FINANCIAL REPORTING QUALITY DURING COVID-19 PANDEMIC: INTERNATIONAL EVIDENCE

Wan Adibah Wan Ismail[1], Akmalia M. Ariff[2]*, Khairul Anuar Kamarudin[3] and Nur Shaida Mohd Adnan[4]

[1]Faculty of Accountancy, Universiti Teknologi MARA, Kampus Sungai Petani, 08400 Merbok, Kedah, Malaysia
[2]Faculty of Business, Economics and Social Development, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia
[3]School of Business, University of Wollongong in Dubai, UOWD Building, Dubai Knowledge Park, P.O. Box 20183 Dubai, United Arab Emirates
[4]Radicare (M) Sdn Bhd, Level 13, Wisma UOA Damansara II, No 6, Jalan Changkat Semantan, Damansara Heights, 50490 Kuala Lumpur, Malaysia

*Corresponding author: akmalia.ariff@umt.edu.my

ABSTRACT

This paper examines the effect of the COVID-19 pandemic on financial reporting quality proxied by earnings conservatism and value relevance of accounting information. Our final sample consists of 10,510 firm-year observations from 29 countries with a balanced number of 5,255 observations for pandemic and pre-pandemic periods. The results show that during the pandemic, the financial statements of companies with a financial year end of 31 March 2020 have different qualities than those in the pre-pandemic period. Lower earnings conservatism is demonstrated in the pandemic period compared to the pre-pandemic period, supporting the argument that business tends to slow the recognition of bad news as the pandemic starts. The value relevance of accounting information declined in the pandemic period, primarily affected by the reduced value relevance of the book value of equity. The findings of this study can help investors evaluate the quality of accounting information and make smarter investment decisions, especially when most companies are in financial trouble.

INTRODUCTION

The novel coronavirus disease (COVID-19 hereafter) has led to unprecedented disturbances to economic activities worldwide. Due to significant levels of uncertainty, COVID-19 causes economic losses arising from disruptions to supply chains, demand and the financial markets. There is a higher bankruptcy risk due to revenue shortfalls and the inability to service debt (Demmou et al., 2021), which has caused a substantial closure of businesses (Banerjee et al., 2020; Bongaerts et al., 2021). COVID-19 is expected to be more acute and has a long-lasting global impact compared to other pandemics in the past (Bose et al., 2021) due to several reasons (Li et al., 2021; Shehzad et al., 2020). First, the financial crisis does not have an economic origin and is truly global, with every region expected to face substantial growth downgrades.[1] Second, the pandemic escalates the current fragile economy in the 2018 and 2019 periods, primarily due to uncertainty arising from the US-Chinese trade war (World Bank, 2019).[2] Further, travel restrictions and border closure have imposed challenges to international trade. Third, policy responses to the COVID-19 situation have been unique in speed, size and scope, mainly focusing on the concerted effort to revise and organise relevant monetary and fiscal policies. Among those include massive bailout and stimulus packages announced around the globe, with investment in large amounts of money in such short periods. With these great economic uncertainties and within these financial distress situations, companies can have higher motivation or pressure to manage earnings, such as to get the bailout and stimulus packages, to sustain.

Nevertheless, the economic impact of the COVID-19 crisis varies, depending on domestic and global factors (OECD, 2021; Barret et al., 2021). For some countries, such as those relying on the service industries and international supply and market, the pandemic's challenges would be more significant than other economies (Shih, 2020). Nevertheless, some countries may strategise well in terms of policy responses in dealing with the pandemic, allowing them to cope and recover their economy quicker than other countries. The ability to maintain economic stability during and after the pandemic could also be related to the existing strong institutional foundation that some countries have. Barret et al. (2021) posit that developing and emerging markets will feel the impact of the pandemic for longer than advanced economies. At the firm level, the ability to deal with the challenges differs across firms, depending on their existing financial conditions (Habib et al., 2013) and the ability to strategise based on past crisis experiences (Ahmed et al., 2019). Hence, it is essential to see the variations in financial reporting quality across firms in various countries during the financial crisis caused by COVID-19.

Financial reporting quality is an essential feature of financial statements, as many decisions rely on how the reported information reflects companies' performance. High-quality accounting information signals the strength of financial performance to users, especially the fund providers in the equity and debt markets. As COVID-19 continues to spread rapidly around the world, a growing concern by fund providers is on how reflective the information reported by the companies is in delivering signals regarding the sustainability of the businesses. We assess whether the ability of the quality of earnings to reflect useful information is affected by the exogenous shock due to the COVID-19 pandemic. The setting of the financial crisis period has been used to explore financial reporting quality, such as those utilising the Latin American "Tequila Crisis" 1994–2002 (Davis-Friday & Gordon, 2005), East Asian Economic Crisis 1997–2001 (Choi et al., 2011; Eng et al., 2005), and the Global Economic Recession 2007–2009 (da Silva, 2019). The findings support two varying perspectives on earnings informativeness during the financial crisis. On one hand, from the alignment perspective, there is a possibility that companies produce high-quality financial reporting due to greater scrutiny by the equity and debt market (Arthur et al., 2015). On the other hand, from the entrenchment perspective, the pressure to stabilise and sustain business operations may have led to lower financial reporting quality (Iatridis & Dimitras, 2013). We intend to add to those empirical findings through the setting in this study that involves firms from various institutional settings and by looking at the perspectives of earnings conservatism and value relevance.

While high-quality earnings can be expected due to greater scrutiny by market participants and regulators during the COVID-19 crisis period, the crisis may also create the incentive to expropriate economic resources by manipulating earning numbers. Some evidence from the COVID-19 pandemic offers the perspective regarding financial reporting quality behaviour in dealing with a financial crisis like no other before. We examine this dilemma by employing a matched-pair sample of firms from 29 countries. We find that accounting information reported in the financial statements during the pandemic period, ended on 31 March 2020, possesses different qualities than in the pre-pandemic period. Using the asymmetric timeliness of the earnings model, we find lower earnings conservatism in the pandemic period than before. Using the value relevance model, we find that the book value of equity has a significantly stronger association with stock prices in the pre-pandemic period than during the pandemic, but the association is not significant for earnings. In addition, we find that the explanatory power in the pre-pandemic period is relatively higher than in the pandemic period. Further analysis shows that the effect of the COVID-19 pandemic varies between developing and developed countries. Overall, the findings are in support of the entrenchment perspective related to the agency costs

that would be higher during the COVID-19 pandemic. The COVID-19 pandemic has induced greater uncertainty at the macro level that impose greater managerial incentives or pressure to manage earnings for opportunistic purposes.

This study contributes to the extant accounting literature in the following ways. First, it adds to the literature on financial reporting quality (Eng et al., 2005; Davis-Friday et al., 2006) by employing a dataset before and during the COVID-19 pandemic. It also adds to the prior studies which have utilised the setting of past financial crises (da Silva, 2019; Filip & Raffournier, 2014) by focusing on the macroeconomic shock arising from the COVID-19 pandemic that influences corporate reporting behaviour. Second, this study incrementally adds to the cross-country analysis of financial reporting quality, where we included observations from 29 countries. Considering that the COVID-19 pandemic has global impacts, among others, on businesses and the economy, these findings provide evidence of how the global pandemic affects the quality of financial reporting. Third, our analysis compares pre- and during-pandemic periods and employs various proxies of financial reporting quality. The research approach provides a comprehensive understanding of how companies strategise on their financial reporting when pressured by the need to prevail during periods characterised by high uncertainty and volatility. In a practical sense, the findings of this study have implications for investors in evaluating the relevance of accounting information to make better investment strategies during periods when most companies are experiencing financial distress.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Information from the financial statement is used to evaluate companies' past and current performance and predict companies' ability to generate shareholders' wealth in the future. Extant studies documented that high-quality financial reporting increases the attractiveness of shares and liquidity in the stock market (Kosmidou et al., 2020; Young & Guenther, 2003), lower the cost of debt (Muttakin et al., 2020), reduces the cost of capital (Khalifa et al., 2019) and promotes more efficient capital allocation (Ha & Feng, 2018). Meanwhile, low-quality financial reporting results in unintentional wealth transfers (Kothari et al., 2016) and misallocation of resources (Masud et al., 2017; Myers et al., 2003).

