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Earnings Manipulation in Times of COVID-19: Evidence from European Union Countries

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Abstract

The coronavirus pandemic has caused the world's worst crisis. No other situation in recent history has had such a negative impact on the global economy. Consequently, companies have been forced to adapt to the new circumstances and strive in this drastically changing world.
The objective of this study is to analyze the impact of the COVID-19 pandemic on earnings management practices in the context of European Union countries. We applied accruals-based methodology, and to estimate discretionary part of accruals we used Dechow, Sloan, and Sweeney model.
Our results confirm that companies reduced earnings management activities during COVID compared to pre-pandemic. This reduction is influenced by the economic situation of the country and companies, as well as by whether or not they are listed on the stock markets. In particular, we observed that the impact of COVID-19 on the change in manipulation is lower in countries with higher GDP, as well as in listed companies and those with negative results.
Our findings have both theoretical and practical implications for the practices of earnings management in European Union countries in times of pandemic. We contribute to the literature by improving understanding of the quality of corporate financial reporting during the COVID-19 period, one of the most important crisis occurred in recent history.

Keywords: earnings management, COVID-19, discretionary accruals, comparative analysis, European Union

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Introduction

The global outbreak of the COVID virus in 2020 has led to immense impacts on all aspects of life, particularly on economic activities. This has resulted in a multiple effects, to name a few: disruptions in international trade and the implementation of national lockdowns, significant declines in product demand, heightened uncertainty due to media coverage, the spread of information (Haroon and Rizvi 2020), and extreme volatility for companies, affecting shareholders worldwide (Ali et al. 2022). As a result, there has been a sudden disappearance of investors and continued poor forecasts. This has forced many previously prosperous and thriving companies to adapt to the new situation.

In this context, companies must have responded to these unexpected circumstances. Previous earnings management literature has demonstrated that firms often manipulate their reported earnings during different crises in order to mitigate the impact of adverse market conditions (see, e.g., Choi, Kim, and Lee 2011; Cimini 2015; Callao, Jarne, and Wroblewski 2020). Therefore, it is a possible that companies were utilizing accounting discretion in attempt to adapt to the new conditions brought about by the current epidemic.

Thus, the aim of our study is to examine the impact of the COVID-19 pandemic on earnings management practices in the context of European countries. The coronavirus pandemic has triggered the worst crisis worldwide, including in European economies. This has exposed structural weaknesses and gaps in services, economic activity, and social protection. No situation in recent history has had such a negative impact on all of the world's economies, disrupting trade, supply chains, a collapse in international tourism and essential services, leading to widespread unemployment, many businesses closures, and an increase in poverty. This situation exposes businesses to unfavorable conditions simultaneously. Our research question therefore focuses on whether firms have changed their earnings management strategies in response to the pandemic, specifically examining how firms managed earnings just before and in the COVID-19 period.

The results confirm the impact of COVID-19 on earnings management practice in European countries. Specifically, there are significant differences in earnings manipulation between the periods: before COVID and COVID periods. Further analysis reveals that companies reduced their earnings management activities in the COVID period compared to before COVID period, particularly in France, Greece, Portugal, and Spain.

Additionally, after controlling for the effect of some economic and business variables, it is observed that the impact of COVID-19 on changes in manipulation is less pronounced in countries with higher GDP, as well as in listed companies and those with negative financial results.

We make several contributions to the literature on earnings management. Firstly, our study provides additional evidence on the impact of COVID-19 on earnings management. While there are currently several studies addressing this issue, the impact of the coronavirus has been significant and there is a need for more comprehensive results, detailed analysis and additional evidence. Improving our comprehension of the accuracy of corporate financial reporting during the COVID-19 pandemic is crucial.

Secondly, this study makes a significant contribution to the existing literature on corporate responses to COVID-19. Although there is a growing literature (Susak 2020; Usheva and Vagner 2020; Duc, Hiep, and Thanh 2021; He and Jianqun 2021; Buitink 2022), this is one of the few studies to examine earnings management practices in Jianqun relation to ongoing pandemic in the context of European Union countries. While there are studies that examine the impact of the coronavirus on individual European countries such as Croatia, Slovakia, United Kingdom, as far as we know, there is only one study that provides a global analysis of different countries from around the world (Buitink 2022). Our study investigates the behavior of managers in twelve European countries.

Finally, previous studies have only examined the impact of COVID-19 on earnings manipulation considered 2020 as a pandemic period. Therefore, since COVID-19 emerged in 2020 but spanned more than a year, previous studies may not have fully captured the true impact of the pandemic. This limitation has been acknowledged by some authors; see for example, Hsu and Yang (2022). In our study, we consider two-year observation period (2020 and 2021) to more accurately measure the impact of COVID-19.

The remainder of this paper is organized as follows: Section 2 reviews the existing literature on earnings management in times of COVID-19 and develops our research hypotheses. Section 3 explains our sample selection process. Section 4 describes our methods and data. Section 5 presents our results, and Section 6 concludes.

