

Assessing the Practice of Earnings Management in COVID-19 Era. Landscape of European Companies: An International Comparison

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Abstract:

Beginning of 2020, the COVID-19 crisis holds for firms all over the world. Under these circumstances, the purpose of this paper is to evaluate the landscape of the European countries in terms of the earnings manipulation in COVID-19 era. Therefore, we compared companies from 15 European countries. The results show that the deteriorating economic conditions caused by COVID-19 are reflected in the managers' activity for earnings management in the context of European companies. Moreover, the panorama of earnings management activities in Europe is quite heterogeneous and inconsistent as we observe significant differences between European countries in the practice of earnings management. Additionally, rather than a single incentive or factor, we find a wide range of variables that affected managers' decisions to engage in earnings manipulation in COVID-19 times. Indeed, the results show that lack of growth opportunity caused by the pandemic, increased amount of debt, volatility of cash flow or sales, even size, age, or book value, were variables that influenced managers' decisions to manipulate earnings in pandemic. In addition, the industry effect cannot be separated from the impact of COVID-19. Surprisingly, institutional mechanisms of control, including audit quality or board monitoring, which are widely documented in the literature as limiting earnings management, were ineffective in the COVID-19 period. The presence of mechanisms of control is considered essential variables that limit the practices of earnings management, but even these can occasionally fail, as confirmed our study.

Keywords: COVID-19; earnings management; comparative analysis; European countries.

JEL Classification: G01; M41; O52; O57; P52.

Introduction

The 2020 coronavirus outbreak transformed global economic activity. Successful companies suddenly faced constraints and limitations, and their operations suffered an unprecedented decline in 2020 as a result of COVID-19 and the measures taken by country authorities to contain the spread of virus. The economic shock suffered by the companies affected by the impact of the COVID-19 crisis was so severe that it highlighted the vulnerability of almost all economic sectors in all European countries.

In 2020, all European Union countries were hurt by severe production losses as a result of the crisis COVID-19, but some were hit harder than others. The European Union (2020) reports confirm that global economic activity fell abruptly only in the first half of the year, by five percentage points of GDP in countries such as Poland and Sweden and up to 11% of GDP in Spain, Croatia and Italy. In the following months, it was even worse in some sectors. The following year, 2021, was supposed to be the year of economic recovery, but as authors Sapir (2020), Buti (2020), Darvas (2020), Goniewicz et al. (2023) (various reports) note, these problems could have a negative impact on the pace of economic recovery, depending on their magnitude. In this context, companies had to respond to these unexpected circumstances.

The objective of our study is to assess the effect of different key economic, financial and macroeconomic variables (growth opportunity, debt, size, age, economic situation of firms, book value, industry effect, board structure, audit control, among others) on the practice of earnings manipulation in response to the negative impact of COVID-19 in the context of European countries. In other words, due to the shock of the coronavirus, the landscape of doing business around the world has changed. Although the possible factors and incentives for earnings management remain, their effect could have been different on firms (no significant effect or change in the direction/ contrary effect). To this end, this paper provides comparative evidence on earnings management in 15 European countries.

We contribute to the earnings management literature in the following way. First, the existing literature examining the impact of COVID-19 on earnings management focuses mainly on the change in manipulation activities during the pandemic period compared to the years before. Our study contributes to the existing literature by examining the effects themselves (directly two pandemic years).

Second, there is a growing literature on the impact of COVID-19 on earnings management; yet this is one of the few studies to present a comparative study across European countries. Previous studies mostly focused on a specific country. We compare earnings management practices related to the ongoing pandemic in 15 European countries.

Third, previous empirical evidence provided rather inconclusive and conflicting views on the impact of COVID-19 on earnings management. Therefore, more results and evidence are needed to refute the previous findings. The impact of the coronavirus was so dominant that a better understanding of firms' incentives during the COVID-19 pandemic is essential. To improve the previous studies on pandemic effect on earnings management, we introduce wide range of different key economic, financial and macroeconomic variables to measure their effect on managers' behaviour.

Fourth, previous studies provided preliminary results on this topic based on accounting data from only one year. They treated 2020 as the pandemic period, but in reality COVID-19 has longer impacts. Therefore, previous studies may not accurately reflect the impact of COVID-19. We include two observation years: 2020 and 2021 to fully measure the impact of COVID -19.

Finally, by introducing some institutional variables, such as audit quality and board structure, we measure their impact on limiting earnings management in a pandemic situation, as their positive effect on the quality of reported earnings has been widely confirmed in the literature. However, it remains to be confirmed whether these institutional mechanisms are still effective after COVID-19.

The results show that managers response with earnings management to the negative economic conditions caused by COVID-19. Additionally, we confirm wide range of variables, such as lack of growth opportunity caused by the pandemic, amount of debt, volatility of cash flow or sales, growth opportunities, even size, age, or book value, that influenced managers' decisions to manipulate earnings. The industry effect cannot be separated as well from the impact of the COVID-19 pandemic.

Moreover, this study proves that the context of European countries is diverse, as we found differences between European countries in the practice of earnings management in COVID-19 period. Finally, surprisingly, the institutional mechanism of control, such as audit quality, or board monitoring, that are widely documented by literature to constrain earnings management, are not effective in COVID-19 era. The presence of control mechanisms is considered a key variable affecting earnings management practices, but as we note, even these can fail in some situations (pandemic).

The paper is organized as follows. Section 1 presents a literature review and the research questions. In Section 2, we explain the sample selection, analysis period and the methodology. Section 3 presents the results. Finally, the last section presents the conclusions.

1. Literature Review

Since the outbreak of COVID-19 in 2020, the world has become unsafe and corporate activities have been put on hold all over the world. The economic crisis triggered by COVID-19 is not comparable to any of the previous crises in recent decades. It had a sudden and global impact and a strong economic, as well as social, impact.

Periods of economic turmoil always cause managers to manipulate earnings to increase or decrease. Managers under the influence of negative situations are induced to manipulate earnings in response to adverse circumstances. Yet, no one could predict a crisis similar to COVID-19. Recent studies measuring the effect of COVID-19 are inconclusive. Susak (2020), Usheva and Vagner (2020), He and Jianqun (2021) and Ryu and Chae (2022), Taylor, Selasi and Yaa (2023), Aljughaiman et al. (2023), Lee, Choi and Lee (2024), El-Feel et al. (2024) showed more earnings management due to the negative impact of the coronavirus. However, Duc, Hiep, and Thanh (2021) and Aljawaheri et al. (2021) confirmed that in COVID-19 companies reduced their earnings manipulation behavior. Thus, the coronavirus has changed the panorama. Although earnings management literature attempts to understand why managers manipulate earnings, and the possible variables for earnings management remain, the characteristics of the circumstances have suddenly changed and managers had to adapt to completely new environment.

Therefore, our 1st research question evaluates which is the context of earnings management in pandemic era. To this end, we include wide range of mostly covered by the earnings management literature variables, to measure the effect of manipulation on managers' decisions. So, what we have learned from previous studies may not have the same implications now during the worst ever crisis.

Second, a large literature on earnings management confirms the differences in managing earnings across countries, see, e.g. Leuz, Nanda, and Wysocki (2003) analyzed companies from 31 countries; Coppensa and Peek (2005) studied 8 European countries; Burgstahler, Hail, and Leuz (2006) focused on 13 countries; Aussenegg, Inwinkl, and Schneider (2008) compared 15 European countries, Gopalan and Jayaraman (2012) analyzed 22 countries worldwide, Enomoto, Kimura, and Yamaguchi (2013) evaluated 38 countries, Mechelli and Cimini (2014) studied 12 countries, Fujiyama et al. (2014) considered 10 countries for the study, Lourenço et al. (2016) considered companies from 6 countries, Callao, Jarne, and Wroblewski (2018) compared 8 countries, Lee, Choi and Lee (2024) used observations from 46 countries, among others.

In addition, recent studies measuring the impact of COVID-19 on earnings management confirm that different European countries respond differently to the impact of COVID-19 in terms of earnings manipulation, as mentioned before. Usheva and Vagner (2020) confirmed more earnings management because of the impact of COVID-19 in Slovak companies. Susak (2020) showed more manipulation in period of COVID-19 in companies from Croatia, Azizah (2021) in Indonesia, He and Jianqun (2021) in Chinese listed companies, Hsu and Yang (2022) in British sample, or Ryu and Chae (2022) in companies from Korea. Duc, Hiep, and Thanh (2021), however, showed less manipulation in sample from Vietnam. Still, inconclusive results found Da Silva Flores et al. (2023). They evaluated whether the COVID-19 pandemic stimulated earnings management among publicly traded companies in Brazil and the USA. Their findings indicate that the discretionary accruals varied in a more accentuated manner during the COVID-19 pandemic.

Therefore, our 2nd research question focused on the comparative analysis of European countries. Although, the strategy employed against pandemic was mainly similar across Europe, we expect that different European companies were responding differently to the negative effects of COVID-19 impact.

2. Research Methodology

2.1. Sample and Analysis Period

We used Bureau Van Dijk's Amadeus database to collect accounting and financial data. Initially, we included all European companies available in the database that provide consolidated financial statements¹. Then, we excluded banks and financial institutions, as they are subject to special accounting rules. In addition, we have excluded all the companies if firm-year observations were missing for key accounting variables, such as total assets, sales, net income, and operating income. Surprisingly, we had to exclude samples from the UK and Ireland because of missing data for some key variables.

¹ We had to discard small countries such as Luxembourg, Liechtenstein, Cyprus, Matla, etc.

We also had to exclude four countries from the sample: Croatia, Hungary, Slovakia, and the Czech Republic, because for each of these countries we have only five, two, one, and two companies left, respectively, which is not enough to create a regression analysis.

Finally, for each variable included in the regression model, we eliminated outliers, the mean plus/minus three times the standard deviation. Therefore, our final sample includes 15 European countries: Austria, Belgium, Finland, France, Germany, Greece, Iceland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, and Switzerland. Thus, our final sample includes a total of 6,517 firms. In Table 1, we present our final sample.

Table 1. Sample composition by country

| Country | No. of companies in our sample |
|--------------|--------------------------------|
| Austria | 296 |
| Belgium | 371 |
| Finland | 559 |
| France | 483 |
| Germany | 355 |
| Greece | 108 |
| Iceland | 33 |
| Italy | 1,596 |
| Netherlands | 83 |
| Norway | 1,244 |
| Poland | 164 |
| Portugal | 197 |
| Spain | 207 |
| Sweden | 712 |
| Switzerland | 109 |
| TOTAL | 6,517 |

Source: The author

In terms of industry sectors (see Table 2), the scientific and support services sector (Group 8), manufacturing and professional services sector (Group 2), and wholesale trade, retail trade, transportation, and food services (Group 4) are the most represented, 29.6%, 24.9%, and 21.0% of the total sample of European countries, respectively. The finance and insurance sector were excluded from the sample, as mentioned. The analysis covers the two-year period of the impact of COVID-19 on companies: years 2020 and 2021. These two years reflect the direct impact of the epidemic on business activity.

