects of expected political costs. The research model also includes controls for company-level variables to capture the other motives of earnings management.

Results: The occurrence of windfall profits in 2022 did not cause systematic downward earnings management. However, windfall profits in 2022 intensified negative earnings management in the segment of companies that had only negative discretionary accruals. The interaction variable that captures only those companies that were subject to windfall tax regulation in Croatia is negative and statistically significant. This finding confirms that actual exposure to windfall profit regulation is a more pronounced motive for downward earnings management than the mere existence of windfall profits. The control variables exhibit signs that are consistent with theoretical assumptions and previous research.

Conclusion: Research on a sample of Croatian manufacturing companies conditionally confirmed the political cost hypothesis, i.e., only for the companies facing clear and pronounced political costs. However, the observed earnings management practices were not caused only by windfall profits tax regulation but can be linked to the company's indebtedness, profitability, and general level of taxation.

Keywords: Windfall profits, discretionary accruals, earnings management, Croatia

1. Introduction

The start of war in Ukraine in February 2022 led to a sharp rise in prices for all major energy sources. In the second half of 2022, energy prices fell and stabilized at a lower level than the peak prices in mid–2022. The high level of uncertainty associated with the war in Ukraine and the rise in energy costs led to a serious increase in revenue and profits for many companies. Some analyses (Trautvetter, 2024) assume that large companies generated windfall profits of EUR 2,000 billion in 2022, including EUR 310 billion for EU companies. The rise in energy prices had a relatively rapid influence on the prices of many products and services, and the EU faced a record-breaking inflation rate of 9.2% (HICP) in 2022. These developments also gave rise to political discussions and media coverage regarding the introduction of a windfall profits tax in the EU Member States. The EU's response to the energy crisis, windfall corporate profits, and high inflation is the introduction of the "solidarity contribution", aimed at raising funds to support households affected by this crisis. In October 2022, the Council of the EU adopted Regulation (EU) 2022/1854, which introduced a "solidarity contribution" for 2022 and/or 2023.

Article 14 of Council Regulation (EU) No 2022/1854 required EU Member States to levy a "solidarity contribution" on windfall profits (hereinafter "windfall profits tax") from companies operating in the oil, gas, coal, and refining sectors. Alternatively, Member States could adopt equivalent national measures that are similar in terms of the objectives and level of taxation. The tax rate for the windfall tax is at least 33% and is applied to a tax base that is 20% higher than the average taxable profit in the period 2018–2021. A study by Nicolay et al. (2023) estimates that the application of the windfall tax model described above in the EU should result in additional tax revenues of EUR 4.4 billion. The enforcement of windfall taxation in EU countries varies in terms of the scope of sectors affected, the windfall tax rate, the tax base, and the years of application (Enache, 2024). Croatia is among the few EU Member States that has covered all sectors with this tax model. However, its application was restricted to windfall profits in 2022 and only to companies with a turnover of more than EUR 39.82 million in 2022.

According to publicly available data (Litvan, 2024), 179 companies in Croatia were affected by the windfall tax in 2022 and paid EUR 248 million in total. It should be noted that the Windfall Tax Act was adopted in the Croatian Parliament (Sabor) on December 16, 2022. Considering that the financial year was coming to an end, the possibility of reducing the tax base through real business decisions (i.e., real earnings management), such as investments in fixed assets, an increase in R&D expenditure, or sales shifting, was very limited. According to the official summary data from the FINA database InfoBIZ[1], Croatian companies reported a strong increase in revenue (+26.4%) and revenue per employee (+22.7%) in 2022 compared to 2021. At the same time, financial profitability indicators developed mostly negatively in 2022 compared to the previous year (ROA decreased by 0.6%, the EBITDA margin decreased by 6.3%, and the EBIT margin decreased by 1.0%). Only the ROE indicator rose by 0.4% in 2022. Such poor financial results may be the result of a sharp increase in input prices and/or accounting strategies aimed at minimizing reported accounting profits. In a business environment where windfall profits and their taxation are discussed in the media and in politics, there is a strong incentive to avoid reporting excessive profitability.

Considering the incentives offered by the 2022 business environment, the main objective of this research is to answer the following question: Is earnings management in Croatian manufacturing companies driven by windfall profits and/or related changes in income tax regulation in 2022? Given that the existing literature in the field of earnings management indicates that the level of discretionary accruals is influenced by the number of variables, it is necessary to control for the impact of other influential variables (leverage, size, profitability, etc.). Clarifying the main and secondary research questions contributes to accounting theory and the practical application of accounting knowledge among users of financial statements. This paper contributes to the current body of knowledge on earnings management practices in several ways. Although numerous studies deal with earnings management, recent review articles (Callao et al., 2020; Vagner et al., 2021; Hien, 2024; Gokhale & Pillai, 2024) show that most studies originate from Western countries (USA, UK, Canada, Spain, etc.) and Asian countries (China, Malaysia, Indonesia, South Korea, etc.), while very few studies have been con-

