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Working Capital and Financial Performance of Indonesian Manufacturing Companies: Before and During COVID-19

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ABSTRACT

This research intends to reveal two important thoughts related to changes in working capital policies before and during the COVID-19 pandemic in Indonesia. This is essential since most companies' working capital policy is aggressive during the normal period but conservative during the difficult period (such as COVID-19), where the demand for products fall off due to a decrease in people's purchasing power. Further, this study attempts to investigate the impact of working capital on company financial performance for both time periods. This study used a sample of manufacturing companies listed on the Indonesian capital market from 2017 to 2021. The Wilcoxon signed-rank test was employed to assess changes in working capital policies while panel data regression was utilized as an analytical technique to test the impact of working capital policies on financial performance. This study reveals that, first, working capital policies measured by Cash Holding Level (CHL) expanded dramatically during COVID-19 but remained unchanged when being measured by Cash Interactive Effect (CIE) and Gross Working Capital Ratio (GWCR). Second, working capital policies prior to COVID-19 measured by CHL and CIE had a favorable and significant effect on company financial performance, measured by Return on Assets (ROA) and Return on Equity (ROE).

INTRODUCTION

Previous research in finance tends to focus on long-term decisions such as investment, capital structure, and dividend policy. Whereas, according to Nazir and Afza (2009), short-term assets and liabilities are essential to make up a company's total assets. In other words, short-term finance is critical to company performance (García-Teruel and Martínez-Solano 2007). Furthermore, Afrifa and Padachi (2016) discovered that working capital management is part of the risk-versus-profit trade-off. As a result, effective working capital management depends on short-term funding decisions to maintain a healthy balance between corporate liquidity and profitability (Akgün and Memiş Karataş 2020). Working capital management has a trade-off, in which when a company takes a conservative approach by holding more working capital, it must pay high costs. In contrast, if the company pursues an aggressive policy of keeping minimal working capital, it will face substantial

liquidity shortfall costs. In these two cases, the company's profitability is significantly dependent on its business position (Panda and Nanda, 2018).

The importance of working capital management in improving company performance has encouraged many studies to examine the relationship between the two. A number of studies examined the relationship between financial performance and working capital investment (Baños-Caballero, García-Teruel, and Martínez-Solano 2014; De Almeida and Eid 2014; Afrifa and Padachi 2016; Panda and Nanda 2018). Another group of studies assessed the impact of working capital components on business performance using the liquidity and/or cash flow approach (Harford, 2010; Kahle & Stulz, 2013; Jiang, 2017). Finally, several others evaluated the relationship between working capital and business performance during the 2008 financial crisis, such as Simon et al. (2017) in Nigeria, Tsuruta (2019) in Japan, and Akgün & Memiş Karataş (2020) in 28 European Union (EU) countries.

Previous research on the relationship between working capital management and company performance has resulted in numerous findings. Nazir and Afza (2009) revealed a negative association between financial performance and current asset investment. Afrifa and Padachi (2016) and Panda and Nanda (2018) discovered a non-linear relationship between working capital and company performance. De Almeida and Eid (2014) discovered a positive relationship between business performance and working capital management efficiency. Seth et al. (2020) reported that working capital management has a direct impact on the performance of manufacturing companies in India. Pestonji and Wichitsathian (2019) demonstrated that working capital policies influence companies' market value via profitability as a mediator variable. Altaf and Ahmad (2019) discovered an inverse U-shape relationship between working capital and company performance. Akgün and Memiş Karataş (2020) demonstrated a positive relationship between gross working capital ratio and business performance in EU countries during the 2008 financial crisis. Finally, EL-Ansary and Al-Gazzar (2021) revealed that net working capital has a non-linear and non-significant impact on ROA but not on ROE.

Efficient working capital management is critical for a company during a period of economic growth in order to improve its competitive position and profitability. Thus, strengthening working capital management is essential for companies to survive the impact of the financial crisis (Akgün and Memiş Karataş 2020; Abuzayed 2012). To base its analysis on the relationship between working capital and corporate performance, this study includes the economic conditions in a developing country, Indonesia, during the COVID-19 period in the literature. As with any other country, Indonesia's economic situation worsened during the pandemic (2020 and 2021). This situation is reflected at least in two critical macroeconomic indicators: GDP growth and unemployment rate. At the same time, this study also includes the financial performance of Indonesian manufacturing companies listed on the Indonesian stock exchange. The relationship between macroeconomic indicators and Indonesian manufacturing companies' financial performance is shown in Figure 1.