Table 2. Sample composition by industry

| INDUSTRY (SIC CODE) | OBS. | Percentage (%) |
|-------------------------------------------------------------------------------------------|--------------|----------------|
| 1. Agriculture, Forestry and Fishing Industries | 76 | 1.2% |
| 2. Manufacturing, Mining and Quarrying and Other Industry | 1,629 | 24.9% |
| 3. Construction | 388 | 6.0% |
| 4. Wholesale and Retail Trade, Transportation and Storage, Accommodation and Food Service | 1,369 | 21.0% |
| 5. Information and Communication Industry | 300 | 4.6% |
| 6. Financial and Insurance Activities | 0 | 0% |
| 7. Real Estate Activities | 629 | 9.7% |
| 8. Professional, Scientific, Technical, Administration and Support Service Activities | 1,932 | 29.6% |
| 9. Public Administration, Defence, Education, Human Health and Social Work Activities | 95 | 1.5% |
| 10. Other Services (Arts, Entertainment, Recreation, Other). | 99 | 1.5% |
| TOTAL | 6,517 | 100.0% |

2.2. Methodology

2.2.1. Estimation of Earnings Management

We use methodology based on accruals to detect and estimate the discretionary part of accruals, as indicated by the literature, the accruals approach is still the most commonly used to estimate earnings manipulation, see for example, Zhang (2002), Siregar and Utama (2008), Callao, Jarne and Wroblewski (2014), Bansal (2023). Accruals are defined as the portion of revenues and expenses that do not imply collections and payments, and are calculated indirectly as the difference between profit and operating cash flows².

Total accruals are composed of non-discretionary accruals (*NDA*), which is the portion of accruals that is difficult to manipulate, and discretionary accruals (*DA*), which is easier to manipulate; therefore, $TA = NDA + DA$. Since the discretionary and non-discretionary components of accruals are not directly observable, we need to employ model for the estimation.

In the literature we find a wide range of alternative accrual models for measuring earnings management. However, the model proposed by Dechow, Sloan and Sweeney (1995) is widely used as the most reliable model for estimating discretionary accruals. Several studies compared different models and concluded that this model is the most accurate model, see for example Bartov and Gul (2000), Kothari, Leone and Wasley (2005), Siregar and Utama (2008), Mora and Sabater (2008), Dechow, Ge and Schrand (2010), Callao, Jarne and Wroblewski (2017).

Hence, we use the model employed in Dechow, Sloan and Sweeney (1995) in cross sectional version to estimate *DA*, see the following equation:

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

where: TA_{it} represents the total accruals of firm i in period t , calculated based on 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 company i in period t compared to $t-1$; ΔREC_{it} represents the change in receivables of company i in period t compared to $t-1$; PPE_{it} represents the fixed assets of company i in period t ; A_{it-1} represents the total assets of firm i in period $t-1$, which is used as a deflator to avoid heteroscedasticity problems; ε_{it} is the error term for firm i in period t .

To improve the reliability of the model and the results, we used the period of 2017-2020 when estimating parameters for calculating the discretionary part of accruals (*DA*). This allowed us to cover more observations and we improve the strength of the model. After estimating the parameters of equation (1), we use the obtained values to predict the discretionary accruals for our analysis period 2020-2021. The prediction error is interpreted as the discretionary part of the accruals, which is defined in equation (2):

$$\frac{DA_{it}}{A_{it-1}} = \frac{TA_{it}}{A_{it-1}} - \left(\alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \varepsilon_{it} \right) \quad (2)$$

where, DA_{it} are discretionary accruals for firm i in period t , and a_0 , a_1 , and a_2 are the estimated values of α_i .

We use the estimated discretionary part of the accruals for the following estimates.

2.2.2. The Context of Earnings Management of European Companies in COVID-19 Time

This study aims to determine which variables had a significant impact on managers' decisions in COVID-19 period, unprecedented worldwide crisis. For this purpose, a regression analysis model was built. We include variables mostly covered by the earnings management literature. The *dependent variable*, $absDA_{i20-21}$, is the absolute value of discretionary accruals for company i in period t (two years: 2020 and 2021) and is used as a proxy for earnings management. These *are independent variables* included in the model:

- Variable growth opportunity, *GROWTH*. Following the negative effects of COVID-19, this variable test whether the perception of recovery and possible subsequent growth of firms may lead companies to manage earnings. Al-Zaqeba and Al-Khawaja (2022) state that growth opportunities are one of the incentives to be considered when evaluating the profitability and stability of a company. García-Meca and Sánchez-Ballesta (2009)

² The equation is: $TA_{it} = \Delta Receivables_{it} + \Delta Inventories_{it} - \Delta Payables_{it} - DEP_{it}$. It is used to calculate total accruals (TA). $\Delta Receivables$ is the change in receivable accounts; $\Delta Inventories$ is the change in inventories; $\Delta Payables$ is the change in payable accounts; and DEP is depreciation and amortization expenses. Indices i and t refer to the company and the year, respectively. Variations are calculated with respect to the previous year.

argue that low growth firms may be encouraged to engage in earnings management practices to hide their “suffering”. This may be the case for firms in a post COVID situation. On the other hand, Debnath (2017) indicates that companies with growth potential have poor earnings quality, showing that higher company growth leads to an increase in accounting choices made by management in earnings reporting. We measure the variable as the difference in revenue between period t and $t-1$ divided by revenue in $t-1$.

- The variable *VALUE* was introduced into the model as a proxy for the value of a company. The literature confirms that the extent of earnings management can vary depending on the book value of the firm, see for example Xie (2001), Kothari, Leone and Wasley (2005), Chi and Gupta (2007), Ronen and Yaari (2008), Raoli (2013), Callao, Jarne and Wroblewski (2017). After the pandemic situation, the European market is characterised by uncertainty, tight competition, and uncertainty. By introducing the variable, we measure whether European firms use earnings management to adjust or change firm value to the new circumstances. We measure the variable as the difference between assets and liabilities scaled by the assets of $t-1$ of each firm.

- *BIG4* variable is a measure of audit quality. Previous studies have confirmed that a Big 4 audit firm (Deloitte, Ernst & Young, KPMG, and PricewaterhouseCoopers) is representative of high audit quality. The reason for this is that high audit quality status ensures high quality reporting earnings, in other words lower earnings management, see studies by Becker et al. (1998), Krishnan (2003), Santos-Jaén, Martín de Almagro and Valls (2023), Sundkvist and Stenheim (2023), Salem et al. (2023). In addition, Susak (2020) studied the impact of COVID-19 on earnings management and audit effect. He evaluated the impact of the concept of “special circumstances” in the context of the pandemic, and as a result, the legal possibility of extending the disclosure of audited consolidated financial statements. According to the author, these “special circumstances” have caused managers to delay submitting their reports, and this delay has led to earnings manipulation. This is because these reports are often the only reliable sources of information and the timing of the release of audited financial statements is very important to investors and shareholders, creating pressure to reduce delays in providing such information (Susak, 2020). We measure the variables as dichotomous variables, where 1 denotes the Big Four audit firm; 0 is not a Big Four audit firm.

- The *DEBT* variable measures the debt structure, which plays an important role as a managerial incentive mechanism for earnings management, see studies by DeFond and Jiambalvo (1994), Becker et al. (1998), Dichev and Skinner (2002), Othman and Zhegal (2006), Callao, Jarne and Wroblewski (2017), González-Sánchez, Segovia and Ibáñez (2023). The COVID-19 affected all firms and caused many of them to increase their debt to cope with the crisis. We define the variable as the total amount of debt relative to each firm’s total assets.

- The *SALES* variable measures whether sales fluctuations lead to earnings management. The literature indicates that earnings managements respond a firm’s operational sales volatility and affects the extent to which firms manage their earnings, see, for example, Hribar and Nichols (2007), Hassan and Farouk (2014), Debnath (2017), and Edison and Nugroho (2020). With the outbreak of coronavirus, the economic relevance of sales decreases. The authors explain that insufficient cash flow may cause a company to manage earnings to adjust the company’s performance to meet requirements of consistency and reliability to investors and market pressures.

- The *CASH* flow variable measures whether cash flow variations lead to earnings management. The literature indicates that earnings managements is also sensitive to cash flow volatility and can affect the extent to which firms manage earnings (Hribar and Nichols, 2007). Following Duc, Hiep and Thanh (2021), He and Jianqun (2021), and Buitink (2022) we measure the variable as operating cash flow divided by total assets.

- The *BOARD* variable measures the role of boards of directors in firms in the context earnings management in response to the crisis COVID-19, as there is ample evidence in the literature on the role of boards in preventing managing earnings, see, for example, Xie, Davidson and DeDalt (2003), Jaggi, Leung and Gul (2009), Hassan et al. (2023) and others. In a crisis such as COVID-19, where the stakes are high and intense scrutiny is taking place, the board has a unique responsibility to provide a response based on a deep understanding of the board’s role such as communicating with stakeholders, regulators, and others. The board should guide and support management in making decisions in the fight for survival, but also ensures that the company positions itself to emerge stronger and more resilient (Katz & McIntosh, 2020; and Moyo, 2020). Hsu and Yang (2022) introduced the variable and found that a larger board mitigates the negative effects of COVID-19 on financial reporting quality. We measure the variable as suggested by Hsu and Yang (2022) using the natural logarithm of the number of board members.

- The *SIGN* variable indicates how firms manipulate during the crisis period according to COVID, i.e., whether earnings-decreasing or earnings-increasing. This variable measure whether the way managers manipulate earnings is significant during the period after COVID-19. During periods of high intensity pandemic, managers may be more likely to choose earnings-increasing (see, e.g., Susak, 2020; Aljughaiman et al., 2023). Taylor, Selasi and Yaa (2023) proposed contrary hypothesis of the effect of COVID-19 pandemic. They considered COVID-19 as a

catalyst for aggressive earnings smoothing. Nevertheless, their results still confirmed that earnings management has significantly increased during the pandemic years. Buitink (2022), on the other hand, found no support for whether firms have a prevalence of income-increasing earnings management activities during the pandemic. We measure the variable as a dichotomous variable that takes the value 1 if firm is earnings increasing (positive sign of discretionary accruals) for company i in period t , and 0 otherwise (negative sign of discretionary accruals).

