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COVID-19 induced economic uncertainty and value relevance of accounting information: European evidence

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This study aims to investigate the impact of the pandemic-induced economic uncertainties on the relevance of earnings among European firms. Using the explanatory power approach, we ascertain the change in explanatory power as a measure of a change in value relevance of earnings before and during the pandemic. Alternative methodology involving the use of an interaction term is used to ensure the robustness of the results. Results obtained from both approaches indicate a decline in the relevance of earnings amid the pandemic. Further analysis also indicates that loss-making firms observed a higher decline in the value relevance of earnings during the pandemic relative to profit-making firms. The findings also reveal that though both large and small firms experienced a decline in the value relevance of earnings, nevertheless, the magnitude of the decline is greater for small firms relative to large firms. In addition to investigating the accounting effect of Covid-19, this study adds to the limited research available on the impact of economic uncertainty induced by the pandemic on the capital markets. It also complements the literature on how the quality of financial information is affected during crisis.

Key words: Covid-19 pandemic, earnings, value relevance, capital allocation, Europe.

INTRODUCTION

The European Centre for Disease Prevention and Control reported the first three imported cases of the virus in Europe on the 24th of January, 2020[1]. Fast-forward to the 20th of December, 2020, the World Health Organization reported a total number of 23,691,857 confirmed cases across Europe[2]. Due to the devastating effects of the pandemic, in the year 2020, the EU faced economic hardships worse than the financial crisis of 2008 with a 6.1% decline in real GDP (Monks and Verwey, 2021). The stock markets of European countries also experienced major shocks during the year 2020 due to information asymmetries and the pandemic-induced economic uncertainties, causing investors to be cautious about the performance of their financial portfolios (Rasa et al., 2020).

The quality of financial information is of paramount importance to investors. Consistent with this view, prior studies have linked the quality of financial information to capital allocation. Francis et al. (2009) opine that the higher the quality of financial information, the easier it is to finance growth opportunities. Agostino et al. (2011), argue that reliable financial information is crucial for stock market investment and for enhancing the efficient allocation of capital. However, Agostino et al. (2011) further suggest that information asymmetries hinder the efficient allocation

[1] https://www.ecdc.europa.eu/en/publications-data/risk-assessment-outbreak-acute-respiratory-syndrome-associated-novel-1

[2] https://www.who.int/publications/m/item/weekly-epidemiological-update---22-december-2020

of resources. This problem of asymmetric information is further exacerbated by the Covid-19 pandemic which induced uncertainties in the financial markets. Stein and Wang (2016) document that in periods of uncertainty, there is a decrease in the quality of financial reporting. One key financial metric that signals information to financial market participants is firms' earnings. Earnings measure a company's operational success reflected through its profitability as it encompasses both the revenues generated and the costs incurred during a financial period, thus giving a snapshot of the company's economic performance (Beyer et al., 2019). Dwelling on a US sample of firms, Liu and Sun (2022), show that earnings are transitory in nature amid the pandemic. In their study, they refer to transitory earnings as the components of a company's income that are considered non-recurring or not likely to persist in the future. Extant literature indicates that transitory earnings do not effectively reveal the fundamental value of firms (Ohlson, 1999) which may impede the efficient allocation of capital. Notwithstanding the different institutional settings and differing financial reporting regimes between Europe and US, in the context of Europe, to date, no known studies have examined the relevance of earnings to financial market participants amid the Covid-19 induced financial market uncertainties in the region. Accordingly, this paper examines the relevance of earnings among a European sample of firms during the pandemic. Furthermore, different from Liu and Sun (2022), our study further examines the effects of firm size on the information content of earnings amid the pandemic.

Our main findings evidence a decline in the relevance of earnings during the pandemic. Given the positive effect of the quality of financial information on capital allocation, our findings may suggest a negative effect of the pandemic on the capital markets. It also highlights how the quality of financial information is affected during the pandemic and may suggest that investors have to be cautious and discreet when relying on financial information amid this pandemic.