Literature review and research hypotheses

The COVID-19 pandemic began on the eve of 2020 when multiple cases of pneumonia were reported. Just a few months later, a global pandemic was declared due to the alarming spread and severity of the virus (World Health Organization 2020). This event was unpredictable, as no similar crisis has occurred in decades. While there have been different financial crises in different countries with varying impacts on economies, the coronavirus was an unprecedented event with a sudden and intense impact on economic activity and financial markets worldwide (Susak 2020).

The COVID-19 outbreak has had a significant impact on the economy, and led immediate economic crisis. Previous research has examined the impact of economic crises on earnings management; however, these studies have shown inconclusive results. For instance, while some studies, such as Da Silva et al. (2014), Flores et al. (2016), Callao, Jarne and Wroblewski (2020), have found an increase in earnings management during financial and economic crises, others, including Filip and Raffournier (2014), Cimini (2015), and Chintrakarn, Jiraporn, and Kim (2018) have documented a decline in earnings management during the economic crises. This decline has been attributed to poor firm performance, which reduces the usefulness of earnings management.

However, the economic crisis caused by COVID-19 is not comparable to any of the previous crises in the last decades. It was sudden and was caused by non-economic factors, resulting in significant economic and social consequence worldwide, as noted by Susak (2020). In the light of this, we will briefly discuss existing studies that have examined the impact of COVID-19 and its main outcomes in various countries.

The first group of studies confirms that companies are more likely to engage in earnings management during the COVID crisis. Susak (2020) conducted a study on the impact of COVID-19 on companies in Croatia. His empirical findings support the hypothesis that the aforementioned changes in the regulatory framework during the exceptional pandemic circumstances had a statistically significant positive effect on the relationship between earnings management and financial reporting delay. Similar results were found by Usheva and Vagner (2020) in their analysis of the impact of COVID-19 on Slovak companies.

In 2021, He and Jianqun conducted a study on the impact of the COVID-19 outbreak on Chinese listed companies. Their findings revealed an increase in accrual-based earnings management, indicating a higher level of earnings manipulation due to the negative effects of the coronavirus. In 2022, Ryu and Chae investigated whether distribution and service companies in Korea maintained the quality and reliability of their accounting information despite the economic changes brought about by the pandemic. The results of their analysis showed that these companies engaged in more earnings management during the COVID-19 period compared to before, suggesting their awareness of the uncertainty surrounding future business performance as the pandemic continued.

The second group of studies shows contradictory results, with some confirming a negative effect of COVID-19 on earnings management. For example, Duc, Hiep, and Thanh (2021) conducted a study on firms in Vietnam and found that during the pandemic, companies reduced their fraudulent behavior in financial statements. Similarly, Aljawaheri et al. (2021) studied firms in Iraq and also found a negative impact of earnings manipulation during the COVID-19 period. Buitink (2022) reached a similar conclusion in a study of 17 countries, including Taiwan, the United States, South Korea, China, Turkey, Sweden, Canada, Israel, Germany, Denmark, Finland, the United Kingdom, the Netherlands, Ireland, Brazil, Switzerland, and France.

Other studies have found no significant difference in earnings management as a result of the COVID-19 pandemic (Azizah, Wahyoeni, and Zoebaedi 2021; Hsu and Yang 2022; or Tenripada et al. 2022).

However, it should be noted that there is a limited number of studies and the results are not conclusive. Additionally, the majority of studies suggest that the pandemic did have an impact on earnings management. Therefore, our hypothesis, in its alternative form, is:

H_1: The outbreak of COVID-19 has led to changes in earnings management practices in the context of EU countries.

Sample selection and analysis period

The accounting and financial data were collected from Bureau Van Dijk's Amadeus database, which contains historical financial data from the annual reports of European companies.

The purpose of this article is to examine the phenomenon of earnings management in the context of European Union countries, specifically focusing on twelve countries[1] with data available

1 The initial sample considered all European Union countries (27 countries); nevertheless, because of the limitation of the database (missing data, outliers) we had to discard other European Union countries.

in the Amadeus database: Austria, Belgium, Finland, France, Germany, Greece, Italy, Netherlands, Poland, Portugal, Spain, and Sweden.

The analysis covers the period from 2017 to 2021, with the years 2017 to 2019 representing the period *before COVID-19* and its impact on companies. This is a period immediately prior to the outbreak of the pandemic. The years 2020 and 2021, referred to *COVID-19 period*, and are used to assess the direct impact of pandemic on company activities.

Thus, our final sample includes a total of 5,218 firms, which amounts to 26,090 firm-year observations (for each firm there are five observations: 5 years). For each variable, outliers were eliminated; the mean plus/minus three times the standard deviation. Table 1 shows the composition of our final sample.

Table 1. Composition of the sample: number of companies and total of observations by country

	Number of companies in our sample	Total number of observations
Austria	308	1,540
Belgium	376	1,880
Finland	563	2,815
France	487	2,435
Germany	361	1,805
Greece	111	555
Italy	1,637	8,185
Netherlands	83	415
Poland	166	830
Portugal	198	990
Spain	208	1,040
Sweden	720	3,600
	5,218	26,090

Source: author's own analysis.