1 https://infobiz.fina.hr

ducted in Eastern and Central European countries. In particular, only two studies (Degiannakis et al., 2019; Pervan et al., 2024) are available for Croatia, which provides an opportunity for additional research and more recent findings. According to the available literature, this is the first study to examine the phenomenon of 2022 windfall profits and the impact of windfall profit taxation in the EU on earnings management. This research focuses on private companies, where the impetus for earnings management differs significantly from that of listed companies. Regarding the research methodology and the measurement of the proxy variable for earnings management, an advance over previous studies is the inclusion of provisions in the total accruals formula, which is generally not the case in previous studies. Such a calculation of total, discretionary, and non-discretionary accruals certainly leads to greater accuracy in measurement and ensures more reliable conclusions. Finally, unlike many studies that focus on only one earnings management factor, this research analyzes the influence of several regressor variables (windfall profits, windfall profits tax regulation, leverage, company size, profitability, and effective income tax) simultaneously.

Empirical findings reveal that the occurrence of windfall profits in 2022 did not cause systematic earnings minimization for companies that reported windfall profits. However, the existence of windfall profits in 2022 amplified downward earnings management in the segment of companies that had only negative discretionary accruals. The interaction variable that identifies only those companies that were actually under Croatian windfall profits tax jurisdiction in 2022 is negative and statistically significant. Such a finding confirms that the actual exposure to windfall profits tax regulation is a more pronounced motive for downward earnings management than the mere existence of windfall profits. Therefore, it can be concluded that the political cost hypothesis can be conditionally accepted, i.e., only for Croatian manufacturing companies faced with direct risk of political costs. The control variables have signs that are consistent with theoretical assumptions and previous research.

The main empirical findings of this study provide useful practical guidelines for various stakeholders. For example, banks and other creditors need to be aware that reported accounting profits might be understated in years with windfall profits if company is faced with credible and pronounced risk of additional political costs. Therefore, a more detailed analysis of financial statements is needed, with particular attention paid to discretionary accrual items such as depreciation, write-offs of receivables, inventory write-offs, provisions, etc. Croatian tax administration should assume that companies facing an additional windfall tax burden are likely to use accounting techniques to decrease the accounting earnings. Therefore, tax audits should be stricter for such companies. In years with windfall profits, external auditors should be cautious about increased possibility of earnings management among directly affected companies and check whether the applied accounting methods are in line with accounting standards and general accounting principles.

This paper is divided into five main sections. After the introduction, Section 2 provides a review of relevant research on earnings management with a particular focus on papers dealing with income tax and windfall profits. The third section describes the databases used, the selection of the research samples, and the variables required for the research methodology. The main research results are explained in Section 4, followed by concluding remarks in the final section.

2. Analysis of previous literature

Earnings management in the context of the phenomenon of windfall profits and their taxation can probably be categorized as a "gray" earnings management according to the definition provided by Ronen and Jaari (2008). The "gray" earnings management views the selection of accounting policies/estimates as opportunistic or economically efficient. From this perspective, companies use the flexibility of accounting standards for the personal interests of managers or the interests of the company. Research on the reaction of companies to the introduction of the windfall profits tax and the choice of accounting methods has its theoretical roots in agency theory (Jensen & Meckling, 1976). According to this theory, the company can be perceived as a set of contracts between the company and its stakeholders. Agency theory provided the foundations of positive accounting theory (PAT) developed by Watts and Zimmerman (1986) and related three main hypotheses (political costs, bonus plans, and debt covenant).

In the context of these theories, all company contracts can create incentives to maximize or mini-

mize the reported accounting profits. The incentives for earnings management may be conflicting, as at the same time, the company may wish to report lower accounting profits to the tax authorities, while presenting more favorable accounting figures to creditors. For the purposes of our study, the political cost hypothesis is particularly interesting. According to the political cost hypothesis, companies minimize profits to avoid public and political attention to reduce risks of political costs (taxing windfall profits or enforcing new regulations such as price caps or margin caps). In specific situations, under pressure from consumers and the media, politicians will tend to transfer wealth from companies to the state budget or to consumers and justify such policies with the public interest. Additional regulation or an additional tax burden represents an external pressure on the company's operations, with negative consequences for the company's managers and owners.

Given that the windfall profits tax was introduced in Croatia as a temporary measure (applicable only for 2022), it provided companies with an incentive to shift profits to subsequent years in which this windfall profits tax was not expected to apply. In other words, according to the political cost hypothesis, it is to be expected that companies will implement downward earnings management in the year in which windfall profits occur and are taxed. Numerous studies (Jones, 1991; Cahan, 1997; Makar et al., 1996; Key, 1997; Han & Wang, 1998 – for petroleum refining companies; Chen et al., 2011 – for private companies) confirm such opportunistic behavior of companies that were faced with the risk of additional political costs (Table 1, Section 1). Contrary to such findings, Han and Wang (1998), using a sample of crude oil and natural gas companies, did not find evidence of earnings management related to the 1990 Persian Gulf crisis and the associated windfall profits. Similarly, Beeks (2003) reported no evidence to support the political cost hypothesis for a sample of water and sewerage companies in England and Wales. Chen et al. (2011) rejected the political cost hypothesis for the sample of state-owned companies. In summary, the literature examining windfall profits largely confirms the emergence of downward earnings management in conditions of political and media exposure. However, one part of the findings still indicates that the political cost hypothesis can be completely or partially rejected in specific circumstances that lead to lower political sensitivity of companies. Such findings emphasize the importance of size, ownership, level of political costs exposure, and institutional context in modeling the relationship between windfall profits and earnings management.