Figure 1 reveals that Indonesian GDP growth fell to -2.07% and 3.69% at the end of 2020 and 2021. At the same time, the unemployment rate increased to 7.07% and 6.49%. This low and even negative GDP growth and the high unemployment rate indicate that, during those periods, the Indonesian economy was not doing well. Furthermore, the financial performance of Indonesian manufacturing companies measured by ROA (Return on Assets) declined in 2020 and 2021. Therefore, this study predicts that the COVID-19 condition has changed working capital policies and had a different impact on company performance.

This study assumes that the crisis during COVID-19 has altered the focus of companies' working capital policies and business performance towards a more stable and realistic one. Therefore, this research question is based on evaluating the investment in working capital management before and

during COVID-19 and examining the relationship between working capital management and the performance of manufacturing companies in the Indonesian capital market.
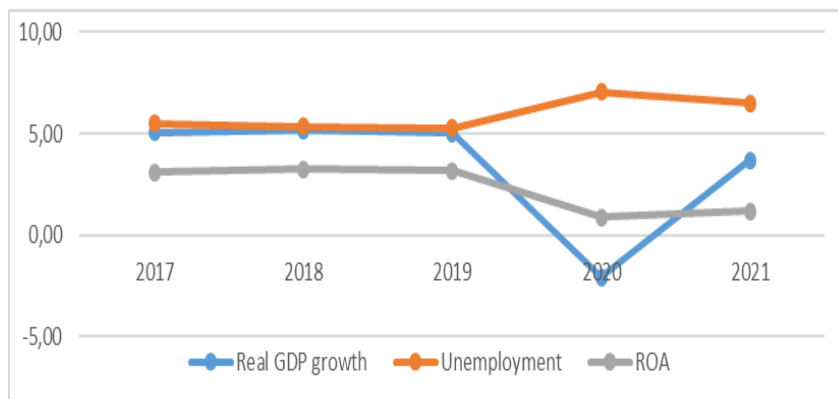
Source: Central Bureau of Statistics and annual report of Indonesian manufacturing companies

Figure 1. GDP, unemployment rate, and ROA of Indonesian manufacturing companies for the period 2017-2021

There are three reasons for using the manufacturing industry sector as a sample. First, this industry is one of the largest industries in the Indonesian capital market. Second, the use of samples from one type of industry can reduce the likelihood of results that may occur when using samples from several types of industry. Third, the manufacturing industry seems to be rarely observed on the topic of the relationship between working capital and company financial performance.

This study contributes to the literature on working capital management and problem-solving in the following ways. First, it investigates the impact of COVID-19 on changes in working capital policies using liquidity and gross working capital ratio. Second, the study provides new insight into the relationship between working capital management and business performance before and during COVID-19 in the context of manufacturing companies in a developing country, Indonesia. It investigates the linearity of the link between working capital policies and business success. In other words, this study assesses financial inclusion in the essential principles of working capital policy as proposed by Akgün & Memiş Karataş (2020).

LITERATURE REVIEW

Working capital is defined as the capital invested by a company to fund its day-to-day operations, which comprises current assets and current liabilities (Pestonji and Wichitsathian, 2019). Working capital is the difference between total current assets and current liabilities. It is divided into two types: gross working capital and net working capital. Gross is the total quantity of all current assets while net is the remainder of current assets and current liabilities (Singh and Kumar 2014).

Working capital management is more than just managing inventory, debt, receivables, and liquidity (Seth et al. 2020; Gill, Biger, and Tibrewala 2010); it more relates to the company's ability to convert assets into cash, operational costs, and quick access to cash (Chiang, Lee, and Liao 2019). Sharma & Kumar (2011) affirmed that working capital management is an important component of company finance theory since it affects business development, profitability, and liquidity through the management of current assets and current liabilities. Its critical target is to save liquidity in the company's daily operations to ensure that obligations that are due soon are met.