Methodology

This study aims to evaluate the impact of the COVID-19 outbreak on earnings management in companies from twelve European Union countries. Various methods for measuring earnings management (*EM*) can be found in the literature, such as studies conducted by Dechow, Ge, and Schrand (2010) or Callao, Jarne, and Wroblewski (2014). Our study utilizes an accruals-based methodology and measures earnings management through discretionary accruals.

Accruals are defined as the portion of revenues and expenses that do not include receipts and payments, and are calculated directly as the difference between profit and operating cash flow. Total accruals are composed of non-discretionary accruals (*NDA*), which are the part of accruals that are difficult to manipulate, and discretionary accruals (*DA*), which are easier to manipulate; hence $TA = NDA + DA$. Since the discretionary and nondiscretionary components of accruals

are not directly observable, we use the model developed by Dechow, Sloan, and Sweeney (1995) to estimate them (equation 1)[2].

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it}, \quad (1)$$

where:
TA_{it} represents the total accruals of firm i in period t, calculated as the difference between earnings (E) and cash flow from operations (CFO): $TA_{it} = E_{it} - CFO_{it}$.
ΔREV_{it} represents the change in revenue of firm i in period t compared to $t - 1$.
ΔREC_{it} represents the change in receivable of firm i in period t compared to $t - 1$.
PPE_{it} represents the property, plants and equipment of firm i in period t.
A_{it-1} represents the total assets of firm i in period $t - 1$, and is used as a deflator to avoid heteroscedasticity problems.
ε_{it} is the error term for firm i in period t.

Discretionary accruals (DA_{it}) are the residual of equation 1 and they are calculated by equation 2, where a_0, a_1, a_2 are the estimated values for the coefficients α_0, α_1 and α_2:

$$\frac{DA_{it}}{A_{it-1}} = \frac{TA_{it}}{A_{it-1}} - \left(a_0 \frac{1}{A_{it-1}} + a_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + a_2 \frac{PPE_{it}}{A_{it-1}} \right). \quad (2)$$

Once DA are obtained as a measure of earnings management, in order to evaluate the impact of the Covid outbreak on *DA*, first, we do a **descriptive analysis**. This includes calculating the magnitude of manipulation (mean of *DA*) and the direction of earnings management practices, either income-increasing or income-decreasing (sign positive or negative of *DA*). We analyze data for two periods: *before COVID period* (2017–2019) and *COVID period* (2020–2021).

After confirming that *DA* do not follow a normal distribution, we conduct a **Wilcoxon rank test** to determine if there is significant differences in earnings management between the two periods. To do this, we first calculate the absolute values of *DA* for each year and then, we calculate the means separately for *before COVID period* (the mean of the absolute value of *DA* for 2017–2019) and *COVID period* (the mean of the absolute value of *DA* for 2020 and 2021). Subsequently, we apply the test.

Finally, in order to test if COVID-19 had an effect on *DA* and if other variables (such as the economic position of countries, and economic and financial position of companies) influenced this possible effect, we built a **regression analysis model** (equation 3):

2 Callao, Jarne, and Wroblewski (2017) confirm that this model is the most popular accrual model used by authors in the earnings management literature to measure the discretionary component of accruals. They analyzed 195 papers and found that this model was used in about 30% of the studies.

$$absDA_{it} = \beta_0 + \beta_1 COVID + \beta_2 GDP_{it} + \beta_3 LOSS + \beta_4 LISTED_{it} + \beta_5 LIQU_{it} + \beta_6 SOLV_{it} + \beta_7 ROA_{it} + \beta_8 COVIDxGDP_{it} + \beta_9 COVIDxLOSS_{it} + \beta_{10} COVIDxLISTED_{it} + \beta_{11} COVIDxLIQU_{it} + \beta_{12} COVIDxSOLV_{it} + \beta_{11} COVIDxROA_{it}. \quad (3)$$

The **dependent variable**, $absDA_{it}$, represents the absolute value of discretionary accruals for firm *i* in period *t* and is used as a proxy for earnings management. We have chosen to use the absolute value of *DA* because our focus in on the impact of COVID-19 on earnings management, rather than the direction in which earnings are managed (i.e. whether they are inflated or deflated). Therefore, the sign of the variable is not relevant to our objective[3].

The **independent variable** is *COVID*. It is a dichotomous variable that takes a value of 1 for fiscal year: 2020 and 2021 (*COVID period)*, and the value of 0 for observations from 2017 to 2019 (*before COVID period*). A similar methodology has been used in Aljawaheri et al. (2021), Duc, Hiep, and Thanh (2021) or Buitink (2022), among others. We expect earnings management to have been affected by pandemic, making the *COVID* variable significant. However, previous studies have reached conflicting results on the direction of this impact (the increase or decrease), so we cannot determine the expected sign.

