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COVID-19, Investor Protection and Earnings Management: A Cross-country Analysis

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Abstract

The importance of the agency problem in external finance has sparked research on investor protection, and earnings management, in the finance literature. Studies find that investor protection decreases accrual earnings management and increases real earnings management (Enomoto et al., 2015) while institutions impact earnings management strategies during financial crises (Wysocki, 2004; Persakis & Iatridis, 2016). This study combines these perspectives and examines how investor protection influences earnings management during COVID-19. I have two hypotheses; first, the relation between investor protection and accrual earnings management is stronger during COVID-19; second, firms with strong investor protection substitute more real earnings management for accrual earnings management during COVID-19. I proxy investor protection with the clusters of Leuz et al. (2003) and measure accrual earnings management and real earnings management with the Kothari model (Kothari et al., 2005) and the proxies of Roychowdhury (2006), respectively. The final sample includes 4,326 firm-year observations from nine countries. The results do not support the first hypothesis, and counterintuitively I observe a positive relation between investor protection and accrual earnings management contradicting previous literature. Besides, I observe that firms with strong investor protection turn to more real earnings management during COVID-19 supportive of the second hypothesis.

Keywords: Earnings Management, Investor Protection, COVID-19, Cross-country Study

Contents

1 Introduction

"Ownership has been separated from control; and this separation has removed many of the checks which formerly operated to curb the misuse of wealth and power."

- Louis D. Brandeis (1933)[1]

Over the years the separation of ownership and control has become increasingly important (Jensen & Meckling, 1976). Formerly, firms operated in sole proprietorship where 'managers' fully finance the firm while simultaneously having control over business decisions. Here, there is no separation of ownership and control as the 'manager' both owns and controls the firm. However, once firms start to grow internal funds deplete increasing the need for external financiers. 'Managers' give up parts of their ownership to external financiers who become residual claimants of the firm. This leads to a separation of ownership and control where the principal (share- and debtholders, together 'outside investors') hands over cash flow rights to the agent (managers and controlling shareholders, together 'insiders'), and the decisions over these cash flows cannot be continuously monitored by outside investors. Fundamental to this is the agency theory described by Jensen and Meckling (1976) which highlights the existence of information asymmetry in principal-agent relationships. The principal requires the agent to act in its best interest, however often interests are not aligned increasing agency costs thereby creating the agency problem. Outside investors demand the insiders to act in their best interest by maximizing shareholder value, however due to insiders' superior knowledge of firm performance and outsider investors' inability to continuously monitor firm decisions, the insiders have incentives to maximize their interests. Therefore, outside investors need information about the firm to assure that their cash flows are managed efficiently. Firms are increasingly accountable to more stakeholders (e.g., need for climate reporting) due to the impact of shareholder value creation (Gray, 2006). An important measure to increase the reliability of public reporting is accounting standards. Public companies must uphold to these standards to increase investors' confidence in reported

[1] Louis K. Liggett Co. v. Lee, 288 U.S. 517, 564–67 (1933)

information. However, managers recognize that accounting standards are not perfect which leaves room for managerial discretion allowing for the influence of accounting numbers diminishing financial reporting quality (Healy & Wahlen, 1999). Here the importance of investor protection comes into play. Investor protection provides a safeguard on cash flows via the law allowing outside investors to influence firm decisions and take actions against the insiders. Multiple studies consider the legal rights of outside investors across countries (Shleifer & Vishny, 1997; La Porta et al., 1998). They show that investor rights and their enforcement differs significantly between countries. Moreover, these differences in investor rights influence firms' access to capital markets. Shareholders and debtholders are more willing to provide funds to firms in countries where their cash flows are more protected by the law (La Porta et al., 1997).

Managers recognize that accounting standards are not perfect (Healy & Wahlen, 1999) incentivizing them to engage in earnings management to maximize own value. If investor protection is non-existent managers are not bound by the legal protection of outside investors, providing more incentives for earnings management without fear of legal consequences. Different studies find that earnings management decreases with investor protection, highlighting the importance of investor protection as a way to limit expropriation by the insiders (Leuz et al., 2003; Enomoto et al., 2015). Earnings management strategies depend on the institutional environment (Wysocki, 2004) which led to studies on the relation between investor protection and earnings management during financial crises (Persakis & Iatridis, 2016). Besides, extensive research has been done on firms' incentives for earnings management during financial crises (Filip & Raffournier, 2014; Trombetta & Imperatore, 2014; Cimini, 2015). It is interesting to examine exogenous shocks because unexpected events can have a huge impact on firm performance. One could question the existence of reverse causality in the relation between investor protection and earnings management; does investor protection enhance reporting quality or do firms with better reporting quality tend to operate in certain investor protection environments? Exogenous shocks have an impact on the institutional environment (Koning, 2016) and therewith earnings management (Wysocki, 2004), therefore exogenous shocks allows for the comparison of post-shock earnings management to pre-shock investor protection mitigating the endogeneity problem caused by reverse causality.

I examine the relation between investor protection and accrual- and real earnings management in the context of a new exogenous shock, COVID-19[2]. This shock had a big influence on firm performance (Shen et al., 2020) which makes it interesting to examine how incentives for earnings management change, providing new insights on the impact of exogenous shocks under different investor protection environments. These results are relevant to outside investors in their resource allocation decisions and to policy makers in the way the legal environment ensures that firms have more access to capital markets by increasing the willingness of outside investors to provide external funds. This paper has two contributions. First, I relate investor protection and earnings management to a new exogenous shock, COVID-19, limiting the endogeneity problem. Second, I combine earlier studies and focus on both accrual- and real earnings management during COVID-19, providing insights on the way firms altercate between these types of earnings management under different investor protection environments. I investigate the following research question:

How does investor protection influence earnings management during COVID-19?

I examine 4,326 firm-year observations spread over nine countries during 2019 and 2020 to examine earnings management one year before COVID-19 and one year during COVID-19. I proxy investor protection with the classifications of Leuz et al. (2003) who group countries together based upon the investor rights described by La Porta et al. (1998). I estimate accrual earnings management and real earnings management with the Kothari model (Kothari et al., 2005) and the proxies of Roychowdhury (2006), respectively. Firms increase accrual earnings management during COVID-19; however this change does not depend on the investor protection environment. Moreover, I observe a stronger increase in real earnings management, through abnormal operation cash flows, in countries with strong investor protection suggesting that firms in these countries turn to more real earnings management during COVID-19.

[2] Nathan and Kelkar (2022) argue that COVID-19 is an endogenous shock. I follow the following definition: "an unpredictable and/or unexpected event not initiated by a given market, community or country that carries a significant negative impact upon that market, community, or country" (Miklian & Hoelscher, 2021, p. 180). This allows shocks like COVID-19 to be exogenous, which could be classified as endogenous according to the traditional definition.

2 Theoretical Framework

2.1 Investor protection

External finance is a pivotal source of firms to fund operational activities (La Porta et al., 1997). Firms can use internal financing for new projects, but internal funds are limited, leaving firms dependent on external financing (Burkart et al., 1997). External financing has two alternatives, debt- and equity financing, where creditors and shareholders provide firms with funds, and therefor expect a return. However, this raises the question how outside investors ensure themselves to be paid back. What stops the management from exploiting outside investors and stealing the profits for themselves?

Fundamental to this is the agency problem identified by Jensen and Meckling (1976). There is a separation of ownership and control. Outside investors hand over cash flow rights and cannot continuously monitor the actions of managers (Shleifer & Vishny, 1986). This leads to information asymmetry between outside investors, who expect a return on their investment, and managers who are incentivized to maximize their value. To ensure that cash flows are managed efficiently investor protection is needed, through both legal rules and legal enforcement (Hart, 1995). Outside investors require some power (e.g. voting rights for shareholders) to ensure that funds are managed efficiently and paid back in the future. Without any rights outside investors are unwilling to finance firms due to fear of expropriation (La Porta et al., 1998). When investor protection increases the private control benefits of the insiders (managers and controlling shareholders) decrease since outside investors have the power to discipline them, which makes it more beneficial for the insiders to meet investors' interests by paying dividends.

La Porta et al. (1998) look at worldwide differences in investor protection and find significant variation in the strength of investor rights. They argue that these rights are what management has to give up in order to receive external funds. They look at two widely-applied law systems, common law and civil law[3], and focus on both shareholder- and creditor rights. For shareholders they identify five different rights; general voting rights, rights to vote against the insiders,

[3] Within civil law they differentiate between, French, German and Scandinavian civil law. They ignore other law systems (e.g. Jewish law) due to their interrelatedness with common- and civil law.

remedial rights (e.g. mandatory pay of dividend), one-share-one-vote rights (each share has equal voting power), and anti-director rights[4]. They find that common law countries provide the best legal protection to shareholders while French civil law countries provide the worst legal protection. The quality of shareholder rights in German civil law countries and Scandinavian countries are in between common law countries and French civil law countries, being more closely located to the latter. Besides, not only the legal environment is important but also legal enforcement (La Porta et al., 1998). This study focuses on five proxies for the quality of legal enforcement: efficiency of the judicial system, rule of law, corruption, risk of expropriation and trust in governments' contractual agreements. Moreover, they consider the quality of accounting standards due to their importance for investors to assess firm performance. They find that legal enforcement is the strongest in Scandinavian countries, followed by German civil law countries, common law countries, and French civil law countries. Furthermore, Scandinavian countries provide the strongest accounting standards, followed by common law countries, German- and French civil law countries. Overall, French civil law countries score the weakest on all forms of investor protection including legal enforcement. This is further demonstrated by the large ownership concentration in French civil law countries due to firms' difficulties to raise external funds because of weak investor protection leading to fear of expropriation by outside investors (La Porta et al., 1998).