- The *INDUSTRY* variable measures the impact of COVID-19 and its impact on various industries. Normally, this is a control variable, but with respect to the situation of COVID-19, the literature indicates significant impacts of pandemic in some industries. Authors such as Huang *et al.* (2020), Das (2020), Lavopa, Zagato and Donnelly (2021) point out that industries that rely on face-to-face interactions or travel are the most affected; these include transportation and storage, accommodation and food services, arts, entertainment and recreation, wholesale and retail, where sales were more than 50% lower than normal last year due to COVID-19. Therefore, we can assume that earnings management in these specific industries is significantly different, as companies in these industries have felt the impact of the crisis much more than others. We measure the industry of the companies with multiple dichotomous variables (nine variables); each variable takes the value of 1 if a company belongs to the industry corresponding to that variable ($N^{\circ} = 0, \dots, 9$, except for 6, which corresponds to the financial sector) and 0 otherwise. Finally, five control variables are included:

- The *SIZE* variable controls for the effects of firm size. Studies of earnings management confirm that firm size has an impact on the presence of earnings management; yet, there is no general agreement on how firm size affects companies' financial reporting, see, e.g., Watts and Zimmerman (1990), Burgstahler and Dichev (1997), Young (1999), Dechow and Dichev (2002), Othman and Zhegal (2006), Paiva and Costa (2013), Alhadab and Clacher (2018), and others. Recent studies examining the impact of COVID-19 on earnings management also show rather mixed results. Hsu and Yang (2022) found that larger firms are associated with higher levels of earnings management. However, He and Jianqun (2021) found opposite results. They confirmed a significant negative relationship between earnings management and firm size. Susak (2020), on the other hand, found no relationship between size and earnings management in a period influenced by COVID-19. The variable was not significant. Following Susak (2020), He & Jianqun (2021), Hsu and Yang (2022), who studied the impact of COVID-19 on earnings management, we measure the variable as the natural logarithm of total assets of each firm in each sample, in year t .

- *LISTED* as a control variable, their coefficient captures the difference in the extent of earnings management between listed and unlisted firms in European countries. Previous studies suggest that listed and unlisted firms differ in earnings management; see Rangan (1998), Vander Bauwhede and Willekens (2003), Ball and Shivakumar (2006), Burgstahler, Hail and Leuz (2006), and Rahman *et al.* (2023). It is a dichotomous variable that takes the value 1 if a firm is listed and 0 if not.

- The *AGE* variable controls for the effect of the age of the firm. The literature, see for example Liu (2006), Fan (2007), Stubben (2010), Lee and Masulis (2011), Zadeh *et al.* (2023), confirms the effect of firm age and earnings management. It is not the same whether it is a young company, a mature company or an experienced (old) company. The results on the relationship between earnings management and age are also inconclusive. Palmrose, Richardson and Scholz (2004), for example, confirm that companies that have been established for a longer period of time tend to be more stable, that the decision-making process is different because they rely more on experience, and that less earnings management is observed. Loderer, Neusser and Waelchli (2011) add that investors tend to have more confidence in a long-established company than in a freshly founded company. This is partly because a long-established company offers a larger profit margin than a newly founded company. Chalaki, Didar, and Riahinezhad (2012), for example, show that younger firms are more innovative and aggressive in earnings management to avoid earnings losses and take more risks to be more competitive. On the other hand, He and Jianqun (2021) found a significant and positive relationship between firm age and earnings management in the COVID-19 period. We measure the variable as the natural logarithm of the number of years since the company was founded.

- The *LIQU* ratio is included to test the impact of the firms' pandemic financial situation on earnings management.

The linear regression is as follows:

$$\begin{aligned}
 absDA_{i20-21} = & \beta_0 + \beta_1 GROWTH_{it} + \beta_2 VALUE_{it} + \beta_3 BIG4 + \beta_4 DEBT_{it} + \beta_5 SALES_{it} \\
 & + \beta_6 CASH_{it} + \beta_7 BOARD_{it} + \beta_8 SIGN + \beta_9 INDUSTRY_0 + \dots + \beta_{17} INDUSTRY_9 \\
 & + \beta_{18} SIZE_{it} + \beta_{19} LISTED + \beta_{20} AGE_{it} + \beta_{21} LIQU_{it}
 \end{aligned} \tag{3}$$

We run the regression for each European country separately to see which variables are significant for firms from each country. In this way, we will be able to describe the practice of earnings management within different European countries in times of COVID-19. Therefore, we will be able to see the differences between European countries and, in fact, to describe the panorama of European companies in the COVID-19 period.

3. Empirical Results

3.1. Earnings Management in COVID-19 Period

First, we focus if we can observe some changes in earnings manipulation caused by the pandemic. Therefore, we estimate discretionary accruals before the pandemic period and in COVID-19 period. We treat 2020-2021 as COVID-19 period, as explained in methodology, and period of 2017-2019 we took as a period previous to pandemic. Table 3 reports means of discretionary accruals from the regression of the Dechow, Sloan, and Sweeney (1995) model for all European countries for both periods.

Table 3. Means of the discretionary accruals from the regression of the Dechow, Sloan, & Sweeney (1995) model

| European countries | Means of discretionary accruals | | |
|-------------------------|---------------------------------|-----------------|---------|
| | Before COVID-19 | COVID-19 period | |
| | 2017-2019 | 2020 | 2021 |
| Austria | 0.02792 | 0.02339 | 0.02061 |
| Belgium | 0.03110 | 0.02456 | 0.02762 |
| Finland | 0.03618 | 0.02679 | 0.02471 |
| France | 0.03642 | 0.02831 | 0.02649 |
| Germany | 0.03224 | 0.02835 | 0.02823 |
| Greece | 0.03212 | 0.02482 | 0.02637 |
| Iceland | 0.03785 | 0.02219 | 0.02818 |
| Italy | 0.02576 | 0.01881 | 0.01692 |
| Netherlands | 0.03381 | 0.02493 | 0.02413 |
| Norway | 0.03698 | 0.02795 | 0.02871 |
| Poland | 0.03234 | 0.02377 | 0.02548 |
| Portugal | 0.03217 | 0.02080 | 0.02187 |
| Spain | 0.02865 | 0.02125 | 0.02233 |
| Sweden | 0.03663 | 0.02811 | 0.02845 |
| Switzerland | 0.03083 | 0.02543 | 0.02358 |
| Adjusted R ² | 97.85% | 99.1% | 99.4% |
| Standard dev. | 0.12175 | 0.04075 | 0.03773 |

Source: The author.

We can observe the change in earnings management between the period before COVID-19 and in COVID-19 period. This suggests that the pandemic situation had an impact on the earnings management activities of managers of European companies. We can observe a slight decrease in means of discretionary accruals (slightly lower earnings manipulation). Following, we analyse the regression model.

3.2. The Context of European Countries in Covid-19 Times. Comparison of Countries

3.2.1. Descriptive Analyses

Table 4 presents the mean values for all variables included in the regression for each European country. Significant differences between countries can be observed for most variables. We can observe differences in the structure of debt (*DEBT*), ranging from 49% in Italy to 68% of debt as a percentage of total assets in Greece. The impact of cash flow recovery also varies across countries (*CASH*). Companies in Austria and Netherlands (6%) show better recoveries. On the other hand, we have Greece, Poland and Switzerland (just over 1%).

Table 4. Mean value of each of the variables for each European country

| | ABSDA | GROWTH | VALUE | BIG4 | DEBT | SALES | CASH | BOARD | SIGN | IND1 | IND2 |
|-------------|--------|---------|--------|--------|--------|---------|--------|--------|--------|--------|--------|
| Austria | 0.0213 | -0.0551 | 0.4368 | 0.0591 | 0.5738 | 0.0359 | 0.0601 | 2.4846 | 0.4797 | 0 | 0.1723 |
| Belgium | 0.0254 | -0.0680 | 0.4067 | 0.1482 | 0.6168 | 0.0204 | 0.0364 | 2.4591 | 0.4973 | 0.0054 | 0.1442 |
| Finland | 0.0248 | -0.0784 | 0.4663 | 0.7039 | 0.5717 | 0.0152 | 0.0491 | 2.9416 | 0.5063 | 0.0054 | 0.2826 |
| France | 0.0273 | -0.0825 | 0.4037 | 0.2311 | 0.6356 | -0.0622 | 0.0043 | 3.3521 | 0.5347 | 0.0041 | 0.1575 |
| Germany | 0.0272 | -0.0886 | 0.4193 | 0.4795 | 0.6131 | 0.0058 | 0.0275 | 3.1698 | 0.4316 | 0.0056 | 0.3089 |
| Greece | 0.0248 | -0.0796 | 0.3451 | 0.2372 | 0.6827 | -0.0661 | 0.0141 | 3.0204 | 0.7256 | 0.0093 | 0.4233 |
| Iceland | 0.0249 | -0.0774 | 0.4376 | 0.6667 | 0.5796 | -0.0385 | 0.0383 | 2.4815 | 0.6970 | 0.0303 | 0.3333 |
| Italy | 0.0177 | -0.0528 | 0.7950 | 0.3289 | 0.4969 | -0.0315 | 0.0342 | 2.8353 | 0.6090 | 0.0085 | 0.3831 |
| Netherlands | 0.0249 | -0.0712 | 0.4066 | 0.4000 | 0.6071 | -0.0520 | 0.0605 | 2.2293 | 0.5333 | 0.0364 | 0.0606 |
| Norway | 0.0273 | -0.0845 | 0.4404 | 0.4196 | 0.5988 | -0.0778 | 0.0477 | 1.9305 | 0.7078 | 0.0217 | 0.2002 |
| Poland | 0.0241 | -0.0981 | 0.5013 | 0.1590 | 0.5317 | -0.0651 | 0.0177 | 2.4349 | 0.6391 | 0.0122 | 0.2813 |
| Portugal | 0.0212 | -0.0588 | 0.3487 | 0.2316 | 0.6578 | -0.0043 | 0.0272 | 2.5924 | 0.6489 | 0.0356 | 0.2239 |
| Spain | 0.0218 | -0.0869 | 0.4351 | 0.5821 | 0.5949 | 0.0083 | 0.0360 | 2.6988 | 0.7246 | 0.0338 | 0.2464 |
| Sweden | 0.0276 | -0.0945 | 0.4826 | 0.3912 | 0.5717 | -0.0784 | 0.0543 | 1.9314 | 0.6096 | 0.0070 | 0.1306 |
| Switzerland | 0.0235 | -0.0666 | 0.5103 | 0.8257 | 0.5252 | 0.0024 | 0.0107 | 3.7710 | 0.6972 | 0 | 0.2110 |
| | IND3 | IND4 | IND5 | IND7 | IND8 | IND9 | IND0 | SIZE | LISTED | AGE | LIQU |
| Austria | 0.0422 | 0.1622 | 0.0169 | 0.0507 | 0.5152 | 0.0169 | 0.0236 | 12.310 | 0.0929 | 3.8645 | 3.2425 |
| Belgium | 0.0701 | 0.2210 | 0.0539 | 0.0431 | 0.4461 | 0.0027 | 0.0135 | 11.695 | 0.0135 | 3.3328 | 1.8573 |
| Finland | 0.0787 | 0.2317 | 0.0725 | 0.0778 | 0.2299 | 0.0161 | 0.0054 | 10.979 | 0.1261 | 3.3289 | 2.0122 |
| France | 0.0228 | 0.2031 | 0.1119 | 0.0508 | 0.4269 | 0.0124 | 0.0104 | 12.728 | 0.6663 | 3.5279 | 1.6347 |
| Germany | 0.0071 | 0.1241 | 0.0635 | 0.0480 | 0.4090 | 0.0141 | 0.0197 | 12.884 | 0.5543 | 3.6540 | 2.5926 |
| Greece | 0.0698 | 0.2512 | 0.1302 | 0.0233 | 0.0558 | 0.0186 | 0.0186 | 11.622 | 0.6884 | 4.3234 | 1.9698 |
| Iceland | 0.0303 | 0.1818 | 0.0606 | 0.0909 | 0.2121 | 0.0303 | 0.0303 | 10.743 | 0.0909 | 3.3277 | 1.5681 |
| Italy | 0.0238 | 0.1447 | 0.0307 | 0.0909 | 0.3020 | 0.0119 | 0.0044 | 12.281 | 0.0476 | 3.4174 | 3.0362 |
| Netherlands | 0 | 0.4061 | 0.0606 | 0.0242 | 0.3758 | 0.0121 | 0.0242 | 11.674 | 0.0242 | 3.3745 | 1.9470 |
| Norway | 0.1411 | 0.2480 | 0.0338 | 0.1957 | 0.1001 | 0.0229 | 0.0366 | 10.319 | 0.0253 | 2.9228 | 2.2433 |
| Poland | 0.0520 | 0.2446 | 0.0795 | 0.0183 | 0.2508 | 0.0367 | 0.0245 | 10.443 | 0.4190 | 4.7622 | 2.2517 |
| Portugal | 0.0483 | 0.2265 | 0.0204 | 0.0534 | 0.3817 | 0.0102 | 0 | 10.913 | 0.0102 | 3.3281 | 1.8942 |
| Spain | 0.0966 | 0.2464 | 0.0483 | 0.0773 | 0.2464 | 0.0048 | 0 | 12.474 | 0.2826 | 3.5313 | 1.9990 |
| Sweden | 0.0414 | 0.3041 | 0.0253 | 0.1173 | 0.3553 | 0.0098 | 0.0091 | 10.277 | 0.0562 | 3.1951 | 2.1007 |
| Switzerland | 0 | 0.0917 | 0.0275 | 0.0367 | 0.5872 | 0.0092 | 0.0367 | 13.975 | 0.6422 | 3.7531 | 2.2269 |