Control variables: as mentioned above, we include certain variables to control for the impact of the macroeconomic environment and certain aspects of companies. These variables are:

- *GDP*: this is the natural logarithm of each country's GDP per capita. We introduce this macroeconomic variable to take into account that the different economic position of different European countries can affect to earnings management by companies. According to Naceur, Ghazouani, and Omran (2007), GDP directly reflects the real state of the economic environment. Several studies, such as those by Shen and Chih (2005), Chih, Shen, and Kang (2007), and Callao, Jarne, and Wroblewski (2020) suggests that strong local markets constrain earnings management. Other research also supports this finding. For example, Shen and Chih (2005) and Chih, Shen, and Kang (2007) confirmed that higher GDP per capita reduces the extent of earnings management. In other words, firms in wealthier countries are generally less likely to engage in earnings management. However, Conrad, Cornell, and Landsman (2002), Cohen and Zarowin (2007) argue that firms have a greater tendency to engage in earnings management during a good economic situation. This concern is based on the observations that investors' reaction to earnings disappointment is more adverse during an economic upturn. The findings of Conrad, Cornell, and Landsman (2002) have also motivated the studies conducted by Rajgopal, Shivakumar, and Simpson (2007) who confirmed that earnings management

3 Warfield, Wild and Wild (1995) point out that the absolute value of (unsigned) discretionary accruals is a good proxy for the combined effect of income-increasing and income-decreasing earnings management. There are many studies that have used unsigned discretionary accruals including Warfield, Wild, and Wild (1995), Becker et al. (1998), Bartov, Gul, and Tsui (2000), Klein (2002), Lin and Paananen (2005), Callao, Jarne, and Wroblewski (2021), among others.

is higher when the economy is doing well. Therefore, the expected the relationship between GDP and earnings management is inconclusive.

- *LISTED*: it is a dichotomous variable that takes a value of 1 if a firm is listed and 0 if it is not. We include this variable to assess the difference in the extent of earnings management between listed and unlisted companies in European countries. We expect a positive relationship with the dependent variable. Previous studies have suggested that listed and unlisted firms differ in their approach to earnings management due to factors such as investor pressure, market pressure, and shareholder influence on managers of listed companies. Some of these studies include Rangan (1998), Degeorge, Patel, and Zeckhauser (1999), Vander Bauwhede and Willekens (2003), Ball and Shivakumar (2006), Burgstahler, Hail, and Leuz (2006), and Givoly, Hayn, and Katz (2010), among others.
- Additionally, we include four variables that reflect the economic and financial situation of companies and their overall performance. These variables can demonstrate their resilience to the negative effects caused by COVID-19:
  - *LIQU*: it is the liquidity ratio for firm *i* in period *t*, which is defined as the ratio of current assets to current liabilities.
  - *SOLV*: it is the solvency ratio for firm *i* in period *t*, defined as the ratio of total assets to total liabilities.
  - *LOSS*: it is a dichotomous variable that takes value of 1 if the company´s earnings is negative, and 0 otherwise.
  - *ROA*: it is the return-on-assets ratio for company *i* in period *t*, defined as the ratio of operating profits to total assets.

We believe that better liquidity, solvency and profitability of the company, the less earnings management is expected. This is supported by previous studies such as Sweeney (1994), Iatridis and Kadorinis (2009), Charitou, Lois, and Santoso (2012). So, we expect the coefficients for LIQ, SOLV and ROA to be negative, while the coefficient for the LOSS variable to be positive.

Finally, we include six new variables as a product of COVID variable and each of the rest of variables (COVID x Z, with Z = GDP, LISTED, LIQU, SOLV, LOSS, ROA). Our goal is to test the influence of these variables on the impact of COVID on earnings management. As *COVID* is a dichotomous variable, with a value of 0 for observation from 2017 to 2019 (*before COVID period*), we cannot predict the sign of the coefficients for these variables. The unprecedented nature of this crisis makes it difficult to anticipate the influence of these variables on earnings management.

Table 2 presents descriptive statistics for the variables included in the regression.

The descriptive statistics show that the highest value of discretionary accruals is 0.4991, while the lowest value is 0.0000. As for the liquidity, solvency or ratio of return on assets, the mean values indicate adequate level of indices. We must take into consideration that the descriptive statistics also enclose the period *before COVID*. The minimum values of the following indices show a very unfavorable situation of the companies and correspond to the *COVID period* of the companies.

The descriptive statistics of GDP (gross domestic product) refers to the mean value of the logarithm of GDP per capita, where 11.0061 refers to Sweden, with the highest GDP per capita, and 9.5371 corresponds to Poland with the lowest GDP per capita. The variables: *COVID x GDP, COVID x LIQU, COVID x SOLV,* and *COVID x ROA* are conditioned by the Covid period; therefore, we may observe reduced values of means in the pandemic period.

Table 2. Descriptive statistics for variables in equation (3)

	Mean	Max	Min	St. Dev
AbsDA	0.0233	0.4991	0.0000	0.0271
GDP	10.5706	11.0061	9.5371	0.3046
LIQU	1.8661	6.9991	0.0001	1.2321
SOLV	1.9542	6.9776	0.0054	0.9715
ROA	0.1400	0.7473	–0.0505	0.0962

Source: author's own analysis.