Considering the context of the research on windfall profits in 2022 in Croatia, the focus should be on accruals-oriented earnings management literature. Namely, due to the late adoption of the regulation on windfall profits (December 16, 2022), Croatian companies had very limited opportunities to undertake real business transactions that could reduce reported accounting profits in 2022. Within a very short time window of only 15 days before the end of the business year, companies could only undertake real transactions to a limited extent, and the main mechanism for reducing windfall profits was the use of accounting policies and estimates. More specifically, depreciation/amortization rates, write-offs of receivables/inventories, and provisions for litigation/guarantees could have been increased. Companies could also, to a certain extent, postpone profit recognition and carry it forward to the next year. In accordance with the aforementioned, according to the assumptions of the political cost hypothesis, discretionary accruals in the year of windfall profits and their taxation should be significantly lower than in the subsequent year without such tax burden.

In addition to articles that directly test the political cost hypothesis, it is also useful to explore the closely related literature on corporate behavior in the years around income tax reforms. The articles (Scholes et al., 1992; Sundvik, 2016; Bai et al., 2021; Wali, 2021; Pervan et al., 2024) Table 1, Section 2, analyze the reactions of companies to the income tax reforms that were implemented by lowering the income tax rate, which created incentives for profit shifting to the year with a lower income tax rate. In these situations, companies had the possibility of achieving permanent income tax savings by using earnings management techniques and by minimizing profits in the year preceding the tax reform. Although studies come from very different institutional environments (the U.S., China, Germany, the Netherlands, Sweden, and Croatia), the empirical findings are remarkably similar. Early and recent studies have confirmed that companies behave economically rationally and use earnings management to reduce income tax payments and increase the value of the company.

Table 1 Summary of previous research on political cost hypothesis and income tax reforms

Authors (Year)	Country / Sample	Research context	Methodology	Main findings
Section 1: Literature focused on political cost hypothesis				
Jones, J. (1991)	The U.S., 23 companies from five industries	ITC investigations to obtain relief for companies under profit pressure because of imports	Discretionary accruals; Jones 1991 model	Companies use discretionary accruals to minimize profits during ITC investigations to obtain relief
Cahan, S. F., Chavis, B. M. & Elmendorf, R. G. (1997)	The U.S., 43 chemical industry companies	U.S. Congress debate on new regulation (a new tax for 42 chemical products) for the chemical industry	Discretionary accruals; Jones 1991 model	In the year of Congress debate, chemical companies managed earnings downward
Makar, S. D., Alam, P. & Pearson, M. A. (1996)	The U.S., 144 companies involved in merger transactions under investigation	Mergers were investigated by the U.S. antitrust regulators	Total accruals; regression with GNP as a proxy for the business cycle	Companies under investigation used accruals in the period of economic growth to minimize profits and avoid the attention of antitrust regulators
Key, K. G. (1997)	The U.S., 24 (1989) and 23 (1990) cable TV companies	U.S. Congress debate on new regulation for the cable TV industry because of potential "beyond reasonable profits"	Total accruals; Regression with time dummy	Companies increase negative discretionary accruals during Congressional scrutiny periods
Han, J. C. Y. & Wang, S.-W. (1998)	The U.S., 76 petroleum and natural gas companies	Antitrust investigation risk during the 1990 Persian gulf crisis	Discretionary accruals; Regression with quarter and year dummies	Oil refining companies used discretionary accruals to reduce profits. Crude oil and natural gas companies did not have unusual accruals.
Chen, D., Li, J., Liang, S. & Wang, G. (2011)	China, 232 real estate companies	A government set of policies aimed at stabilizing housing prices and reducing real estate industry profits	Discretionary accruals; Jones 1991 model; Regression with a proxy for political costs	Private companies use earnings management aimed to reduce profitability. Evidence was not confirmed for state-owned companies.
Hsiao, D. F., Hu, Y. & Lin, J. W. (2016)	The U.S., 593 oil and gas companies	2011 Arab Spring political instability and oil price shocks	MLE regressions; discretionary accruals	Political costs increase downward earnings management
Section 2: Literature focused on income tax reforms				
Scholes, M. S., Wilson, G. P. & Wolfson, M. A. (1992)	The U.S., 812 companies from 57 two-digit SIC industries	Income tax reform in the U.S. (1986): reduction of the tax rate from 46% to 34%	Quarterly data; focus on margin deferral and SG&A expenses acceleration	Companies deferred revenue recognition and accelerated expense recognition to shift income
Sundvik, D. (2016)	Sweden, 3,254 private firms	Two income tax reforms (2009 and 2013) in Sweden aimed at lowering the tax rate	Discretionary accruals; Kothari et al. 2005 model; Specific accruals	Firms shift income to lower-tax periods
Bai, M., Song, D. & Li, H. (2021)	China, 639 listed manufacturing companies	Reduction of the income tax rate in China (2007) from 33% to 25%	Current accruals; Regression	Companies under anticipation of income tax reduction use earnings management