In another study La Porta et al. (1997) further examine this phenomenon by analyzing firms' ability to raise external funds. They predict that external capital markets are bigger in countries with strong investor protection since outside investors have rights to discipline the insiders to ensure that they receive a return on their investment. They look at three measures of equity finance; ratio of stock market capitalization to GNP, number of listed domestic firms relative to the population, and the number of IPOs relative to the population. For debt finance they focus on total bank debt in the private sector and the total face value of corporate bonds. In line with their prediction they find that firms from common law countries have more access to debt- and equity markets compared to civil law countries. Moreover, their findings show that the quality of legal

[4] La Porta et al. (1998) identify five proxies for anti-director rights; the rights to vote by mail, the deposit of shares before a shareholder meeting, cumulative voting, rights to take legal actions against directors and the amount of shares needed to request a shareholder meeting. Anti-director rights reflect the way the legal system deals with conflicts between shareholders and management.

enforcement, next to the quality of legal rules, is an important predictor of the size of external capital markets.

However, this raises the question why particular law systems protect investors better than others? Why do common law countries typically have stronger investor protection? For this, La Porta et al. (2000) give two explanations; the judicial explanation and the political explanation[5]. Overall, these studies show that investor protection is essential for firms' ability to raise external funds, and that country differences in legal rules and enforcement affects the size of external capital markets due to investors' willingness to provide such funds (La Porta et al., 2000). But here the focus is on the influence of investor protection on the behavior of outside investors. What about managers? When managers prepare financial statements do their incentives change with the legal environment? And what causes these changes?

2.2 Reporting incentives under different legal environments

Firms in need of external funds are expected to provide information about the firm to the public so investors can make investment decisions (Drake et al., 2012). Accounting standards allow for discretion generating incentives for managers to provide information that maximizes their value at the expense of investors. For instance, it creates incentives for earnings management where managers use their judgment to influence earnings. Managers use earnings management to influence financial reports through changes in firm performance and accounting numbers important for contractual outcomes (Healy & Wahlen, 1999). Two ways for managers to influence earnings are accrual earnings management and real earnings management. Managers engage in accrual earnings management to influence discretionary accruals[6]. Accrual earnings management focuses strictly on influencing these accruals, for instance through changes in accounting policies, not affecting real business activities. On the contrary, real earnings management focuses on

[5] The judicial explanation is about the importance of general principles (common law) versus legislation (civil law). In common law the judges use general principles to assess cases (fiduciary duty) while in civil law the judges are obligated to strictly follow the statutes established by the legislators. Therefore, if an insider finds a way to circumvent the system in civil law they can do so without fear of any consequences, unlike in common law systems (La Porta et al., 2000). The political explanation focuses on the relative power of the crown and the property owners throughout history. For instance, in England the crown lost its power early to the parliament and property owners, leading to strong protection of private property, and eventually outside investors.

[6] Difference between recognized revenues and recognized costs and actual cash flows resulting from managerial discretion.

influencing real business activities, for instance through decreases in R&D expenses, which immediately impacts firms' earnings. Incentives of both firms (Burgstahler & Dichev, 1997) and managers (Bergstresser & Philippon, 2006) impact earnings management. However, institutional factors such as laws and regulations also play a role in firms' incentives to engage in earnings management (Wysocki, 2004; Burgstahler et al., 2006).

Leuz et al. (2003) link investor protection with earnings management by performing a cluster analysis where they group countries together based upon the investor rights described by La Porta et al. (1998). Leuz et al. (2003) identify three clusters ranging from weak investor protection to strong investor protection. The insiders have incentives to protect their private control benefits by concealing firm performance from outside investors (Leuz et al., 2003). If investor protection is strong outside investor have more rights to control firms' behavior and discipline the insiders (La Porta et al., 1998). From this perspective, one can expect that accrual earnings management decreases with investor protection because insiders' incentives to conceal firm performance are reduced due to fear of outside investors exerting their power and discipling the insiders (Leuz et al., 2003). However, strong investor protection might also increase insiders' incentives to engage in accrual earnings management to conceal private control benefits because they realize that detection of these benefits, results in punishment by outside investors. From this perspective, strong investor protection incentivizes the insiders to engage in more accrual earnings management due to the fear of higher penalties. Overall, the findings of Leuz et al. (2003) support the former argument and they observe that countries with strong investor protection engage in less accrual earnings management.

Enomoto et al. (2015) improve on the reliability of these findings and consider more firm-year observations. They find a negative relationship between investor protection and accrual earnings management supporting Leuz et al. (2003). Furthermore, other studies find that the quality of accounting standards and analyst coverage are essential rights for outside investors to judge firm performance and thereby to limit accrual earnings management (Yu, 2008; DeGeorge et al., 2013). Shen and Chih (2005) support these views and observe that both investor protection and quality of accounting standards reduce banks' incentives to engage in accrual earnings management.

Overall, managers engage in earnings management to acquire private control benefits (Shleifer & Vishny, 1997; Leuz et al., 2003). Private control benefits include but are not limited to executive compensation, transfer pricing and inefficient investing from executives (Dyck & Zingales, 2004). Studies find that investor protection variates between countries while other studies show that institutional factors influence managers' incentives to pursue actions of discretion (La Porta et al., 1998; Leuz et al., 2003; Wysocki, 2004). Investor protection increases the rights of outside investors to discipline the insiders, reducing managers' incentives to engage in accrual earnings management (Leuz et al., 2003). Moreover, the quality of accounting standards and analyst coverage limit accrual earnings management (Yu, 2008; DeGeorge et al., 2013). Investor protection goes together with stronger accounting standards and more analyst coverage (La Porta et al., 1998), further strengthening the expectation of a negative relation between investor protection and accrual earnings management. Thus, strong investor protection limits insiders' ability to conceal firm performance while simultaneously circumventing disciplinary actions of outside investors. Multiple studies support these arguments and observe a negative relation between investor protection and accrual earnings management (Leuz et al., 2003; Shen & Chih, 2005; Enomoto et al., 2015).

Since firms consider the institutional environment when strategizing about earnings management the magnitude of this relation might be affected when the environment adapts to exogenous shocks (Fligstein & Freeland, 1995). Financial crises have a big economic impact altering investor expectations and increasing investor risk perceptions which strengthens their awareness of firm behavior (Hoffmann et al., 2013). Subsequently, one can expect that firms are extra diligent in the preparation of financial statements during financial crises to answer investors' uncertainty and need for information. However, does investor protection influence this diligence in public reporting? Do earnings management practices during times of uncertainty depend on investor protection?

2.3 Reporting incentives during financial crises

Opposed to the agency theory, which focuses on the relation between the principal and the agent, the institutional theory highlights the importance of the institutional environment in firms' decisions about information asymmetry and the protection of outside investors (Aguilera & Jackson, 2003). It considers institutional embeddedness and stresses the interplay between institutions and the decisions of firms made within a social context. The corona crisis has an internal impact on firms, through firm performance (Shen et al., 2020), and an external impact, through increased scrutiny and heightened regulatory control (Cohen et al., 2008; Smales, 2021). Moreover, COVID-19 is a social issue making outside investors more attentive of CSR reporting (Hassan et al., 2021).

Financial crises influence incentives for earnings manipulation. Managers have incentives to meet earnings targets (Matsumoto, 2002) and keep stock prices stable by engaging in accrual earnings-increasing management due to their direct link to executive compensation (Bergstresser & Philippon, 2006). Moreover, firms might want to engage in accrual earnings-decreasing management to be eligible for financial support (DeAngelo et al., 1994) or to inflate future earnings (Kirschenheiter & Melumad, 2002). However, firms also have incentives to decrease accrual earnings management during financial crises; investors have lower expectations, firms have higher litigation risks, and a higher demand for timed earnings all lowering incentives for earnings management (Cimini, 2015). Multiple studies examine firms' incentives for accrual earnings management during financial crises (Trombetta & Imperatore, 2014; Cimini, 2015). They observe that firms decrease accrual earnings management during the financial crisis of 2008 and attribute this to heightened regulatory control. On the contrary, Persakis and Iatridis (2015) find that earnings quality is lower during the financial crisis of 2008. They consider the legal environment within which firms operate. Their findings show that legal enforcement is positively (negatively) related to earnings quality (earnings management). Furthermore, Persakis and Iatridis (2016) show that investor protection decreases incentives for accrual earnings management during the financial crisis of 2008.

On the one hand, managers have incentives to reduce accrual earnings management during COVID-19 due to heightened regulatory control increasing fear of disciplinary actions from outside investors (Cohen et al., 2008). Due to excessive public scrutiny firms are more inclined to pursue stakeholders' interests and provide high-quality reports. When investor protection is strong and well enforced, outside investors have more power to influence the insiders and punish directors when they are dissatisfied (La Porta et al., 2000). From this perspective, excessive public scrutiny inclines firms with strong investor protection to report high-quality earnings. This is further supported by Kousenidis et al. (2013) who show that firms that rely on external financing have incentives to report high-quality earnings to attract investors. When outside investors have extensive rights firms are more concerned about providing high-quality reports due to fear of punishment and difficulty to acquire future funds. Besides, Johnson et al. (2000) consider investor protection during the Asian financial crisis and find that firms with weak investor protection pursue the interests of outside investors as long as future prospects are good. However, when economic conditions worsen, the insiders increase expropriation, and due to weak legal rights outside investors have little power to discipline them. This shows that firms with weak investor protection are less concerned about heightened public scrutiny during financial crises and are not afraid to pursue own interests.

On the other hand, firms have similar incentives for accrual earnings management during financial crises regardless of the legal environment. Managers are incentivized to meet certain benchmarks (Matsumoto, 2002); executive compensation is linked to stock prices leading to incentives for accrual earnings management to keep stock prices stable (Bergstresser & Philippon, 2006); bad economic conditions incentivize firms to engage in accrual earnings-decreasing management to be eligible for financial support (DeAngelo et al., 1994); and uncertainty decreases incentives for accrual earnings management due to lower expectations and higher demand for timed earnings (Filip & Raffournier, 2014).