Table 3 shows the frequencies for dichotomous variables in equation (3). The sample consists of 40% of the observations from the *COVID period* (years: 2020 and 2021), and 60% from the period before the pandemic (period of 2017–2019). Additionally, 17.78% of firms reported a loss in at least once during our sample period. However, when considering only the *COVID period*, this percentage increases to 72.97% of the firms reporting a loss. Lastly, our sample is composed of 18.36% of listed companies.

Table 3. Frequencies for dichotomous variables in equation (3)

Variable		% affirmative
COVID	2020–2021	40.00
	2017–2019	60.00
LOSS	Loss company	17.78
	No loss company	82.22
LISTED	Listed companies	18.36
	Unlisted companies	81.64

Source: author's own analysis.

The correlations between the variables in regression (3) are shown in Table 4. As can be seen, the correlations between the variables are low or moderate and the signs of the correlations are mostly expected.

Table 4. Results of correlation analysis between the variables included in the regression

	COVID	*GDP*	*LOSS*	*LISTED*	*LIQU*	*SOLV*	*ROA*	*Covid x GDP*	*Covid x LOSS*	*Covid x LISTED*	*Covid x LIQ*	*Covid x SOLV*	*Covid x ROA*
COVID	1												
GDP	−0.0458**	1											
LOSS	0.0456**	−0.0497**	1										
LISTED	0.0340**	−0.0938**	0.1173**	1									
LIQU	0.0390	0.0353**	−0.0148*	−0.0201**	1								
SOLV	0.0422**	0.0311	−0.0226**	0.0209**	−0.0147	1							
ROA	−0.0309**	0.1737**	−0.0815**	−0.1755**	0.0215**	−0.0941**	1						
COVID x GDP	0.3993*	0.0704**	0.0438**	−0.0022	0.0608	0.0624	0.0944	1					
COVID x LOSS	0.3604**	−0.0265**	0.3327**	0.0721**	−0.0493	0.0706	−0.0655**	0.3576**	1				
COVID x LISTED	0.3448**	−0.0389**	0.0915**	0.2937**	−0.0119	0.0124*	−0.1042**	0.3413**	0.2313**	1			
COVID x LIQ	0.0339	0.0237**	−0.0089	−0.0127*	0.5321**	−0.0829	0.0436*	0.0351**	−0.0625	−0.0672	1		
COVID x SOLV	0.4894**	0.0251**	0.0222**	0.0199	−0.0324	0.5047**	−0.0492**	0.4892**	0.1761**	0.1833**	0.0128*	1	
COVID x ROA	0.3067**	0.1156**	−0.0197**	−0.0785**	0.0296	−0.0421**	0.4474**	0.4111**	0.1814**	0.1272**	0.0392**	0.2908**	1

* Significant at 0.05.

** Significant at 0.01.

Source: author's own analysis.

Results

Descriptive analysis

First, we analyze the extent of earnings management (represented by the mean of DA) during two time periods: *before COVID period* (2017–2019) and *COVID period* (2020–2021). Table 5 presents the means of DA values for each country and for the EU countries as a whole during these two periods. We note that, overall, earnings management was lower in *COVID period* for sample of whole European countries. Additionally, in *before COVID period,* manipulation was used to increase earnings, but this changed in *COVID period*, with earnings being managed downward.

If we do an analysis by country, we can observe some cases (Greece, Poland, Portugal, Spain and Sweden) where earnings management declined in *COVID period* (absolute value of mean of DA is lower), In other countries, such us Belgium, Finland, Germany, and Netherlands, the earnings management raised in *COVID period* (absolute value of mean of *DA* is higher),

In contrast, other countries such as Belgium, Finland, Germany, and the Netherlands saw an increase in earnings management in *COVID period*, with a higher absolute value of the mean of *DA* and with earnings-decreasing practices in both periods (negative means).

In Austria and France, the earnings management declined in *COVID period* and the direction of manipulation shifted from earnings-increasing to decreasing earnings. However, in Italy, the companies increased their earnings management and the sign changed from earnings-decreasing *before COVID* to earnings-increasing in *COVID period.*

In summary, it can be confirmed that companies across Europe have altered their earnings management practices due to the impact of COVID-19. A consistent trend was observed in all European countries except Italy. The changes observed in DA in the *COVID period* resulted in lower reported earnings compared to what would have been shown if the manipulation had been continued.

Table 5. Means of DA before and in COVID period by country

Means of DA	Before COVID period	COVID period
	2017–2019	2020–2021
Austria	0.00132	−0.00085
Belgium	−0.00713	−0.00864
Finland	−0.00223	−0.00352
France	0.00422	−0.00155
Germany	−0.00469	−0.00918
Greece	0.01670	0.01073
Italy	−0.00044	0.00119
Netherlands	−0.00192	−0.00508
Poland	0.00789	0.00476

Means of DA	Before COVID period	COVID period
	2017–2019	2020–2021
Portugal	0.00717	0.00688
Spain	0.01092	0.00883
Sweden	0.00412	0.00296
All sample countries	0.00110	–0.00014

Source: author's own analysis.