Source: The author

There are also differences between countries in other variables, such as the number of listed companies in the sample (*LISTED*): in the Belgian sample, only 1% of the sample is represented by listed companies; in contrast, Greece, France and Switzerland have between 65 and 70% of listed companies in our sample. For more details on other variables, see Table 4. The context of European companies is thus complex and diverse.

3.2.2. Correlation Analyses

We tested correlation coefficients between all variables. First, we performed the correlation analysis for all European countries as a single block of European firms. The results are shown in Table 5. We observe a strong correlation between the variables: *DEBT-VALUE*, -0.80. The other variables do not show significant correlation.

Following, we run a correlation analysis for all European samples separately. The obtained results confirmed our preliminary results. We affirm a strong negative correlation between variables: *DEBT-VALUE* in almost all European countries (from -0.82 to -0.97), with the exception of countries: Austria, Norway, Spain and Sweden. Other variables do not show strong correlations. Therefore, to solve the problem of the correlation of these two variables, we exclude the *VALUE* variable from the regression for the posterior regression for all European countries, with the exception of these four countries, leaving in the regression only the *DEBT* variable. We think that debt effect is more significant in terms of the COVID-19 impact on the panorama of the European companies, see section of the selection and description of the variables.

Table 5. Correlation matrix for all European countries

| | ABSDA | GROWTH | VALUE | BIG4 | DEBT | SALES | CASH | BOARD | SIGN | INDUST1 | INDUST2 |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| ABSDA | 1 | | | | | | | | | | |
| GROWTH | -0.0402 | 1 | | | | | | | | | |
| VALUE | -0.1055 | 0.1848 | 1 | | | | | | | | |
| BIG4 | 0.0357 | -0.0084 | -0.0658 | 1 | | | | | | | |
| DEBT | 0.1323 | -0.0927 | -0.8029 | 0.0308 | 1 | | | | | | |
| SALES | -0.0242 | 0.5907 | 0.1668 | 0.0048 | -0.0766 | 1 | | | | | |
| CASH | -0.0094 | 0.0637 | 0.1103 | 0.0151 | -0.2245 | 0.0318 | 1 | | | | |
| BOARD | -0.0035 | 0.0186 | -0.0521 | 0.2343 | 0.0703 | 0.0280 | -0.0882 | 1 | | | |
| SIGN | -0.1861 | -0.0130 | 0.0767 | -0.0654 | -0.0895 | -0.0208 | -0.0889 | -0.1198 | 1 | | |
| INDUST1 | 0.0012 | 0.0022 | -0.0075 | -0.0019 | -0.0142 | 0.0011 | 0.0209 | -0.0225 | 0.0119 | 1 | |
| INDUST2 | -0.0956 | 0.0385 | 0.0863 | 0.0968 | -0.0871 | 0.0240 | 0.0255 | 0.2170 | -0.0909 | -0.0629 | 1 |
| INDUST3 | 0.0209 | -0.0210 | -0.0773 | 0.0073 | 0.0712 | -0.0018 | -0.0097 | -0.0842 | 0.0834 | -0.0274 | -0.1451 |
| INDUST4 | -0.0196 | -0.0026 | -0.0434 | -0.0466 | 0.0393 | -0.0100 | 0.0152 | -0.0922 | 0.0418 | -0.0562 | -0.2979 |
| INDUST5 | 0.1088 | -0.0126 | -0.0039 | 0.0112 | 0.0086 | 0.0026 | -0.0092 | 0.1120 | -0.0889 | -0.0240 | -0.1272 |
| INDUST7 | 0.0712 | -0.0207 | 0.0233 | -0.0408 | -0.0155 | -0.0310 | -0.0246 | -0.2080 | 0.1591 | -0.0356 | -0.1886 |
| INDUST8 | -0.0159 | -0.0045 | -0.0095 | -0.0376 | 0.0193 | 0.0124 | -0.0175 | -0.0192 | -0.0545 | -0.0707 | -0.3746 |
| INDUST9 | -0.0081 | 0.0053 | -0.0002 | 0.0056 | 0.0001 | 0.0006 | 0.0033 | 0.0349 | 0.0125 | -0.0132 | -0.0700 |
| INDUST0 | 0.0709 | -0.0056 | -0.0187 | 0.0141 | 0.0028 | -0.0255 | -0.0033 | 0.0685 | -0.0292 | -0.0135 | -0.0717 |
| SIZE | -0.0160 | 0.0653 | 0.0869 | 0.1942 | -0.0381 | 0.0897 | 0.0244 | 0.5216 | 0.0196 | -0.0141 | 0.0958 |
| LISTED | 0.0870 | -0.0281 | -0.0802 | 0.1227 | 0.0602 | -0.0047 | -0.1544 | 0.4004 | -0.0711 | -0.0400 | 0.0182 |
| AGE | -0.0915 | 0.0225 | 0.0461 | -0.0217 | -0.0947 | 0.0165 | 0.0146 | 0.3318 | -0.0035 | -0.0095 | 0.1806 |
| LIQU | -0.0937 | 0.0927 | 0.5519 | -0.0607 | -0.5058 | 0.0801 | 0.0338 | -0.0975 | 0.0894 | 0.0217 | 0.0384 |
| | INDUST3 | INDUST4 | INDUST5 | INDUST7 | INDUST8 | INDUST9 | INDUST0 | SIZE | LISTED | AGE | LIQU |
| ABSDA | | | | | | | | | | | |
| GROWTH | | | | | | | | | | | |
| VALUE | | | | | | | | | | | |
| BIG4 | | | | | | | | | | | |
| DEBT | | | | | | | | | | | |
| SALES | | | | | | | | | | | |
| CASH | | | | | | | | | | | |
| BOARD | | | | | | | | | | | |
| SIGN | | | | | | | | | | | |
| INDUST1 | | | | | | | | | | | |
| INDUST2 | | | | | | | | | | | |
| INDUST3 | 1 | | | | | | | | | | |
| INDUST4 | -0.1296 | 1 | | | | | | | | | |
| INDUST5 | -0.0554 | -0.1137 | 1 | | | | | | | | |
| INDUST7 | -0.0821 | -0.1685 | -0.0720 | 1 | | | | | | | |
| INDUST8 | -0.1631 | -0.3348 | -0.1430 | -0.2120 | 1 | | | | | | |
| INDUST9 | -0.0305 | -0.0625 | -0.0267 | -0.0396 | -0.0787 | 1 | | | | | |
| INDUST0 | -0.0312 | -0.0640 | -0.0273 | -0.0405 | -0.0805 | -0.0150 | 1 | | | | |
| SIZE | -0.0629 | -0.1492 | -0.0112 | -0.0165 | 0.1037 | -0.0277 | -0.0092 | 1 | | | |
| LISTED | -0.0441 | -0.0821 | 0.1681 | -0.0776 | 0.0695 | -0.0218 | -0.0101 | 0.3054 | 1 | | |
| AGE | -0.0445 | 0.0170 | -0.0058 | -0.0671 | -0.1161 | -0.0031 | 0.0073 | 0.2564 | 0.2113 | 1 | |
| LIQU | -0.0272 | -0.0518 | -0.0424 | 0.0391 | 0.0128 | -0.0062 | 0.0065 | 0.0322 | -0.0617 | 0.0374 | 1 |

Source: The author.

3.2.3. Regression Results

We run multiple regressions for each European country separately (see Annex 1). To simplify the interpretation of the results of multiple regressions, we show in Table 6 the summary of the significance of the variables and the sign of the significant variables. The overall observation confirms that the panorama of European companies in terms of earnings management activities in the period immediately following the outbreak of COVID-19 is heterogeneous, and significantly diverse. It indicates that the way the managers of companies from different European countries were responding differently to the negative effects of COVID-19 impact, despite the strategy employed against pandemic was mainly similar across Europe. Therefore, the detailed analysis of the variables is presented below.