Authors (Year)	Country / Sample	Research context	Methodology	Main findings
Wali (2021)	The Netherlands, 1,350 companies and Germany, 1,850 companies	Income tax rate reductions in Germany and the Netherlands	Discretionary accruals; modified Jones 1995 model	Companies use income-decreasing accruals in the year before tax rate cuts
Pervan, I., Jakaša, P. & Pervan, M. (2024)	Croatia, 4,694 (2016 reform) and 4,651 (2020 reform) manufacturing companies	Two income tax reforms (2016 and 2020) in Croatia aimed at lowering tax rate	Earnings distribution analysis, Discretionary accruals; Kothari et al. 2005 model	Both tax reforms triggered a shift of profits to years with lower tax rates

Source: Authors

Although the focus of this research is on the influence of windfall profits and related tax regulation on earnings management, to get a broader picture, it is necessary to unravel other motives such as the payment of regular income taxes and the debt covenant hypothesis. A review of studies examining earnings management in relation to regular income tax payments shows that there are no clear conclusions, as the results are mixed. A study of V4 countries (Hungary, Slovakia, the Czech Republic, and Poland) did not confirm that the income tax variable has influenced the level of discretionary accruals (Callao et al., 2020). SánchezBallesta and Yagüe (2020) report mixed results with regard to tax-driven earnings management. If companies have used accounting techniques to increase their profits in the past, the motives for positive earnings management are more important than the motives for reducing the current income tax payments. In contrast, companies without such historical strategies use accounting methods to reduce income tax payments. A recent study by Delgado et al. (2023) uses neural networks to identify the relationship between earnings management and corporate tax payments. The analysis of a sample of companies from five European countries (Spain, France, Italy, Germany, and the UK) did not confirm the hypothesis that earnings management is used to decrease the income tax burden.

In addition to the political cost hypothesis, the debt covenant hypothesis should also be considered when modeling the determinants of earnings management. According to this hypothesis, companies try to select accounting policies so that the target variables (debttoequity ratio, debt-to-EBITDA ratio, quick ratio, etc.) comply with the conditions set out in existing credit financing agreements. Numerous studies (DeFond & Jiambalvo, 1994; Lazzem & Jilani, 2018; Palumbo & Rosati, 2022) have examined and mostly confirmed the debt covenant hypothesis. It should be emphasized that the expected direction of earnings management of the debt covenant hypothesis is completely opposite to the political cost hypothesis. In other words, more indebted companies are expected to use accounting techniques to maximize assets and profits. However, some studies (Jha, 2013) have questioned the debt convention hypothesis, as discretionary accruals are inconsistent in the quarter before and the quarter after the breach of the debt financing agreement. Siagian and Handika (2024) report that leverage had a negative impact on the change in accounting policy, which is due to the specific Japanese business environment where banks do not allow earnings management.

3. Data and research variables

The company-level data used for the empirical analysis was retrieved from the Orbis database in May 2025. To avoid the potential problem of cross-industry differences, this research focuses only on the manufacturing industry (NACE Rev. 2 codes from 10 to 32). The data was extracted only for companies that published non-consolidated financial statements and reported an annual turnover of at least EUR 50,000 in the period 2015–2023. The application of these criteria resulted in an initial sample of 4,938 companies. The data obtained from the FINA database InfoBIZ[2] indicates that the manufacturing sector in Croatia represents one of the most important sectors of the national economy, as it generated 39.9% of export revenues in 2022

2 https://infobiz.fina.hr

(42.3% in 2023), 23.5% of total revenues (22.3% in 2023), and employed 23.9% of the workforce (23.2% in 2023).

The measurement of discretionary accruals (DACC) first requires a methodology for calculating total accruals (TACC). Based on the available data from the Orbis database, the socalled balance sheet approach was applied. Insight into previous literature (Sundvik, 2016; El Diri, 2018; Kliestik et al., 2021) shows that the balance sheet approach calculates total accruals using the following elements: change in receivables (ΔRECE), change in inventories (ΔINVE), change in payables (ΔPAYA), and depreciation and amortization (DEPR). However, it should be noted that such an approach often does not take into account change in provisions (ΔPROV), an item that is subject to considerable discretion. Accordingly, Formula 1 is therefore used to provide a more precise measurement of total accruals:

$$TACC_{it} = \Delta RECE_{it} + \Delta INVE_{it} - \Delta PAYA_{it} - DEPR_{it} - \Delta PROV_{it}. \quad (1)$$

TACC was calculated using cross-sectional data from the manufacturing sector in the "estimation period". The selection of years for the estimation period in Croatia was somewhat problematic due to two corporate income tax reforms that led to significant discretionary accruals (Pervan, et al., 2024), in 2016 and 2017 (the first reform) and in 2020 and 2021 (the second reform). As discretionary accruals were not expected in the forecast period, the aforementioned years were excluded and only the years 2015, 2018, and 2019 were retained in the estimation dataset.