This study contributes to the limited literature on the economic impacts of the Covid-19 pandemic in the European region. Particularly, we make a significant contribution to the accounting literature on Covid-19 as one of the first to investigate the informative content of earnings in Europe amid the pandemic. Furthermore, our study is one of the first to examine the effects of firm size on financial reporting quality in Europe during the pandemic. Akin to the global financial crisis of 2008, the Covid-19 pandemic has also had a grave economic impact. Therefore, it is essential to incorporate its impacts into the literature on economic crises. We do this as we document a negative effect of the pandemic on the value relevance of earnings and its potential consequence on capital allocation in Europe.

Related literature and hypothesis formulation

There have been some studies conducted to ascertain the impact of various crises on the value relevance of various aspects of financial information. Davis-Friday et al. (2006), Graham et al. (2000) and Ho et al. (2001), have studied the impact of the 1997 Financial Crisis of Asia on the value relevance of earnings. Their studies provide evidence that in the context of Thailand, Malaysia and Indonesia, there was a decrease in the value relevance of earnings during the crisis period. Choi et al. (2011), also studied the impact of this crisis on discretionary accruals and non-discretionary accruals in the context of Asian countries. They reveal no variation in the value relevance of non-discretionary accruals but a decrease in the value relevance of discretionary accruals.

Concerning the 2008 global financial crisis, the study of Bepari et al. (2013) suggests that in Australia, there was a decrease in the value relevance of operating cash flows and an increase in the value relevance of earnings during the crisis. In the case of New Zealand, Habib et al. (2013) postulate that the global financial crisis of 2008 led to a decrease in the value relevance of discretionary accruals. However, Chen et al. (2020), analyze the effect of this crisis on how informative income smoothing was among Taiwanese firms and their finding discloses that there was a reduction in how efficient income smoothing conveys private information to shareholders during the crisis. Tahat and Alhadab (2017), find no significant impact of the global financial crisis on the value relevance of book value and earnings in the case of UK-listed companies.

Stein and Wang (2016), opine that the quality of financial reporting may be affected in periods of uncertainty. Nevertheless, despite the Covid-19 induced uncertainty, the only study conducted to assess the impact of the Covid-19 on value relevance is that of Liu and Sun (2022), using a sample of US firms. Their findings indicate that in the case of US firms, the Covid-19 has led to a decrease in the value relevance of earnings. Our study differs substantially because we study the case of European firms with different economic environments and institutional settings. Though the pandemic has had a global effect, countries may feel the impact differently and this may be owing to the different measures adopted by various countries to contain the virus. For example, it is feasible that countries that adopted robust containment measures with strong stimulus packages for firms may feel the effects

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Table 1. Country distribution.

Country	Frequency	Percent
Belgium	67	2.29
Denmark	54	1.85
Finland	99	3.39
France	357	12.22
Germany	313	10.71
Greece	106	3.63
Italy	166	5.68
Netherlands	74	2.53
Norway	157	5.37
Poland	199	6.81
Russia	46	1.57
Spain	79	2.70
Sweden	363	12.42
Switzerland	126	4.31
Turkey	194	6.64
United Kingdom	522	17.86
Total	2.922	100.00

of the pandemic differently from other countries as investors were likely to still have confidence in the financial markets of those countries stemming from the robust containment measures. More extended nationwide lockdowns in European countries as compared to the USA are likely to have affected firms differently across the two regions. Furthermore, there exist different accounting regimes in the US and Europe. While the US uses US GAAP which is more rule-based, the European region applies IFRS which is more principle-based and offers much managerial discretion and leeway. Scott (2015), argues that the inherent flexibility and discretion in accounting standards can engender earnings manipulation which can affect the decision usefulness of earnings. Due to the heterogeneity in the institutional settings and financial reporting regimes between the US and the European contexts, investigating the information content or the relevance of earnings in the European context amid the pandemic is important. Furthermore, the size of firms is known to affect the level of value relevance of accounting information (Aubert and Grudnitski, 2012; Dyck *et al.*, 2010; Yu, 2008). Different from Liu and Sun (2022), our study further examines the effects of firm size on the information content or value relevance of earnings in the context of the health crisis.