The coefficient for the *GROWTH* variable is significant for companies in five European countries: Finland, France, Greece, Italy and Switzerland. In all of these countries, the variable has a negative sign, meaning that companies with low growth opportunities are encouraged to adopt earnings management practices. Growth opportunities include the prospects of capacity expansion, the possibility of acquiring other firms, new product innovation, investment in brand name through advertising, and even maintenance and replacement of existing assets (see, e.g., AlNajjar & Riahi-Belkaoui, 2001; Lemma, Negash & Mlilo, 2013). Similarly, the growth opportunity is also a perspective for recovery after the collapse of the economy due to COVID-19. Therefore, the growth potential for companies in this context of the pandemic is limited and consequently leads to earnings management, as our results confirm at least for companies from five European countries.

Second, we can observe the significance of the *VALUE* variable in three European countries, Spain and two Scandinavian countries: Norway, and Sweden. A positive sign indicates that the higher the book value of the firm, the more involved managers are in earnings management activities. Better valuable in economic terms firms are likely to be under greater pressure to meet earnings expectations, and as explained by Monti-Belkaoui & Riahi-Belkaou (1999), companies are expected to have better prospects, and therefore they are more inclined to engage in earnings management to meet such estimates and forecast. After the outbreak of COVID-19, the European market is suddenly characterized by uncertainty, insecurity and volatility, and therefore earnings management can be seen as a solution to adjust the value of companies to meet market expectations, as was observed in Spain, the economy most affected by COVID-19, or in Sweden, a country that opted for a different pandemic strategy (no complete shutdowns were made throughout the pandemic period).

The *BIG4* variable has a positive and significant coefficient only for firms from Iceland. First of all, Icelandic companies in our sample represent 67% of the companies audited by the Big 4. Only two other countries have a similar percentage of companies audited by the Big 4 in our sample: Finland and Switzerland. However, for both countries, this factor is not significant in terms of earnings management.

Table 6. Results of significance and sign of variables from multiple regressions for all European countries separately

| | GROWTH | VALUE | BIG4 | DEBT | SALES | CASH | BOARD | SIGN | IND1 | IND2 | IND3 |
|-------------|--------|-------|------|------|-------|------|-------|------|------|------|------|
| Austria | | | | (+) | | (+) | (-) | (-) | | | (+) |
| Belgium | | | | | | (+) | (+) | (-) | | | (+) |
| Finland | (-) | | | (+) | | (+) | | (-) | (+) | | |
| France | (-) | | | | | | (-) | (-) | | | |
| Germany | | | | (+) | (-) | (+) | | (-) | | | |
| Greece | (-) | | | (-) | (+) | | (+) | | | | (+) |
| Iceland | | | (+) | (-) | | (-) | (-) | | | (-) | |
| Italy | (-) | | | | (+) | (-) | (+) | (-) | | (-) | |
| Netherlands | | | | (+) | (-) | (+) | | | (+) | | |
| Norway | | (+) | | (+) | | | | (-) | (-) | | (+) |
| Poland | | | | (+) | | | | (-) | | | |
| Portugal | | | | (-) | | | | (-) | | | (+) |
| Spain | | (+) | | (+) | | (+) | (+) | (-) | | | (+) |
| Sweden | | (+) | | (+) | | | (-) | (-) | (+) | (-) | |
| Switzerland | (-) | | | | | | | (-) | | | |

| | IND4 | IND5 | IND7 | IND8 | IND9 | IND0 | SIZE | LISTED | AGE | LIQU |
|-------------|----------|----------|----------|----------|----------|------|----------|----------|----------|----------|
| Austria | | SIGN (+) | SIGN (+) | | | (-) | SIGN (+) | | | |
| Belgium | | SIGN (+) | SIGN (+) | | | (+) | SIGN (-) | | SIGN (-) | SIGN (-) |
| Finland | | SIGN (+) | SIGN (+) | SIGN (+) | SIGN (+) | | | | SIGN (-) | |
| France | | SIGN (+) | SIGN (+) | SIGN (+) | | (+) | | SIGN (+) | SIGN (-) | |
| Germany | | SIGN (+) | SIGN (+) | | | (+) | | SIGN (+) | SIGN (-) | |
| Greece | | | SIGN (+) | SIGN (+) | | | | SIGN (+) | | |
| Iceland | SIGN (-) | | | | SIGN (+) | (-) | SIGN (+) | | | |
| Italy | | SIGN (+) | | | SIGN (+) | (+) | | | SIGN (-) | |
| Netherlands | | | | SIGN (+) | SIGN (+) | | | | | |
| Norway | | | SIGN (+) | | SIGN (-) | | SIGN (+) | SIGN (+) | SIGN (-) | |
| Poland | | | SIGN (+) | | | | SIGN (+) | | | SIGN (+) |
| Portugal | SIGN (+) | | | | | | SIGN (+) | | SIGN (-) | SIGN (-) |
| Spain | SIGN (+) | SIGN (+) | SIGN (+) | | | | | | SIGN (-) | |
| Sweden | SIGN (+) | SIGN (+) | SIGN (+) | | | | SIGN (+) | SIGN (+) | SIGN (-) | |
| Switzerland | SIGN (+) | | SIGN (+) | | | | | | SIGN (-) | SIGN (-) |

Note: SIGN indicates that the variable is significant, see Annex 1. In brackets, we show the sign of the variable.

Source: The author.

According to OECD reports (2020), there are at least ten countries that require an annual government audit in addition to existing internal and independent external controls (Argentina, Belgium, Brazil, Hungary, Iceland, Italy, Japan, Korea, Poland, and Turkey). Iceland is one of these countries. Other countries in our sample mentioned in the report: Italy and Poland do not have such a significant sample of companies audited by the Big 4 and included in our study. Therefore, it is understandable that we did not obtain significance for the variable. Moreover, as mentioned in the report, Iceland's case is different because almost all companies are required to be audited by the government. This detail indicates the importance of the audit approach in Iceland (especially for companies with consolidated financial statements).

Surprisingly, however, our results for the audit variable are contrary to the expectations. The sign is positive. The results do not suggest a lack of quality among the four major auditing firms, as a negative relationship between high quality auditing firms and earnings management is unquestionable in the literature. Therefore, our results are more in line with the study of Susak (2020). He addressed the question of the impact of the post-release period of COVID-19 that creates an opportunity for earnings management. This is because, in the period immediately following the pandemic outbreak, the legislature introduced the concept of "special circumstances". This "special circumstances" allowed for a delay in the reporting; as a result, companies took advantage of the regulatory gap and reported more earnings management.

Our fourth variable, $DEBT_t$, is significant for almost all European companies. Only, for companies from Belgium, France, Italy and Switzerland the effect of debt leveraged on earnings management cannot be confirmed. For companies from other countries, we mostly observe a positive relationship (positive coefficient for Austria, Finland, Germany, the Netherlands, Norway, Poland, Spain, and Sweden), suggesting that the intensity of discretionary accruals increases for companies with higher leverage. The sign is consistent with the extensive literature. Managers manage earnings to meet debt covenant agreements, see for example the studies of DeFond and Jiambalvo (1994), Becker et al. (1998), Dichev & Skinner (2002), Othman & Zhegal (2006). COVID-19 impacted companies, which in many cases forced them to increase debt to cope with the consequence of the crisis.

However, in three cases (companies from Greece, Iceland and Portugal) the sign is negative. Prior literature also provides arguments for the negative relationship between earnings management and leverage, explaining that higher leverage is associated with a reduction in earnings management, see for example Denis and Denis (1993), Jelinek (2007), Jha (2013). Jelinek (2007), for example, explains that firms with higher leverage could avoid earnings management because they are more monitored and therefore it would be more difficult to perform earnings management.

We can find that variables *SALES* and *CASH* flow are significant for companies from nine countries, see Table 6. This means that operational volatility of sales and cash flow has direct impact on earnings management.

Cash flow volatility represents uncertainty about future prospects and may create incentives to increase/decrease earnings management, according to authors Pastor and Veronesi (2009), Kuo et al. (2014). Bukit and Iskandar (2009), for example, show that managers of firms with high cash flow volatility tend to use their discretion to increase reported earnings so that their decisions are biased toward maximizing wealth. Subramanyam and Wild (1996) point out that increased cash flow volatility is associated with firm risk and longevity. Therefore, as authors note, operating cash flows variability may increase the probability of firm difficulty or even bankruptcy.

The same situation presents itself in the case of sales volatility. Dechow and Dichev (2002) confirm that the sales variable is an indicator of the operating environment of companies. The higher the magnitude of the sales volatility, the more volatile is the operating environment of companies, which indicates a higher risk.

Due to financial difficulties and uncertainty caused by the coronavirus, companies from Germany, Italy and the Netherlands have significant values for both variables, confirming the propensity of managers to manipulate earnings. Companies from Austria, Belgium, Finland, Greece, Iceland and Spain show volatility in at least one of the variables, which has the same effect on earnings management. Consequently, we can confirm that the pandemic situation leads to instability and volatility in sales and cash flow, and that, as a result, managers respond with earnings management activities to compensate for this situation.

BOARD variable is significant for eight countries. In companies from Austria, France, Iceland and Sweden the coefficient is negative. This implies that larger boards of directors help to mitigate the negative impact of COVID-19 on the quality of financial reporting. The same results were obtained by Hsu and Yang (2022). This could be due to better monitoring (Boone et al., 2007; Coles, Daniel and Naveen, 2008), instructions and recommendations provided (Guest, 2009; Lu and Boateng, 2018), better environmental links and greater expertise (Dalton et al., 1999), or the diverse and more effective knowledge (Xie, Davidson, & DaDalt, 2003) provided by a larger board. These arguments can be particularly important in times of difficult situations caused by COVID-19.

However, in companies from Belgium, Greece, Italy and Spain, we observe an opposite situation. The larger the board, the more earnings management is observed. As described in the literature, it is more difficult for board members to communicate efficiently with each other when the board is larger. When communication is inadequate, effectiveness decreases (see, e.g., Chtourou, Bedard, & Courteau, 2001). Alonso, Palenzuela & Iturriaga (2000) confirm that large boards have poorer coordination and communication among members, and their results show a significant positive relationship between board size and earnings management.

SIGN variable is significant for almost all European countries, implying that the type of manipulation, either earnings-decreasing or earnings-increasing, has an impact on the amount of earnings management in the period after COVID-19. A negative sign indicates that firms with earnings increasing are less engaged in earnings management (smoothing earnings) than firms with earnings decreasing. The COVID-19 pandemic triggered a global economic crisis that forced companies to experience unfavourable conditions simultaneously. So, it seems that earnings smoothing is more aggressive in companies. With the pandemic circumstances, stakeholders and investors understand the current situation; therefore, it is logical and reasonable for managers to try to smooth income by taking certain accounting measures to reduce earnings over time in order to secure relationships with creditors and investors in the near future. The literature also confirms the effect of earnings smoothing in times of crisis and economic difficulties, see for example, Aljifri (2007), Kangarlouei, Motavassel & Rezvani (2012), Harnovinsah and Indriani (2015).