The coefficients of the earnings management model were estimated by two alternative approaches, the modified Jones model (Dechow et al., 1995), formula 2, and the performance matching model (Kothari et al., 2005), formula 3:

$$\frac{TACC_{it}}{TASS_{it-1}} = \beta_0 + \beta_1 \frac{1}{TASS_{it-1}} + \beta_2 \frac{\Delta REVE_{it} - \Delta RECE_{it}}{TASS_{it-1}} + \beta_3 \frac{PPEQ_{it}}{TASS_{it-1}} \quad (2)$$

$$\frac{TACC_{it}}{TASS_{it-1}} = \beta_0 + \beta_1 \frac{1}{TASS_{it-1}} + \beta_2 \frac{\Delta REVE_{it} - \Delta RECE_{it}}{TASS_{it-1}} - + \beta_3 \frac{PPEQ_{it}}{TASS_{it-1}} + \beta_4 ROA_{it}, \quad (3)$$

where TASS stands for total assets, REVE for revenues, RECE for receivables, and PPEQ for the fixed tangible assets, while ROA represents a ratio between net profit and assets from the same year (t). The estimated beta parameters, derived from the dataset of manufacturing companies, are employed to estimate the non-discretionary component of accruals (NDACC). Finally, the proxy variable for earnings management (discretionary accruals, DACC) is calculated as the difference among actual accruals (AACC) and the non-discretionary component of aggregate accruals (NDACC) in the event period:

$$DACC_{it} = AACC_{it} - NDACC_{it}. \quad (4)$$

Considering the main objective of the research, a company-level Difference-in-Differences (DiD) design with fixed effects is used in the panel model. The DiD approach enables the identification of the effects of the occurrence of windfall profits in 2022 and their taxation on changes in earnings management. The used FE panel with DiD interaction variables explores two sources of variation. Company fixed effects capture time-invariant company characteristics, while year fixed effects capture macroeconomic and other common trends for all companies in the sample. For nuanced results, we decided to use two interaction variables (INTER1_D and INTER2_D). INTER1_D reveals whether companies with 2022 windfall profits adjusted discretionary accruals in 2022 in anticipation of possible political costs (even though the majority of them were not directly affected by the regulation on the windfall profits tax). A negative sign with INTER1_D would indicate profit minimization to avoid the broader aspect of potential political costs (negative publicity in media, regulation of selling price caps, regulation of margins, etc.). On the other hand, the INTER2_D interaction variable isolates the effects of the implemented income tax reform in 2022 and the behavior of that segment of companies faced with the direct effects of the windfall tax regulation. Therefore, the sign with INTER2_D represents the pure causal effect of the windfall tax regulation in Croatia on the practice of earnings management. Since the review of previous research on earnings management has shown that political costs and related tax incentives are neither the only nor the most important drivers of earnings management practices, it is necessary to control for the influence of other competing influential factors presented in Table 2:

Table 2 Research variables

Variable name	Label	Calculation
Discretionary accruals	DACC_K	Kothari et al. (2005)
	DACC_MJ	Dechow et al. (1995)
Interaction dummy 1	INTER1_D	WP2022_D * 2022_D
Interaction dummy 2	INTER2_D	WPTJ2022_D * 2022_D
Dummy variable for 2022	2022_D	Dummy (1 if year = 2022; otherwise 0)
Dummy variable for 2023	2023_D	Dummy (1 if year = 2023; otherwise 0)
Dummy variable for windfall profits in 2022	WP2022_D	Dummy (1 if Income before tax in 2022 > 20% higher than average Income before tax in the period 2018–2021; otherwise 0)
Dummy variable for companies under 2022 windfall profit tax jurisdiction	WPTJ2022_D	Dummy (1 if Revenue in 2022 > EUR 39.82 mil; otherwise 0)
Leverage	LEV	$\text{Total Debt}_t/\text{Assets}_t$
Company size	SIZE	Ln (Assets)
Return on Assets	ROA	$\text{Net profit}_t/\text{Assets}_t$
Effective income tax rate	EITR	$\text{Income tax liability}_t/\text{Profit before tax}_t$