The quality of financial reporting is subject to various factors. Related to this study is a stream of research that looks at how macroeconomic factors provide managerial incentives that relate to financial reporting quality (Kim & Qi, 2010; Kim et al., 2016). In general, macroeconomic variables explain the managerial

decision concerning the issuance and characteristics of management forecasts (Kim et al., 2016). Another line of studies has utilised the financial crisis setting that is close to a "near-natural experiment" to test whether such sudden and negative exogenous shock explains how companies tailor their financial reporting strategy (da Silva, 2019). Variations in corporate reporting behaviour during the economic crisis can be elucidated based on the agency theory, which suggests that conflict of interest stems from the separation of ownership and control would cause the agent (managers) to have different goals than the principal (investors). Agency costs tend to be higher during a financial crisis because the additional uncertainty leads to greater information asymmetry between managers and investors. Extant studies propose two conflicting views regarding the financial crisis-financial reporting quality relationship; the alignment and entrenchment perspectives.

From the alignment perspective, the need to sustain their business may provide incentives for managers to produce high-quality financial reporting during a financial crisis, as the risk of being exposed for not being truthful can lead to a negative reputation and image (Khoo et al., 2020; Rodriguez-Ariza et al., 2016). This is due to more excellent regulatory supervision during those crisis periods and greater scrutiny by the market players who need to strategise towards deriving the best investment portfolio. From the entrenchment perspective, managers may have the incentive to manage or manipulate earnings figures to achieve financial goals, such as meeting earnings targets to acquire investment opportunities. In addition, managers may be pressured to report more positive news during the financial crisis since reporting bad news tends to generate more informational asymmetries and magnify the contagion effect (Weiss & Shon, 2017). Reporting more positive news is a strategy employed to reduce panic, especially concerning the stock market volatility during those periods (Francis et al., 2013). Finally, during the economic crisis, managers might be enticed towards downward earnings management due to contracting incentives with the creditors in favour of investors (Ahmed et al., 2008) or might tend to perform upward earnings management due to signalling incentives (Ahmad-Zaluki et al., 2011).

Prior studies have utilised various institutional settings to understand how corporate reporting behaviour respond to and react during the financial crisis period. For instance, during the "Tequila Crisis" that occurred from 1994 to 2002, Davis-Friday and Gordon (2005) find that the value relevance of the book value of equity of the Mexican firms did not change during the crisis period, but the value relevance of earnings is shown to decrease. The 1997 financial crisis has mainly been used to explore the financial reporting quality in the Asian context, as shown in empirical evidence using the setting of the countries that were severely hit by the crisis, such as Indonesia (Warganegara & Vionita, 2010), South Korea (Ho

et al., 2001), Malaysia (Ahmad-Zaluki et al., 2011) and Thailand (Herrmann et al., 2008). Ho et al. (2001), for example, show that the value relevance of earnings significantly declines from the pre-crisis to the in-crisis period. However, the decline is not replaced by the increasing value relevance of the book value of equity during the same period.

In a more comprehensive approach, those that utilise data from a multiset of countries identify the various aspects of how the 1997 financial crisis explains financial reporting quality. Using data from Indonesia, South Korea, Malaysia and Thailand, Davis-Friday et al. (2006) conclude that the quality of corporate governance and accounting systems explains the extent of changes in the value relevance of the book value of equity, but not earnings, during the crisis. They find that the value relevance of earnings in Indonesia, Thailand and Malaysia reduced during the 1997 financial crisis, but such evidence is not shown for the Korean sample. Focusing on Hong Kong, Malaysia, Singapore and Thailand, Eng et al. (2005) find that investors may have undervalued the accounting measures in the pre- and post-crisis periods. However, there is evidence that the accounting measures were overvalued during the crisis. Choi et al. (2011) identify that the crisis led to a decline in the value relevance of discretionary accruals. Still, no impact was seen on the value relevance of non-discretionary components for the nine countries in their sample. Their findings also indicate that the decrease in the value relevance of discretionary accruals during the crisis was more severe for firms in countries with weak institutions than those with strong institutions. Further, the value relevance of discretionary accruals declined significantly for firms with high information asymmetries than those with low information asymmetries.

Another setting used to explore financial reporting quality is the global economic recession between 2007–2009. Past studies identified a significant increase in income smoothing during the global economic crisis in Mexico (Miranda-Lopez & Valdovinos-Hernandez, 2019), a significantly higher level of earnings management during the crisis compared to the pre-crisis period in Australia (Mollik et al., 2020), and a positive relationship between conservatism and the stock performance during the financial crisis period in the US (Francis et al., 2013). Habib et al. (2013), focusing on firms in New Zealand, find that managers of distressed firms engage more in income-decreasing earnings management practices than healthy firms. With the global financial crisis, the results show favourable market pricing of discretionary accruals in the non-crisis period but a substantial reduction in pricing coefficients during the global financial crisis period. Based on discretionary accruals, Türegün (2020) shows an increase in earnings management in the post-crisis period in Turkey. Covering the UK FTSE 350, Tahat and Alhadab (2017) found that the relative value relevance of

book value declined, but the value relevance of earnings increased during the financial crisis period from 2007 to 2008. Bepari et al. (2013) identify that the value relevance of earnings in Australia increased during the 2008–2009 global financial crisis compared to the pre-crisis period, while Bilgic et al. (2018) indicate that the value relevance of accounting information diminished during the global financial crisis.

The European Union (EU) has often been used as a unique setting to explore the global financial crisis of 2008, mainly since the crisis has dramatically impacted the countries within the EU. Arthur et al. (2015) argue that firms are motivated to present higher-quality financial reports during the financial crisis to increase investors' confidence and reduce the negative impact of the economic recession. Cimini (2015) conducted an event study to compare country-by-country abnormal accruals and provided evidence of a decrease in misrepresentation in most European countries after the global financial crisis. Filip and Raffournier's (2014) study concluded that earnings management decreases during the global financial crisis as the downward trend exists in most of the 16 countries under review. The study also indicates that national characteristics and market forces affect the propensity of income smoothing but not accrual quality.

A study by Iatridis and Dimitras (2013) compares how Portuguese, Irish, Italian, Greek and Spanish-listed firms behave during the global financial crisis of 2008. Their results show that firms engage more in earnings management in Portugal, Italy and Greece than in Ireland during the financial crisis. However, the results for firms in Spain are, to some extent, conflicting. Kousenidis et al. (2013) utilise the sample of firms categorised as residing in countries with weak fiscal sustainability, i.e., Spain, Greece, Ireland, Italy and Portugal, as these countries have been forced to apply harsh austerity measures and are practically under financial supervision by EU authorities. The results suggest that, on average, earnings quality has improved in the crisis period. Nevertheless, earnings quality deteriorates in the presence of incentives for earnings management, evidenced by the biggest discretionary accruals over a single period.