Working capital is commonly used to assess a company's liquidity (Seth et al. 2020) in order to ensure that the business can satisfy short-term commitments. Businesses with insufficient liquidity are more likely to experience financial trouble (Ding, Guariglia, and Knight 2013), but excess liquidity can also harm company performance (Bhattacharya 2004). To be more specific, liquidity influences not only cash position but also company earnings (Charitou, Elfani, and Lois 2010). This direct effect is caused by the need of the company to finance its working capital and cover the cash deficits. Therefore, this study employs working capital with liquidity ratio and gross working capital ratio approaches, as suggested by Akgün & Memiş Karataş (2020).

Working capital is important to establish a company's profitability and market value. Inadequate working capital management will create financial disruption to the organization (Bernard et al. 2019). Due to ongoing developments, the implementation of an efficient measuring system for working capital, such as dimension growth, highly competitive environment, developments in information and communication technology, quality improvement, greater demands for capacity development, and continuous improvement (Chiang et al., 2019; Asante et al., 2018), remains a common research subject, especially in the manufacturing sector. Thus, financial managers must reconsider their working capital practices (Pestonji and Wichitsathian 2019). As demonstrated by various scholars (Peng & Zhou, 2019; Salehi et al., 2019; Laghari & Chengang, 2019), proper and successful working capital management will directly reduce costs, risks, and company sustainability, and boost profitability. In other words, working capital management is critical for businesses of all sizes, sectors, industries, and economies (Akgün and Memiş Karataş 2020).

Hypothesis Development

EL-Ansary & Al-Gazzar (2021) affirmed that if a company can create cash from its day-to-day operations and convert working capital into cash smoothly and on time, it should maintain less cash. Excess cash indicates the company's incapacity to rapidly transform non-cash working capital assets into cash due to higher business risks. The company is obliged to pay opportunity costs for both causes, which in turn reduces its profitability (EL-Ansary and Al-Gazzar 2021). Similarly, Mun & Jang (2015) believed that a company's cash holding level (CHL) is the most essential measure of effective working capital management. In this case, if a company has a positive net CHL and a positive net working capital, that working capital will negatively influence operating profit. On the other hand, if the company has a negative CHL but a positive net working capital, working capital will not have a negative impact on operational profit. Further, during the financial crisis, cash flow has a favorable and considerable impact on investment, according to Arslan-Ayaydin et al. (2014). Similarly, Jebran et al. (2019) discovered that cash flow and liquidity had a strong positive impact on cash holdings during the 2008 financial crisis. Therefore, the hypothesis proposed is as follows.

H_1: CHL had a positive effect on the financial performance of manufacturing companies in Indonesia, before and during COVID-19.

The company's working capital decisions, proxied by the cash holding level (CHL) and cash interactive effect (CIE) variables, appear to be interconnected entities. Both are the most essential indicators of efficient working capital management (EL-Ansary and Al-Gazzar 2021). Working capital assessed by CIE is the interplay between CHL and the company's total liabilities, resulting in a more sensitive effect on business risk (Mun and Jang 2015). Thus, if a company has a positive CIE and a positive net working capital, this working capital tends to diminish operating profit since a large CIE gives a signal that the company can confront a high debt risk (Mun and Jang 2015). However, larger cash flows can overcome debt crisis risk. Jebran et al. (2019) and Arslan-Ayaydin et al. (2014)

reported that cash flow had a significant positive impact on investment during the 2007-2008 financial crisis. Therefore, the hypothesis proposed is as follows.

H_2: CIE had a positive effect on the financial performance of manufacturing companies in Indonesia, before and during COVID-19.

The relationship between working capital management and company success has been thoroughly observed from a variety of perspectives. Several empirical studies have found a statistically significant relationship between working capital management efficiency and company profitability (Deloof, 2003; García-Teruel & Martínez-Solano, 2007). Seth et al.'s (2020) study on Indian companies discovered that working capital management has a direct effect on the financial performance of manufacturing organizations. According to Afrifa & Padachi (2016), there is a non-linear relationship between working capital and financial performance. Simon et al. (2017) stated that the relationship between working capital management and financial performance is not linear. According to EL-Ansary & Al-Gazzar (2021), net working capital has a non-linear effect on ROA and a non-significant impact on ROE.

Recently, Amponsah-Kwatiah and Asiamah (2021) revealed that working capital management, which encompasses inventory and account receivables management as well as the cash conversion cycle, has a favorable and significant influence on the profitability of manufacturing companies in Ghana when it is assessed using ROA and ROE. Akgün & Memiş Karataş (2020) discovered that the gross working capital ratio (GWCR) had a positive and significant effect on the financial performance of companies in EU countries during the 2008 global financial crisis. Thus, the hypothesis proposed is as follows.

