

Analysis of the Influence of Working Capital Management and Cash Holding on Profitability: An Empirical Study of Nonfinancial Sector Companies in Indonesia

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ABSTRACT: The purpose of this study is to analyze the effect of working capital management on the profitability of non-financial companies listed on the Indonesia Stock Exchange for the period 2019 – 2023. The population in this study is all non-financial companies listed on the Indonesia Stock Exchange (IDX) during the period 2019 to 2023. The sample selection applied was purposive sampling, so that the research sample was 545 companies. The analysis technique used panel data regression with Stata 19 software through model consistency testing and t and F hypothesis tests. The results showed that the fixed effect model was the best model selected. Net Working Capital (NWC) has no significant effect on the profitability of non-financial sector companies, Cash holding has a positive and significant effect on the profitability of non-financial sector companies, The interaction between NWC and the COVID-19 crisis has a positive and significant effect on the profitability of non-financial sector companies, and The interaction between cash holding and the crisis has no significant effect on the profitability of non-financial sector companies.

KEYWORDS: Working Capital Management, Net Working Capital, Cash holding, COVID-19, Profitability

INTRODUCTION

Companies across various sectors are facing external pressures due to global crises that have shaken operational and financial stability. One of the most prominent crises occurred during the COVID-19 pandemic, marked by restrictions on economic activity, supply chain disruptions, and reduced demand due to weakened purchasing power. These conditions collectively put pressure on companies' liquidity and profitability. (Brinca et al., 2021; Halim et al., 2024; Liu et al., 2024; Zanolle et al., 2023).

In Indonesia, the pressures of the crisis caused by the COVID-19 pandemic are clearly reflected in the decline in profitability of companies in the non-financial sector. Based on the average Return on Assets (ROA) data for the 2019–2023 period in Table 1.1, most sectors experienced a sharp decline in 2020, even recording negative values. The consumer cyclical sector, for example, recorded an ROA of -3.09% in 2020 and continued to decline to -12.68% in 2021. Negative ROA was also recorded in the technology sector (-3.61%), property & real estate (-0.11%), and transportation & logistics (-1.53%) in 2020, reflecting a significant impact on profitability across sectors.

Although most sectors were negatively impacted, several sectors continued to record positive performance during the pandemic. The noncyclical industrial and consumer sectors maintained positive ROA, while the healthcare sector experienced a significant jump from 5.6% (2019) to 10.4% (2021). The energy sector also showed a strengthening trend, with ROA increasing from 1.82% (2020) to 10.79% in 2022.