The institutional agency theory argues that the legal environment plays a role in firms' incentives to protect outside investors (Aguilera & Jackson, 2003). During financial crises firms become extra aware about decisions involving the protection of outside investors (Johnson et al., 2000) and they face heightened regulatory control affecting managers' incentives to pursue stakeholders' interest (Cohen et al., 2008; Smales, 2021). I hypothesize that firms' incentives for accrual earnings management during the corona crisis depend on the legal environment. Firms increase their diligence regarding external financing due to its costliness during financial crises (Duchin et al., 2010). Managers want to maintain and attract outside investors by reporting high-quality earnings (Kousenidis et al., 2013) and this incentive is more intensified for firms with strong investor protection since outside investors have the power to discipline the insiders. Moreover, I expect firms with weak investor protection to pursue more incentives for accrual earnings management unrelated to the legal environment (e.g. meeting earnings targets) due to the lower concern for heightened public scrutiny and to maintain confidence in the firm (Johnson et al., 2000). These studies emphasize the role of disciplinary actions where firms with strong investor protection are less incentivized to use accrual earnings management, due to heightened public scrutiny and fear of punishment (Leuz et al., 2003), and more incentivized to report high-quality earnings to attract external funds (Kousenidis et al., 2013). At the same time, firms with weak investor protection have more incentives to engage in accrual earnings management, because they can do so without fear of any consequences due to weak legal rights of outside investors (Leuz et al., 2003). Subsequently, investor protection turns firms away from accrual earnings management during financial crises, however if protection is limited firms' incentives for accrual earnings management increase[7]. I expect that strong investor protection increases the concern for external finance during COVID-19 incentivizing firms to provide high-quality earnings while weak investor protection have more incentives to pursue own interests, due to lack of legal rights of outside investors, making the relation between investor protection and accrual earnings management more pronounced. This leads to the first hypothesis:

H1: *The relation between investor protection and accrual earnings management is stronger during COVID-19*

Next to manipulation of accruals firms use real business activities to manage earnings (Healy & Wahlen, 1999; Graham et al., 2005). Real earnings management is more discrete than accrual earnings management, but also more costly due to its direct impact on firms' earnings (Graham et al., 2005). From this perspective, real earnings management is an effective strategy for managers to hide private control benefits with limited fear of detection. One can expect that the

[7] The assumption here is that managers of firms with weak investor protection have a short-term horizon over a long-term horizon. One could also argue that firms' difficulties to attract external funds in countries with weak investor protection (La Porta et al., 1997) incentivizes these firms to report high-quality earnings. Namely, detection of earnings management, in already financially tough times, might jeopardize the firm on the long term due to the unwillingness of outside investors to provide future funds, and the limited alternatives for the firm to attract new funds.

effectiveness of accrual earnings management to mask private control benefits decreases when monitoring and regulation increase inclining firms to engage in more real earnings management. Cohen et al. (2008) support this and examine the Sarbanes-Oxley Act[8]. They find that firms turn to more real earnings management after the implementation of this act suggesting that firms favor real earnings management in times of heightened regulatory control. Besides, firms perceive real earnings management as a more effective strategy when the regulation of accounting standards is strong and to hide political gains (Ewert & Wagenhofer, 2005; Braam et al., 2015). These studies support Graham et al. (2005) and show that strong monitoring and regulation incentivizes firms to increase real earnings management. This assertion is further strengthened by Zang et al. (2012) who find that increased scrutiny does not limit earnings management, but changes firms' incentives to altercate between accrual- and real earnings management. Enomoto et al. (2015) offer another explanation and argue that firms are less inclined to use real earnings management due to its negative impact on future firm performance (Cohen & Zarowin, 2010). Besides, Kim and Sohn (2013) show that cost of capital increases once firms use more real earnings management further incentivizing firms to minimize real earnings management.

From the perspective of Leuz et al. (2003), firms with strong investor protection are less inclined to engage in real earnings management. The insiders want to realize private control benefits while simultaneously circumventing disciplinary actions from outside investors. Firms have to contemplate between accrual- and real earnings management strategies to hide private control benefits. As Zang et al. (2012) suggest firms consider the relative costs of accrual- and real earnings management. On the one hand, managers are more inclined to engage in real earnings management due to its inconspicuousness reducing the likelihood of disciplinary actions taken by outside investors (Graham et al., 2005). But on the other hand, real earnings management is more costly and has a bigger impact on outside investors (Cohen & Zarowin, 2010). This suggests that investor protection decreases incentives for real earnings management due to insiders' fear of punishment from outside investors. The importance of the relative cost of accrual- and real

[8] This act was implemented in the United States as a reaction to multiple accounting scandals, such as the Enron scandal and WorldCom scandal, and consists of a set of regulations for public firms as a way to prevent such scandals in the future.

earnings management leads to the expectation that investor protection decreases real earnings management due to its costliness and investors' ability to punish the insiders (Zang et al., 2012). However, earnings management strategies depend on the institutional environment (Wysocki, 2004). Therefore, one could question whether incentives for real earnings management change during COVID-19 in different investor protection environments.

The corona crisis alters the institutional environment due to its negative impact on firm performance (Shen et al., 2020). Stakeholders realize this and become more attentive of firms' behavior intensifying public scrutiny and regulatory control. Subsequently, one can expect firms to substitute real earnings management for accrual earnings management since it is more obscure, therewith countering the higher level of public scrutiny and regulatory control. I assume these increases in real earnings management to depend on investor protection. Firms with strong investor protection are more concerned about heightened public scrutiny and regulatory control due to insiders' fear of punishment by outside investors for the realization of private control benefits. Real earnings management is more likely to go under the radar leading to the expectation that firms with strong investor protection turn to more real earnings management when public scrutiny is heightened. Overall, I expect real earnings management to increase and accrual earnings management to decrease during the corona crisis. More importantly, I expect that this substitution effect is more pronounced in firms with strong investor protection due to a bigger dependency on real earnings management to mask private control benefits in times of heightened public scrutiny and regulatory control. This leads to the following hypothesis:

H2: *Firms in countries with stronger investor protection substitute more real earnings management for accrual earnings management during COVID-19*

3 Methodology

3.1 Sample selection

The two key variables are investor protection and earnings management. To look at country differences in investor protection I follow Leuz et al. (2003) by grouping countries with similar institutions together. This study identifies three different groups for investor protection: "(1): outsider economies with large stock markets, dispersed ownership, strong investor rights, and strong legal enforcement (e.g. United Kingdom and United States); (2) insider economies with less-developed stock markets, concentrated ownership, weak investor rights, but strong legal enforcement (e.g. Germany and Sweden); and, (3) insider economies with weak legal enforcement (e.g. Italy and India)" (Leuz et al., 2003, p. 507).

I conduct a European study, including Australia, and examine three countries for each cluster identified by Leuz et al. (2003)[9]. Besides, I focus on countries which have implemented IFRS to diminish the influence of different accounting standards. This leads to the following country sample and their respective groups: United Kingdom, Australia and Norway (strong investor protection); Germany, France and Sweden (intermediate investor protection); and Italy, Spain and Greece (weak investor protection). I focus on public firms in these countries. I exclude financial firms because of heavy regulation and complex incentives in terms of earnings management (Burgstahler & Dichev, 1997), following previous literature (Leuz et al., 2003; Enomoto et al., 2015; Persakis & Iatridis, 2016). I collect data from 2019 and 2020 which allows me to compare earnings management one year before COVID-19 and one year during COVID-19. To estimate accrual earnings management and real earnings management I collect data from Orbis which provides a wide range of financial information on public firms. Moreover, due to its wide firm coverage it allows subgroup analysis based upon geographical location essential for this study.

Panel A in Table 1 shows the final sample. The initial sample consists of 5,077 firms with 10,114 firm-year observations. Thereof, 5,280 observations are excluded due to missing earnings

[9] There may be concern about the applicability of the classifications of Leuz et al. (2003) today. To limit this concern, I run an additional analysis using the Investor Protection Index from the World Economic Forum (2018).

management estimations, and 590 observations are excluded due to missing control variables leading to the final sample of 4,326 firm-year observations consisting of 2,348 unique firms. Further, panel B shows the number of firms per country. This displays an uneven distribution with more firms in the first cluster (1,072 firms) compared to the second cluster (839 firms) and the third cluster (437 firms).

3.2 Accrual earnings management

I estimate accrual earnings management with the model of Kothari (Kothari et al., 2005) which is based upon the Modified Jones Model (Dechow et al., 1995). The Modified Jones Model distinguishes between discretionary- and non-discretionary accruals and assumes that changes in revenue contribute to changes in non-discretionary accruals whereas changes in credit sales are attributable to managerial discretion. The Modified Jones Model is widely used in the literature (Habib et al., 2013; Cimini, 2015; Persakis & Iatridis, 2016) and compared to previous models makes the distinction between discretionary- and non-discretionary accruals. However, Kothari et al. (2005) show that discretionary accruals are related to firm performance and claim that it is important to control for firm performance to increase the reliability of measurements of discretionary accruals. Therefore, I follow Kothari et al. (2005) and match discretionary accruals with firm performance by including return on assets as an independent variable in the model. First, I estimate total accruals using the cash flow method as suggested by Hribar and Collins (2002). This is represented by equation 1.

(1) $$TACC_t = NI_t - CFO_t$$

Where $TACC_t$ is the total accruals in year t, NI_t is net income in year t, and CFO_t is cash flow from operations in year t. Next, I estimate the Kothari model as represented by equation 2[10].

(2) $$\frac{TACC_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{\Delta REV_t}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}} + \alpha_4 ROA_{t-1} + \varepsilon_t$$

[10] The terms are scaled by lagged total assets to control for heteroskedasticity due to differences in firm size (Kothari et al., 2005).