H_3: GWCR had a positive effect on the financial performance of manufacturing companies in Indonesia, before and during COVID-19.

RESEARCH METHOD

The population of this study covered all manufacturing companies registered on the Indonesia Stock Exchange (IDX) from 2017 to 2021. The sample consisted of 124 manufacturing companies that published successive financial reports during the period, establishing 620 observation units. These observation units were further broken down into two: data before COVID-19 (2017-2019) consisting of 372 observation units and data during COVID-19 (2020-2021) consisting of 248 observation units. The data was obtained from secondary sources: the IDX website and the Central Bureau of Statistics.

The Wilcoxon signed-rank test was employed as the analytical method to compare working capital policies before and during COVID-19. Meanwhile, panel data regression was used to examine the impact of working capital policies on company financial performance. This panel data regression consisted of three models: Model 1: the condition before and during COVID-19 (2017-2021), which was analyzed using full data (620 observation units); Model 2: the condition before COVID-19 (2017-2019), which was analyzed using 372 observation units; and Model 3: the condition during COVID-19 (2020-2021), which was analyzed using 248 observation units.

Financial performance was chosen as the dependent variable and measured using return on assets (ROA) and return on equity (ROE) as suggested by EL-Ansary and Al-Gazzar (2021) and Akgün and Memiş Karataş (2020).

The ROA value was determined using the formula:

$$\frac{\text{Net profit}}{\text{Total assets}} \text{x } 100\%$$

The ROE value was determined using the formula:

$$\frac{\text{Net profit}}{\text{Total equity}} \text{x } 100\%$$

Working capital policies were assigned as the independent variable and measured using cash holding level (CHL) and cash interactive effect (CIE) as suggested by Akgün and Memiş Karataş (2020), and gross working capital ratio (GWCR) as suggested by EL-Ansary and Al-Gazzar (2021). The three working capital policy proxy variables were determined using the following formulas:

$$CHL \quad = \frac{\text{Cash and cash equivalent}}{\text{Total Assets}}$$

$$CIE \quad = \frac{\text{CHL x Total Liabilities}}{\text{Total Assets}}$$

$$GWCR = \frac{\text{Gross Working Capital}}{\text{Total Sales}}$$

Furthermore, this study comprised four control variables: company size (SIZE), defined as the logarithm of total assets; growth opportunity (GROW), defined as asset growth; leverage (LEV), defined as the total debt to total assets ratio (Chiang et al. 2019); and GDP growth which describes the economic condition of Indonesia (EL-Ansary and Al-Gazzar, 2021; Moussa, 2019).

Also, as previously stated, this study employed two analytical models. First, the Wilcoxon signed-rank test was used to examine the averages of the three working capital metrics (CHL, CIE, and GWCR) before and during the COVID-19 crisis. Second, panel data regression was used to analyze the effect of the three working capital measures on the financial performance (ROA and ROE) of Indonesian manufacturing companies.

The Wilcoxon signed-rank test was conducted using the following formula:

$Z = (T\_(S-) \mu\_t)/\sigma\_t$

In which:
$T\_(S) = \Sigma$ smallest rank level
$\mu\_t = (n (n+1))/4$
$\sigma\_t = \sqrt{((n(n+1)(2n+1))/24)}$

The panel data regression equation model developed in this study can be stated as follows:

$$\text{ROA}_{it} = \yen_0 + \yen_1 \text{CHL}_{it} + \yen_2 \text{CIE}_{it} + \yen_3 \text{GWCR}_{it} + \yen_4 \text{SIZE}_{it} + \yen_5 \text{GROW}_{it} +$$
$$\yen_6 \text{LEV}_{it} + \yen_7 \text{GDP}_{it} + \varepsilon_{1it} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots. \ldots \ldots \ldots. \ldots \ldots (1)$$
$$\text{ROE}_{it} = \text{\euro}_0 + \text{\euro}_1 \text{CHL}_{it} + \text{\euro}_2 \text{CIE}_{it} + \text{\euro}_3 \text{GWCR}_{it} + \text{\euro}_4 \text{SIZE}_{it} + \text{\euro}_5 \text{GROW}_{it} +$$
$$\text{\euro}_6 \text{LEV}_{it} + \text{\euro}_7 \text{GDP}_{it} + \varepsilon_{2it} \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots. \ldots \ldots \ldots \ldots \ldots.. \ldots (2)$$

In the next stage, equations (1) and (2) were applied to analyze all of the models; Model 1, Model 2, and Model 3.