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

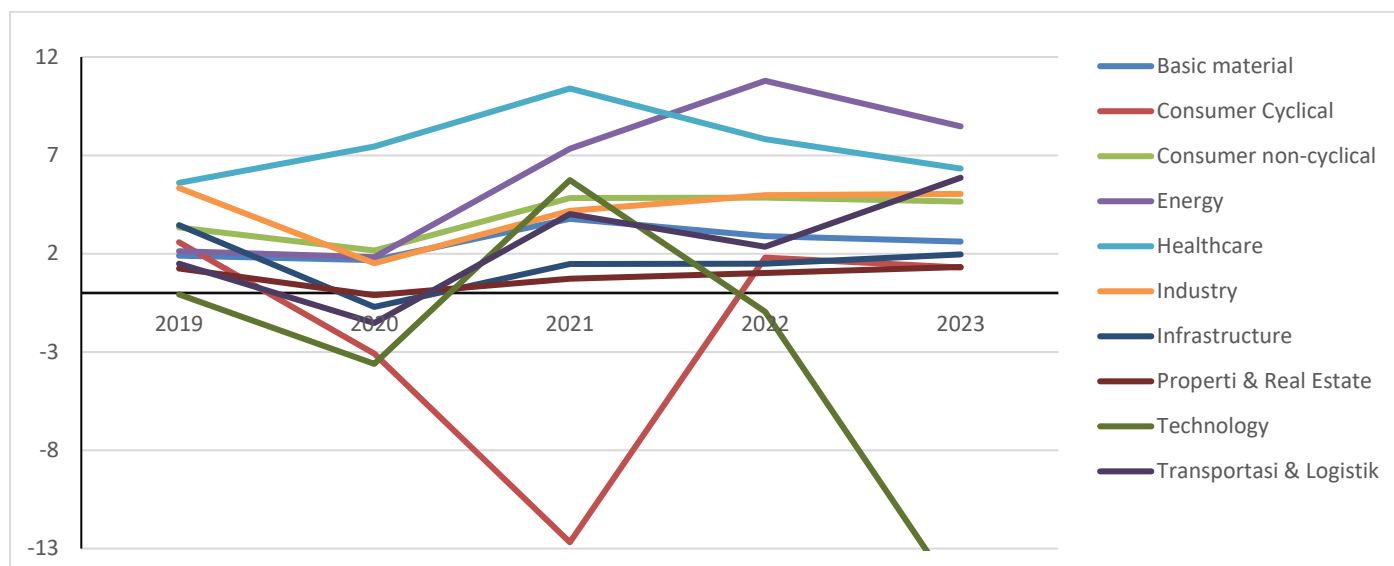


Figure 1. Trends in the development of average ROA of companies in the non-financial sector in Indonesia for the period 2019-2023

Variations in ROA indicate that crisis pressures impact companies differently. Amid uncertainty, a company's ability to maintain liquidity is a key determinant of survival. In this context, cash and working capital management strategies play a crucial role in maintaining operational continuity and profitability during a crisis. (Chauhan & Rameshbhai, 2024; Kayani et al., 2024; Accounting & Ahmad, 2025; Huynh et al., 2025; Jantadej & Kotcharin, 2025). When liquidity is well managed, companies tend to be able to survive and even maintain profits. Conversely, weak liquidity management can worsen financial conditions and significantly reduce profitability.

Based on working capital data measured by the net working capital (NWC) ratio and cash holding ratio during the 2019–2023 period, several sectors did increase their liquidity during the crisis.

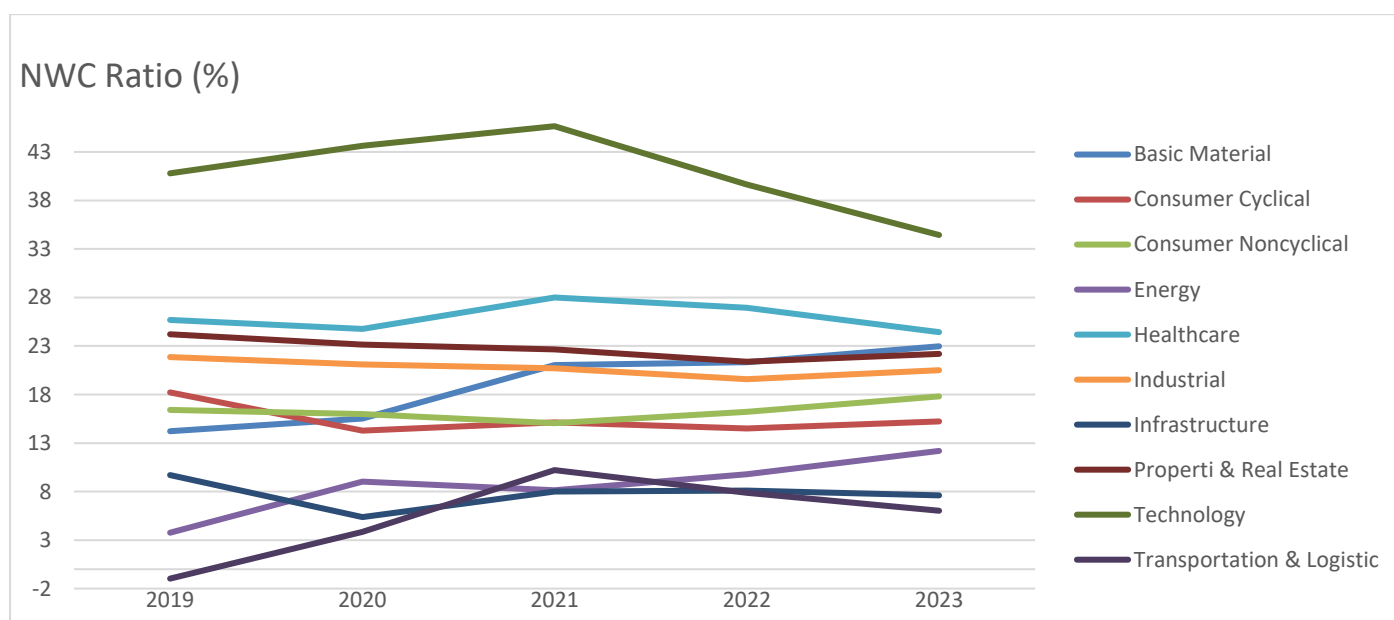


Figure 2. Net working capital ratio of the non-financial sector in Indonesia 2019–2023