Where A_{t-1} is the total assets in year t – 1, ΔREV_t is the difference in revenue between year t and year t – 1, PPE_t is the gross value of property, plant and equipment in year t, and ROA_{t-1} is net income in year t divided by total assets in year t – 1. Using the estimates of the coefficients from equation 2, I estimate non-discretionary accruals as represented by equation 3.

$$(3) \qquad NDA_t = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{(\Delta REV_t - \Delta REC_t)}{A_{t-1}} + \alpha_3 \frac{PPE_t}{A_{t-1}}$$

Here ΔREC_t is the difference in accounts receivable between year t and year t – 1. Finally, I estimate discretionary accruals as the difference between total accruals and non-discretionary accruals as represented by equation 4.

$$(4) \qquad DACC_t = \left(\frac{TA_t}{A_{t-1}}\right) - NDA_t$$

Here $DACC_t$ represents the discretionary accruals in year t.

3.3 Real earnings management

I estimate real earnings management using the proxies developed by Roychowdhury (2006)[11]. He argues that firms have three ways to manipulate earnings through real transactions. Managers can use discretion to influence total sales through price discounts and lenient credit terms, influence cost of goods sold through increased production, and reductions in discretionary expenditures. Roychowdhury (2006) estimates the normal levels of cash flow from operations, production costs and discretionary expenses, and states that the abnormal levels are equal to deviations from these estimations. The normal level of cash flow from operations, production costs and discretionary expenses are estimated using equations 5, 6 and 7, respectively.

$$(5) \qquad \frac{CFO_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 ROA_{t-1} + \varepsilon_t$$

[11] I follow Cohen et al. (2020) and again add ROA as an independent variable to match real earnings management with firm performance.

(6) $$\frac{PROD_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 \frac{\Delta S_t}{A_{t-1}} + \alpha_4 \frac{\Delta S_{t-1}}{A_{t-1}} + \alpha_5 ROA_{t-1} + \varepsilon_t$$

(7) $$\frac{DISEXP_t}{A_{t-1}} = \alpha_1 \frac{1}{A_{t-1}} + \alpha_2 \frac{S_t}{A_{t-1}} + \alpha_3 ROA_{t-1} + \varepsilon_t$$

Where S_t is total sales in year t, ΔS_t is the difference in total sales between year t and year t – 1, $PROD_t$ is cost of goods sold in year t plus the change in inventory between year t and year t – 1, ΔS_{t-1} is the difference in total sales between year t – 1 and year t – 2, and $DISEXP_t$ is discretionary expenses[12] in year t. Eventually, the abnormal levels are estimated as the residuals of the estimations in equations 5, 6 and 7.

3.4 Regression models

For the main analysis I run multiple regression models. The dependent variables are accrual earnings management and real earnings management estimated by the Kothari model (Kothari et al., 2005) and the proxies of Roychowdhury (2006), respectively. The main independent variables are CLU and COV19. CLU is a categorical variable grouping observations, based upon investor protection, into one of the three clusters identified by Leuz et al. (2003). I create this variable with the first cluster as the reference group to evaluate differences in earnings management between the three clusters. COV19 is a dummy variable equal to '0' for observations before COVID-19 and equal to '1' for observations during COVID-19. I include an interaction effect between CLU and COV19 to examine the first- and second hypothesis. Further, I include control variables in all models. I control for firm size since studies show that larger firms engage in less earnings management (Reynolds & Francis, 2000; Dechow & Dichev, 2002). I estimate firm size as the natural logarithm of total assets. I control for leverage since studies show that firms with different debt-to-equity ratios have different risk profiles leading to different incentives for earnings management (Sweeney, 1994; Jaggi & Lee, 2002). Moreover, I include ROA to control for differences in firm performance affecting the level of accrual- and real earnings management (Kothari et al., 2005; Cohen et al., 2020). Finally, I include market-to-book (MTB) ratio since high-

[12] Sum of research and development (R&D) expenses, advertising expenses, and selling, general and administrative (SG&A) expenses, where advertising- and SG&A expenses both fall under other operating expenses.

growth firms are more incentivized to meet earnings targets (Barth et al., 1999; Roychowdhury, 2006). For the first hypothesis I run the following regression models:

(1) $AEM_t = \beta_0 + \beta_1 CLU + \beta_2 COV19 + \beta_3 FirmSize + \beta_4 LEV + \beta_5 ROA + \beta_6 MTB + \varepsilon_t$

(2) $AEM_t = \beta_0 + \beta_1 CLU + \beta_2 COV19 + \beta_3 CLU * COV19 + \beta_4 FirmSize + \beta_5 LEV + \beta_6 ROA + \beta_7 MTB + \varepsilon_t$

Here AEM_t is equal to either the net level of accrual earnings management or the absolute level of accrual earnings management in year t. Following previous research, I expect a significant positive coefficient (for the second- and third cluster with the first cluster as reference group) on CLU in the first model. The first hypothesis predicts that this negative relation between investor protection and accrual earnings management is stronger during COVID-19. Therefore, the first hypothesis predicts a significant positive coefficient on the interaction effect in the second model indicating that the slope of the relation between accrual earnings management and COVID-19 is less steep for the second- and third cluster (compared to the first cluster), and thus is more pronounced. For the second hypothesis I run the following regression model:

(3) $REM_t = \beta_0 + \beta_1 CLU + \beta_2 COV19 + \beta_3 CLU * COV19 + \beta_4 FirmSize + \beta_5 LEV + \beta_6 ROA + \beta_7 MTB + \varepsilon_t$

Here REM_t represents either the level of real earnings management for the individual proxies (RM_CFO, RM_PROD, and RM_DISEXP) in year t, or the total level of real earnings management (RM_PROXY) in year t where the three proxies are combined into an aggregate score following Cohen et al. (2008)[13]. The second hypothesis predicts a significant negative coefficient on the interaction effect (for the second- and third cluster with the first cluster as reference group) indicating that countries with strong investor protection turn to more real earnings management during COVID-19.

[13] Cheng et al. (2016) use two aggregate scores, separating real earnings management through abnormal production costs and abnormal cash flow from operations. They argue that combining these two proxies for real earnings management can lead to double counting since increases in abnormal production costs can also lead to decreases in abnormal cash flow from operations. For the purpose of this study it is more practical to combine the three proxies to capture real earnings management in one proxy. Moreover, since RM_PROD is fairly stable during the considered period I assume that the impact on the results is negligible.

4 Analysis

4.1 Descriptive statistics

Table 2 reports the descriptive statistics of the dependent-, independent- and control variables for the full sample and the individual clusters. The data analysis shows that the distributions of most variables are lightly skewed and have a leptokurtic shape with moderately high values for kurtosis[14] indicating that outliers might influence the data[15]. For the purpose of this study, I decide to not further deal with these fat tails since they provide valuable information, and should not be ignored (Saleh & Ahmed, 2005).

Panel A reports for the full period. The mean of DACC (.0286) in the first cluster is higher than in the second cluster (.0050) and similar to the third cluster (.0257) showing no relation between investor protection and earnings-increasing- versus earnings-decreasing management. The mean (median) of the absolute value of discretionary accruals (ABS_DACC) is .1255 (.0848) in the first cluster, higher than .1084 (.0690) in the second- and .0852 (.0646) in the third cluster. This contradicts previous research and suggests that there is no negative relation between investor protection and accrual earnings management, but that investor protection increases accrual earnings management. Real earnings management is similar in the first- and second cluster. The mean of RM_CFO is higher in the second cluster (.1043) compared to the first cluster (.0918), while RM_DISEXP is higher in the first cluster (-.0201) compared to the second cluster (-.0424). Overall, the mean (median) of real earnings management (RM_PROXY) is .0624 (.0909) in the third cluster, higher than the first- and second cluster, where the third cluster engages in more RM_CFO (-.0094) compared to the first- (-.0354) and second cluster (-.0449).

The mean of firm size is 12.7477 with the smallest- and biggest firms in the first- (12.4097) and second cluster (13.1491), respectively. The mean of ROA is -.0373 suggesting that firms have a negative return on average due to financial losses, but the median (.0170) indicates that firms with large financial losses influence the mean downwards. The mean (median) of ROA before

[14] Values for skewedness and kurtosis not reported.

[15] To limit the influence of spurious outliers I already winsorize the data for the dependent- and independent variables at the 1% and 99% level.

COVID-19 is -.0289 (.0245) compared to -.0451 (.0092) during COVID-19[16]. This decrease is to be expected due to the financial impact of the corona crisis (Shen et al., 2020). The mean (median) of ROA is -.0641 (.0114) in the first cluster, lower than -.0216 (.0235) in the second- and -.0055 (.0131) in the third cluster. The way lower mean of the first cluster compared to the median suggests it contains firms with big financial losses.

The average leverage ratio is 0.6555. Debt increases with investor protection (.5999 vs .6813 vs .7351) in line with other studies (La Porta et al., 2000; Cheng & Shiu, 2007). The average MTB ratio (2.7648) shows that the average firm market value is above their book value. Finally, the mean of COV19 (.5215) indicates that there are more observations during COVID-19. The first cluster contains the most observations during COVID-19 (.5409), followed by the second cluster (.5103), while the third cluster (.4981) contains more observations before COVID-19.

Panel B and panel C report the data of before- and during COVID-19 separately. The first cluster engages in the most earnings-increasing management before COVID-19, and the third cluster during COVID-19. The lower means and medians of DACC during COVID-19 indicate that earnings-decreasing management increases regardless of investor protection. ABS_DACC is the highest in the first cluster not in line with my prediction. Furthermore, accrual earnings management increases during COVID-19; the mean (median) of ABS_DACC is .1021 (.0677) before COVID-19 compared to .1204 (.0840) during COVID-19. This contradicts studies who claim that accrual earnings management decreases during financial crises (Filip & Raffournier, 2014; Cimini, 2015), but supports studies who show that accrual earnings-decreasing management increases during financial crises (Habib et al., 2013; Persakis & Iatridis, 2015)[17].