Based on a sample of firms from developed countries, da Silva (2019) suggests that perceived integrity through financial disclosure quality bolsters investor confidence in the firm's financial information during a crisis, thereby attenuating crash risk. The study found that pre-crisis accounting opacity fueled the abnormal component of crash risk associated with the crisis, and corporate governance practices had virtually no effect. In Persakis and Iatridis's study (2015), firms are categorised into three clusters according to shareholder protection. There is evidence that earnings quality decreased during the global financial crisis of

2008, but the deterioration of earnings quality appears to be more severe in firms in clusters characterised by medium and weak shareholder protection. The findings suggest that managers have a greater incentive to opt for aggressive conservatism, lower earnings predictability, and book more accruals during the financial crisis. Ahmed et al. (2019) find that banks led by crisis-experienced executives and directors exhibit better performance, lower risk-taking and higher accounting quality during the global financial crisis period. They were able to learn from prior crisis experiences and capitalise on how the banks overcame the challenges of the global financial crisis.

In sum, there is mixed evidence on how the financial reporting quality would be affected by the financial crisis. For example, Arthur et al. (2015) and Filip and Raffournier (2014) support the claim that there is a high motivation to improve financial reporting quality to survive the crisis. These findings align with the alignment incentive, as managers serve the interest of the shareholders through high financial reporting quality. Nevertheless, there is evidence pointing towards the perspective that companies engage in lower-quality financial reporting, such as increased earnings management (Iatridis & Dimitras, 2013), and that the value relevance of accruals decreases during those crisis periods (Choi et al., 2011). These findings support the entrenchment incentive since engaging in low financial reporting quality imposes a risk to the shareholders. Aside from this empirical evidence that has utilised the setting of past financial crises (da Silva, 2019; Filip & Raffournier, 2014), a gap exists on how financial reporting quality would differ within the macroeconomic shock arising from the COVID-19 pandemic. High-quality accounting information is essential in decision-making, especially during a financial crisis (Bepari et al., 2013). However, companies that reside within various institutional environments would have varying motives and pressures during the financial crisis caused by the COVID-19 pandemic which differs from other past financial crises.

Financial Reporting Quality and COVID-19

In addition to the findings highlighted above, we explore the aspects of financial reporting quality in the financial crisis triggered by the COVID-19 pandemic that we identify as a crisis with significantly different features compared to those crises that have been the focus of past research. First, the financial crisis that started in 2020 is genuinely global, and no countries are spared from the economic shock and downturn. Further, the severe socio-economic impact caused, and arising, from the crisis is the reason that countries' ability to recover their economy quickly is uncertain (Bose et al., 2021). Nevertheless, there are differences in how COVID-19 affects firms in different countries and industries. In terms of

countries' variations, Bose et al. (2021) document a greater decline in firm value for firms domiciled in countries where the COVID-19 impact is more devastating but the negative impact is less pronounced for firms: (1) with higher sustainability performance, (2) domiciled in countries with a lower environmental-value-oriented culture, and (3) in a country with a stakeholder-oriented culture. In terms of industries' variations, despite a decrease in overall revenue, profitability and investment in Chinese listed companies, COVID-19 severely hits the travel and tourism, transport, and, other companies that depend on those industries (Rababah et al., 2020). In short, the global financial crisis provides a level field to test the informativeness of earnings across companies faced with fundamental financial, operations and economic shocks.

Second, while the financial crisis has a worldwide effect, the policy responses addressing health and economic challenges are rather country-specific. The policies to flatten the curve, such as movement control orders and travel bans, aim to speed up the recovery process. The economic stimulus package has been in various forms, with all aiming to be distributed in a short period to recover the companies and the economies quickly. All these have been unique because each country strives to get the best formula to recover its economy. Hence, analysing the financial reporting quality of companies from different countries using an international dataset provides another layer of understanding of how the institutional features of the nations can explain financial reporting quality (Filip & Raffournier, 2014; Persakis & Iatridis, 2015). Third, there are companies with much more significant challenges than the other companies because of the current financial challenges (Habib et al., 2013), while there are some with past experiences in dealing with financial crises (Ahmed et al., 2019) that would allow them to handle the crisis better than the other companies. In line with those views, while all companies strive to sustain their businesses in the pandemic period, managerial responses, incentives and behaviours may differ across companies to result in different organisational strategies adopted, including the quality of earnings during the crisis period.

Therefore, aside from prior studies that have explored financial reporting quality during the financial crisis (da Silva, 2019; Filip & Raffournier, 2014), studies utilising the setting of the COVID-19 pandemic are relevant in the context of this study. In Šušak (2020), regulatory changes involving the extension of financial reporting deadlines in the Republic of Croatia are used to test the association between earnings management and financial reporting delay. The results portray the incentive to manage earnings, as the financial reporting delays after the regulatory changes are attributed to earnings management activities, especially in the case of income-decreasing accruals. Furthermore, the results

suggest that during the COVID-19 pandemic, the regulatory changes regarding financial reporting deadlines provide an opportunity for firms to adjust their financial information by pessimistic economic forecasts to mitigate possible profitability deterioration in future periods. Using a dataset of firms from the Shanghai and Shenzhen stock exchanges, Chen et al. (2021) provide evidence that unfavourable (favourable) 2019 earnings forecasts are clustered in days with increasing (decreasing) local COVID-19 cases. They also find that firms with high managerial ownership, non-state ownership and those under financial distress have a greater tendency to hide pre-existing firm-specific bad news under COVID-19-induced uncertainty. Further analysis indicates that the manipulation of disclosure dates influences the market reaction in a favourable direction for firms. Their results align with the perspective that the firms' disclosure timing strategy is influenced by capital-market pressure, political favour and lender concessions. Financial reporting quality related to COVID-19 is tested by Jordan et al. (2021), which looks into two types of earnings management in the US setting:

1. Cosmetic earnings management that occurs when the second left digit in the income number is manipulated up to reach zero and causes the first left digit to rise by one.

2. Upward manipulation of income to ensure the calculated EPS number is rounded a penny higher rather than lower when EPS is reported in the income statement.

Nevertheless, the results suggest that managers continued to exhibit unbiased reporting practices despite the pandemic-induced recession because there is no evidence to indicate that these two earnings management practices occurred during 2020.

In summary, there is evidence that financial reporting quality is sensitive to a bad economic environment. In addition, research that has attempted to utilise the setting of COVID-19 manages to provide interesting evidence regarding firms' financial reporting quality. Yet, more research needs to be done to understand how financial reporting quality would vary in the context of uncertainty arising from COVID-19. More specifically, the differences in how COVID-19 affects countries and companies, and the differences in country-specific policy responses and company-specific organisational strategies may have resulted in varying financial reporting quality of the companies.

Hypotheses Development

This study intends to add to the existing empirical evidence through this setting. First, we extend the literature on financial reporting quality during the

financial crisis period (da Silva, 2019; Filip & Raffournier, 2014) by focusing on the global economic shock caused by the COVID-19 pandemic; second, we add to the evidence on financial reporting quality in the COVID-19 period as we employed observations from 29 countries, to add to those single-country setting of the prior studies (Šušak, 2020; Chen et al., 2021; Jordan et al., 2021); and third, our analysis compares pre and during-pandemic periods and employ the perspectives of earnings conservatism and value relevance as an attempt to provide a comprehensive view on corporate financial reporting behaviour due to the financial crisis period. Based on the discussions of the prior studies above, we predict that the COVID-19 pandemic will pose significant challenges impacting earnings quality.

With regards to earnings conservatism, we posit that there will be variations in the quality of earnings, as shown by a lower earnings conservatism in the pandemic period compared to the pre-pandemic period. Our approach aligns with studies investigating earnings conservatism surrounding the financial crisis period (Persakis & Iatridis, 2015; Warganegara & Vionita, 2010; Kousenidis et al., 2013) where the financial crisis is deemed to create a greater incentive for managers to opt for aggressive conservatism. In a high uncertainty period such as the financial crisis, managers tend to recognise bad news slower than good news to minimise investors' reaction to bad news, which can limit the firms' access to capital. Thus, greater conservatism can be expected during the COVID-19 period compared to before COVID-19. We state the hypothesis as follows:

> H1: *Ceteris paribus*, earnings reported during the COVID-19 pandemic incorporate the bad news (negative returns) slower than the good news (positive returns) compared to the pre-pandemic period.