RESULTS

Descriptive Statistics

We have divided this section into results and discussion sub-chapters. This first sub-chapter discusses descriptive statistics and the results of the Wilcoxon signed-rank test, multicollinearity test, and estimating panel data regression using the Random Effect Model. The descriptive statistics of 620 observation units used in this study are depicted in the following Table 1.

Table 1. Descriptive statistics

Information	ROA	ROE	CHL	CIE	GWCR	SIZE	GROW	LEV	GDP
Mean	4.655	7.267	0.105	0.037	0.511	6.444	0.121	0.435	3.376
Std. Dev.	9.015	23.696	0.122	0.047	0.225	0.695	0.436	0.213	2.779
Median	3.546	6.459	0.060	0.024	0.496	6.351	0.054	0.426	5.020
Maximum	92.100	224.459	0.857	0.432	3.321	8.565	5.715	1.645	5.170
Minimum	-40.142	-166.638	0.000	0.000	0.024	5.014	-0.899	0.003	-2.070
Observations	620	620	620	620	620	620	620	620	620

Source: data processed by Eviews

Table 1 shows that the mean value of ROA is 4.66%, with a standard deviation of 9.012%, indicating that the company has a positive ROA mean value. ROA has a median value of 3.55%, a maximum value of 92.10%, and a minimum value of -40.14%. The mean value of ROE is 7.27%, with a standard deviation of 23.70%, indicating that the company has a positive ROE mean value. ROE has a median value of 6.46%, a maximum value of 224.46%, and a minimum value of -166.64%. The mean value of CHL is 0.105, with a standard deviation of 0.122. The median value of CHL is 0.060, with a maximum value of 0.857 and a minimum value of 0.000. The mean value of CIE is 0.037, with a standard deviation of 0.047. The median value of CIE is 0.024, with a maximum value of 0.432 and a minimum value of 0.000. The mean value of GWCR is 0.511, with a standard deviation of 0.225. The median value of GWCR is 0.496, with a maximum value of 3.321 and a minimum value of 0.024. The mean value of SIZE is 6.444, with a standard deviation of 0.695. The median value of SIZE is 6.351, with a maximum value of 8.565 and a minimum value of 5.014. The mean value of GROW is 0.121, with a standard deviation of 0.436. The median value of GROW is 0.054, with a maximum value of 5.715 and a minimum value of -0.899. The mean value of LEV is 0.435, with a standard deviation of 0.213. The median value of LEV is 0.426, with a maximum value of 1.645 and a minimum value of 0.003. The mean value of GDP growth is 3.376%, with a standard deviation of 2.779. The median value of GDP is 5.020%, with a maximum value of 5.170% and a minimum value of -2.070.

Wilcoxon Signed-Rank Test

Table 2 summarizes the results of various tests of working capital policies: CHL, CIE, and NWCR, for both periods (before and during the COVID-19 pandemic).

Table 2 reveals that the mean value of CHL before COVID-19 was significantly smaller than the mean value of CHL during COVID-19. Meanwhile, the mean values of CIE and GWCR before COVID-19 were no different from those that appeared during COVID-19.

Table 2. Result of Wilcoxon signed ranks test

Variable name	Mean		Std. Deviation		Z	Asymp. Sig. (2-tailed)
	Before	During	Before	During		
CHL	0.0977	0.1150	0.1063	0.1232	-2.163	0.031**
CIE	0.0359	0.0394	0.0397	0.0442	-1.304	0.192
GWCR	0.5184	0.4996	0.1971	0.1923	-0.834	0.404

Notes: ** Significant at 5%; *** Significant at 1%

Source: Analysis results of data processed by IBM SPSS Statistics

Panel Data Regression

The panel data regression analysis was conducted to test the suitability of the model using the Chow, Hausman, and Lagrange Multiplier (LM) tests. The results are presented in Table 3.