Real earnings management is the highest in the third cluster before COVID-19 where RM_CFO, RM_DISEXP and RM_PROXY are the highest; the mean (median) is -.0173 (-.0044) in the third cluster compared to -.0559 (-.0101) in the first- and -.0492 (-.0187) in the second cluster; for RM_DISEXP this is -.0300 (-.0047) compared to -.0414 (-.0252) in the first- and -.0491 (-.0295) in

[16] Values of control variables before- and during COVID-19 not reported.

[17] Trombetta and Imperatore (2014) argue that accrual earnings management depends on the severity of the crisis. They argue that a severe crisis incentivizes firms to take more risks to avert bankruptcy and increase accrual earnings management. Considering, I focus on 2020 when the financial impact of COVID-19 is the highest (Shen et al., 2020), this could be a plausible explanation for this finding.

the second cluster; and for RM_PROXY this is .0529 (.0758) compared to -.0072 (.0677) in the first- and .0075 (.0438) in the second cluster.

Real earnings management increases during COVID-19 through RM_CFO and RM_DISEXP. The mean (median) of RM_CFO and RM_DISEXP in the first cluster increase from -.0900 (-.0297) to -.0591 (.0040) and -.0450 (-.0257) to -.0073 (-.0046), respectively; In the second cluster from -.0763 (-.0298) to -.0707 (-.0148) and -.0521 (-.0298) to -.0395 (-.0174); And in the third cluster from -.0328 (-.0190) to -.0162 (.0042) and -.0321 (-.0047) to -.0246 (.0025). Overall, the mean (median) of RM_PROXY increases from .0102 (.0590) to .0559 (.1026).

Figure 1 and Figure 2 show the means of accrual- and real earnings management before- and during COVID-19, respectively. In Figure 1 ABS_DACC decreases from the first- to third cluster. This contradicts previous studies and suggests that investor protection increases incentives for accrual earnings management. Moreover, Figure 1 shows preliminary disproof of the first hypothesis. The clusters have similar increases in accrual earnings management giving no sign of a more pronounced relation during COVID-19. In Figure 2 real earnings management increases in each cluster. The second hypothesis predicts that the first cluster substitutes more real earnings management for accrual earnings management during COVID-19. I observe an increase in accrual earnings management giving preliminary disproof of a substitution effect between accrual- and real earnings management. However, Figure 2 does suggest that the first cluster turns to more real earnings management.

Table 3 reports the Pearson correlation matrix. The positive correlation between COV19 and ABS_DACC suggests that accrual earnings management increases during COVID-19. Moreover, the positive correlation between COV19 and RM_CFO, RM_DISEXP, and RM_PROXY, indicates that real earnings management increases during COVID-19. The positive correlation between ABS_DACC and RM_PROXY is unsupportive of a tradeoff between accrual- and real earnings management, but firms do substitute between RM_CFO for ABS_DACC as suggested by the negative correlation. Table 3 displays moderate correlations between the control variables leaving me to believe there is no multicollinearity in the models[18].

[18] I run a VIF test which confirms that there are no issues of multicollinearity.

4.2 Mean comparison

First, I run t-tests to analyze group mean differences in accrual- and real earnings management before- and during COVID-19 and group mean differences between the three clusters. Table 4 reports the results. Panel A reports the differences for the individual clusters. The lower means of DACC in the first- and second cluster during COVID-19 suggest that these clusters increase earnings-decreasing management, unlike the third cluster where there is no significant difference. ABS_DACC increases in the first- and second cluster during COVID-19 while the third cluster sees no significant change. This could be supportive of the second hypothesis and propose a more pronounced relation during COVID-19. However, I argue that the relation is negative (I observe a positive relation), and that accrual earnings management decreases during COVID-19 (I observe an increase). Real earnings management increases in the first cluster where RM_CFO, RM_DISEXP, and RM_PROXY are higher during COVID-19. In the second- and third cluster real earnings management also increases, but only RM_CFO in the third cluster is significantly higher (at 10% level). These findings support the second hypothesis and suggest that investor protection increases the dependence on real earnings management during COVID-19. However, I only find a substitution effect between RM_CFO and ABS_DACC (as highlighted in Table 3).

Panel B of Table 4 reports the mean differences between the three clusters for the full period, before- and during COVID-19. The mean differences in DACC show that the first- and third cluster engage in the most earnings-increasing management. The mean difference between the second- and third cluster becomes significantly negative (at 1% level) indicating that the second cluster engages in more earnings-decreasing management during COVID-19. The mean differences of ABS_DACC indicate that strong investor protection increases accrual earnings management[19]. Real earnings management is the highest in the third cluster before COVID-19, and the lowest in the first cluster, but these differences become smaller during COVID-19 providing preliminary evidence that the first cluster turns to more real earnings management.

[19] The mean differences between the first- and second cluster, first- and third cluster, and second- third cluster are all positively significant (at 1% level) for the full period indicating that firms with strong investor protection engage in more accrual earnings management. The first hypothesis predicts more significant differences during COVID-19. The mean differences and their t-values increase between the first- and third cluster, and second- and third cluster providing an indication for this more pronounced effect.

4.3 Regression analysis

Table 5 and Table 6 report the regression results of accrual earnings management and real earnings management, respectively. COV19 is positively significant (at 1% level) in the first column of Table 5 providing evidence that firms engage in more accrual earnings management during COVID-19. This contradicts studies who observe a decrease in accrual earnings management during financial crises (Filip & Raffournier, 2014; Cimini, 2015), but supports those who observe an increase in accrual earnings-decreasing management during financial crises (Habib et al., 2013; Persakis & Iatridis, 2015). This is further highlighted by the negative significance (at 1% level) of COV19 in the third column which shows that accrual earnings-decreasing management increases during COVID-19. Interestingly, the coefficient of the interaction variable in the fourth column is positively significant (at 1% level) suggesting that the third cluster turns to less accrual earnings-decreasing management during COVID-19 compared to the first cluster. These results confirm earlier findings represented by Figure 1. Further, the coefficient of the third cluster is negatively significant (at 1% level) in the first column while the coefficient of the second cluster is insignificant. This finding is counterintuitive since it suggest that the relation between investor protection and accrual earnings management is positive inconsistent with previous research (Leuz et al., 2003; Enomoto, 2015; Persakis & Iatridis, 2016)[20]. The second column includes the interaction variable between COV19 and CLU[21]. The positive significance (at 1% level) of 1.COV19 indicates that the first cluster engages in more accrual earnings management during COVID-19. The interaction variable between COV19 and CLU shows no significance. This is evidence that the three clusters have no slope differences in the relation between accrual earnings management and COVID-19 unsupportive of the first hypothesis. There is no evidence of a more pronounced relation between investor protection and accrual earnings management during COVID-19.

[20] These results support the other argument of Leuz et al. (2003) that strong investor protection increases earnings management since the insiders have higher fear of penalties by outside investors, and thus have more incentives for earnings management to hide private control benefits. Whether this is the correct explanation I leave open to interpretation as the goal of this study is not to capture the relation between investor protection and earnings management perse, but to capture the possible more pronounced effect during the corona crisis.

[21] All the reported regressions that include an interaction variable between COV19 and CLU have the level of either accrual- or real earnings management in the first cluster before COVID-19 as comparison group. For instance, the coefficient on 1.COV19 compares the difference in earnings management before- and during COVID-19 in the first cluster, while 2.CLU and 3.CLU strictly compare the differences in earnings management between the second- and third cluster with the first cluster before COVID-19.

In the first column of Table 6 the dependent variable is RM_CFO. 1.COV19 is positively significant (at 1% level) indicating that RM_CFO increases in the first cluster during COVID-19. The coefficients of the second- and third cluster are negatively insignificant and positively significant (at 1% level), respectively. This shows that RM_CFO is lower in the second cluster than the first cluster before COVID-19, although insignificant, and higher in the third cluster. The coefficients of the second- and third cluster are both negatively significant (at 1% and 5%, respectively) for the interaction variable. This is evidence that the first cluster increases RM_CFO more during COVID-19 compared to the second- and third cluster supportive of the second hypothesis. In the second column, with RM_PROD as dependent variable, all coefficients are insignificant. 1.COV19 is positively insignificant which suggests that firms in the first cluster do not change RM_PROD during COVID-19. Moreover, the coefficients of the second- and third cluster on the interaction variable are both negatively insignificant indicating that the relation between investor protection and RM_PROD is not more pronounced during COVID-19. In the third column the dependent variable is RM_DISEXP. The coefficient of the third cluster is positively significant (at 5% level) suggesting that firms in the third cluster engage in more RM_DISEXP before COVID-19. The coefficient of the second cluster is also positive, but insignificant. Both clusters are negatively insignificant on the interaction variable. This shows that the second- and third cluster increase RM_DISEXP less (although insignificant) than the first cluster during COVID-19. The fourth column shows the results of the aggregate score of real earnings management (RM_PROXY). 1.COV19 is positively significant (at 1% level) showing that firms in the first cluster increase real earnings management during COVID-19. The coefficients of the second- and third cluster are positively insignificant and positively significant (at 5% level), respectively. This indicates that firms in the third cluster engage in more real earnings management before COVID-19. Furthermore, the coefficients of both clusters are negatively insignificant on the interaction variable. This suggests that the second- and third cluster increase real earnings management less (although insignificant) than the first cluster during COVID-19.