With regards to the value relevance of accounting information, we posit that the differences in the value relevance of book value and earnings during the pandemic period and the pre-pandemic period would exhibit variations in the quality of accounting information. We follow the approach in prior studies that investigate how financial crises affect the value relevance of accounting information (Iatridis & Dimitras, 2013; Ho et al., 2001; Davis-Friday & Gordon; 2005). We posit that the book value of equity would be more relevant during the COVID-19 period because it proxies for the firms' settlement value, while the earnings would be less relevant during the COVID-19 period because uncertainty and instability would affect its ability to project future results. We state the hypotheses as follows:

H2a: *Ceteris paribus*, the value relevance of book value of equity increases during the COVID-19 pandemic compared to the pre-pandemic period.

H2b: *Ceteris paribus*, the value relevance of earnings reduces during the COVID-19 pandemic compared to the pre-pandemic period.

RESEARCH DESIGN

Sample

Our sample covers firms around the globe. Using the Thomson Reuters database, we identified firms with financial statements for the financial year ended 31 March 2019 (pre-pandemic) and 31 March 2020 (during the pandemic period).[3] We recognise that some countries allow businesses to choose their financial year ends, but others have specified a particular financial year-end. For example, companies in China and Russia are mandated to have a financial year ending on 31 December.[4] Hence, we omit these companies because we only consider companies whose fiscal year ends on 31 March.[5] Although most countries' fiscal years end on 31 December, our data requirement justifies the need to exclude them because the COVID-19 pandemic only became a global threat after the WHO's announcement on 14 January 2020.[6]

Further, we exclude financial institutions (SIC code between 6000 and 6999) and utility companies (SIC code between 4900 and 4999) because they are highly regulated (Francis & Wang, 2008; Kamarudin, Ariff, & Wan Ismail, 2020; Houqe et al., 2012). Finally, we remove observations with missing or incomplete data and winsorise observations that fell in the top and bottom 1% to mitigate outliers' influence. Our final sample consists of 10,510 firm-year observations with a balanced number of 5,255 observations for the pandemic and pre-pandemic periods.

Table 1
Sample by countries

Country	Frequency	Percent
Australia	128	1.22
Belgium	4	0.04
Canada	296	2.82
Denmark	10	0.1
Egypt	6	0.06
France	38	0.36
Germany	16	0.15
Hong Kong	36	0.34
Hungary	2	0.02
India	3,450	32.83
Indonesia	8	0.08
Israel	2	0.02
Italy	8	0.08
Japan	5,022	47.78
Malaysia	268	2.55
Netherlands	4	0.04
New Zealand	70	0.67
Poland	8	0.08
Saudi Arabia	8	0.08
Singapore	130	1.24
South Africa	4	0.04
South Korea	20	0.19
Sweden	30	0.29
Switzerland	18	0.17
Thailand	26	0.25
Turkey	2	0.02
United Kingdom	294	2.8
United States	590	5.61
Vietnam	12	0.11
Total	10,510	100

Table 1 presents the number of observations by country. The sample is heavily represented by Japan (*n* = 5,022) and India (*n* = 3,450), consistent with both countries' financial year ending from 1 April to 31 March. Meanwhile, Hungary,

Israel and Turkey have the lowest number of observations with two observations for each country. The list and definition of variables are reported in the Appendix.

Measurements

In prior studies that utilise the setting of the financial crisis, the quality of earnings has been explored from value relevance, timeliness, conservatism, earnings smoothing, persistence and predictability (Choi et al., 2011; da Silva, 2019; Filip & Raffournier, 2014). In this study, we employ two commonly used dimensions for financial reporting quality: Earnings conservatism and value relevance, consistent with prior studies that use multiple measures for financial reporting quality (Barth et al., 2008; Kamarudin, Ariff, & Jaafar, 2020; Leuz et al., 2003).[7]

Measurements for earnings conservatism model

Stock return is used as a proxy for economic income as it is assumed that stock prices reflect all information from various sources other than the financial statements, consistent with evidence that stock prices lead to earnings informativeness (Ball & Brown, 1968; Beaver et al.1980; Kothari & Sloan, 1992). In contrast, accounting earnings impose different verification standards for the recognition of different types of economic news. For bad news (negative stock returns), lower verification standards are used, which results in the immediate recognition of losses. However, for good news (positive stock return), higher verification standards are imposed for gains to be recognised in accounting earnings. This approach results in a stronger positive association between bad news and earnings, suggesting a timelier reporting of bad news relative to good news.

Following Basu (1997), we use the asymmetric timeliness of earnings to measure earnings conservatism. This measure has been widely used in many studies, for example, Ball et al. (2003), Ball and Shivakumar (2005), Bushman and Piotroski (2006), and Roychowdhury and Watts (2007). In this model, as shown in Equation (1), earnings conservatism is the extent to which current-period accounting earnings asymmetrically incorporate economic losses relative to economic gain.

$$EY = \beta_0 + \beta_1 RET + \beta_2 RD + \beta_3 RET * RD + \varepsilon \qquad (1)$$

where *EY* is the earnings yield, measured by earnings per share deflated by the beginning of the fiscal year's price per share; *RET* is the annual return during the fiscal year; *RD* is a dummy variable equals to one if *RET* is negative, and zero otherwise. In Equation (1), earnings conservatism is measured by β_3, the

coefficient on *RET*RD*, where a positive coefficient implies that earnings reflect bad news more quickly than good news.

Measurements for value relevance model

The analysis of the value relevance of earnings is motivated by existing findings that the strength of the price-earnings relationship varies across observations. The value relevance of accounting variables, such as the book value of equity, is conditional on this relationship. For example, Hayn (1995) suggests that negative earnings may adversely affect the value relevance of accounting earnings. Firms' losses are less informative than profits about firms' prospects because shareholders have a liquidation option (Hayn, 1995). Another strand of studies further indicates that the book value of equity becomes more relevant to firm valuation when firms report negative earnings (Collins et al., 1997) or experience financial difficulties (Barth et al., 1998). These results are consistent with two explanations identified in the literature. First, book value serves as a better proxy for expected future earnings for loss firms because negative earnings usually are perceived to contain large transitory components (Ohlson, 1995). Second, the book value of equity serves as a better proxy for the abandonment or adaptation option for firms with a greater likelihood of encountering financial distress (Burgstahler & Dichev, 1997).

Value relevance portrays how useful the accounting numbers are to equity investors. Accounting numbers are considered value relevant if they are shown to be associated with stock prices, in line with the argument that accounting numbers are relevant and reliable to investors (Barth et al., 1998). Therefore, we measure value relevance using the price model, as shown in Equation (2).

$$PRICE = \beta_0 + \beta_1 BV + \beta_2 E + \eta_1 \dots \eta_{28} + \varepsilon \qquad (2)$$

where *PRICE* is the price per share, *BV* is the book value of equity per share, *E* is earnings per share, and $\eta_1 \dots \eta_{28}$ represents indicator variables for the industries in the sample. We perform the Chow test to examine differences in the coefficients of the book value of equity and earnings. In Equation (2), value relevance is measured by significant coefficients of β_1 for the book value of equity and β_2 for earnings. Further, we also compare the adjusted R^2 between samples to calculate the relative and incremental value relevance (Biddle et al., 1995; Collins et al., 1997; King & Langli, 1998).