Source: Authors

Given that the study sample consists mainly of private, unlisted companies, motives such as managerial bonuses, income smoothing, and disclosure of private information to investors are not considered relevant in this context. However, the issue of credit financing is of particular importance for private companies, which is why the indebtedness variable is included in the model. In line with similar studies of earnings management, profitability and size variables are included as control variables (Chen et al., 2011; Sundvik, 2016; Assidi et al., 2022; Palumbo & Rosati, 2022; Pervan et al., 2024, etc.). Due to the real risk of reverse causality in the model, some of the independent variables (LEV, ROA and EITR) are used with lag (t-1), while SIZE is used without lagging. The estimated FE panel model has the following form:

$$DACC_{it} = \beta_0 + \beta_1 INTER1\_D_i + \beta_2 INTER2\_D_i + \beta_3 LEV_{it} + \beta_4 SIZE_{it-1} + \beta_5 ROA_{it-1} + \beta_6 EITR_{it-1} + \beta_7\, 2022_D + \beta_8\, 2023_D. \quad (4)$$

4. Empirical findings

Table 3 provides descriptive statistics for all research variables after removal of missing data observations and outliers (two standard deviations above or below the mean). Both proxy variables for earnings management (DACC_K and DACC_MJ) have arithmetic means close to zero, which is in line with the theoretical expectation that positive and negative discretionary accruals cancel out in the long run. The SIZE variable shows significant variation because it includes a rather heterogeneous sample of companies. The average indebtedness (LEV) of the companies in the sample is moderate and amounts to 52.43%. ROA has a high degree of variation and indicates the heterogeneity of observations regarding the business performance. Dummy for windfall profits (WP2022_D) indicates that 24.8% of companies in 2022 reported windfall profits according to the definition from EU and Croatian regulations. However, due to the limited application to large companies in Croatia (WPTJ2022_D), only 0.04% of the companies were subject to windfall profit tax regulation.

Table 3 Descriptive statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
$DACC\_K_t$	15,850	0.011154	0.161713	-0.53242	0.560136
$DACC\_MJ_t$	15,867	0.013498	0.161585	-0.64863	0.576402
LEV_{t-1}	16,568	52.42626	25.91539	-10.657	100
$SIZE_t$	16,644	6.521029	1.392559	3.295837	9.816543
ROA_{t-1}	16,624	6.919423	8.228259	-19.423	33.522
$EITR_{t-1}$	16,643	0.112752	0.099476	-0.20556	6.64
2023_D	16,644	0.135845	0.342634	0	1
WP2022_D	16,644	0.247597	0.431629	0	1
WPTJ2022_D	16,644	0.000421	0.020504	0	1

Source: Authors' calculations

Table 4 shows the results of correlation analyses for all variables in the research model. Proxy variables for discretionary accruals (DACC_K and DACC_MJ) are, as expected, highly correlated, which indicates measurement of similar constructs. Correlation analysis reveals that both measures of discretionary accruals are significantly correlated with almost all independent variables. Since none of the correlations between independent variables exceeds 0.7, multicollinearity does not have a significant impact on the final results from the estimated FE panel regression.

Table 4 Pairwise Pearson correlations among research variables

	DACC_K	DACC_MJ	$SIZE_t$	LEV_{t-1}	ROA_{t-1}	$EITR_{t-1}$	2023_D	WP2022_D	WPTJ2022_D
$DACC\_K_t$	1.0000								
$DACC\_MJ_t$	0.9987***	1.0000							
$SIZE_t$	-0.0682***	-0.0667***	1.0000						
LEV_{t-1}	0.0253***	0.0386***	0.0135*	1.0000					
ROA_{t-1}	-0.0522***	-0.0022	-0.0236***	0.2723***	1.0000				
$EITR_{t-1}$	-0.0500***	-0.0428***	0.1977***	0.0516***	0.1303***	1.0000			
2023_D	-0.0503***	-0.0418***	0.0450***	-0.0118	0.1580***	0.0236***	1.0000		
WP2022_D	-0.0380***	-0.0375***	0.0134*	0.0070	0.0229**	0.0595***	0.6912***	1.0000	
WPTJ2022_D	-0.0192**	-0.0198**	0.0431***	-0.0173**	-0.0105	0.0062	0.0090	0.0358***	1.0000

Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' calculations

Given the main objective of this research, the signs and significance of the interaction variables in Table 5 are of particular importance. The empirical findings confirm that the sign of INTER1_D is negative, which is consistent with the hypothesis of profit minimization due to potential broad effects of political costs. However, the first interaction variable is not statistically significant in the baseline DACC models (DACC_K and DACC_MJ), indicating that broad political costs did not have a sufficiently strong or unified effect on the entire sample of windfall profit companies. In contrast, the INTER2_D interaction variable, which captures only those companies that were subject to windfall

tax regulation, is negative and statistically significant in both DACC specifications at the 5% level. This finding confirms that the actual exposure to taxation due to windfall profits is a much stronger motive for downward earnings management than the mere existence of windfall profits. Therefore, it can be concluded that the political cost hypothesis can be accepted, but only for those companies that had a very credible and pronounced risk of political costs, i.e., additional taxation. This finding of interaction variables is in line with the findings of Han and Wang (1998) and Chen et al. (2011). Han and Wang (1998) found that not all companies in the oil sector are equally exposed to political costs, while Chen et al. (2011) confirmed the political cost hypothesis only for the private real estate companies. Similar to the aforementioned two studies, our findings also confirmed that stronger exposure to political costs is more likely to encourage earnings management practices.