In Table 6 we present the percentages of firms in different European countries that engaged in earnings-increasing and earnings-decreasing practices during the two distinct periods. Our findings indicate that, prior to the coronavirus outbreak, a higher number of companies utilized earnings management to increase their earnings. Across all European countries, the proportion of companies exhibiting positive signs of discretionary accruals was significantly greater than those showing negative signs.

In France, Portugal, Sweden, and Poland, twice as many companies managed their earnings upward compared to those that managed them downward. In Spain, this percentage increased to 76.3%, while in Greece, the number of companies employing earnings management to increase their earnings was more than four times the number of companies using it to decrease their earnings. Therefore, we can determine that, before the pandemic, the predominant strategy among European companies was to manage their earnings to order to increase them.

However, in *COVID period,* companies have altered their earnings management practices. In all countries included in the study, with the exception of Italy and Poland, there has been a decrease in the percentage of companies engaging in upward earnings management. In Poland, the proportion of firms engaging in both upward and downward earnings management has become almost equal in both periods. Nevertheless, in Italy, the majority of companies have continued their strategy of earnings-increasing in response to the pandemic.

We also observe that, among the countries where there has been a decline in the percentage of companies engaging in upward earnings management in *COVID period*, only Belgium and Germany have seen more companies managing their earnings downwards than upwards.

Table 6. Nature of earnings management by country: earnings increasing vs. earnings decreasing in COVID-19 and before (%)

	Before COVID period		COVID period	
	2017–2019		2020–2021	
	Positive DA	Negative DA	Positive DA	Negative DA
All sample countries	61.9	38.1	59.3	40.7
Austria	53.9	46.1	51.1	48.9
Belgium	51.3	48.7	49.9	50.1
Finland	53.1	46.9	52.3	47.7

	Before COVID period		COVID period	
	2017–2019		2020–2021	
	Positive DA	Negative DA	Positive DA	Negative DA
France	63.6	36.4	55.2	44.8
Germany	51.6	48.4	44.2	55.8
Greece	80.8	19.2	76.1	23.9
Italy	57.5	42.5	61.4	38.6
Netherlands	57.4	42.6	51.8	48.2
Poland	70.5	29.5	70.2	29.8
Portugal	64.8	35.2	63.1	36.9
Spain	76.3	23.7	74.8	25.2
Sweden	62.5	37.5	61.1	38.9

Source: author's own analysis.

Based on the results of the descriptive analysis, it can be concluded that companies in most European countries were affected by the exceptional situation of the COVID-19 outbreak. As a result, they tended to manage their earnings less in *COVID period*, while also being more inclined to manage them downward before pandemic.

Wilcoxon test results

In order to determine whether there are statistically significant differences in earnings management between the two periods analyzed, we conduct the Wilcoxon test. The results, shown in Table 7, indicate a significant difference at 5% level between the periods *before COVID* and *in COVID-19* in the sample countries as a whole. Moreover, we can conclude that earnings management decreased in *COVID period,* as evidenced by the higher number of companies and mean rank for negative ranks (*COVID period-before COVID period*).

When examining companies from various countries individually, the results of the Wilcoxon test indicate significant differences in earnings management between the two periods for Belgium, France, Germany, Greece, Portugal, Spain, and Sweden. In three of these countries (Belgium, Germany, and Sweden), there was an increase in earnings management *in COVID* period, as evidenced by a higher number of companies and a higher mean rank for positive ranks (*COVID period-before COVID period*). Conversely, in France, Greece, Portugal, and Spain, there was a decrease in manipulation in COVID-19 period. However, for companies from Austria, Finland, Italy, Netherlands, and Poland, there were no statistically significant differences in earnings management between the two time periods.

Table 7. Results of Wilcoxon test

	COVID-Before COVID	N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
All sample countries	Negative Ranks	2697[a]	2 610.93	7 041 689.00	– 2.146[a]	0.032**
	Positive Ranks	2521[b]	2 607.97	6 574 682.00		
Austria	Negative Ranks	170[a]	150.21	25 536.00	– 1.114[a]	0.265
	Positive Ranks	138[b]	159.78	22 050.00		
Belgium	Negative Ranks	185[a]	180.68	33 425.00	– 0.955[a]	0.098***
	Positive Ranks	191[b]	196.08	37 451.00		
Finland	Negative Ranks	301[a]	276.15	83 120.00	– 0.968[a]	0.333
	Positive Ranks	262[b]	288.73	75 646.00		
France	Negative Ranks	266[a]	245.94	65 421.00	– 1.933[a]	0.053***
	Positive Ranks	221[b]	241.66	53 407.00		
Germany	Negative Ranks	159[a]	172.18	27 376.00	– 2.668[a]	0.008*
	Positive Ranks	202[b]	187.95	37 965.00		
Greece	Negative Ranks	72[a]	56.60	4 075.00	– 2.845[a]	0.004*
	Positive Ranks	39[b]	54.90	2 141.00		
Italy	Negative Ranks	816[a]	828.06	675 693.00	– 0.279[a]	0.780
	Positive Ranks	821[b]	810.00	665 010.00		
Netherlands	Negative Ranks	45[a]	44.40	1 998.00	– 1.158[a]	0.247
	Positive Ranks	38[b]	39.16	1 488.00		
Poland	Negative Ranks	89[a]	80.99	7 208.00	– 0.447[a]	0.655
	Positive Ranks	77[b]	86.40	6 653.00		
Portugal	Negative Ranks	125[a]	103.13	12 891.00	– 3.766[a]	0.000*
	Positive Ranks	73[b]	93.29	6 810.00		
Spain	Negative Ranks	120[a]	107.69	12 923.00	– 2.365[a]	0.018**
	Positive Ranks	88[b]	100.15	8 813.00		
Sweden	Negative Ranks	338[a]	360.00	121 681.00	– 1.451[a]	0.095***
	Positive Ranks	382[b]	360.94	137 879.00		