The energy and healthcare sectors, for example, recorded increases in net working capital (NWC) and cash, followed by increased profitability. However, this pattern did not apply to all sectors. The technology and transportation and logistics sectors also recorded increases in net working capital (NWC) and cash, but still experienced a decline in ROA. Conversely, some sectors, such as the raw materials sector, were able to maintain their financial performance despite the lack of significant increases in liquidity.

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

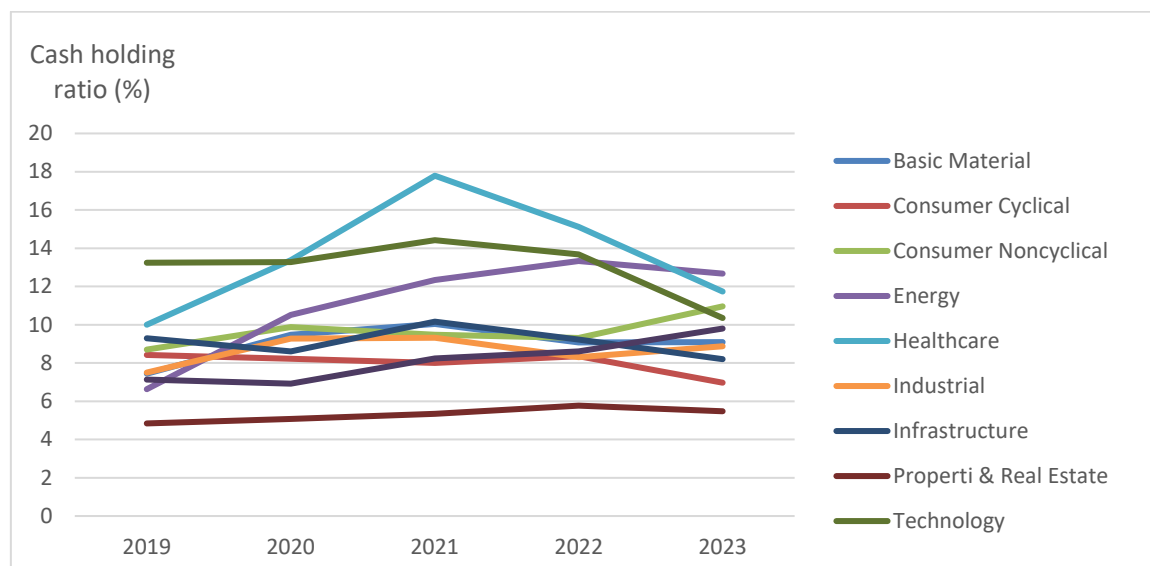


Figure 3. Cash holding ratio of non-financial sector in Indonesia 2019–2023

Some sectors showed increases in NWC and cash ratios, accompanied by increased profitability. Conversely, there were also sectors that showed increased liquidity but not accompanied by improvements in financial performance. This suggests that the relationship between liquidity strategy and profitability is not universal, but rather heavily influenced by the specific context and external conditions faced by each company.

The relevance of this research is further strengthened by the recognition that economic crises are a recurring phenomenon. Over the past three decades, Indonesia has experienced several major crises, such as the 1998 monetary crisis, the 2008 global financial crisis, and the COVID-19 pandemic. A deeper understanding of the role of short-term financial strategies such as cash and working capital management is crucial to increasing a company's resilience in the face of similar external pressures in the future.