Table 3. Model fitness test results

Description	Probability			Fit Model
	Chow Test	Hausman Test	LM Test	
Dependent Variable ROA:				
Model 1.1: Before and during COVID-19	0.000	0.945	0.000	REM
Model 2.1: Before COVID-19	0.000	0.999	0.000	REM
Model 3.1: During COVID-19	0.000	0.999	0.000	REM
Dependent Variable ROE:				
Model 1.2: Before and during COVID-19	0.000	0.983	0.000	REM
Model 2.2: Before COVID-19	0.000	0.999	0.000	REM
Model 3.2: During Covd-19	0.000	0.999	0.000	REM

Source: Data processed by Eviews

Table 4. Multicollinearity test results

Variable	CHL	CIE	GWCR	SIZE	GROW	LEV	GDP
CHL	1						
CIE	0.642	1					
GWCR	0.374	0.398	1				
SIZE	-0.021	0.074	-0.235	1			
GROW	0.008	0.021	-0.041	0.046	1		
LEV	-0.318	0.269	-0.044	0.134	0.009	1	
GDP	-0.038	-0.018	0.047	-0.017	0.099	0.017	1

Source: Data processed by Eviews

The results of the Chow test for all models show a probability value of 0.000, indicating that the Fixed Effect Model (FEM) is better suited than the Common Effect Model (CEM). The Hausman test results show a probability value of larger than 0.050, indicating that the Random Effect Model (REM)

is more appropriate than the FEM. The LM test results show a probability value of 0.000, indicating that the Random Effect Model (REM) is better suited than the Common Effect Model (CEM). Thus, in this work, REM was employed for all models investigated, as suggested by Bouri (2021) and Khattun and Ghosh (2019). According to Gujarati (2014), the Random Effect Model (REM) demands the data to be free of multicollinearity. Thus, a multicollinearity test was conducted, and the results are presented in Table 4.

Table 4 shows that all correlation coefficients between independent variables have a value less than 0.850. It implies that the data does not show any symptoms of multicollinearity. Thus, the results of the analysis are worth interpretation.

Further, Table 5 presents the summary of the Random Effect Model (REM) analysis results for all models.

Table 5. Summary of random effect model analysis

Variable name	Model 1		Model 2		Model 3	
Dependent variable ROA	Model 1.1		Model 2.1		Model 3.1	
Independent variable:	Coeff.	Probability	Coeff.	Probability	Coeff.	Probability
CHL	6.285	0.196	17.492	0.034**	-1.015	0.828
CIE	21.678	0.059	13.258	0.445	15.681	0.338
GWCR	4.195	0.009***	4.1848	0.024**	7.396	0.034**
SIZE	2.407	0.006***	2.4096	0.021**	2.886	0.002***
GROW	1.328	0.016**	1.2041	0.061	1.815	0.117
LEV	-8.071	0.002***	-4.038	0.249	-15.563	0.000***
GDP	0.314	0.000***	7.774	0.092	0.354	0.000***
Konstanta	-12.178	0.038**	-52.739	0.031**	-12.563	0.055
Dependent variable ROE	Model 1.2		Model 2.2		Model 3.2	
Independent variable:	Coeff.	Prob.	Coeff.	Prob.	Coeff.	Prob.
CHL	-3.218	0.819	-8.907	0.653	-7.100	0.562
CIE	81.946	0.015**	106.987	0.032**	23.798	0.617
GWCR	8.459	0.070	6.284	0.293	20.993	0.037**
SIZE	4.752	0.041**	4.280	0.028**	7.976	0.002***
GROW	2.911	0.075	2.660	0.291	4.926	0.152
LEV	-16.892	0.020**	-23.186	0.007***	-24.158	0.009***
GDP	0.462	0.052	14.386	0.490	0.395	0.085
Konstanta	-24.960	0.112	-89.149	0.403	-46.256	0.014**

Notes: *** Significant at 1%; significant at 5%
Source: Data processed by Eviews

DISCUSSION

The result of the Wilcoxon signed-rank test shows that through the liquidity ratio approach, the working capital CHL before COVID-19 was significantly smaller than the working capital CHL during COVID-19. This result indicates that during COVID-19, manufacturing companies in Indonesia had higher liquidity since CHL pursued a conservative working capital policy. The companies were more cautious about the potential of default by boosting their cash-holding position. This finding is in line with the study of Jebran et al. (2019) on Pakistani enterprises, proving a considerable increase in cash flow and liquidity in cash holdings during the financial crisis period.