Finally, the *INDUSTRY* variables are significant in different sectors of different industries in different European countries. These results confirm the presence of earnings management practices in companies from different industries in different countries conditioned by the period of COVID-19.

As mentioned above, the panorama of European companies is complex and diverse; therefore, different industries in different countries are affected differently. The results show that no two countries are similar in terms of earnings management activities based on industry characteristics. In Spain, for example, the country where tourism and gastronomy are very important, the results confirm the earnings manipulation activities in those two industries. However, the presence of earnings management is also found in construction, communication, information or real estate industries, which are composed of different sectors (development, sales, marketing, property management, professional services such as law, accounting, etc.).

The most important industry in Sweden has traditionally been agriculture, which employed more than half of the domestic labour force. However, more recently, motor vehicles, telecommunications, industrial machinery, precision equipment, chemical products, forestry, iron and steel have also been among the most important industries (Kjellberg, 2017). Looking at our results, we can confirm the presence of earnings management in these three main industries: Agriculture and Forestry (Group 1), Manufacturing (Group 2), Communication and Information (Group 5), but also in Food Service, Wholesale. Thus, we can once again demonstrate the presence of earnings management in the country's main industries.

On the other hand, we cannot confirm the significance of the variable in the main German industrial sector, automotive and manufacturing (Group 2 of our analysis), with companies such as, Volkswagen, Daimler, BMW (all automotive), BASF (chemicals), Siemens (electrical). Nevertheless, we can again confirm the presence of earnings management in the food industry, retail, professional services, and entertainment industries. These are industries that have experienced the direct impact of the COVID-19 restrictions and closures during many weeks in 2020. For details in other European countries see Table 6.

In conclusion, the industry effect cannot be separated from the impact of the pandemic COVID-19. Deteriorating economic conditions still require managers to perform well. The information gap between managers and shareholders causes managers to practise earnings management (Azizah, 2021). Kallunki & Martikainen (1999) explain that this is because investors compare the economic conditions of companies within the industry. A company operating in one industry behaves differently in terms of earnings management than a company operating in another industry. We can observe two trends: first, we observe the presence of earnings management in industries directly affected by multi-week shutdowns due to the coronavirus, such as the food industry, entertainment, and wholesale trade. Second, we see the significance of the variable in the start-up industry of each European country (with some exceptions, such as the results of the Polish or German sample).

Finally, we analyse the control variables. First, the *LISTED* variable is significant with positive sign of the coefficient for companies from five European countries (France, Germany, Greece, Norway, and Sweden), which means that listed companies in these countries engage more in earnings management activities. Rezaee (2005) argues that the motivations for fraudulent financial statements among listed firms are mainly related to economic pressures and incentives associated with meeting stock market requirements. For example, the impact of the COVID-19 pandemic on a company's financial and operational concerns prompted managers to engage in earnings management. The pandemic reduced revenues and increased costs as the market was affected by disruptions in supply and production chains. Managers are under pressure from shareholders, so they can use fraudulent tricks in financial statements to disguise the true business situation (Duc, Hiep & Thanh, 2021).

However, we cannot confirm such a relationship in other countries. This may be due to both the smaller number of listed firms in our sample and as noted by He and Jianqun (2021), that market investors develop more understanding of earnings management practices during a negative shock due to the COVID-19, and listed firms do not engage in earnings management activity. Due to investors' understanding and positive perception of the pandemic circumstances, they have no need for earnings manipulation.

Regarding our second control variable, the *SIZE*_{*i*} we can confirm the effect of firm size on earnings management in Austria, Belgium, Iceland, Norway, Poland, Portugal, and Sweden, which is consistent with other studies in times of coronavirus, see Basly & Saadi (2020) and Duc, Hiep & Thanh (2021). They found a positive relationship with firm size, i.e., more earnings management is observed in larger firms. However, Susak (2020), found no relationship between size and earnings management in a period influenced by COVID-19. In Finland, France, Germany, Greece, Italy, Spain, and Switzerland, we also cannot confirm the significance of the coefficient.

The control variable, *AGE*_{*i*} is significant in all European countries except Austria, Greece, Iceland and Poland. Its negative coefficient captures the difference in the extent of earnings management as a function of firm age, suggesting that older firms engage in less earnings management. The results are consistent with the earnings management literature. Company age is an indicator for investors in terms of investment decisions. Company age indicates how long a company has been in existence. Long-established companies are believed to generate higher profits due to their experience and are able to compete and take advantage of business opportunities to survive, especially in times of crisis such as the coronavirus pandemic.

Finally, *LIQU* ratio, control financial variable, is significant for firms in four European countries (only in Belgium, Poland, Portugal and Switzerland), in three of them with a negative sign (except Poland), as expected. This could indicate that a better financial situation of the company leads to a lower presence of earnings management activities. However, in companies from other European countries, we cannot confirm the significance of the variable, suggesting that the particular situation of the company does not directly lead to earnings manipulation.

Conclusion

Since the outbreak of COVID-19, the companies have faced increasing uncertainty, vulnerability, and pressure, and they have been more susceptible to the temptation to engage in earnings management practices to mitigate the effects of the crisis. Under these circumstances, the objective of this study was to examine the landscape of the European countries in COVID-19 period. Therefore, we compared companies from 15 European countries to see if the earnings management behaviour is similar or different. Several conclusions emerge from the results. We observe a change in earnings management between the period before and after COVID-19, suggesting that the pandemic had an impact on managers' activities related to earnings manipulation. Second, the panorama of earnings management activities in Europe is quite heterogeneous and inconsistent. Third, rather than a single incentive or factor, we find a wide range of variables that affected managers' decisions in European countries to engage in earnings manipulation in COVID-19 period. Below, we present some of the main findings related to those variables.

First, we confirm that in the context of a pandemic, firms with low growth opportunities, at least, in firms from five European countries, are encouraged to adopt earnings management practices.

Second, the results also suggest that the higher the book value of the firm, the more involved managers in earnings management in the three European countries, as explained literature, companies economically more valuable are likely to be under greater pressure to meet earnings expectations.

Third, we also found that in most European countries, firms with higher leverage observe higher intensity of discretionary accruals practices. The sign is consistent with the extensive literature.

Fourth, we find only in one European country (Iceland) the impact of auditing on earnings management. Similarly, in most European countries, our results show rather insignificant role of the board of directors in terms of earnings management. Only in four countries we may confirm the effect of board monitoring to mitigate the negative effects of COVID-19 on the quality of financial reporting. Consequently, our results surprisingly confirm that even institutional mechanisms to control earnings management, such as audit quality or board monitoring, which are widely documented in the literature to constrain earnings management, are not effective in the period after COVID-19. The presence of control mechanisms is seen as an essential variable influencing earnings management practices, but as we can observe, even these can fail in some situations (pandemic circumstances).

Among other results, we confirm that firms from nine countries experience significant volatility in cash flow or sales (or both) due to financial difficulties and uncertainty caused by the coronavirus, and that managers engage in earnings management activity in response to compensating for instability and uncertainty in future periods. Finally, our findings confirm that the industry effect cannot be separated from the impact of the COVID-19.

Regarding control variables, for firms from five European countries, we find that listed firms engage in more earnings management because, as described in the literature, managers are under pressure from shareholders during a pandemic, so they may use fraudulent tricks in financial statements to disguise the true business situation (Duc, Hiep and Thanh, 2021). We found a positive relationship with company size, i.e., more earnings management is observed in larger companies in the following countries: Austria, Belgium, Iceland, Norway, Poland, Portugal, and Sweden, which is consistent with other studies that have examined the effect of COVID-19 on earnings management. We also cannot confirm the significance of the coefficient in Finland, France, Germany, Greece, Italy, Spain, and Switzerland, similar to the study of Susak (2020).

Our results also captured (in all European countries except Austria, Greece, Iceland, and Poland) the existence effect of firm age and earnings management, suggesting that older firms exhibit less earnings management. The results are consistent with the earnings management literature. In summary, the deteriorating economic conditions affected by the COVID-19 are reflected in the managers' activity in terms of the earnings manipulation in the context of European companies. In two years, immediately after the outbreak of the pandemic, managers have been engaged in accounting discretion. Nevertheless, this study proves that there are differences between European countries in the practice of earnings management in COVID-19.

Although we have brought new evidence to the literature, further studies could incorporate other variables of institutional mechanism of control, such as investor protection and ownership, to assess their impact in the post COVID period. Future research could extend the analysis to other countries, citing the UK sample as an example. Finally, future studies could offer worldwide comparative studies.

Credit Authorship Contribution Statement

All authors developed the theory, encouraged the investigations, verified the analytical methods, and finally, supervised the findings of this work. Thereby, as well, all authors discussed the results and contributed to the final manuscript. Consequently, the contribution, the whole design and implementation of the research is a co-work of all authors of the present article.

Conflict of Interest Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Annex 1

Results of multiple regressions for each of the European country

| AUSTRIA | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | -.023 | .019 | | -1.228 | .220 |
| GROWTH | .001 | .005 | .012 | .236 | .813 |
| VALUE | .008 | .016 | .076 | .525 | .600 |
| BIG4 | .001 | .006 | .007 | .115 | .908 |
| DEBT | .027 | .017 | .233 | 1.592 | .092 |
| SALES | -.005 | .005 | -.055 | -1.072 | .284 |
| CASH | .059 | .016 | .159 | 3.757 | .000 |
| BOARD | -.002 | .001 | -.087 | -1.693 | .091 |
| SIGN | -.004 | .002 | -.092 | -2.074 | .039 |
| INDUSTRY2 | .002 | .003 | .032 | .736 | .462 |
| INDUSTRY3 | .012 | .005 | .107 | 2.581 | .010 |
| INDUSTRY4 | .003 | .003 | .048 | 1.061 | .289 |
| INDUSTRY5 | .013 | .007 | .077 | 1.903 | .058 |
| INDUSTRY7 | .013 | .004 | .135 | 3.238 | .001 |
| INDUSTRY9 | .001 | .007 | .006 | .148 | .882 |
| INDUSTRY0 | -.012 | .006 | -.082 | -2.001 | .046 |
| SIZE | .003 | .001 | .174 | 3.414 | .001 |
| LISTED | .002 | .005 | .027 | .410 | .682 |
| AGE | -.001 | .001 | -.042 | -.923 | .356 |
| LIQU | .000 | .000 | -.050 | -1.184 | .237 |
| F-value | 4.231* | | | | |