To develop the hypothesis for our study, it is necessary to understand the role earnings play in determining firm value. The theoretical framework of O’hanlon and Peasnell (2002), indicates that firm value is made up of the book value and discounted future residual income. According to Liu and Sun (2022), the earnings generated by companies during the Covid-19 period can be considered as transitory earnings and in the view of Ohlson (1999), transitory earnings possess a lower ability to determine firm value. Following this logic, it can be argued that the Covid-19 pandemic would decrease the value relevance of earnings. Following this we formulate the following hypothesis:

H1: The Covid-19 pandemic has a negative impact on the value relevance of earnings of firms.

Sample

Using data from the Factset Fundamentals database, this study covers a two-year period, 2019 which is the pre-pandemic period and 2020 the pandemic period. Using a random sampling technique, the Factset Fundamentals database generates a sample of listed firms in Europe. Following Liu and Sun (2022), we exclude finance firms. Also, we limit our sample to firms with fiscal year ending 31st December. Table 1 depicts the country distribution of firms.

METHODOLOGY

The explanatory power approach synonymous with Collins et al. (1997) and Liu and Sun (2022) was employed to estimate the value relevance of book value and earnings.

$$SP_i = \alpha_0 + \alpha_1 BVPS_i + \alpha_2 EPS_i + \alpha_{\dots} Country\ Dummies_i + \epsilon \quad (1)$$

Where, SP: share price at year end, BVPS: book value per share at year end, EPS: earnings per share before extraordinary items at year end.

The adjusted R^2 measures the explanatory power of equation (1) which reflects how much the book value and earnings explain the variability of the share price.

Consistent with prior literature, we estimate a standard model to determine the explanatory power of the book value per share alone. The model is defined as:

$$SP_i = \alpha_0 + \alpha_1 BVPS_i + \alpha_{\dots} Country\ Dummies_i + \epsilon \quad (2)$$

Similarly, the book value explanatory power is determined through the adjusted R^2 of equation (2).

The incremental change in the adjusted R^2 (ΔR^2) is how much of a change in the share price is explained by earnings only and this represents our measure of value relevance of earnings.

$$\Delta R^2 = Adjusted\ R^2\ of Equation\ 1 - Adjusted\ R^2\ of\ Equation\ 2 \quad (3)$$

The value relevance of earnings is estimated separately for the pre-pandemic year and the pandemic year. We then compare the ΔR^2 of the pre-pandemic year to that of the pandemic year. We expect a decrease in the incremental explanatory power of earnings from the pre-pandemic year to the pandemic year (ΔR^2_{2019} should be greater than ΔR^2_{2020}).

To ensure the robustness of our results from the above models, we run a regression to test the relationship between the slope coefficient of earnings and the share price as follows:

Table 2. Descriptive statistics, correlation matrix, VIF.

Variable	Obs	Mean	Std. Dev.	SP	BVPS	EPS	PY	PY*EPS	VIF
Panel A: Full sample									
SP	5.844	30.75	89.80	1.00					-
BVPS	5.844	13.87	46.02	0.77***	1.00				2.95
EPS	5.844	0.79	4.42	0.73***	0.69***	1.00			1.93
PY	5.844	0.50	0.50	0.02*	0.00	-0.04***	1.00		1.91
*PY*EPS*	5.844	0.30	3.06	0.49***	0.42***	0.68***	0.10***	1.00	1.04
Panel B: Pre-pandemic (2019)									
SP	2.922	28.73	86.65	1.00					
BVPS	2.922	13.65	45.56	0.78***	1.00				2.39
EPS	2.922	0.98	4.53	0.79***	0.76***	1.00			2.39
PY	2.922	0.00	0.00	-	-	-	1.00	-	-
*PY*EPS*	2.922	0.00	0.00	-	-	-	-	1.00	-
Panel C: Pandemic (2020)									
SP	2.922	32.77	92.82	1.00					-
BVPS	2.922	14.09	46.47	0.78***	1.00				1.60
EPS	2.922	0.60	4.31	0.66***	0.61***	1.00			1.60
PY	2.922	1.00	0.00	-	-	-	1.00		-
*PY*EPS*	2.922	0.60	4.31	0.66***	0.61***	1.00	-	1.00	-

$$SP_i = \alpha_0 + \alpha_1 BVPS_i + \alpha_2 EPS_i + \alpha_3 PY_i + \alpha_4 PY * EPS_i + \alpha_{...} Country\ Dummies_i + \epsilon \quad (4)$$