Table 5 shows that for Model 2.1, working capital measured by CHL has a positive-significant effect on return on assets (ROA). It implies that prior to COVID-19, Indonesian manufacturing companies with greater CHLs had better ROA. This finding complements the findings of Bhatias and Srivastava's (2016) research on Indian companies, that working capital management has a considerable favorable impact on financial performance. This empirical finding also, in particular, confirms Akgün and Memiş Karataş's (2020) conclusion, stating that liquidity, measured by CHL, has a positive-significant impact on business performance, indicated by ROA, across all European Union countries. However, the result of the analysis demonstrates that CHL has no influence on ROA for Model 1.1 (before and during COVID-19) and Model 3.1 (during COVID-19). This analytical result is in line with Thuraisingam's (2015) observation of Sri Lankan companies. Also, this study discovered that CHL assessed by return on equity (ROE) has no effect on the financial performance of manufacturing companies in Indonesia, for all models. This finding is in accordance with Akgün and Memiş Karataş (2020), who affirmed that working capital assessed by CHL has no statistical impact on business performance evaluated by ROE for all European Union (EU) countries.

Table 5 reveals that the gross working capital ratio (GWCR) has a positive-significant influence on ROA for all models. This demonstrates that manufacturing companies in Indonesia with a higher GWCR had a significantly higher ROA. This empirical evidence confirms Akgün and Memiş Karataş's (2020) study on companies in EU countries. It is also consistent with those of Amponsah-Kwatiah and Asiamah (2021), who demonstrated that working capital management, which includes inventory management, account receivables, and the cash conversion cycle, has a positive-significant effect on the ROA and ROE of manufacturing companies in Ghana. The evidence is significant because the effect of GWCR on ROA is substantial enough to be utilized as a reference for Indonesian manufacturing companies. Furthermore, Table 5 shows that GWCR has a positive-significant influence on ROE for Model 2.3. This finding is in line with Amponsah-Kwatiah and Asiamah (2021), but it is different from Akgün & Memiş Karataş (2020), who discovered that GWCR has no influence on ROE.

The regression result shows that the control variable company size (SIZE) has a positive and significant effect on ROA and ROE in all models. Thus, Indonesian manufacturing companies with a larger size had greater ROA and ROE, both before and during COVID-19. This positive effect of company size on ROA and ROE has also been reported by several previous studies, such as Amponsah-Kwatiah and Asiamah (2021), EL-Ansary and Al-Gazzar (2021), and Elgattani and Hussainey (2020).

The regression result reveals that growth opportunity (GROW) has a significant positive effect on ROA for Model 1.1. Meanwhile, the analytical result for Models 1.2 and 1.3 demonstrates that GROW has no effect on ROA. The analysis also shows that GROW has no effect on ROE across all models. The result stating that growth has a beneficial influence on ROA is in line with Ramachandran *et al.* (2018). Meanwhile, that growth has no influence on ROA and ROE is in accordance with the findings of Egbunike and Okerekeoti (2018).

In all models, the regression result reveals that financial leverage (LEV) has a significant negative effect on ROA and ROE. This indicates that manufacturing companies in Indonesia with more leverage had lower ROA and ROE, both before and during COVID-19. Several prior research, including Amponsah-Kwatiah and Amponsah-Kwatiah and Asiamah, (2021), Hoque and Liu (2021), and Elgattani and Hussainey (2020), established empirical evidence that leverage has a detrimental influence on ROA and ROE.

In this study, the sole macroeconomic statistic included as a control variable is GDP growth. The regression result reveals that GDP growth (GDP) has a positive and significant impact on ROA in Model 1.1 (before and during COVID-19) and Model 3.1 (during COVID-19). This finding suggests that as the Indonesian economy grows or expands, so will the ROA of Indonesian manufacturing

companies. This result is supported by Derbali (2021), Ledhem and Mekidiche (2020), and Moussa (2019). However, this study shows that GDP growth has little effect on the financial performance of Indonesian manufacturing companies, as evaluated by ROE.

CONCLUSION

The results of this study conclude that manufacturing companies in Indonesia did not modify their working capital strategies during the COVID-19 outbreak. In contrast, assessed by cash holding level (CHL), working capital grew dramatically during the pandemic.