Overall, the results partially support the second hypothesis and reveal a positive relation between real earnings management and COVID-19 which is more pronounced for firms with strong investor protection. All coefficients of the interaction variable are negative and suggest that the second- and third cluster increase real earnings management less than the first cluster during COVID-19. However, only the first model (RM_CFO) shows significance highlighting that the stronger increase in real earnings management in the first cluster is through abnormal operation cash flows. Besides, I only observe a substitution effect between ABS_ACC and RM_CFO as highlighted by Table 3. This contradicts Zang et al. (2012) who find that firms substitute between accrual earnings management and real earnings management through abnormal production costs and discretionary expenses (they do not focus on abnormal operation cash flows)[22]. The findings support Graham et al. (2005) and Cohen et al. (2008) and show that firms increase real earnings management when regulatory control is heightened. Furthermore, they support the proposition that investor protection increases the concern of heightened public scrutiny and regulatory control leaving firms more dependent on real earnings management during financial crises.

4.4 Robustness check

A concern of the research approach is that the clusters are based upon the classifications of Leuz et al. (2003). They identify three clusters and group countries together based upon level of investor protection proxied with the investor rights described by La Porta et al. (1998). However, investor rights depend on the legal environment of the respective countries. Since laws are subject to change the classifications of Leuz et al. (2003) might be outdated and unapplicable to todays' investor rights. To limit this concern I conduct an additional analysis using the Investor Protection Index constructed by the World Economic Forum (2018) as a proxy for investor protection. This index consists of four components to quantify firms' accountability to investors in different countries; strength of auditing and accounting standards, efficacy of corporate boards, protection of minority shareholders' interest, and the strength of investor protection. If the findings are robust the signs and significance of the variables are homogeneous. Table 7 and

[22] Garel et al. (2021) present an explanation for the lack of a substitution effect and argue that investor distraction is important. They find that accrual- and real earnings management increase when institutional investors are distracted from the firm due to impactful shocks unrelated to the firm. The corona crisis has a big impact on the world and could lead to investor distraction and less attention to earnings announcements. This increases firms' incentives to increase both accrual- and real earnings management. Another possibility is that RM_CFO is perceived as the simplest way to manage earnings through real transactions. Increasing production during the corona crisis might be difficult due to problems in the supply chain. Moreover, reductions in discretionary expenditures are unlikely due to needed R&D expenses (e.g., how to manage employees working at home) to keep the business efficient during the corona crisis.

Table 8 report the results. The results do not change and are consistent with earlier findings. IVP is positively significant (at 1% level) in the first column of Table 7 supporting the counterintuitive finding of a positive relation between investor protection and accrual earnings management. Moreover, the interaction variable is insignificant confirming that the change in accrual earnings management during COVID-19 does not depend on the level of investor protection unsupportive of the first hypothesis. In Table 8 the coefficients of IVP are negatively significant for RM_CFO, RM_DISEXP and RM_PROXY (at 1%, 10%, 10%, respectively). This is in line with previous findings and suggests that investor protection leads to less incentives for real earnings management before COVID-19. The coefficient on the interaction variable in the first column is positively significant (at 10% level) consistent with previous findings and supportive of the second hypothesis. Besides, the coefficients on the interaction variable in the third- and fourth column are positively insignificant. Despite the insignificance, these coefficients reinforce the believe that investor protection increases firms' dependence on real earnings management during financial crises. The findings support, although more moderately, the second hypothesis and suggest that firms with strong investor protection increase real earnings management more during COVID-19. This effect is most prevailing in RM_CFO while RM_DISEXP and RM_PROXY also show positive signs. Overall, the findings are robust where the first hypothesis remains unsupported while the evidence for the second hypothesis is more moderate.

5 Conclusion

The goal of this paper is to study cross-country earnings management and the way investor protection influences these practices during the corona crisis. The premise of this paper is that the insiders want to hide private control benefits through earnings manipulation. The corona crisis heightens the level of public scrutiny and regulatory control, more concerning to firms with strong investor protection due to fear of disciplinary actions taken by outside investors, leading to the expectation of a more pronounced relation between investor protection and accrual earnings management during COVID-19. Additionally, firms manipulate earnings through real transactions, a less detectable but also more costly method. Again, firms with strong investor protection are more concerned about the heightened level of public scrutiny during COVID-19. This leads to the expectation that firms with strong investor protection turn to more real earnings management, due to incentives to be more discrete, during COVID-19. I perform a cluster analysis based upon the institutional factors identified by La Porta et al. (1997) and Leuz et al. (2003). The analysis suggests that investor protection is unrelated to changes in accrual earnings management during COVID-19 unsupportive of the first hypothesis, and interestingly contrary to other studies I observe a positive relation between investor protection and accrual earnings management (Leuz et al., 2003; Enomoto et al., 2015). The results support the second hypothesis and show that firms with strong investor protection turn to more real earnings management, through abnormal operation cash flows (i.e., price discounts and lenient credit terms), during COVID-19.

These results have multiple implications. First, they suggest that firms with strong investor protection are more dependent on real earnings management in times of heightened public scrutiny and regulatory control. This is relevant to outside investors to be aware of firms' incentives for real earnings management and the obscurity of this earnings management strategy. This helps outside investors to assess financial reporting quality in different investor protection environments during financial crises. Second, the results are relevant to policy makers to consider the importance of real earnings management and to reflect on current disclosure rules and ways to build upon these rules to minimize incentives for real earnings management. This is critical for countries with strong investor protection where increased public scrutiny and regulatory control during COVID-19 increases the incentives for real earnings management and does not limit total earnings management. Third, the results show that firms contemplate between the adequacy of earnings management strategies under different institutional environments, where real earnings management is also important meaning that solely focussing on accrual earnings management in accounting research is inappropriate and can lead to inaccurate conclusions.

This study is not without limitations. The sample period is short since I only focus on two years. This might not give a clear picture of earnings management practices around the corona crisis. Furthermore, the industry distributions of the inspected countries differ significantly (e.g., Italy's largest industries are tourism and manufacturing while in the UK the services industry dominates). The corona crisis impacts industries differently which also leads to different incentives for earnings management, potentially creating biases in the findings. Besides, I consider a legal approach with a focus on investor rights. Another important determinant of earnings management practices during crisis periods is corporate governance. For instance, board construction, board independence and audit committees can influence firms' incentives for earnings management. Finally, the identified clusters might be too broad and ignore other important cultural characteristics that drive managerial behaviour. For instance, the level of uncertainty avoidance in a country might influence earnings management practices, an aspect ignored by Leuz et al. (2003)

Since the focus of this study is on countries who have implemented IFRS, it could be interesting for future research to examine earnings management in countries with different accounting standards and compare how incentives might differ. Another interesting area of research would be to involve corporate governance (beyond the legal sphere) and examine how corporate governance plays a role in the accountability to stakeholders during the corona crisis, and its relation to earnings management. Finally, it would be interesting to consider a longer period to examine how earnings management practices change around the corona crisis to obtain more evident results.

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Appendix

TABLE 1. FINAL SAMPLE

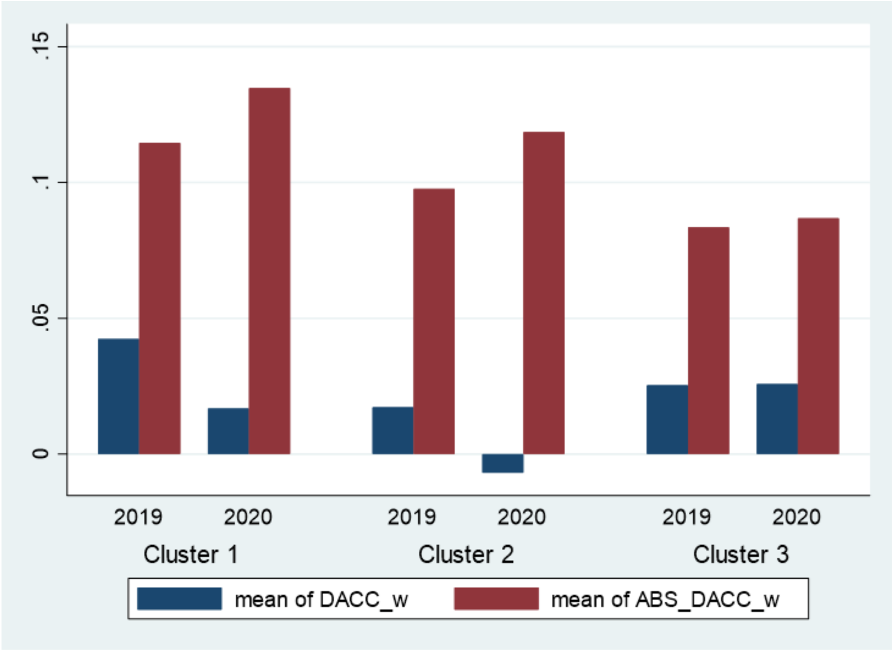
Panel A: Sample selection	**Nr of firms (cumulative)**
- Active firms	317,873,453
- Listed firms	84,263
- In country sample	9,320
- Non-financial firms	6,196
- IFRS	5,077
= Sample of firms	5,077
	Observations
Starting sample	10,154
- Missing estimations earnings management	5,238
- Missing control variables	590
Final number of observations	4,326
Number of unique firms	2,348
Panel B: Country distribution	**Nr of firms**
Cluster 1	
United Kingdom	562
Australia	428
Norway	82
Cluster 2	
Germany	304
France	276
Sweden	259
Cluster 3	
Italy	211
Spain	116
Greece	110

Notes: *Panel A reports the process of the sample selection and shows which firms and observations are excluded. Panel B reports the number of unique firms for each country part of one of the three clusters.*