| BELGIUM | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .027 | .027 | | 1.023 | .307 |
| GROWTH | .002 | .005 | .015 | .328 | .743 |
| VALUE | .026 | .023 | .245 | 1.138 | .256 |
| BIG4 | -.001 | .003 | -.011 | -.297 | .767 |
| DEBT | .026 | .025 | .226 | 1.047 | .295 |
| SALES | -.008 | .008 | -.047 | -.994 | .321 |
| CASH | .044 | .017 | .101 | 2.641 | .008 |
| BOARD | .002 | .001 | .069 | 1.694 | .091 |
| SIGN | -.014 | .002 | -.291 | -7.758 | .000 |
| INDUSTRY1 | -.003 | .012 | -.008 | -.222 | .825 |
| INDUSTRY2 | -.003 | .003 | -.047 | -1.192 | .234 |
| INDUSTRY3 | .009 | .004 | .092 | 2.499 | .013 |
| INDUSTRY4 | .002 | .002 | .029 | .736 | .462 |
| INDUSTRY5 | .012 | .004 | .113 | 3.018 | .003 |
| INDUSTRY7 | .009 | .004 | .074 | 2.008 | .045 |
| INDUSTRY9 | -.007 | .016 | -.016 | -.453 | .651 |
| INDUSTRY0 | .034 | .008 | .145 | 4.101 | .000 |
| SIZE | -.001 | .001 | -.068 | -1.773 | .077 |
| LISTED | -.002 | .007 | -.009 | -.239 | .811 |
| AGE | -.003 | .001 | -.093 | -2.326 | .020 |
| LIQU | -.002 | .001 | -.088 | -1.853 | .064 |
| F-value | 6.979* | | | | |

| FINLAND | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .020 | .007 | | 3.005 | .003 |
| GROWTH | -.006 | .003 | -.061 | -1.759 | .079 |
| BIG4 | -.001 | .002 | -.024 | -.822 | .411 |
| DEBT | .014 | .004 | .136 | 3.820 | .000 |
| SALES | -.002 | .005 | -.015 | -.433 | .665 |
| CASH | .019 | .011 | .054 | 1.784 | .075 |
| BOARD | -.001 | .001 | -.029 | -.778 | .437 |
| SIGN | -.012 | .001 | -.247 | -8.199 | .000 |
| INDUSTRY1 | .044 | .009 | .136 | 4.809 | .000 |
| INDUSTRY3 | .004 | .003 | .048 | 1.547 | .122 |
| INDUSTRY4 | .002 | .002 | .040 | 1.188 | .235 |
| INDUSTRY5 | .012 | .003 | .130 | 4.117 | .000 |
| INDUSTRY7 | .015 | .003 | .167 | 5.105 | .000 |
| INDUSTRY8 | .006 | .002 | .102 | 2.925 | .004 |
| INDUSTRY9 | .018 | .005 | .095 | 3.297 | .001 |
| INDUSTRY0 | -.003 | .009 | -.009 | -.323 | .747 |
| SIZE | .001 | .000 | .037 | 1.047 | .295 |
| LISTED | .000 | .002 | -.005 | -.150 | .881 |
| AGE | -.003 | .001 | -.075 | -2.435 | .015 |
| LIQU | .001 | .000 | .056 | 1.641 | .101 |
| F-value | 9.775* | | | | |

| FRANCE | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .052 | .007 | | 6.921 | .000 |
| GROWTH | -.013 | .006 | -.123 | -2.136 | .033 |
| BIG4 | .002 | .002 | .031 | .955 | .340 |
| DEBT | .003 | .005 | .022 | .615 | .539 |
| SALES | .006 | .006 | .059 | 1.012 | .312 |
| CASH | -.010 | .010 | -.036 | -1.004 | .315 |
| BOARD | -.003 | .001 | -.082 | -1.967 | .049 |
| SIGN | -.013 | .002 | -.235 | -7.348 | .000 |
| INDUSTRY1 | -.012 | .013 | -.028 | -.935 | .350 |
| INDUSTRY2 | .003 | .003 | .035 | .902 | .367 |
| INDUSTRY3 | .006 | .006 | .033 | 1.039 | .299 |
| INDUSTRY5 | .016 | .003 | .184 | 4.876 | .000 |
| INDUSTRY7 | .036 | .004 | .292 | 8.189 | .000 |
| INDUSTRY8 | .005 | .002 | .085 | 1.912 | .056 |
| INDUSTRY9 | .000 | .007 | .001 | .019 | .985 |
| INDUSTRY0 | .020 | .008 | .076 | 2.443 | .015 |
| SIZE | .000 | .001 | -.007 | -.159 | .874 |
| LISTED | .005 | .002 | .082 | 2.209 | .027 |
| AGE | -.006 | .002 | -.125 | -3.453 | .001 |
| LIQU | -.001 | .001 | -.039 | -1.112 | .267 |
| F-value | 11.119* | | | | |

| GERMANY | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .037 | .009 | | 4.182 | .000 |
| GROWTH | .006 | .005 | .049 | 1.148 | .251 |
| BIG4 | .000 | .002 | -.008 | -.192 | .848 |
| DEBT | .013 | .005 | .099 | 2.501 | .013 |
| SALES | -.019 | .007 | -.124 | -2.863 | .004 |
| CASH | .016 | .009 | .065 | 1.776 | .076 |
| BOARD | .002 | .001 | .072 | 1.353 | .176 |
| SIGN | -.011 | .002 | -.196 | -5.309 | .000 |
| INDUSTRY1 | -.001 | .013 | -.003 | -.092 | .927 |
| INDUSTRY2 | .000 | .002 | .007 | .171 | .865 |
| INDUSTRY3 | .014 | .011 | .042 | 1.222 | .222 |
| INDUSTRY4 | -.002 | .003 | -.019 | -.505 | .614 |
| INDUSTRY5 | .015 | .004 | .133 | 3.588 | .000 |
| INDUSTRY7 | .033 | .005 | .257 | 7.130 | .000 |
| INDUSTRY9 | -.006 | .008 | -.025 | -.727 | .467 |
| INDUSTRY0 | .046 | .008 | .216 | 6.101 | .000 |
| SIZE | -.001 | .001 | -.063 | -1.243 | .214 |
| LISTED | .008 | .002 | .146 | 3.676 | .000 |
| AGE | -.004 | .001 | -.122 | -3.153 | .002 |
| LIQU | -.001 | .001 | -.055 | -1.435 | .152 |
| F-value | 10.523* | | | | |

| GREECE | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .020 | .014 | | 1.369 | .173 |
| GROWTH | -.033 | .016 | -.446 | -2.115 | .036 |
| BIG4 | .002 | .003 | .044 | .570 | .570 |
| DEBT | -.015 | .008 | -.199 | -1.981 | .049 |
| SALES | .036 | .015 | .480 | 2.323 | .021 |
| CASH | -.010 | .030 | -.028 | -.344 | .731 |
| BOARD | .008 | .004 | .214 | 2.118 | .036 |
| SIGN | -.005 | .003 | -.125 | -1.578 | .117 |
| INDUSTRY1 | .004 | .011 | .023 | .337 | .737 |
| INDUSTRY3 | .015 | .005 | .230 | 3.282 | .001 |
| INDUSTRY4 | .000 | .003 | -.011 | -.144 | .886 |
| INDUSTRY5 | .000 | .004 | .003 | .038 | .970 |
| INDUSTRY7 | .066 | .018 | .296 | 3.625 | .000 |
| INDUSTRY8 | .020 | .005 | .296 | 4.160 | .000 |
| INDUSTRY9 | -.001 | .008 | -.006 | -.091 | .928 |
| INDUSTRY0 | -.003 | .009 | -.026 | -.371 | .711 |
| SIZE | -.001 | .001 | -.121 | -1.221 | .224 |
| LISTED | .007 | .003 | .181 | 2.212 | .028 |
| AGE | .001 | .002 | .019 | .267 | .790 |
| LIQU | -.002 | .001 | -.163 | -1.621 | .107 |
| F-value | 4.199* | | | | |

| ICELAND | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .040 | .031 | | 1.287 | .204 |
| GROWTH | -.003 | .021 | -.038 | -.152 | .880 |
| BIG4 | .010 | .004 | .205 | 2.175 | .035 |
| DEBT | -.042 | .016 | -.304 | -2.555 | .014 |
| SALES | .014 | .016 | .208 | .856 | .396 |
| CASH | -.070 | .040 | -.219 | -1.726 | .091 |
| BOARD | -.007 | .004 | -.189 | -1.689 | .098 |
| SIGN | -.008 | .005 | -.156 | -1.455 | .152 |
| INDUSTRY1 | -.011 | .012 | -.085 | -.923 | .361 |
| INDUSTRY2 | -.026 | .006 | -.545 | -3.937 | .000 |
| INDUSTRY3 | -.016 | .013 | -.121 | -1.203 | .235 |
| INDUSTRY4 | -.030 | .008 | -.515 | -3.851 | .000 |
| INDUSTRY5 | .008 | .011 | .085 | .685 | .497 |
| INDUSTRY7 | .015 | .010 | .200 | 1.489 | .143 |
| INDUSTRY9 | .020 | .011 | .158 | 1.795 | .079 |
| INDUSTRY0 | -.034 | .013 | -.260 | -2.630 | .012 |
| SIZE | .006 | .002 | .426 | 3.043 | .004 |
| LISTED | -.006 | .008 | -.084 | -.771 | .445 |
| AGE | -.006 | .004 | -.150 | -1.424 | .161 |
| LIQU | -.001 | .003 | -.051 | -.392 | .697 |
| F-value | 7.257* | | | | |

| ITALY | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .024 | .006 | | 3.664 | .000 |
| GROWTH | -.009 | .003 | -.086 | -2.781 | .005 |
| BIG4 | .000 | .001 | .004 | .237 | .813 |
| DEBT | .002 | .003 | .022 | .829 | .407 |
| SALES | .006 | .003 | .072 | 2.339 | .019 |
| CASH | -.022 | .008 | -.046 | -2.609 | .009 |
| BOARD | .001 | .001 | .045 | 2.005 | .045 |
| SIGN | -.007 | .001 | -.144 | -8.085 | .000 |
| INDUSTRY1 | -.004 | .004 | -.015 | -.838 | .402 |
| INDUSTRY2 | -.004 | .001 | -.077 | -3.551 | .000 |
| INDUSTRY3 | .000 | .003 | .000 | .024 | .981 |
| INDUSTRY4 | .000 | .001 | -.006 | -.309 | .757 |
| INDUSTRY5 | .009 | .002 | .072 | 4.104 | .000 |
| INDUSTRY7 | .000 | .001 | .000 | -.021 | .983 |
| INDUSTRY9 | .006 | .004 | .029 | 1.693 | .090 |
| INDUSTRY0 | .076 | .006 | .223 | 13.004 | .000 |
| SIZE | .000 | .000 | .000 | -.005 | .996 |
| LISTED | .003 | .002 | .027 | 1.521 | .128 |
| AGE | -.002 | .001 | -.039 | -2.172 | .030 |
| LIQU | .000 | .000 | -.016 | -.630 | .529 |
| F-value | 19.959* | | | | |