In the pre-COVID-19 period, the working capital strategy using the liquidity approach, specifically CHL and cash interactive effect (CIE), had a good and significant effect on the financial performance of Indonesian manufacturing companies. However, during the COVID-19 period, HCL and CIE's working capital regulations had no effect on the financial performance of such firms. Working capital policy, assessed by the gross working capital ratio (GWCR), had a beneficial and considerable impact on the financial performance of Indonesian manufacturing companies both before and during the COVID-19 period.

This study contributes significantly to the advancement of working capital theory, particularly in the context of Indonesian manufacturing companies. It advises the management of such companies to maintain and enhance the gross working capital ratio in both normal and crisis conditions. Furthermore, under normal conditions, a strategy to raise working capital through a liquidity-level approach would be more appropriate.

Working capital management is closely related to how companies maintain their liquidity level. When a company maintains a higher level of liquidity to prevent risk, it bears a higher cost of capital, which can affect its financial performance. Meanwhile, the company may face higher risks if it tries to minimize its cost of capital by putting fewer liquid assets (working capital) in place, which would ultimately reduce its income and profits. Noting the trade-offs of working capital management, Seth et al. (2020) and (Chiang, Lee, and Liao 2019) argued that working capital is the amount of capital required to maintain a company's ability to convert assets into cash, operational costs, and quick access to cash. Technically, EL-Ansary and Al-Gazzar (2021) claimed that if a company can earn cash from day-to-day operations and convert working capital into cash smoothly and on time, the company does not need to maintain a large level of liquidity. In contrast, excessive cash retention reflects the company's incapacity to swiftly transform non-cash working capital assets into cash because of higher business risks.

The COVID-19 pandemic in 2020 and 2021 has generally placed most companies in a high-risk position. The decline in GDP growth to -2.02% and an increase in the unemployment rate to 7.07% in 2020 indicates that aggregate demand has fallen drastically which is marked by very low inflation of 1.68%. In this condition, manufacturing companies in Indonesia should have maintained a high level of liquidity, to be precise, those companies needed to maintain greater gross working capital to deal with this risk.

MANAGERIAL IMPLICATION

This study reveals that working capital management is one of the most important determinants of the financial performance of manufacturing companies in Indonesia, both under normal conditions (before COVID-19) and during times of crisis (during COVID-19). The COVID-19 crisis has passed;

nonetheless, a similar crisis or another type of economic and financial disaster may be likely to reoccur. Therefore, this research offers some essential recommendations for the management of Indonesian manufacturing companies.

First, in addition to long-term investment needs (fixed assets), management should pay more attention to the company's short-term investment (working capital) needs. The greater availability of capital goods (fixed assets) will increase the inefficiency of the company's operations if it is not followed by the availability of adequate working capital. This is because a large capacity of fixed assets will increase the average cost of production per unit of product.

Second, in normal conditions, management should enhance the company's working capital, especially the cash holding level (CHL) and cash interactive effect (CIE). This study affirms that, under normal conditions, an increase in HCL and CIE can greatly improve a company's financial performance which is measured by return on assets (ROA) and return on equity (ROE). However, if the company confronts the same or a similar economic and financial crisis in the future, this study suggests management to not expand investment in HCL and CIE.

Third, management should enhance the company's working capital, especially the gross working capital ratio (GWCR), both in normal times and in times of crisis. This is due to the fact that an increase in GWCR, both under normal and crisis situations, can greatly improve a company's financial performance, measured by ROA and ROE.

Finally, in general, this research strongly advises the management of Indonesian manufacturing companies to always maintain their level of working capital, particularly liquidity, whether under normal or crisis conditions. If a company is in an illiquid situation and is unable to satisfy its short-term obligations, it will swiftly lose credibility and reputation in the eyes of consumers, investors, employees, the government, and other stakeholders.

LIMITATION AND FUTURE RESEARCH

Despite its contribution, this study bears some limitations. First, it is limited to a certain type of sample, i.e., manufacturing companies in Indonesia from 20017 to 2021. Second, in this study, the company's performance is centered on financial performance assessed by ROA and ROE. Therefore, we propose several suggestions to the future study agenda in order to further improve this research. First, we recommend future research to observe other companies from the agricultural, mining, basic and chemical sectors, and consumer goods industries in the sample. Second, we recommend that the magnitude of the company's performance variables, such as market performance and economic value added, be increased. Third, we propose looking at the same industrial sectors that exist in other countries, such as Malaysia and other ASEAN countries.

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