Regression Models

The earnings conservatism model for H1

For testing the first hypothesis (H1) of whether the COVID-19 pandemic leads to an increase or decrease in earnings conservatism, we extend the Basu (1997) asymmetric timeliness of earnings model by incorporating a dummy variable for COVID-19 pandemic (*COVID*) and interacting this variable with the existing test variables in the Basu's model. The extended model is as shown in Equation (3):

$$
\begin{aligned}
EY = {} & \beta_0 + \beta_1 RET + \beta_2 RD + \beta_3 RET*RD + \beta_4 COVID + \beta_5 COVID*RET \\
& + \beta_6 COVID*RD + \beta_7 COVID*RET*RD + \sum\nolimits_{\beta=8}^{\beta=10} CONTROLS \\
& + \sum\nolimits_{\beta=11}^{\beta=13} CONTROLS*RET + \sum\nolimits_{\beta=14}^{\beta=16} CONTROLS*RD \\
& + \sum\nolimits_{\beta=17}^{\beta=19} CONTROLS*RET*RD + \eta_1 \eta_{28} + \varepsilon
\end{aligned}
\tag{3}
$$

where *EY* is the earnings yield, measured by earnings per share deflated by the beginning of the fiscal year's price per share; *RET* is the annual return during the fiscal year; *RD* is a dummy variable equals to one if *RET* is negative, and zero otherwise, and *COVID* is a dummy variable equals to one if the financial statement was issued after the World Health Organization (WHO) announced COVID-19 as a global pandemic, otherwise 0. We follow the approach of the prior research (Khan & Watts, 2009; LaFond & Roychowdhury, 2008) to control for firm size (*SIZE*), leverage (*LEV*), and growth opportunities (*MTB*), where *SIZE* is the natural log of total assets (in thousands of dollars); *LEV* is the ratio of total debt to total assets, and *MTB* is the market to book ratio. *SIZE* is expected to negatively affect earnings conservatism, consistent with the argument that large firms have lower information asymmetry, thus reducing the contracting demands for conservatism (Khan & Watts, 2009). High-leverage firms (*LEV*) have higher agency costs and higher financial distress costs, creating a greater need for conservatism to reduce such problems. *MTB* would negatively affect earnings conservatism, owing to prior unrecognised increases in asset values that reduce the necessity to recognise asset value losses (Roychowdhury & Watts, 2007). Finally, we also include industry-fixed effects in the regression model to control for the potential effects of these variables.

In Equation (3), the coefficient of *COVID*RET*RD*, β_7, represents the change in the return response coefficient of the firms during the COVID-19 pandemic compared to the non-pandemic period. Concerning H1, the coefficient of

β_7 that is greater (lesser) than zero indicates that firms are more (less) conservative during the pandemic than in the non-pandemic period.

The value relevance model for H2

For testing the second hypothesis of whether the book value of equity (H2a) and earnings (H2b) are value relevant, we perform two tests. First, we regress Equation (2) on the pre-and during-pandemic samples. From the estimation results, we perform the Chow (1960) test to examine the differences in the book value of equity and earnings coefficients, indicating changes in value relevance of the book value of equity and earnings.

Second, we use the relative and incremental value relevance approach following Biddle et al. (1995), Collins et al. (1997), and King and Langli (1998). For both pre- and during-pandemic samples, we estimate Equations (4) and (5) to determine the relative value relevance of book value per share and earnings per share:

$$PRICE = \beta 0 + \beta 1BV + \eta 1 \ldots \eta 28 + \varepsilon \tag{4}$$

$$PRICE = \beta 0 + \beta 1E + \eta 1 \ldots \eta 28 + \varepsilon \tag{5}$$

where *PRICE* is the price per share; *BV* is the book value of equity per share; *E* is earnings per share; and $\eta_1 \ldots \eta_{28}$ represents indicator variables for the industries in the sample.

From the adjusted R^2 from regressions (4) and (5), we measure the relative value relevance where either book value or earnings could have explanatory power beyond the explanatory power of the other. We then compare these results with the estimation of Equation (2) to determine incremental explanatory power.

FINDINGS

Descriptive Analysis

Panel A of Table 2 reports descriptive statistics of variables for the two groups of samples, i.e., before and during the COVID-19 pandemic. The sample during the COVID-19 pandemic shows lower earnings yield (*EY*), stock returns (*RET*), stock prices (*PRICE*); and market-to-book ratio (*MTB*) than the sample before the COVID-19 pandemic. However, we find no significant differences in the loss in

stock return (*LOSS*), the book value of equity (BV), earnings per share (*EPS*), firm size (*SIZE*) and leverage (*LEV*) between both periods.

Table 2
Descriptive statistics and correlations

Panel A: Descriptive statistics

Variables	Before pandemic (N = 5,255)		During pandemic (N = 5,255)		Mean diff.
	Mean	SD	Mean	SD	
EY	0.026	0.174	0.012	0.203	−0.014***
RET	−0.150	0.351	−0.221	0.392	−0.070***
RD	0.782	0.413	0.790	0.407	0.008
PRICE	14.007	27.733	12.545	27.184	−1.463***
BV	10.703	18.258	10.952	18.485	0.249
E	0.727	1.769	0.607	1.730	−0.121
SIZE	19.087	2.130	19.104	2.157	0.017
LEV	0.467	0.310	0.467	0.218	0.000
MTB	2.395	4.217	1.965	4.218	−0.429***

Notes: *** shows significance at the 0.01 level, Variable definitions are provided in the Appendix.

Panel B: Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) *COVID*	1.000									
(2) *EY*	−0.038*	1.000								
(3) *RET*	−0.094*	0.180*	1.000							
(4) *RD*	0.010	−0.099*	−0.684*	1.000						
(5) *PRICE*	−0.027*	0.082*	0.229*	−0.215*	1.000					
(6) *BV*	0.007	0.137*	0.100*	−0.029*	0.590*	1.000				
(7) *E*	−0.034*	0.361*	0.182*	−0.139*	0.609*	0.595*	1.000			
(8) *SIZE*	0.004	0.134*	0.116*	−0.084*	0.360*	0.346*	0.292*	1.000		
(9) *LEV*	0.000	−0.112*	−0.070*	0.044*	−0.028*	−0.063*	−0.061*	0.167*	1.000	
(10) *MTB*	−0.051*	−0.041*	0.239*	−0.204*	0.223*	−0.131*	0.009	−0.072*	0.122*	1.000

Notes: * shows significance at the 0.01 level, Variable definitions are provided in the Appendix.

We perform pairwise correlation analysis among the dependent and independent variables. The results in Panel B of Table 2 show that *COVID* has negative correlations with the *EY*, *RET*, *PRICE* and *MTB*. We find the highest correlation between *RET* and *RD*, with a value of –0.684. Although the results show several significant correlations between the independent variables, none represent any concern for multicollinearity, as no correlations exceed 0.80 (Gujarati, 1995).[8]

Main Analysis[9]

Earnings conservatism analysis for H1

Table 3 reports the regression results on the effects of the COVID-19 pandemic on earnings conservatism, partitioned by the periods before and during the pandemic as well as the pooled sample. The results in all four columns show positive and significant coefficients for *RET*RD* at 1% level, indicating incremental sensitivity of accounting income to the incorporation of bad news than good news, hence showing evidence of earnings conservatism in both periods.

In the pandemic period, as reported in column (1), we find the coefficient for *RET*RD* is positive and significant, but the value is smaller than in the pre-pandemic period, as reported in column (2). In columns (3) and (4), we test the difference in earnings conservatism between the pre-pandemic and pandemic periods. We find the coefficient for *COVID*RET*RD* is negatively significant ($p < 0.01$), suggesting significantly low earnings conservatism or less timely recognition of losses in the pandemic period than the pre-pandemic period. A plausible explanation is that managers tend to delay recognising bad news and signal the less negative impact of COVID-19 to the users of the financial statements, most probably to avoid market panic and drop in share prices. Another explanation is that those market participants are unaware of how profound the impact of COVID-19 is on business performance and sustainability as of 31 March 2020.