Numerous studies have been conducted on the influence of working capital management and cash holdings on profitability, but the results have shown mixed results. Some studies have found a positive relationship, both under normal and crisis conditions, as shown by Akgün & Memiş Karataş (2024) in the EU-28 and Western Europe, Pant (2024) in India, as well as Akbar et al. (2021) during the global financial crisis of 2007–2008. On the other hand, a study by Kumar & Symss (2024), Hasan et al., 2023 in Scandinavia as well as EL-Ansary & Al-Gazzar (2021) in the MENA region showed a negative relationship between WCM and profitability. Some others revealed nonlinear patterns (U-shaped and inverted U-shaped) as in the findings EL-Ansary & Al-Gazzar (2021) and Chambers & Cifter (2022) in the global hospitality sector.

In Indonesia, several studies such as Ruhadi et al. (2024), Badruzaman (2023), Inrico et al. (2023) Several studies have examined the influence of working capital management and cash holdings during the COVID-19 crisis. However, these studies are still limited to specific sectors such as manufacturing, healthcare, and FMCG. Furthermore, few studies have explored the impact across sectors and compared the dynamics of these influences across industries during the crisis. Therefore, this study aims to fill this gap by analyzing the influence of working capital management and cash holdings on the profitability of non-financial companies in Indonesia across sectors, particularly in the context of the crisis.

LITERATURE REVIEW

Working Capital Management

Working capital management is an activity that encompasses all management functions regarding the balance between a company's current assets and current liabilities. Working capital management is one aspect that must be considered within a company. If a company cannot manage and maintain its working capital level, it will face insolvency. This means the company has so few current assets that it cannot cover all current liabilities and is forced to liquidate. A sufficiently high level of current assets will be able to cover all current liabilities, thus indicating a margin of safety. (Marshall, 1920).

Net Working Capital

Net working capital (NWC) describes the level of liquidity of a company to support the company's operations so that the company can create profitability in normal and unstable economic conditions. (Ruhadi et al., 2024).

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

Cash Holding

Cash is a large part of current assets and is important for the continuity of company operations.(Abd El Hammed & Oriebby, 2024).

Profitability

Profitability is a ratio used to measure a company's ability to generate profits from its normal business activities.(Anthony & Danarsari, 2022).

Covid 19

Covid 19 describes the time period during which the crisis occurred due to the Covid 19 pandemic, which is used as a dummy variable in this study. (Afroze & Faysal, 2022)

Research Conceptual Framework

A general overview of the analysis of the influence of working capital management and cash holding on the profitability of non-financial sector companies in Indonesia can be seen in Figure 4 below.