Table 5 FE panel regression results for baseline and signed DACC models

Panel A: DACC; Kothari et al. (2005)			
Variable	**DACC_K**	**|DACC_K⁻|**	**|DACC_K⁺|**
INTER1_D	-0.0123	-0.0274***	0.0028
INTER2_D	-0.1322**	-0.1350	-0.0682
LEV_{t-1}	0.00138**	-0.00084	0.00067
$SIZE_{t}$	0.0350	-0.0435*	0.0479**
ROA_{t-1}	0.00188***	-0.00036	0.00044
$EITR_{t-1}$	0.1183**	0.1258*	0.1567**
2023_D	-0.0047	-0.0069	0.0026
Constant	-0.3226**	0.2160	-0.2584*
Observations	**7,230**	**3,455**	**3,775**
F value	**6.88**	**3.48**	**2.63**
R^2 (within)	**0.0169**	**0.0304**	**0.0194**
Panel B: DACC – MJ; Dechow et al. (1995)			
Variable	**DACC_MJ**	**|DACC_MJ⁻|**	**|DACC_MJ⁺|**
INTER1_D	-0.0101	-0.0269***	0.0058
INTER2_D	-0.1339**	-0.1319	0.0615***
LEV_{t-1}	0.00128**	-0.00091	0.00088
$SIZE_{t}$	0.0386*	-0.0417*	0.0505**
ROA_{t-1}	0.00159**	-0.00074	0.00064
$EITR_{t-1}$	0.1162**	0.1287*	0.1677***
2023_D	-0.0029	-0.0053	0.0052
Constant	-0.3382**	0.2082	-0.2930*
Observations	**7,234**	**3,382**	**3,852**
F value	**6.15**	**3.57**	**–**
R^2 (within)	**0.0146**	**0.0332**	**0.0246**

Note: FE estimations with firm and year fixed effects. Robust standard errors clustered at the firm level.
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.
Source: Authors' calculations

To gain even deeper insight into the behavior of companies in 2022, the sample was split according to the sign of the DACC variables. Accordingly, additional models (only positive DACC and only negative DACC) were estimated, which revealed asymmetries in the behavior of sampled companies. In both negative DACC specifications (|DACC_K$^-$| and |DACC_MJ$^-$|), INTER1_D is negative and statistically significant at the 1% level. This finding confirms that the existence of windfall profits in 2022 intensified only downward earnings management, which allows for conditional acceptance of the political cost hypothesis. Conversely, in the segment of companies that had only positive discretionary accruals (|DACC_K$^+$| and |DACC_MJ$^+$|), INTER1_D is statistically insignificant, indicating that the occurrence of windfall profits in 2022 did not affect the change in upward earnings management. After splitting the sample according to the sign of the DACC variable, INTER2_D is statistically significant and positive only for the |DACC_MJ$^+$|) specification.

The secondary objectives of the research refer to other regressors that, according to theory and earlier empirical evidence, can affect discretionary accruals. In this segment of variables, the debt covenant hypothesis can be analyzed, according to which more indebted companies try to improve financial position and performance in financial statements (Watts & Zimmerman, 1986). The empirical findings from Table 5 confirm the PAT theoretical assumptions because the signs with the LEV variable are positive and statistically significant in both baseline DACC models. Thus, the higher indebtedness of Croatian manufacturing companies caused income-increasing earnings management. This empirical result is in line with findings from similar studies in Croatia (Pervan et al., 2024) and other countries (DeFond & Jiambalvo, 1994; Lazzem & Jilani, 2018; Palumbo & Rosati, 2022). The simultaneous analysis of the political cost hypothesis and the debt covenant hypothesis shows that the findings for the debt covenant hypothesis are more stable and robust through alternative model specifications. Such a finding may suggest that incentives for private contracting are dominant compared to public political cost related motives.

Controlling for the SIZE variable in the baseline DACC models reveals somewhat mixed results because in the DACC_K specification it is positive but statistically insignificant, while in the DACC_MJ specification, it becomes positive, but only marginally statistically significant (at the 10% level). In the segment of companies with only negative accruals, SIZE only marginally reduces the level of discretionary accruals (|DACC_K$^-$| and |DACC_MJ$^-$|), while in the segment of companies with only positive accruals (|DACC_K$^+$| and |DACC_MJ$^+$|), the effect is completely opposite. The lagged ROA variable across both baseline DACC specifications (DACC_K and DACC_MJ) is positive and statistically significant. The observed sign indicates that more profitable companies have larger and more positive discretionary accruals. The finding is in line with previous literature (Dechow et al., 1995; Kothari et al., 2005), which reports that more profitable companies are associated with upward earnings management to meet earnings benchmarks or to signal sustainable performance. After breaking the sample according to the sign of the DACC variable, the profitability measure (ROA) becomes statistically insignificant.