Table 3

Regression estimates of the effect of the COVID-19 pandemic on earnings conservatism.

Variables	Pre–pandemic (1)	During pandemic (2)	Pooled (3)	Pooled (4)
Intercept	0.060*** (33.351)	0.066*** (27.079)	0.060*** (28.817)	0.068*** (5.325)
RET	−0.018*** (−5.290)	0.015*** (3.213)	−0.019*** (−4.674)	−0.056** (−2.298)
RD	0.013*** (5.634)	0.002 (0.701)	0.013*** (4.923)	−0.024 (−1.447)
*RD*RET*	0.118*** (21.228)	0.058*** (8.994)	0.124*** (19.086)	0.248*** (6.917)
COVID			0.005* (1.862)	0.006** (2.377)
*COVID*RET*			0.032*** (5.851)	0.012** (2.396)

(*Continued on next page*)

Table 3 (*Continued*)

Variables	Pre–pandemic (1)	During pandemic (2)	Pooled (3)	Pooled (4)
COVID*RD			−0.011*** (−2.904)	−0.014*** (−3.963)
COVID*RET*RD			−0.068*** (−8.001)	−0.049*** (−6.153)
SIZE	–	–	–	−0.000 (−0.685)
SIZE*RET	–	–	–	0.002 (1.536)
SIZE*RD	–	–	–	0.002** (2.514)
SIZE*RET*RD	–	–	–	−0.007*** (−3.719)
LEV	–	–	–	0.029*** (4.125)
LEV*RET	–	–	–	0.050*** (4.164)
LEV*RD	–	–	–	−0.005 (−0.566)
LEV*RET*RD	–	–	–	−0.002 (−0.096)
MTB	–	–	–	−0.004*** (−15.200)
MTB*RET	–	–	–	0.001*** (3.654)
MTB*RD	–	–	–	−0.005*** (−11.972)
MTB*RET*RD	–	–	–	−0.013*** (−14.672)
Industry effects	Yes	Yes	Yes	Yes
Adj. R^2	0.10	0.07	0.08	0.22
N	5,255	5,255	10,510	10,510
F-stat	192.539	135.735	140.249	157.067

Notes: t-statistics in parentheses, $*p < 0.10$, $**p < 0.05$ and $***p < 0.01$, Variable definitions are provided in Appendix.

Value relevance analysis for H2

Table 4 reports the results of the regressions (2), (4) and (5) on the value relevance of the book value of equity and earnings for both pre-pandemic and pandemic periods, and the pooled sample. Panel A reports the regression estimates and the Chow (1960) statistic, and Panel B reports the incremental value relevance.

In columns (1) to (6) of Panel A, we find the coefficients for *BV* are positive for all samples. The results from Equation (2) show that the coefficient for *BV* in column (1) for the pre-pandemic period (0.598) is higher compared to column (2) for the pandemic period (0.516). Similar findings were found in Equation (4), where the coefficient for *BV* in column (5) for the pandemic period (0.865) is lower than the coefficient in the pre-pandemic period (0.947) in column (4). The Chow F-stat, which tests differences in the coefficients book value of equity, shows a value of 14.93 ($p < 0.00$), suggesting a significant decline in the value relevance of the book value of equity after the COVID-19 pandemic.

For the value relevance of earnings, the results in columns (1) to (3) and (7) to (9) show that the coefficients for *E* are positive, indicating evidence of value relevance of earnings information. We then compare the coefficient values between the pre-pandemic and the pandemic samples. The results from Equation (2) show that the coefficient for *E* in column (1) for the pre-pandemic period (6.136) is lower compared to column (2) for the pandemic period (6.268), but the Chow test shows the difference in the coefficients are not significant (F-stat = 0.22). In Equation (5), where we only estimate *E* on *PRICE*, we found the coefficient for E in column (7) for the pre-pandemic period (9.701) is higher than the coefficient in the pandemic period (0.946). The Chow test of the two coefficients shows an insignificant value (F-stat = 0.84), implying no significant changes in the value relevance of earnings after the COVID-19 pandemic.

Table 4
Regression estimates of the effect of COVID-19 pandemic on value relevance

Panel A: Regression estimates on value relevance models using robust standards errors on subsamples by COVID-19 and pooled sample

Variables	(1) Pre-pandemic	(2) During pandemic	(3) Pooled sample	(4) Pre-pandemic	(5) During pandemic	(6) Pooled sample	(7) Pre-pandemic	(8) During pandemic	(9) Pooled sample
Intercept	3.340*	2.879	3.114**	2.593*	3.147	2.869**	4.795*	3.658*	4.218**
	(1.657)	(1.531)	(2.260)	(1.818)	(1.620)	(2.394)	(1.733)	(1.747)	(2.448)
BV	0.598***	0.516***	0.556***	0.947***	0.865***	0.905***	–	–	–
	(8.882)	(7.205)	(11.314)	(18.604)	(16.637)	(24.808)			
E	6.136***	6.268***	6.210***	–	–	–	9.701***	9.464***	9.573***
	(7.245)	(6.451)	(9.721)				(10.300)	(9.721)	(14.225)
Industry effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R²	0.49	0.45	0.47	0.39	0.35	0.37	0.39	0.38	0.39
N	5,255	5,255	10,510	5,255	5,255	10,510	5,255	5,255	10,510
Chow test F									
BV	9.54***		–	13.94***		–	–		–
E	0.22		–			–	0.84		–
Total value relevance Adj. R²	5.76***		–			–	–		–
Relative BV Adj. R²	–	–	–	14.93***		–	–	–	–
Relative E Adj. R²	–	–	–			–	0.69	–	–

Notes: *t*-statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Variable definitions are provided in Appendix.

Panel B: Incremental Adj. R²

Variables	Incremental		
	BV Adj. R²	E Adj. R²	Com Adj. R²
Pre-pandemic	0.10	0.10	0.29
During pandemic	0.07	0.10	0.28

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Panel A also shows the explanatory power in the pre-pandemic period (Adjusted R^2 = 0.49) is relatively greater than the explanatory power in the pandemic period (Adjusted R^2 = 0.45). The Chow (1960) test for differences in the explanatory power of regressions for the samples before and during the pandemic rejects the null hypothesis of no difference in the value relevance of accounting information between before and after the pandemic periods (total value relevance, F = 5.76, significant at *p*-value 0.01). These results imply that the value relevance of accounting information appears to be greater in the period before the pandemic.

Following Graham et al. (2000), King and Langli (1998), and Collins et al. (1997), we decompose the total explanatory power of the book value of equity and earnings into the incremental component attributable to the book value of equity, the incremental component attributable to earnings, and the component common to both book value and earnings. The incremental value relevance of the book value of equity (earnings) is derived by subtracting the relative value relevance of earnings (book value) from the total value relevance. Value relevance common to both book value of equity and earnings is derived by subtracting incremental value relevance of both book of equity and earnings from total value relevance.

As summarised in Panel B of Table 4, the results show that 29% of the variation in stock prices is explained by the components common to both the book value of equity and earnings in the pre-pandemic period and the percentage drops slightly to 28% during the pandemic period. Moreover, although the incremental value relevance of earnings remains unchanged as the pandemic starts, the incremental value relevance of the book value of equity is greater during the pre-pandemic period (0.10) than during the pandemic period (0.07).