PY is the pandemic year dummy variable coded as 0 for 2019 and 1 for 2020. *PY*EPS* is the interaction term between the pandemic and earnings per share. If the pandemic had a negative impact on the value relevance of earnings, then the coefficient of the interaction term (*PY*EPS*) should be negative and significant. Country dummies are included in all regressions to control for the effect of country-specific factors.

RESULTS

Table 2 reports the descriptive statistics, correlation and VIF of the variables. We observe a decrease in the mean value of EPS during the pandemic. The t-test of differences in means is significant at 1%, indicating firms may have generally underperformed during the pandemic.

Table 3 reports the results of equations (1), (2) and (4) which test the impact of Covid-19 on the value relevance of earnings. Results indicated in Panel A of Table 3 compare the explanatory power of equations (1) and (2) for 2019 and 2020. First, in 2019, the incremental change in ΔR^2 is 8.92% (73.36% - 63.44%). This is the incremental difference in the R^2 of equation (1) and equation (2) and this signifies the value relevance of earnings in 2019. The procedure is repeated for the same set of firms in 2020. An incremental change of 6.08% (67.81% - 61.73%) is obtained for the pandemic year and this signifies the value relevance of earnings in 2020. It can be observed that there is a decline in the value relevance of earnings from 8.92% in 2019 to 6.08% in 2020. The results suggest that the pandemic negatively impacted the value relevance of earning in Europe in line with our expectation.

In Panel B of Table 3, we investigate the slope coefficient of earnings as defined in Equation 4. The negative and significant coefficient indicates a decrease in earnings relevance amid the pandemic, corroborating our earlier results and also supporting the findings of Liu and Sun (2022).

Additional analysis

Finally, prior literature argues that losses are transient in nature and hence do not fully reflect relevance in the valuation of firms (Collins et al., 1997). Accordingly, we split the sample into profit and loss-making firms using EPS and replicate our analysis.

From Table 4, the explanatory power of earnings for the profit-making firms in the pre-pandemic year is 11.76 and 11.25% in the pandemic year respectively. This indicates a decline in the value relevance of earnings for profit-making firms (-0.51%). For loss-making firms, the explanatory power of earnings is 5.81 and 2.51% in 2019 and 2020 respectively, signifying a decline in the value relevance of earnings (-3.36%). Our findings sustain the argument that the pandemic generally has a negative impact on the value relevance of earnings for both profit-making and loss-making firms. However, the negative effect is greater for loss-making firms.

The size of firms is known to affect the level of value relevance of accounting information. Big firms find it more difficult to manipulate earnings due to the degree of

Table 3. Results.

Panel A. Explanatory power								
	2019				2020			
Variable	Equation 1		Equation 2		Equation 1		Equation 2	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
Intercept	-17.01**	-2.52	-12.92*	-1.66	-9.03	-1.16	-8.81	-1.04
BVPS	0 .71***	24.24	1.37***	59.81	1.02***	36.57	1.40***	56.95
EPS	8.87***	30.63			6.73***	23.43		
N	2.922				2.922			
F-Stat	450.83		317.85		362.92		295.53	
Adj R2	72.36%		63.44%		67.81%		61.73%	
ΔR^2	8.92%				6.08%			
$\Delta R^2_{2020}-\Delta R^2_{2019}$	-2.84%							

Panel B: Slope coefficient		
Variable	Equation 4	
	Coef	t-stat
Intercept	-16.01***	-3.07
BVPS	0.90***	44.65
EPS	7.46***	36.80
PY	6.36***	4.91
PY*EPS	-0.00002***	-4.09
N	5,844	
F-Stat	707.65	
Adj R^2	69.68%	

***, **, * significance at the 1, 5 and 10% respectively.

Table 4. Value relevance of earnings in profit-making and loss-making firms.