The lagged EITR variable is positive and statistically significant for all six DACC specifications, providing evidence of asymmetric earnings management strategies. A positive sign in both baseline DACC models (DACC_K and DACC_MJ) confirms that companies with a higher tax burden have larger and more positive discretionary accruals. A positive sign in the model with only negative discretionary accruals (|DACC_K$^-$| and |DACC_MJ$^-$|) indicates that a higher tax burden enhances profit minimization strategies to reduce income tax payments. Conversely, for observations with only positive DACC, a higher EITR results in an increase in reported profits. Such an asymmetric finding for EITR shows that in earnings management practice there is often a trade-off between tax and other motives; sometimes tax motives prevail, while sometimes other motives prevail. Results are comparable with the findings of SánchezBallesta and Yagüe (2020), who also reported similar results with regard to tax-driven earnings management. Namely, they point out that companies, which historically used upward earnings management, have motives that are more pronounced than the motives for decreasing the current income tax burden.

5. *Concluding remarks*

The war in Ukraine and the sanctions against Russia in 2022 have led to increased uncertainty on

the energy markets and a significant rise in energy prices. EU responded to the energy crisis, windfall corporate profits, and high inflation with a number of different measures, including the windfall profits tax implemented in Croatia and other EU Member States. Such a business environment provides a unique testing ground to examine how companies respond to the increasing possibility of political costs, such as additional profit taxation and selling price restrictions.

By applying the difference-in-differences framework in the FE panel for the period 2021–2023, we came to several very interesting conclusions. This primarily refers to the fact that the occurrence of windfall profits in 2022 did not cause systematic downward earnings management. However, the interaction variable capturing the effect of windfall profits amplified negative earnings management in the segment of companies that had only negative discretionary accruals. The INTER2_D interaction variable that captures only those companies that were subject to windfall profits tax regulation is negative and statistically significant. This finding confirms that the actual exposure to windfall profit taxation is a more pronounced motive for downward earnings management than the mere existence of windfall profits. Therefore, it can be concluded that the political cost hypothesis can be conditionally accepted, i.e., only for companies faced with direct risk of political costs. The control variables have signs that are consistent with theoretical assumptions and previous research. The LEV variable is positive in both baseline models, clearly confirming the debt covenant hypothesis. It should be emphasized that the main empirical findings are stable for both DACC specifications (DACC_K & DACC_MJ), indicating that the results are not sensitive to the choice of constructs for measuring earnings management.

The key findings of this research provide several practical guidelines for the various users of accounting information. Commercial banks and other institutional creditors need to be aware that the reported accounting profits in the years of excessive profitability may be intentionally reduced by the choice of accounting methods/estimates if company is faced with credible and pronounced risk of additional political costs. Consequently, a more detailed analysis of accounting figures is required, with particular attention paid to discretionary accrual items such as depreciation, write-offs of receivables, write-offs of inventories, provisions, etc. Croatian tax auditors should assume that companies faced with the additional windfall tax burden will probably use accounting methods aimed at reducing the reported accounting profit. Therefore, tax auditors should be stricter for such companies. In the years with windfall profit, external auditors should be particularly careful to prevent accounting manipulations, i.e., the selection of accounting techniques that are not in line with accounting standards and general accounting principles.

Although this research resulted in interesting findings about the impact of windfall profits and related tax regulations on earnings management, several important limitations should be highlighted. First of all, it should be emphasized that the analysis was conducted only for the manufacturing industry in Croatia. Consequently, the number of companies with windfall profits is relatively small, and an even smaller number of companies were subject to windfall profits tax regulation. The sample predominantly included private companies where the incentives for financial reporting strategies are often not identical to those for listed companies. Taking into account all of the above as well as the specific implementation of windfall profits tax regulation in Croatia, the conclusions have limited generalizability. The results could be valid for small open EU economies with a similar institutional and business environment (high book-tax conformity, code law, predominantly private firms, etc.). By contrast, the behavior of listed companies from countries with stronger institutional supervision, better corporate governance practices, and lower book-tax conformity could result in different findings. Another limitation is the research methodology itself, which is limited to total discretionary accruals. The reason for this is the fact that earnings management cannot be measured directly. The total discretionary accruals used in the study are proxy variables, which have certain limitations in terms of measurement reliability. Although we used two measures for discretionary accruals (Dechow et al., 1995 and Kothari et al., 2005 models) for robustness of conclusions, they are not perfect in separating the discretionary and non-discretionary components of accruals. This problem can be particularly pronounced in short data panels in the periods with significant economic turbulence.

Future research should include a larger number of countries to improve the generalizability of the

conclusions. It should consider how institutional (book-tax conformity, rule of law, etc.) and additional company-level factors (audit quality, type of ownership, etc.) shape the influence of windfall profits on earnings management. A longer time coverage of the data would enable the use of a dynamic panel and more reliable knowledge about the practice of earnings management after the tax reform and the persistence of companies' behavior. Future research could also analyze windfall profits through the prism of real transactions-based earnings management, specific accruals earnings management, or profit distributions. Validating research results using different methodologies can enhance their reliability.

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