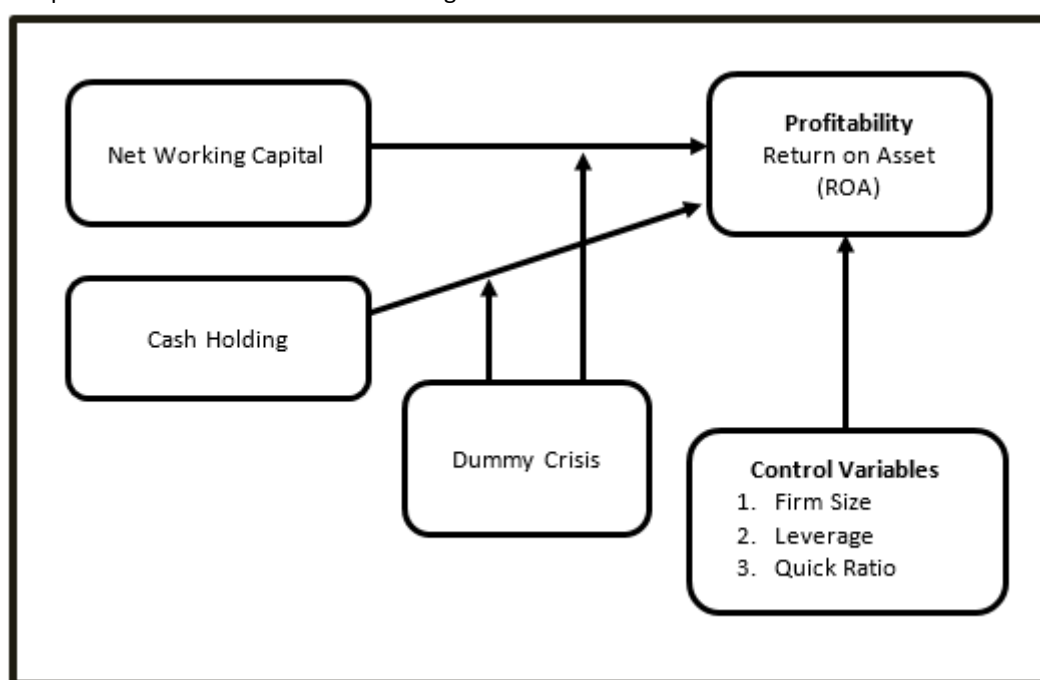


Figure 4. Research Conceptual Framework

HYPOTHESIS

Working capital is the difference between current assets and current liabilities, also known as net working capital (NWC) from an accounting perspective. NWC reflects a company's level of liquidity to support its operations, enabling it to achieve profitability under both normal and unstable economic conditions. Under normal economic conditions, efficient working capital management is considered capable of improving operational performance and profitability. This constitutes a trade-off in the context of working capital management, which states that companies must maintain a balance between current assets and current liabilities to remain liquid but not overinvest in less productive assets. Several studies have found that increasing working capital (NWC) can support financial performance by providing an adequate liquidity cushion.(Akgün & Memiş Karataş, 2024; Kasradze & Gikorashvili, 2024; U. Kayani et al., 2024; Liu et al., 2024; Ruhadi et al., 2024).

H1: Net working capital has a significant influence on the profitability of non-financial sector companies in Indonesia.

Cash is a large part of current assets and is important for the continuity of company operations.(Abd El Hammed & Oriebby, 2024). Although it may seem unprofitable, cash is needed to pay obligations, deal with unforeseen conditions, and strengthen financial flexibility.(Baños-Caballero et al., 2014; Doan, 2020; Rashid et al., 2022; Yilmaz & Samour, 2024). Large cash reserves provide flexibility in investment and business growth and enable increased sales through credit relaxation.(Akgün & Memiş Karataş, 2024)However, high cash also creates additional costs and risks.(Abd El Hammed & Oriebby, 2024; Raja et al., 2023). Research conducted byOzcan (2024),Rashid et al. (2022),Nimra et al. (2022), And(Raja et al., 2023) found a significant relationship between cash holdings and financial performance. Meanwhile, other research conductedAbd El hammed & Oriebby (2024)And(Nuhung & Nurqamar, 2020) found the opposite result.

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

H2 :Cash holding has a significant impact on the profitability of non-financial sector companies in Indonesia.

The COVID-19 pandemic has placed significant pressure on cash flow and operational stability of companies, particularly in the non-financial sector. Decreased demand, supply chain disruptions, and market uncertainty have left many companies facing high liquidity risks.(Banerjee & Deb, 2023; Brinca et al., 2021). During a crisis, working capital management strategies can change significantly due to disruptions in the supply chain and demand.U. Kayani et al. (2025)In the context of the global financial crisis (GFC), it was found that the impact of working capital on ROA differed between the periods before, during, and after the crisis.Jantadej & Kotcharin (2025)also supports that a company's response to external shocks influences the effectiveness of working capital in creating shareholder value. Effectively managed working capital through the management of current assets and liabilities can provide financial flexibility and help companies survive under pressure. A study byKasradze & Gikorashvili (2024),Akgün & Memiş Karataş (2024),Zanolla et al. (2023) Research shows that working capital is significantly correlated with financial performance during a crisis. Companies that are able to strategically adjust their payment and collection policies tend to maintain profits despite declining revenues.Banerjee & Deb (2023).Considering the important role of working capital management in facing economic uncertainty during the pandemic, it is assumed that working capital has a significant influence on company profitability during the COVID-19 crisis.