TABLE 2. DESCRIPTIVE STATISTICS

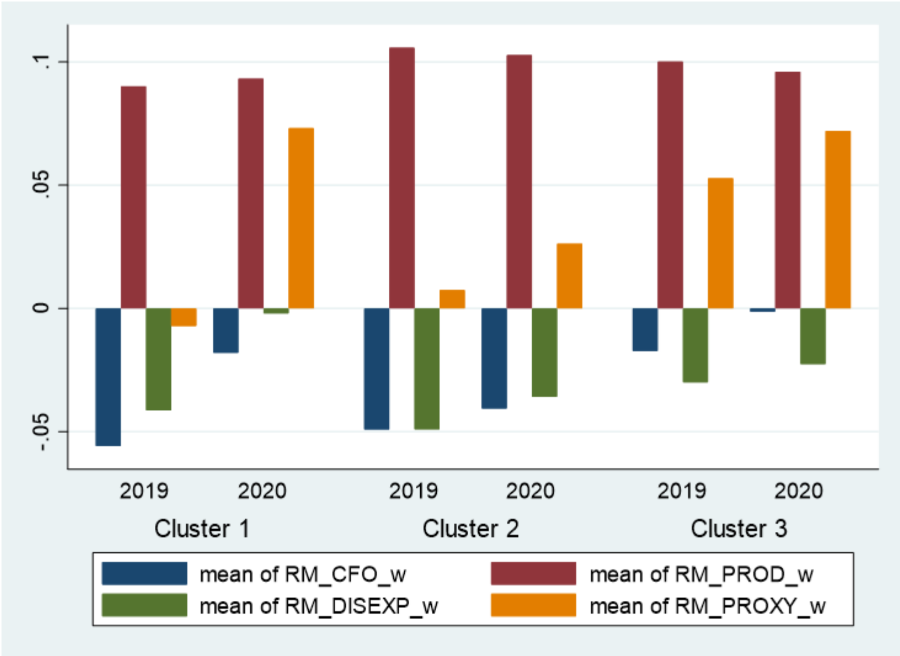
	Full Sample				Cluster 1				Cluster 2				Cluster 3			
	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD	N	Mean	Median	SD
Panel A: Full Period																
DACC	4,326	.0192	-.0002	.1621	1,908	.0286	.0034	.1774	1,609	.0050	-.0124	.1631	809	.0257	.0192	.1133
ABS_DACC	4,326	.1116	.0748	.1191	1,908	.1255	.0848	.1285	1,609	.1084	.0690	.1220	809	.0852	.0646	.0788
RM_CFO	4,326	-.0341	-.0008	.1729	1,908	-.0354	.0064	.1962	1,609	-.0449	-.0095	.1655	809	-.0094	.0057	.1175
RM_PROD	4,326	.0976	.0896	.2448	1,908	.0918	.0846	.2632	1,609	.1043	.0951	.2299	809	.0981	.0895	.2279
RM_DISEXP	4,326	-.0295	-.0127	.3174	1,908	-.0201	-.0119	.3607	1,609	-.0424	-.0233	.2911	809	-.0263	.0002	.2510
RM_PROXY	4,326	.0340	.0840	.5711	1,908	.0363	.0916	.6339	1,609	.0171	0.0607	.5221	809	.0624	.0909	.5038
FirmSize	4,326	12.7477	12.5589	2.3194	1,908	12.4097	12.2436	2.3142	1,609	13.1491	12.9342	2.3383	809	12.7468	12.5441	2.1640
ROA	4,326	-.0373	.0170	.2055	1,908	-.0641	.0114	.2430	1,609	-.0216	.0235	.1833	809	-.0055	.0131	.1285
LEV	4,326	.6555	.3546	1.6653	1,908	.5999	.2771	1.6136	1,609	.6813	.4305	1.5708	809	.7351	.4112	1.9427
MTB	4,326	2.7648	1.6620	4.6129	1,908	2.8048	1.6650	4.5478	1,609	3.1329	1.8514	5.0606	809	1.9383	1.3270	3.6279
COV19	4,326	.5215	1	.4996	1,908	.5409	1	.49846	1,609	.5103	1	.5001	809	.4981	0	.5003
Panel B: Pre-Covid19 (2019)																
DACC	2,070	.0295	.0074	.1491	876	.0424	.0125	.1626	788	.0173	-.0048	.1506	406	.0253	.0224	.1085
ABS_DACC	2,070	.1021	.0677	.1126	876	.1146	.0745	.1228	788	.0977	.0582	.1159	406	.0835	.0681	.0736
RM_CFO	2,070	-.0458	-.0122	.1633	876	-.0559	-.0101	.1855	788	-.0492	-.0187	.1571	406	-.0173	-.0044	.1132
RM_PROD	2,070	.0981	.0879	.2487	876	.0901	.0881	.2654	788	.1058	.0879	.2327	406	.1002	.0881	.2413
RM_DISEXP	2,070	-.0421	-.0193	.3126	876	-.0414	-.0252	.3574	788	-.0491	-.0295	.2833	406	-.0300	-.0047	.2589
RM_PROXY	2,070	.0102	.0590	.5729	876	-.0072	.0677	.6461	788	.0075	.0438	.5060	406	.0529	.0758	.5244
Panel C: During Covid-19 (2020)																
DACC	2,256	.0098	-.0084	.1727	1,032	.0168	-.0071	.1883	821	-.0069	-.0217	.1736	403	.0258	.0179	.1180
ABS_DACC	2,256	.1204	.0840	.1242	1,032	.1348	.0972	.1324	821	.1186	.0819	.1268	403	.0869	.0608	.0839
RM_CFO	2,256	-.0233	.0103	.1807	1,032	-.0180	.0211	.2034	821	-.0407	-.0014	.1733	403	-.0013	.0140	.1212
RM_PROD	2,256	.0972	.0904	.2413	1,032	.0932	.0826	.2614	821	.1028	.0989	.2274	403	.0960	.0901	.2137
RM_DISEXP	2,256	-.0180	-.0047	.3214	1,032	-.0020	-.0033	.3627	821	-.0359	-.0160	.2984	403	-.0226	.0027	.2431
RM_PROXY	2,256	.0559	.1026	.5687	1,032	.0732	.1117	.6212	821	.0263	.0859	.5373	403	.0721	.1014	.4826

FIGURE 1. ACCRUAL EARNINGS MANAGEMENT PER CLUSTER



Notes: *Figure 1 reports the means of DACC and ABS_DACC for the three individual clusters. The means of 2019 and 2020 are reported to display the difference between before- and during COVID-19.*

FIGURE 2. REAL EARNINGS MANAGEMENT PER CLUSTER



Notes: *Figure 2 reports the means of RM_CFO, RM_PROD, RM_DISEXP and RM_PROXY for the three individual clusters. The means of 2019 and 2020 are reported to display the difference between before- and during COVID-19.*

TABLE 3. PEARSON CORRELATION MATRIX

	COV19	DACC	ABS_DACC	RM_CFO	RM_PROD	RM_DISEXP	RM_PROXY	FirmSize	ROA	LEV	MTB
COV19	1.0000	-0.0607***	0.0767***	0.0650***	-0.0018	0.0379**	0.0280*	-0.0055	-0.0395***	0.0034	0.0263*
DACC		1.0000	0.4200***	-0.4373***	-0.1491***	0.2781***	-0.0614***	-0.1017***	-0.4280***	.0254**	-0.0830***
ABS_DACC			1.0000	-0.3773***	0.0713***	0.2531***	0.0757***	-0.3179***	-0.3278***	-0.0146	0.1941***
RM_CFO				1.0000	0.1975***	0.1115***	0.3909***	0.2626***	0.1664***	0.0528***	-0.1396***
RM_PROD					1.0000	0.6862***	0.6402***	-0.0642***	0.1074***	0.0004	0.1448***
RM_DISEXP						1.0000	0.6803***	-0.1944***	-0.4357***	0.0093	0.0369**
RM_PROXY							1.0000	-0.0344**	-0.1535***	0.0125	0.0259*
FirmSize								1.0000	0.3702***	0.1609***	-0.0820***
ROA									1.0000	0.0279*	0.0018
LEV										1.0000	0.3706***
MTB											1.0000

Notes: *Table 3 reports the Pearson correlation matrix. *, **, *** represent the statistical significance of the correlations on confidence levels 0.1, 0.05 and 0.01, respectively.*

TABLE 4. MEAN COMPARISONS

Panel A	**Mean (2019)**	**Mean (2020)**	**Difference means**
Cluster 1			
DACC	.0424	.0168	.0256 (3.14)***
ABS_DACC	.1146	.1348	-.0202 (-3.44)***
RM_CFO	-.0559	-.0180	-.0379 (-4.22)***
RM_PROD	.0901	.0932	-.0031 (-0.26)
RM_DISEXP	-.0414	-.0020	-.0393 (-2.38)**
RM_PROXY	-.0072	.0732	-.0803 (-2.76)**
Cluster 2			
DACC	.0173	-.0069	.0242 (2.98)***
ABS_DACC	.0977	.1186	-.0209 (-3.45)***
RM_CFO	-.0492	-.0407	-.0086 (-1.04)
RM_PROD	.1058	.1028	.0030 (0.26)
RM_DISEXP	-.0491	-.0359	-.0132 (-0.91)
RM_PROXY	.0075	.0263	-.0188 (-0.72)
Cluster 3			
DACC	.0253	.0258	-.0005 (-0.06)
ABS_DACC	.0835	.0869	-.0033 (-0.60)
RM_CFO	-.0173	-.0013	-.0160 (-1.94)*
RM_PROD	.1002	.0960	.0042 (0.26)
RM_DISEXP	-.0300	-.0226	-.0074 (-0.42)
RM_PROXY	.0529	.0721	-.0192 (-0.54)