	Explanatory power					
Profit firms	2019			2020		
	Equation 1%	Equation 2%	ΔR2%	Equation 1%	Equation 2%	ΔR2%
EPS>0 (n=1.824)						
Adj R^2	80.24	68.48	11.76	76.72	65.47	11.25
$\Delta R^2_{2020}-\Delta R^2_{2019}$						-0.51
Loss firms						
EPS<0 (n=1.084)						
Adj R^2	18.59	12.78	5.81	53.07	50.56	2.51
$\Delta R^2_{2020}-\Delta R^2_{2019}$						-3.36

EPS>0 denotes profit-making firms and EPS<0 denotes loss-making firms. 14 firms recorded 0 EPS and are excluded from the observations.

attention focused on them by financial market participants. Evidence is provided by Aubert and Grudnitski (2012), Dyck et al. (2010) and Yu (2008) to support the case that the number of financial analysts following a firm has a negative impact on the level of accounting manipulation. Big firms have more financial analysts following them in addition to other financial market participants and hence, in a period of crisis, it will be interesting to know if these factors that affect big firms are still able to uphold the value relevance of their earnings. We, therefore, divide the sample using the median of total assets and replicate our analysis.

Table 5 details the explanatory power of earnings in big and small firms for the years 2019 and 2020. For big firms,

Table 5. Value relevance of earnings in large and small firms.

	Explanatory power					
Large firms	**2019**			**2020**		
	Equation 1%	**Equation 2%**	**ΔR2%**	**Equation 1%**	**Equation 2%**	**ΔR2%**
Total assets > median (n=1.454)						
Adj R^2	74.70	65.93	8.77	69.33	63.33	6.00
ΔR^2_{2020}-ΔR^2_{2019}						-2.77
Small firms						
Total assets < median (n=1.468)						
Adj R^2	54.73	47.05	7.68	52.95	48.77	4.18
ΔR^2_{2020}-ΔR^2_{2019}						-3.50

With the sample split into large and small firms, equations (1) and (2) are run separately for the subsamples to estimate the change in explanatory power.

the difference in explanatory power from 2019 to 2020 of -2.77% indicates a decline in the value relevance of earnings. Similarly, for small firms, we document a difference in the explanatory power of -3.50% from 2019 to 2020 which also signifies a decline in the value relevance of earnings. The results indicate a general decline in the value relevance of earnings for both big firms and small firms alike. The pressures big firms face in maintaining a high level of value relevance of accounting information as compared to small firms do not match up to the impact of the Covid-19 pandemic.

Conclusion

The rippling effect of the Covid-19 has been felt in major aspects of the European economy and the business world and within this context, this study examines the effects it has had on one of the essential qualitative features that enhance the usefulness of accounting information. Specifically, the impact of the pandemic was investigated on the value relevance of earnings. Our main findings evidence was a decline in the relevance of earnings amid the pandemic. Given the positive effect of the quality of financial information on capital allocation, our findings may suggest a negative effect of the pandemic on the capital markets. It also highlights how the quality of financial information is affected during the crisis and suggests that investors may have to be cautious and discreet when relying on financial information for investment decisions amid this pandemic. We provide further evidence which reveals that the pandemic has led to a general decrease in value relevance of earnings among profit and loss-making firms, even though the effect is greater in the case of loss-making firms. Also, big firms are unable to withstand the pressures to report earnings with higher value relevance in comparison to small firms.

In light of the findings from this study, it is imperative that policymakers and private sector decision-makers implement strategies to mitigate the economic impact of Covid-19 and enhance the value relevance of earnings. Policy-makers should enforce stricter financial disclosure regulations, support small firms through financial aid and improved market infrastructure, and enhance transparency.

Meanwhile, private sector leaders should bolster risk management, focus on strategic financial planning, maintain transparent communication with stakeholders, and leverage technology to improve financial reporting and analysis. These steps will ensure more robust financial information and facilitate better capital allocation during recovery phases, ultimately fostering a resilient economic environment amidst and post-pandemic conditions. The pandemic has had a negative impact on the value relevance of earnings for both large and small firms alike. Looking forward to future research, it will be insightful to consider the case of firms in the finance sector and the context of the African region.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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