H3 :Net working capital influences the profitability of non-financial companies in Indonesia in the context of the crisis

The COVID-19 crisis has placed significant pressure on companies' cash flows due to the halt in economic activity, declining sales, and supply chain disruptions. In these circumstances, cash becomes a crucial instrument for maintaining operational continuity and avoiding bankruptcy.(Anthony & Danarsari, 2022; Badruzaman, 2023; Shaharuddin et al., 2021)Companies tend to increase cash reserves beyond normal needs to address uncertainty and anticipate liquidity risks. Cash allows companies to meet short-term obligations, pay taxes, service debt, and carry out other operational activities. Furthermore, adequate cash reserves provide flexibility to respond to strategic opportunities during a crisis, such as investments or acquisitions at low valuations.(Chang & Yang, 2022).Akgün & Memiş Karataş (2024) and JH Kim & Kim (2023)found that cash holding has a positive influence on a company's ROA and ROE amidst the crisis, confirming the importance of cash in strengthening a company's financial resilience.Wu et al. (2023b)AndAnthony & Danarsari (2022) Thus, in the context of the COVID-19 crisis, companies with adequate cash holding levels are expected to be able to maintain their financial performance.

H4: Cash holding influences the profitability of non-financial companies in Indonesia in the context of the crisis

RESEARCH METHODOLOGY

The population in this study was all 837 non-financial companies listed on the Indonesia Stock Exchange (IDX) from 2019 to 2023. The sample selection method used was purposive sampling, a sampling technique based on specific criteria or characteristics relevant to the research focus. Based on these criteria, a sample of 545 companies was obtained. This study used panel data regression analysis with the help of Stata software, beginning with testing the best model selection through the Chow and Hausman tests. Hypothesis testing in this study used the F and t tests.

RESULTS AND DISCUSSION

Best Model Testing

1. Chow Test

The Chow test aims to determine the most appropriate regression model between the common effect model and the fixed effect model. Based on the test results with a 5% significance level, the p-value obtained was 0.0000, which is less than $\alpha = 0.05$. Thus, the null hypothesis (H_0) is rejected, making the most appropriate model to use in this study the fixed effect model.

2. Hausman test

The Hausman test was used to evaluate whether random effects or fixed effects were more appropriate in this research context. The test results showed a p-value of 0.0000, less than the 5% significance level, thus rejecting the null hypothesis. This indicates that the fixed effects model is considered the most appropriate approach for estimating the model in this study.

Hypothesis Testing

Based on data processing, the following research model regression results were obtained.

Table 1. Results of the Research Model Regression Test

Variables	Indicator	Research Model (ROA)
ROA (Lag)	Coef.	0.3665***

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

	Std. Error	(0.0574)
NWC	Coef.	0.0103
	Std. Error	(0.0247)
CHL	Coef.	0.1701***
	Std. Error	(0.0425)
Crisis Dummy	Coef.	-0.0074
	Std. Error	(0.0075)
NWCxCrisis	Coef.	0.1011***
	Std. Error	(0.0346)
CHLxCrisis	Coef.	-0.0644
	Std. Error	(0.0560)
SIZE	Coef.	0.0149***
	Std. Error	(0.0026)
LEV	Coef.	-0.0489***
	Std. Error	(0.0166)
CUR	Coef.	-0.00096
	Std. Error	(0.0005)
Constant	Coef.	-0.4024***
	Std. Error	(0.0616)
Model		PCSE (OLS)
Obs.		2,180
Prob > chi2		0.0000
R-square		0.4102

Based on the regression results presented in Table 1, the F-probability value is 0.0000, or less than the 5% significance level. This means that the independent variables in the model simultaneously have a significant effect on the dependent variable. This means that, collectively, all independent variables contribute to changes in ROA, an indicator of company performance. Furthermore, the goodness of fit test is demonstrated by an R-squared value of 0.4102. This indicates that 41.02% of the variation in company profitability can be explained by the variables in the research model, while the remainder is explained by factors outside the model.

Table 2. Summary of Regression Test Results

Variables	P-value	Decision	Influence
Net Working Capital	0.678	H ₀ accepted	Not Significant (+)
Cash Holding Level	0,000	H ₀ rejected	Significant (+)
Cash Holding x D_COVID19	0.251	H ₀ accepted	Not Significant (-)
Net Working Capital x D_COVID19	0.003	H ₀ rejected	Significant (+)