| NETHERLANDS | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .011 | .026 | | .445 | .657 |
| GROWTH | .045 | .030 | .500 | 1.487 | .139 |
| BIG4 | .000 | .004 | -.010 | -.104 | .917 |
| DEBT | .025 | .012 | .258 | 2.172 | .032 |
| SALES | -.052 | .029 | -.596 | -1.778 | .078 |
| CASH | .078 | .031 | .219 | 2.550 | .012 |
| BOARD | .000 | .002 | .013 | .145 | .885 |
| SIGN | .000 | .004 | .007 | .078 | .938 |
| INDUSTRY1 | .038 | .010 | .314 | 3.641 | .000 |
| INDUSTRY2 | .009 | .007 | .105 | 1.283 | .202 |
| INDUSTRY5 | .005 | .007 | .053 | .652 | .515 |
| INDUSTRY7 | -.009 | .010 | -.064 | -.832 | .407 |
| INDUSTRY8 | .012 | .004 | .266 | 2.823 | .005 |
| INDUSTRY9 | .031 | .014 | .165 | 2.156 | .033 |
| INDUSTRY0 | -.008 | .013 | -.051 | -.624 | .534 |
| SIZE | .000 | .002 | -.008 | -.088 | .930 |
| LISTED | -.003 | .014 | -.013 | -.176 | .861 |
| AGE | -.004 | .003 | -.134 | -1.539 | .126 |
| LIQU | .000 | .001 | .027 | .249 | .804 |
| F-value | 2.867* | | | | |

| NORWAY | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | -.006 | .006 | | -1.009 | .313 |
| GROWTH | -.002 | .003 | -.020 | -.627 | .531 |
| VALUE | .007 | .004 | .081 | 1.812 | .070 |
| BIG4 | .000 | .001 | .000 | -.013 | .989 |
| DEBT | .014 | .005 | .141 | 3.082 | .002 |
| SALES | .001 | .002 | .009 | .279 | .780 |
| CASH | .006 | .005 | .022 | 1.094 | .274 |
| BOARD | .000 | .001 | .004 | .155 | .877 |
| SIGN | -.010 | .001 | -.206 | -9.998 | .000 |
| INDUSTRY1 | -.005 | .003 | -.036 | -1.754 | .080 |
| INDUSTRY2 | -.002 | .001 | -.028 | -1.184 | .237 |
| INDUSTRY3 | .003 | .001 | .043 | 1.911 | .056 |
| INDUSTRY5 | .003 | .002 | .025 | 1.204 | .229 |
| INDUSTRY7 | .006 | .001 | .114 | 4.789 | .000 |
| INDUSTRY8 | -.002 | .002 | -.025 | -1.119 | .263 |
| INDUSTRY9 | -.006 | .003 | -.044 | -2.173 | .030 |
| INDUSTRY0 | .002 | .002 | .017 | .782 | .434 |
| SIZE | .004 | .000 | .200 | 9.288 | .000 |
| LISTED | .005 | .003 | .037 | 1.801 | .072 |
| AGE | -.004 | .001 | -.071 | -3.578 | .000 |
| LIQU | .000 | .000 | .006 | .280 | .779 |
| F-value | 14.926* | | | | |

| POLAND | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | -.022 | .017 | | -1.353 | .177 |
| GROWTH | -.002 | .011 | -.013 | -.147 | .883 |
| BIG4 | -.009 | .006 | -.090 | -1.483 | .139 |
| DEBT | .036 | .008 | .280 | 4.403 | .000 |
| SALES | -.015 | .012 | -.114 | -1.250 | .212 |
| CASH | -.003 | .010 | -.019 | -.307 | .759 |
| BOARD | .002 | .004 | .036 | .455 | .649 |
| SIGN | -.012 | .005 | -.151 | -2.634 | .009 |
| INDUSTRY1 | -.013 | .019 | -.038 | -.693 | .489 |
| INDUSTRY3 | .001 | .010 | .008 | .133 | .894 |
| INDUSTRY4 | -.002 | .006 | -.022 | -.323 | .747 |
| INDUSTRY5 | .007 | .009 | .047 | .773 | .440 |
| INDUSTRY7 | .030 | .017 | .104 | 1.731 | .084 |
| INDUSTRY8 | -.001 | .006 | -.014 | -.214 | .830 |
| INDUSTRY9 | -.005 | .012 | -.024 | -.424 | .672 |
| INDUSTRY0 | -.008 | .014 | -.031 | -.554 | .580 |
| SIZE | .003 | .001 | .116 | 1.775 | .077 |
| LISTED | .001 | .006 | .009 | .121 | .904 |
| LIQU | .002 | .001 | .124 | 2.057 | .041 |
| F-value | 2.500* | | | | |

| PORTUGAL | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .010 | .012 | | .856 | .393 |
| GROWTH | .001 | .005 | .013 | .224 | .823 |
| BIG4 | -.002 | .002 | -.040 | -.736 | .462 |
| DEBT | -.015 | .005 | -.205 | -3.181 | .002 |
| SALES | .001 | .002 | .043 | .760 | .448 |
| CASH | -.011 | .007 | -.074 | -1.442 | .150 |
| BOARD | .002 | .002 | .055 | .869 | .385 |
| SIGN | -.005 | .002 | -.139 | -2.635 | .009 |
| INDUSTRY1 | .002 | .005 | .018 | .349 | .728 |
| INDUSTRY2 | -.002 | .003 | -.034 | -.514 | .607 |
| INDUSTRY3 | .011 | .005 | .123 | 2.252 | .025 |
| INDUSTRY4 | .010 | .003 | .211 | 3.610 | .000 |
| INDUSTRY5 | -.002 | .007 | -.019 | -.375 | .708 |
| INDUSTRY7 | .000 | .004 | .000 | -.008 | .994 |
| INDUSTRY9 | .002 | .009 | .013 | .271 | .787 |
| SIZE | .003 | .001 | .174 | 2.990 | .003 |
| LISTED | .011 | .010 | .062 | 1.174 | .241 |
| AGE | -.003 | .002 | -.123 | -1.832 | .068 |
| LIQU | -.003 | .001 | -.182 | -2.929 | .004 |
| F-value | 3.968* | | | | |

| SPAIN | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .011 | .014 | | .777 | .437 |
| GROWTH | -.004 | .005 | -.052 | -.843 | .400 |
| VALUE | .024 | .008 | .306 | 2.946 | .003 |
| BIG4 | -.002 | .003 | -.037 | -.625 | .532 |
| DEBT | .036 | .010 | .417 | 3.664 | .000 |
| SALES | .007 | .006 | .067 | 1.067 | .286 |
| CASH | .034 | .015 | .131 | 2.254 | .025 |
| BOARD | .003 | .002 | .109 | 1.761 | .079 |
| SIGN | -.008 | .002 | -.174 | -3.438 | .001 |
| INDUSTRY1 | .000 | .006 | -.004 | -.083 | .934 |
| INDUSTRY2 | -.005 | .003 | -.092 | -1.431 | .153 |
| INDUSTRY3 | .014 | .004 | .198 | 3.561 | .000 |
| INDUSTRY4 | .005 | .003 | .110 | 1.859 | .064 |
| INDUSTRY5 | .010 | .005 | .099 | 1.959 | .051 |
| INDUSTRY7 | .013 | .004 | .159 | 3.095 | .002 |
| INDUSTRY9 | -.018 | .014 | -.060 | -1.296 | .196 |
| SIZE | -.001 | .001 | -.092 | -1.482 | .139 |
| LISTED | .003 | .003 | .071 | 1.196 | .233 |
| AGE | -.003 | .002 | -.100 | -1.819 | .070 |
| LIQU | .000 | .001 | -.028 | -.519 | .604 |
| F-value | 4.389* | | | | |

| SWEDEN | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | -.020 | .009 | | -2.087 | .037 |
| GROWTH | .006 | .006 | .052 | .964 | .335 |
| VALUE | .018 | .005 | .183 | 3.392 | .001 |
| BIG4 | .000 | .002 | -.008 | -.284 | .776 |
| DEBT | .038 | .007 | .297 | 5.211 | .000 |
| SALES | -.008 | .006 | -.082 | -1.503 | .133 |
| CASH | .006 | .007 | .022 | .867 | .386 |
| BOARD | -.003 | .001 | -.088 | -2.819 | .005 |
| SIGN | -.014 | .001 | -.248 | -9.456 | .000 |
| INDUSTRY1 | .023 | .008 | .070 | 2.819 | .005 |
| INDUSTRY2 | -.004 | .002 | -.053 | -1.852 | .064 |
| INDUSTRY3 | .002 | .004 | .012 | .462 | .644 |
| INDUSTRY4 | .005 | .002 | .091 | 3.126 | .002 |
| INDUSTRY5 | .014 | .004 | .078 | 3.045 | .002 |
| INDUSTRY7 | .010 | .002 | .119 | 4.309 | .000 |
| INDUSTRY9 | .007 | .007 | .024 | .935 | .350 |
| INDUSTRY0 | -.004 | .007 | -.012 | -.487 | .627 |
| SIZE | .004 | .001 | .173 | 6.011 | .000 |
| LISTED | .008 | .003 | .064 | 2.340 | .019 |
| AGE | -.003 | .001 | -.066 | -2.357 | .019 |
| LIQU | .000 | .000 | -.023 | -.755 | .450 |
| F-value | 12.130* | | | | |

| SWITZERLAND | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
|-------------|-----------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | .031 | .011 | | 2.894 | .004 |
| GROWTH | -.011 | .006 | -.124 | -1.653 | .100 |
| BIG4 | .000 | .003 | -.002 | -.031 | .975 |
| DEBT | -.003 | .007 | -.028 | -.397 | .692 |
| SALES | .007 | .007 | .083 | 1.106 | .270 |
| CASH | -.008 | .011 | -.047 | -.718 | .474 |
| BOARD | .003 | .002 | .107 | 1.380 | .169 |
| SIGN | -.006 | .002 | -.138 | -2.251 | .026 |
| INDUSTRY2 | .001 | .003 | .030 | .400 | .689 |
| INDUSTRY4 | .007 | .004 | .118 | 1.737 | .084 |
| INDUSTRY5 | -.003 | .007 | -.031 | -.461 | .646 |
| INDUSTRY7 | .050 | .006 | .540 | 8.842 | .000 |
| INDUSTRY0 | -.005 | .006 | -.055 | -.863 | .389 |
| SIZE | .000 | .001 | .016 | .189 | .851 |
| LISTED | -.003 | .003 | -.085 | -1.179 | .240 |
| AGE | -.003 | .002 | -.131 | -1.873 | .063 |
| LIQU | -.003 | .001 | -.213 | -3.006 | .003 |
| F-value | 8.940* | | | | |

Source: The author