Overall, the findings show that earnings conservatism was lower during the pandemic than previously. This demonstrates that firms delay the recognition of bad news when the pandemic started. The massive impact of COVID-19 on business sustainability probably explains the findings that the book value of equity has a considerably weaker relationship with stock prices during the pandemic period than before. Furthermore, we observe that the explanatory power in the pre-pandemic phase is higher than in the pandemic period. The incremental value relevance of earnings has remained constant as the epidemic has progressed. In contrast, the incremental value relevance of the book value of equity has decreased as the pandemic has progressed. These findings show that the market perceived the COVID-19 pandemic would take longer to resolve since it affects the fundamental of business (book value) rather than just earnings.

Sensitivity Analysis

We perform several robustness tests to ensure the robustness of our main results. First, we re-estimate the equations on samples partitioned into developing (n = 3,842) and developed countries (n = 6,667). The results are reported in Panel A of Table 5. For the earnings conservatism model, the results in columns (1) and (2) show that our earlier results for conservatism hold for both samples. We find the coefficients for COVID*RET*RD are negatively significant, suggesting that earnings are less conservative during the COVID-19 pandemic.

Second, Morck et al. (2000) found that the systematic component of returns variation in emerging markets is much larger than in developed countries. In particular, stock returns in emerging countries appear unconnected to fundamentals' co-movement, whereas considerable firm-specific return variations have been found in developed countries. We used market-adjusted returns (MRET) as an alternative proxy for economic news to control for time-series stationarity. The results reported in columns (2) and (3) of Panel B Table 5 show that the coefficient for COVID*MRET*MRD is negatively significant, indicating that earnings conservatism declines during the COVID-19 pandemic in developing countries and the pooled sample.

Table 5
Sensitivity analysis

Panel A: Regression estimates on developed versus developing countries samples: Earnings conservatism

Variables	(1)	(2)
	Developed countries	Developing countries
Intercept	0.063*** (23.851)	0.057*** (16.284)
RET	–0.034*** (–6.207)	0.002 (0.420)
RD	0.015*** (4.421)	0.009** (2.051)
RET*RD	0.154*** (17.403)	0.084*** (8.606)
COVID	0.005 (1.474)	–0.009 (–1.350)
COVID*RET	0.048*** (6.801)	0.019* (1.838)
COVID*RD	–0.003 (–0.640)	0.012 (1.448)
COVID*RET*RD	–0.022* (–1.881)	–0.050*** (–3.397)
Industry effects	Yes	Yes
Adj. R²	0.13	0.06
N	6,668	3,842
F-stat	143.221	34.671

Notes: t-statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$, Variable definitions are provided in the Appendix.

Panel B: Regression estimates using market-adjusted return

Variables	(1) Developed countries	(2) Developing countries	(3) Pooled
Intercept	0.056*** (21.406)	0.057*** (13.768)	0.056*** (25.002)
MRET	–0.005 (–0.929)	0.003 (0.458)	–0.000 (–0.035)
MRD	0.009*** (2.774)	–0.009* (–1.914)	0.001 (0.577)
MRET*MRD	0.101*** (11.611)	0.084*** (8.741)	0.086*** (13.469)
COVID	0.007** (1.994)	–0.017** (–2.001)	0.007** (2.317)
COVID*MRET	0.038*** (5.236)	0.020** (1.987)	0.021*** (3.833)
COVID*MRD	–0.002 (–0.381)	0.014 (1.617)	–0.010*** (–2.794)
COVID*MRET*MRD	–0.018 (–1.535)	–0.048*** (–3.460)	–0.034*** (–3.957)
Industry effects	Yes	Yes	Yes
Adj. R^2	0.11	0.06	0.07
N	6668	3842	10510
F-stat	115.456	38.636	122.367

Notes: t-statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Variable definitions are provided in the Appendix.

Panel C: Regression estimates on developed versus developing countries samples: Value relevance

Variables	(1) Developed countries	(2) Developing countries
Intercept	4.408*** (32.487)	0.298*** (20.436)
BV	0.308*** (46.916)	0.474*** (227.415)
E	3.543*** (52.726)	3.325*** (123.924)
COVID	0.006 (0.030)	–0.150*** (–7.178)
COVID*BV	–0.012 (–1.341)	–0.069*** (–15.937)
COVID*E	–1.510*** (–15.931)	–2.295*** (–53.770)
Industry effects	Yes	Yes
Adj. R^2	0.74	0.98
N	6,666	3,833
F-stat	3873.834	48372.312

Notes: t-statistics in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Variable definitions are provided in the Appendix.

Panel D: Regression estimates on value relevance models by separating BV into TA and TL

Variables	(1) Pre-pandemic	(2) Post-pandemic	(3) Pooled
Intercept	3.993* (1.716)	2.879 (1.504)	3.471** (2.313)
TA	0.237** (2.271)	0.438*** (5.742)	0.285*** (2.686)
TL	–0.128 (–0.861)	–0.342*** (–3.170)	–0.169 (–1.206)
E	7.453*** (7.702)	6.218*** (6.669)	7.088*** (9.279)
Industry effect	Yes	Yes	Yes
Adj. R^2	0.47	0.46	0.46
N	5,255	5,255	10,510

Notes: t-statistics in parentheses, * $p < 0.10$, ** $p < 0.05$ and *** $p < 0.01$. Variable definitions are provided in the Appendix.

Third, we extended Equation (2) for the value relevance model by incorporating *COVID* as an interaction of *BV* and *E*. We then regress the extended equation on samples partitioned into developing and developed countries. The results reported in Panel C of Table 5 shows that there is a decrease in the value relevance of earnings in both developing and developed samples as the coefficients for *COVID*E* are negatively significant. For the book value of equity, we find a reduction in the value relevance of book value of equity during the pandemic in the developing countries sample, as reported in column (2), where the coefficient for *COVID*BV* is negatively significant. However, such evidence is not shown for firms from developed countries. The findings suggest that the impact of COVID-19 on the value relevance of accounting numbers varies between developing and developed countries.

Finally, we separate *BV* into total assets per share (*TA*) and total liabilities per share (*TL*) and include these variables in Equation (2). We re-estimate the equation on pre-pandemic, during the pandemic, and pooled samples. The results are reported in Panel D. We find the coefficients for *E* are positively significant in all samples, consistent with the earlier findings. For *TA*, the coefficients for *E* are positively significant in all samples suggesting that the total asset information is value relevant to investors. For the *TL*, we find a negatively significant coefficient in the COVID-19 pandemic sample but insignificant in the pre-pandemic and pooled samples. These results suggest that for the COVID-19 pandemic sample, investors perceived total liabilities as necessary information. In addition, the negative sign of the coefficient indicates that high total liabilities are linked to lower stock prices during the pandemic period.

CONCLUSIONS

The COVID-19 outbreak that started in the year 2020 has dramatically impacted the financial condition of businesses worldwide. While the pandemic is promulgated to impose severe economic challenges that differ from the past global financial crisis (Bose et al., 2021), the impact varies by country and industry (OECD, 2021; Barret et al., 2021). This study examines whether the financial crisis due to the recent pandemic explains the variations in financial reporting quality. The agency theory perspective is employed in testing whether the quality of financial information significantly differs in the period before and during the pandemic. Extending the evidence that utilised the setting of the past financial crises (da Silva, 2019; Filip & Raffournier, 2014), we employ a dataset of firms from 29 countries to demonstrate how financial reporting quality varies when firms face unprecedented economic challenges during the periods characterised by high uncertainty and volatility.

The analysis using the earnings conservatism model shows that firms exhibit low earnings conservatism, or less timely recognition of losses, in the pandemic period than in the pre-pandemic period. The findings indicate that managers tend to delay recognising bad news, most probably to avoid market panic and drop share prices. Meanwhile, analysis using the value relevance model shows significant declines in the value relevance of book value and earnings during the pandemic period. Further investigation, however, shows that the falls in the value relevance of accounting information after the COVID-19 pandemic primarily affect the value relevance of book value but not earnings. More specifically, the value relevance of earnings exceeds that of the book value of equity in the pandemic period, implying that the market gives more attention to the book value than earnings during the pandemic. The findings of this study can be explained from the entrenchment perspective related to the agency costs that would be higher during the COVID-19 pandemic. The evidence that managers report bad news slower than good news and the decline in the value relevance of book value during the pandemic period indicate the managerial incentive or pressure to manage accounting information for opportunistic purposes as a strategy to minimise market volatility and maintain flow of capital.