The working capital management variable, with the Net Working Capital Ratio (NWCRCR) as its proxy, has a positive coefficient of 0.0103, but is not statistically significant with a p-value of 0.678. This indicates that empirically, an increase in NWC does not have a significant impact on company profitability (ROA) in the 2019–2023 observation period. Although the direction of the relationship is positive, this insignificance indicates that working capital management strategies have not been able to consistently drive financial performance across all non-financial sectors. In the context of the Neoclassical Theory of the Firm as explained by Alfred Marshall (1920), companies are considered rational agents aiming to maximize profits through efficient decisions, including in short-term working capital management. Marshall emphasized that the greater the proportion of circulating capital, the higher the managerial burden and operational complexity borne by the company. This means that inefficient NWC management can incur additional costs that ultimately reduce profitability. Marshall also introduced the concept of a "boundary line of irregular shape," which is the maximum profit limit from additional investment, including investment in working capital components such as inventory and receivables. If a company exceeds this threshold without carefully considering internal capacity and market

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

conditions, additional investment will not yield adequate returns. In the context of this study, the insignificance of NWC on ROA may indicate that many companies are not within the optimal range of working capital management, either being too conservative or too aggressive, resulting in statistically inconsistent impacts on profitability. Furthermore, within the Marshallian framework, the relationship between NWC and profitability is strongly influenced by industry characteristics, cash cycles, and operational efficiency. Companies facing long operating cycles or high reliance on receivables may require greater working capital investment, but if their receivables or inventory management are inefficient, there will be no significant increase in profits. Therefore, these empirical results may reflect variations in working capital management efficiency across companies or sectors, which obscures their aggregate significance. These research findings align with previous research showing similar results. For example, a study by Akgün & Memiş Karataş (2021) on non-financial sector public companies in EU-28 countries stated that the influence of working capital on ROA is not always significant, and is contextual and not universal.

The Cash Holding Level (CHL) variable has a coefficient of 0.1701 and is significant at the 1% level (p -value = 0.000). This means that there is a statistically positive and significant relationship between the level of cash holdings and the profitability (ROA) of non-financial companies in Indonesia during the 2019–2023 period. In other words, the higher the proportion of cash held by a company, the greater the rate of return on assets obtained. Alfred Marshall in his Neoclassical Theory of the Firm emphasized that efficient management of working capital, including cash, contributes directly to a company's short-term profit. In competitive market conditions, cash holdings provide flexibility for companies to respond quickly to opportunities, reduce dependence on external financing, and avoid financial distress costs. This is especially relevant for companies in the non-financial sector that face operational uncertainty and volatility in market demand. Marshall also emphasized the importance of "flexibility of internal funds" as a buffer against market uncertainty, as well as the risks of using external funds, which tend to be expensive and risky in certain situations. In this context, the regression results strengthen the position that cash accumulation can be a rational and profitable financial strategy, as long as it is managed optimally. This finding is in line with previous research, Kim & Kim (2023) studied publicly traded restaurant companies in the United States and found that cash holdings significantly increased profitability, both in the short and long term.

The interaction variable between Net Working Capital and the crisis dummy (nwc_crisis) obtained a coefficient of 0.1011 with a p -value of 0.003, indicating significance at the 1% level. This indicates that during the crisis period, the influence of NWC on ROA increased significantly compared to the non-crisis period. The positive and significant coefficient on the $NWC \times Crisis$ interaction indicates that the influence of NWC on ROA increased/strengthened during the crisis compared to normal conditions, so that the higher the NWC during the crisis, the greater its contribution to the profitability of non-financial sector companies. The Neoclassical Theory of the Firm view by Marshall (1920), which emphasizes the importance of efficient working capital management to maintain profitability, especially under conditions of uncertainty. During a crisis, NWC can function as a liquidity cushion to anticipate disruptions in operational and financing cash flows. This finding is in line with research Liu et al. (2024), Akgün & Karataş (2023), Zanolta et al. (2023), and Badruzzaman (2023) show that liquidity flexibility becomes increasingly crucial during a crisis, as companies must be able to adapt to external pressures. A strong liquidity position enables companies to meet short-term obligations and navigate uncertainty during a financial crisis.