Panel B	**Diff cluster 1 vs cluster 2**	**Diff cluster 1 vs cluster 3**	**Diff cluster 2 vs cluster 3**
Full period			
DACC	.0236 (4.08)***	.0030 (0.45)	-.0206 (-3.22)***
ABS_DACC	.0172 (4.04)***	.0403 (8.29)***	.0232 (4.91)***
RM_CFO	.0094 (1.52)	-.0261 (-3.52)***	-.0355 (-5.45)***
RM_PROD	-.0125 (-1.48)	-.0063 (-0.60)	.0061 (0.62)
RM_DISEXP	.0223 (1.99)**	.0062 (0.45)	-.0160 (-1.34)
RM_PROXY	.0192 (0.97)	-.0262 (-1.04)	-.0454 (-2.04)**
2019			
DACC	.0251 (3.26)***	.0171 (1.93)*	-.0080 (-0.95)
ABS_DACC	.0169 (2.88)***	.0311 (4.72)***	.0142 (2.24)**
RM_CFO	-.0067 (-0.79)	-.0386 (-3.87)***	-.0319 (-3.63)***
RM_PROD	-.0157 (-1.27)	-.0101 (-0.65)	.0056 (0.39)
RM_DISEXP	.0077 (0.49)	-.0113 (-0.57)	-.0191 (-1.13)
RM_PROXY	-.0146 (-0.51)	-.0600 (-1.64)	-.0454 (-1.45)
2020			
DACC	.0237 (2.79)***	-.0090 (-0.89)	-.0327 (-3.41)***
ABS_DACC	.0162 (2.66)***	.0479 (6.76)***	.0317 (4.56)***
RM_CFO	.0226 (2.54)**	-.0167 (-1.55)	-.0393 (-4.09)***
RM_PROD	-.0096 (-0.83)	-.0028 (-0.19)	.0068 (0.50)
RM_DISEXP	.0338 (2.15)**	.0206 (1.05)	-.0133 (-0.77)
RM_PROXY	.0469 (1.71)*	.0011 (0.03)	-.0458 (-1.45)

Notes: *Panel A reports the results for the three individual clusters, and compares the means of DACC, ABS_DACC, RM_CFO, RM_PROD, RM_DISEXP and RM_PROXY before COVID-19 and during COVID-19. Panel B reports the results of the mean comparisons between the three clusters for the same variables. The results consist of mean comparisons for the full period, 2019, and 2020. *, **, *** represent the statistical significance of the coefficients on confidence levels 0.1, 0.05 and 0.01, respectively.*

TABLE 5. REGRESSIONS ACCRUAL EARNINGS MANAGEMENT

VARIABLES	(1) ABS_DACC	(2) ABS_DACC	(3) DACC	(4) DACC
1.COV19		0.0134***		-0.0337***
		(0.00492)		(0.00665)
2.CLU	-0.00436	-0.00758	-0.0113**	-0.0157**
	(0.00367)	(0.00528)	(0.00496)	(0.00713)
3.CLU	-0.0234***	-0.0191***	0.0118*	-0.00440
	(0.00453)	(0.00644)	(0.00613)	(0.00870)
1.COV19#2.CLU		0.00628		0.00825
		(0.00726)		(0.00981)
1.COV19#3.CLU		-0.00864		0.0319***
		(0.00899)		(0.0121)
FirmSize	-0.0104***	-0.0104***	0.00358***	0.00356***
	(0.000783)	(0.000783)	(0.00106)	(0.00106)
ROA	-0.141***	-0.141***	-0.356***	-0.357***
	(0.00859)	(0.00859)	(0.0116)	(0.0116)
LEV	-0.00304***	-0.00302***	0.00635***	0.00634***
	(0.00108)	(0.00108)	(0.00146)	(0.00146)
MTB	0.00482***	0.00481***	-0.00336***	-0.00334***
	(0.000388)	(0.000388)	(0.000524)	(0.000524)
COV19	0.0141***		-0.0246***	
	(0.00326)		(0.00441)	
Constant	0.227***	0.227***	-0.0198	-0.0146
	(0.0104)	(0.0107)	(0.0141)	(0.0144)
Observations	4,326	4,326	4,326	4,326
Adj. R-squared	0.193	0.193	0.204	0.205

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: *Table 5 reports the four regressions with the dependent variables ABS_DACC and DACC. The first- and second model have ABS_DACC as dependent variable and the third- and fourth model have DACC as dependent variable. The second- and fourth model include an interaction variable between COV19 and CLU. *, **, *** represent the statistical significance of the coefficients on confidence levels 0.1, 0.05 and 0.01, respectively.*

TABLE 6. REGRESSIONS REAL EARNINGS MANAGEMENT

VARIABLES	(1) RM_CFO	(2) RM_PROD	(3) RM_DISEXP	(4) RM_PROXY
1.COV19	0.0438***	0.00356	0.0201	0.0675***
	(0.00753)	(0.0110)	(0.0131)	(0.0260)
2.CLU	-0.00442	0.0146	0.0146	0.0248
	(0.00807)	(0.0118)	(0.0141)	(0.0278)
3.CLU	0.0275***	0.0103	0.0434**	0.0812**
	(0.00985)	(0.0144)	(0.0172)	(0.0340)
1.COV19#2.CLU	-0.0346***	-0.00700	-0.0106	-0.0522
	(0.0111)	(0.0163)	(0.0193)	(0.0383)
1.COV19#3.CLU	-0.0303**	-0.00470	-0.0142	-0.0492
	(0.0137)	(0.0201)	(0.0240)	(0.0474)
FirmSize	0.0161***	-0.0106***	-0.00523**	0.000308
	(0.00120)	(0.00175)	(0.00209)	(0.00413)
ROA	0.0762***	0.171***	-0.657***	-0.409***
	(0.0131)	(0.0192)	(0.0229)	(0.0453)
LEV	0.00709***	-0.00655***	0.00273	0.00326
	(0.00165)	(0.00242)	(0.00288)	(0.00569)
MTB	-0.00539***	0.00809***	0.00217**	0.00487**
	(0.000593)	(0.000868)	(0.00103)	(0.00204)
Constant	-0.243***	0.213***	-0.0159	-0.0459
	(0.0163)	(0.0239)	(0.0284)	(0.0562)
Observations	4,326	4,326	4,326	4,326
Adj. R-squared	0.105	0.042	0.193	0.024

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: *Table 6 reports the four regressions with dependent variables RM_CFO, RM_PROD, RM_DISEXP and RM_PROXY. All four regressions include an interaction variable between COV19 and CLU. *, **, *** represent the statistical significance of the coefficients on confidence levels 0.1, 0.05 and 0.01, respectively.*

TABLE 7. REGRESSIONS ACCRUAL EARNINGS MANAGEMENT INVESTOR PROTECTION INDEX WEF

VARIABLES	(1) ABS_DACC	(2) ABS_DACC	(3) DACC	(4) DACC
COV19	0.0142***	-0.0217	-0.0244***	0.0894*
	(0.00326)	(0.0341)	(0.00441)	(0.0461)
IVP	0.0170***	0.0136***	-0.0126***	-0.00180
	(0.00322)	(0.00457)	(0.00436)	(0.00618)
COV19#IVP		0.00676		-0.0214**
		(0.00639)		(0.00864)
FirmSize	-0.0105***	-0.0105***	0.00327***	0.00325***
	(0.000777)	(0.000777)	(0.00105)	(0.00105)
ROA	-0.142***	-0.142***	-0.357***	-0.357***
	(0.00857)	(0.00857)	(0.0116)	(0.0116)
LEV	-0.00302***	-0.00300***	0.00643***	0.00638***
	(0.00108)	(0.00108)	(0.00146)	(0.00146)
MTB	0.00476***	0.00475***	-0.00340***	-0.00337***
	(0.000388)	(0.000388)	(0.000525)	(0.000524)
Constant	0.132***	0.150***	0.0494*	-0.00802
	(0.0195)	(0.0260)	(0.0264)	(0.0351)
Observations	4,326	4,326	4,326	4,326
Adj. R-squared	0.193	0.193	0.203	0.204

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: *Table 7 reports the four regressions with dependent variables ABS_DACC and DACC. The first- and second model have ABS_DACC as dependent variable and the third- and fourth model have DACC as dependent variable. The second- and fourth model include an interaction variable between COV19 and CLU. *, **, *** represent the statistical significance of the coefficients on confidence levels 0.1, 0.05 and 0.01, respectively.*

TABLE 8. REGRESSIONS REAL EARNINGS MANAGEMENT INVESTOR PROTECTION INDEX WEF

	(1)	(2)	(3)	(4)
VARIABLES	RM_CFO	RM_PROD	RM_DISEXP	RM_PROXY
COV19	-0.0749	0.00281	-0.0357	-0.108
	(0.0523)	(0.0764)	(0.0910)	(0.180)
IVP	-0.0202***	0.00121	-0.0209*	-0.0399*
	(0.00701)	(0.0102)	(0.0122)	(0.0241)
COV19#IVP	0.0189*	-0.000575	0.00919	0.0275
	(0.00981)	(0.0143)	(0.0170)	(0.0337)
FirmSize	0.0154***	-0.0104***	-0.00513**	-8.86e-05
	(0.00119)	(0.00174)	(0.00207)	(0.00410)
ROA	0.0756***	0.172***	-0.653***	-0.405***
	(0.0131)	(0.0192)	(0.0228)	(0.0452)
LEV	0.00745***	-0.00654***	0.00291	0.00383
	(0.00165)	(0.00242)	(0.00288)	(0.00569)
MTB	-0.00558***	0.00811***	0.00212**	0.00465**
	(0.000595)	(0.000869)	(0.00103)	(0.00205)
Constant	-0.123***	0.212***	0.108	0.196
	(0.0398)	(0.0581)	(0.0692)	(0.137)
Observations	4,326	4,326	4,326	4,326
Adj. R-squared	0.099	0.042	0.192	0.023

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Notes: *Table 8 reports the four regressions with dependent variables RM_CFO, RM_PROD, RM_DISEXP and RM_PROXY. All four regressions include an interaction variable between COV19 and CLU. *, **, *** represent the statistical significance of the coefficients on confidence levels 0.1, 0.05 and 0.01, respectively.*