The findings of this study have significant implications for the academic literature, especially concerning the need to consider the agency costs that would have heightened during financial crises. Extant studies showed evidence of the alignment (Khoo et al., 2020; Rodriguez-Ariza et al., 2016) and entrenchment (Ahmed et al., 2008; Ahmad-Zaluki et al., 2011) perspectives explaining the implications of financial crises. Our study adds to those by looking into the context of the COVID-19 pandemic, which has induced greater uncertainty at the macro-level and, accordingly, greater agency costs that give rise to the pressures and incentives for managers to entrench. This study also offers practical implications in several aspects. The findings of this study provide useful information to investors worldwide in dealing with critical investment decisions and resource allocations as it reveals the reliability and characteristics of accounting information during the pandemic. This study also contributes as an essential input for policymakers and standard setters, especially in formulating policies and standards on accounting and disclosing the impact or adjustments for COVID-19. It is important to note the implications that policies and standards would have on corporate reporting behaviour, such as shown by the effect of regulatory changes from COVID-19 in Šušak (2020). In the aspect of auditors, the findings of this study should indicate that firms would have strategised differently on financial reporting quality during intense financial crises. Hence, the audit work should be performed effectively by focusing on items with a higher potential for manipulation.

We believe that the findings of this study would be an impetus to much more future research. While robustness analyses have been undertaken to explain the possible explanations for our findings, certain limitations in this study can be addressed by future research. First, we look at the financial reporting quality from the perspective of earnings conservatism and value relevance, both of which look at how informative financial reporting is. However, financial reporting practices would have differed because of the financial crisis (Sutthachai & Cooke, 2009), such as the increase in impairment losses which would have been realised due to the internal and external factors of impairment arising from the pandemic. In the setting of the 2008–2009 global financial crisis, for example, Bepari et al. (2014) found that compliance with International Financial Reporting Standards (IFRS) for goodwill impairment testing increased significantly during the crisis. Accordingly, we posit that the impairment of assets would be an important aspect that needs to be factored into future research on COVID-19 and the quality of accounting information.

Second, we encourage future research to extend our study by applying other research models and measurements of the variables. While the prior studies justify our selection of variables using the earnings conservatism and value relevance models, several aspects can be extended especially in disentangling the reasons behind our findings. For example, future research could consider potential variations in financial reporting quality due to internal and external pressures. For internal pressures, which arise from internal stakeholders and firm-level characteristics, the quality of corporate governance (Lin & Hwang, 2010) such as the role of the board can be considered. For external pressures, which arise from the institutional environment surrounding companies, product market competition (Kamarudin et al., 2020) and country-level features (Isidro et al., 2016; Johnson et al., 2000) are interesting aspects to be ventured into. Future studies can also incorporate various measurements of financial reporting quality in the analysis, such as on the value relevance of cash flow, as shown by Bepari et al. (2013). Finally, while our study offers international evidence with the use of a large dataset of firms from 29 countries, it would be interesting to examine the effect of the COVID-19 pandemic specifically among firms from more vulnerable industries such as the hospitality sector only, as well as focusing only on samples of firms from specific regions such as the Asian or Latin American countries. The research approach would allow future research to cater for analysis on segmental and/or regional policy formulation, such as on corporate governance, financial assistance programs, and economic diplomacy.

NOTES

1. According to World Bank data, the global economy shrunk by 3.293% in 2020, worse than the 2009 global economic crisis. COVID-19 is forecasted to have staggering economic and severe socio-economic impacts that would weaken long-term growth due to the plunge in investment because of elevated uncertainty, the erosion of human capital from mass unemployment, and the disruptions in trade and supply linkages (World Bank, 2020).

2. According to Vilmi et al. (2019), the continuation of the trade war has increased uncertainty globally and has raised the World Trade Uncertainty index for trade policy uncertainty to a record high this year. The Bank of Finland estimated that the escalation of the trade war and subsequent widespread disruptions to the financial markets, would reduce the global GDP growth by around 0.7 of a percentage point, and in an adverse scenario by a further two percentage points.

3. Our sample excludes firms with a financial year ended other than 31 March. This is because 31 March 2020 is the financial year end that is the nearest to the COVID-19 event as announced by the WHO on 14 January 2020, and for which the data is available at the time of study. This selection is made in line with the objective of the research, that is to compare the quality of accounting information reported in the financial statements in the pandemic period than in the pre-pandemic period.

4. The China's Accounting Law (Chapter 2, Article 11) requires firms in China (Mainland) to set the financial year according to the Gregorian calendar which starts on 1 January and ends on 31 December every year.

5. We chose the 31 March 2020 financial statements because that is the earliest date that awaken international community on the severity of the pandemic. Since the announcement date, most of the countries around the world enforced lockdowns, for example Australia (31 March), Belgium (18 March), Canada (17 March), Denmark (12 March), France (17 March), Germany (16 March), Hungary (28 March), India (25 March), Israel (2 April), Italy (9 March), Malaysia (18 March), Netherlands (15 March), New Zealand (23 March), Poland (13 March), Saudi Arabia (16 March), Singapore (7 April), South Africa (26 March), Switzerland (17 March), Thailand (25 March), Turkey (23 April), United Kingdom (23 March), United States (19 March), and Vietnam (1 April). For financial statements with the financial year ended 31 March 2020, it is clear that the preparation of financial reports and auditing process were carried out during the pandemic period. This enables us to understand the immediate and spontaneous effect of COVID-19. If the sample is to be extended to 31 December 2020, the quality of financial reporting would largely influenced by a variety of factors, i.e. financial distress, lockdown, supply, logistic, business interruption and etc.

6. On 14 January 2020, the WHO held a press briefing during which it stated that, based on experience with respiratory pathogens, the potential for human-to-human transmission in the 41 confirmed cases in the People's Republic of China existed: "it is certainly possible that there is limited human-to-human transmission". Considering this event, the earliest financial data available and relevant with the objective of this study are from firms with a financial year ended 31 March 2020. Hence, we did

not include other financial year ends as the severity of the COVID-19 varies across countries and time.

7. Other measures of earnings quality, such as earnings management and accrual quality, rely on models that require data from both the current and past years. The inclusion of data from multiple accounting periods would result in the overlaps in the pre- and post-pandemic periods, making it impossible for the measurements to be utilised in the setting of this study.

8. We also test for Variance Inflation Factor (VIF) which measures the extent to which the variance of the estimated regression coefficient is increased due to collinearity. The results (untabulated for brevity) indicate that collinearity is not an issue, since all the VIF values are below 2.

9. We only present the results of the main regression estimates. For brevity, the results and discussion for the diagnostic tests that have been performed prior to the regression analyses (outliers, heteroscedasticity, autocorrelation, normality of residuals, and linearity) are not reported.

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APPENDIX

Variable description

Variable	Definition
COVID	A dummy variable equals to one if the financial statement was issued after the World Health Organisation (WHO) announced COVID-19 as a global pandemic, otherwise 0.
EY	Earnings per share deflated by the beginning of the fiscal year's price per share.
RET	The annual return during the fiscal year.
RD	A dummy variable equals one if RET is negative and zero otherwise.
PRICE	The price per share.
BV	The book value of equity per share.
E	Earnings per share.
SIZE	The natural log of total assets.
LEV	The ratio of total debt to total assets.
MTB	The market to book ratio.