The interaction coefficient between cash holdings and crisis ($CHL \times Crisis$) is negative at -0.0644 and is not statistically significant (p -value = 0.251 > 0.05). This indicates that during the COVID-19 crisis, even though companies had cash reserves, the additional effect of cash on profitability (ROA) did not increase significantly and even tended to weaken. In other words, the strategic benefit of cash holdings in boosting profitability was not as strong as in normal periods. This decreased effectiveness could be caused by various factors, such as the increasing opportunity cost of holding cash, or cash being used solely to maintain operational continuity without generating significant returns. This finding is consistent with Marshall's Theory of the Firm, where the efficiency of capital management, including cash, is highly dependent on market context and dynamics. During the crisis, although companies held large amounts of cash for precautionary motives, limited productive investment opportunities and high market uncertainty made the effect of cash reserves on profitability less than optimal. This result is in line with the findings of Akgün & Memiş Karataş (2020) as well as (Abd El Hammed & Oriaby, 2024) who also noted that a company's cash reserves do not always contribute directly to profitability.

Control Variable Hypothesis Test

Table 3. Summary of Control Variable Regression Results

Variables	P-value	Decision	Influence
ROA (Lag)	0,000	H_0 rejected	Significant (+)
Crisis	0.310	H_0 accepted	Not Significant (-)

Analysis of the Influence of Working Capital Management and Cash Holding on Company Profitability: An Empirical Study of Non-Financial Sector Companies in Indonesia

Leverage	0.003	H ₀ rejected	Significant (-)
Firm Size	0,000	H ₀ rejected	Significant (+)
Current Ratio	0.069	H ₀ accepted	Not Significant (-)

The Lag ROA variable shows a positive coefficient of 0.3665 and is significant at the 1% level (p-value = 0.000). This indicates a profitability persistence effect, where the previous year's profit performance significantly contributes to the current year's profitability. This means that companies with high ROA levels in the previous period tend to maintain that performance in the following period, reflecting stability and consistency in financial management. This finding supports the theory of earnings dynamics in the Theory of the Firm, which states that previous profit achievement can signal continued managerial efficiency.

The Dummy Crisis (COVID-19) shows a negative coefficient of -0.0074, but it is not statistically significant (p-value = 0.310). This indicates that, on average, the COVID-19 crisis did not have a significant direct effect on ROA for all companies in the sample. However, this result does not rule out the possibility that the crisis's influence is contextual, as evidenced by the interaction variable showing different effects on companies with different working capital management strategies.

The Leverage variable has a negative coefficient of -0.0489 and is significant at the 1% level (p-value = 0.003). These results indicate that the higher the leverage level, the lower the company's ROA. This reflects that high debt usage increases interest expenses and financial risk, thereby reducing the company's net profit. This finding supports the Theory of the Firm's view that excessive external financing can increase the risk of loss, especially during market downturns. Similar findings were also produced by research by Akgun and Karatas (2020), which stated that high leverage increases interest expenses, thereby reducing company profitability.

The Size variable also showed a positive effect on ROA with a coefficient of 0.0149 and significant at the 1% level (p-value = 0.000). This indicates that the larger the company size, the higher its profitability. Large companies tend to have economies of scale and access to more stable financial resources, allowing them to manage costs more efficiently and achieve higher profit margins. This aligns with Marshall's view that company size also influences profit margins, although in the long run it can face competitive pressures. These results align with the findings of Kabir Hasan (2023), who stated that large companies have better financial resources and are therefore able to generate strong profits.

The Current Ratio variable has a very small and insignificant coefficient (coefficient = -0.00096; p-value = 0.069). This means that the company's ability to meet its short-term obligations has not been proven to directly influence ROA in this model. This may be because the current ratio does not explicitly reflect operational efficiency but rather only indicates static liquidity.

CONCLUSIONS, LIMITATIONS, AND SUGGESTIONS

The conclusion of this study is that Net Working Capital (NWC) does not significantly affect the profitability of non-financial sector companies, while Cash holdings have a positive and significant effect on the profitability of non-financial sector companies. The interaction between NWC and the COVID-19 crisis has a positive and significant effect on the profitability of non-financial sector companies, while the interaction between cash holdings and the crisis has no significant effect on the profitability of the non-financial sector. A limitation of this study is the R-squared value of 41.02%, indicating that this model explains most, but not all, of the variation in company profitability. There is still approximately 59% of the variation in ROA that is not explained by the variables in this model. This indicates the need to add other relevant variables in further research, such as operational cash flow, management quality, company age, ownership structure, or macroeconomic variables such as economic growth and inflation. By expanding the scope of variables, the accuracy of the model in explaining the determinants of profitability can be improved.

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