[a] COVID period < Before

[b] COVID period > Before

* Significance at 1%.

** Significance at 5%.

*** Significance at 10%.

Source: author's own analysis.

Regression results

Table 8 presents the results of regression (3) on the impact of COVID-19 on earnings management activities in European Union countries.

The coefficient for the COVID variable is negative (–0.021) and significant at 10%, indicating that firms reduced their earnings management activities *in COVID period* compared to the period before COVID. This finding is not in line with some previous research on the impact of COVID on earnings management, such as Susak (2020), He and Jianqun (2021), Ryu and Chae (2022), and Tenripada et al. (2022), which suggest that earnings management behavior increases as companies face financial difficulties. However, Duc, Hiep, and Thanh (2021) found similar results to ours. As the authors note, this result is easily understandable. Due to the effects of COVID-19, companies' operations were disrupted, and investors and the market are more understanding of the impact of the pandemic and show greater tolerance for companies' poor performance. As a result, managers are less likely to engage in earnings management during the pandemic period than before.

Similarly, Azizah, Wahyoeni, and Zoebaedi (2021) have confirmed that the global COVID pandemic has made managers more cautious in their company management. While companies have continued to engage in earnings management during the pandemic, the numbers have been significantly smaller compared to *before COVID*. As the author explains, this is due to the fact that if managers strive to show strong company performance during the pandemic, even if it is not reflective of the actual situation, it may raise suspicion from various stakeholders such as the public, analysts, auditors, investors, and shareholders. Such aggressive actions by managers can also jeopardize their position within the company.

The GDP variable is also significant, with a positive coefficient of 0.008 at a 1% level of significance. This suggests that companies in wealthier countries engage in more earnings management compared to those in countries with lower GDP. This finding is not consistent with the previous literature on earnings management, such as Shen and Chih (2005) and Chih, Shen, and Kang (2007). However, Zamanianfar et al. (2021) argue that this result can be attributed to the decrease in GDP growth, which has led corporate executives to choose earnings management in order to mitigate the negative impact of macroeconomic conditions. In times of economic downturn, managers may feel pressure to maintain positive expectations and avoid creating uncertainty about economic conditions, even when the economy is performing well. This is important for maintaining investors' confidence and avoiding potential negative consequences for the company.

All European countries have suffered severe production losses due to COVID-19 crisis. Nevertheless, it is expected that companies will respond more efficiently to adverse circumstances under better macroeconomic conditions. This may lead managers in these economies to adopt more earnings management practices, as our results confirm.

The variables LISTED, LOSS, and ROA are all significant at 1% in explaining the earnings management, and the coefficients have the expected signs. The first two have a positive coefficients (0.006 for LISTED and 0.008 for LOSS), while ROA has a negative coefficient (–0.003). This indicates that

listed companies and those with a weaker economic position are more likely to engage in earnings management practices. On the other hand, the variables LIQU and SOLV are not significant, suggesting that the specific financial situation does not explain earnings management.

Previous studies have found consistent results regarding the impact of listing on earnings management. Rezaee (2005) and Givoly, Hayn, and Katz (2010), along with other researchers, have confirmed that listed companies are primarily motivated by economic pressures and incentives to meet stock market requirements and investor expectations when they engage in earnings management. Prior literature also suggests that firms reporting losses and worse economic position are more likely to engage in earnings management (Alhadab and Clacher 2018).

Table 8. Ordinary least squares regression results

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Significance
	B	Std. Error	Beta		
(Constant)	– .055	.008		– 7.296	.000
COVID	– .021	.012	-.389	– 1.829	.067
GDP	.008	.001	.085	10.431	.000
LISTED	.006	.001	.085	10.577	.000
LIQU	2.541E-8	.000	.002	.217	.828
SOLV	9.031E-5	.000	.008	1.002	.317
LOSS	.008	.000	.117	16.761	.000
ROA	– .003	.001	-.101	– 12.438	.000
COVIDxGDP	.002	.001	.374	1.752	.080
COVIDxLISTED	.001	.001	.011	1.329	.084
COVIDxLIQU	4.721E-8	.000	.002	.255	.799
COVIDxSOLV	7.236E-5	.000	.005	.556	.578
COVIDxLOSS	.002	.001	.013	1.762	.078
COVIDxROA	.000	.000	.010	.878	.380
F-value	128.578*				

$$absDA_{it} = \beta_0 + \beta_1 COVID + \beta_2 GDP_{it} + \beta_3 LOSS + \beta_4 LISTED + \beta_5 LIQU_{it} + \beta_6 SOLV_{it} \quad (3)$$

Source: author's own analysis.

After analyzing the impact of COVID on earnings management, we can see that the variables COVIDxGDP, COVIDxLOSS and COVIDxLISTED are significant at 10% and the sign of their coefficients is positive. This suggests that in *COVID period*, there was a decrease in earnings management but it was less pronounced in firms from more prosperous countries (–0.021+0.002), in listed firms (–0.021+0.001) and in loss-making firms (–0.021+0.002). It is important to note that while the coefficients are still negative, they are less negative, indicating a less significant decrease in manipulation. However, this does not necessarily mean that earnings management was higher than *before COVID period*.

Literature has shown that given the differences in the economic and institutional conditions in the different countries, the companies respond to macroeconomic instability through earnings management tactics differently, see for example, Leuz, Nanda, and Wysocki (2003), Geiger, Quirvan, and Hazera (2007), Reverte (2008), Tylsch (2009), among others.

These variations can be attributed to factors such as the level of development of the capital market in each country, the level of pressure from investors on companies, and the economic and financial conditions of firms in different European markets. Therefore, based on the above results we can confirm our hypothesis: there were changes in earnings management because of the COVID outbreak. These changes were conditioned by the economic situation of the country and by the particular economic situation and visibility of each company.

Conclusions

Since the outbreak of COVID-19, companies have been facing increased uncertainty and deteriorating business outcomes. This complex situation has made companies more susceptible to the temptation to respond to balance sheet numbers through earnings management practices. The purpose of this study is to examine the impact of COVID-19 on earnings management practices of companies in European Union countries. Specifically, we aim to determine whether firms have altered their earnings management strategies in response to the pandemic, which has caused a global economic crisis and created unfavorable conditions for firms.

Having controlled for the effect of some economic and business variables on earnings management, our results confirm the impact of COVID-19 on earnings management activities of sample firms. Due to the COVID outbreak, all European countries analyzed have changed their earnings management activity, as we verified significant differences between *before COVID* and *COVID* periods. In fact, a detailed analysis confirms that EU companies have generally reduced their earnings management activities during the *COVID period* compared to the pre-COVID period. Thus, in the pandemic, companies continued to engage in earnings management, but in much smaller volumes than *before COVID*. This activity is particularly pronounced in France, Greece, Portugal and Spain.

Secondly, the decrease in earnings manipulation caused by the pandemic has been mitigated by certain factors, specifically the country's macroeconomic conditions, the status of being a publicly listed company and reporting losses.

Further research could be extended to other European countries to determine the specifics of different corporate and legal environments, and consider the use of measures that could capture other aspects of financial reporting quality. Additionally, it might be intriguing to extend the analysis to other countries beyond the European Union.

Lastly, our research provides preliminary findings on the topic. Only two years of accounting data are currently available. As data for more years become available, further investigation into impact of COVID-19 on financial reporting quality in post-pandemic years would be recommendable.

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Kształtowanie wyniku finansowego w czasach COVID-19. Doświadczenia krajów Unii Europejskiej

Pandemia COVID-19 spowodowała najgorszy kryzys w skali światowej. Żadna inna sytuacja w najnowszej historii nie miała tak negatywnego wpływu na globalną gospodarkę. W związku z tym firmy musiały dostosować się do nowych okoliczności i przetrwać w tym drastycznie zmieniającym się świecie. Celem niniejszego badania jest analiza wpływu pandemii COVID-19 na praktykę kształtowania wyniku finansowego w krajach Unii Europejskiej. Zastosowano metodologię opartą na rozliczeniach międzyokresowych, a do oszacowania uznaniowej części rozliczeń międzyokresowych wykorzystano model Dechowa, Sloana i Sweeneya.

Wyniki badania potwierdzają, że firmy ograniczyły działania związane z kształtowaniem wyniku finansowego w czasie pandemii COVID-19 w porównaniu do okresu przed pandemią. Wpływ na to miała sytuacja gospodarcza państw i firm, a także to, czy firmy te były notowane na giełdach. W szczególności zaobserwowano, że wpływ pandemii na zmiany w kształtowaniu wyniku finansowego był mniejszy w krajach o wyższym PKB, a także w spółkach giełdowych i tych osiągających niekorzystne wyniki finansowe.

Zaprezentowane wyniki badań mają zarówno teoretyczne, jak i praktyczne implikacje dla praktyki kształtowania wyniku finansowego w krajach Unii Europejskiej w czasie pandemii. Wnoszą również wkład do literatury przedmiotu, zwiększając poziom zrozumienia wagi jakości sprawozdawczości finansowej firm w okresie pandemii COVID-19, jednego z najważniejszych kryzysów, jakie miały miejsce w najnowszej historii.

Słowa kluczowe: kształtowanie wyniku finansowego, COVID-19, uznaniowe rozliczenia międzyokresowe, analiza porównawcza, Unia Europejska