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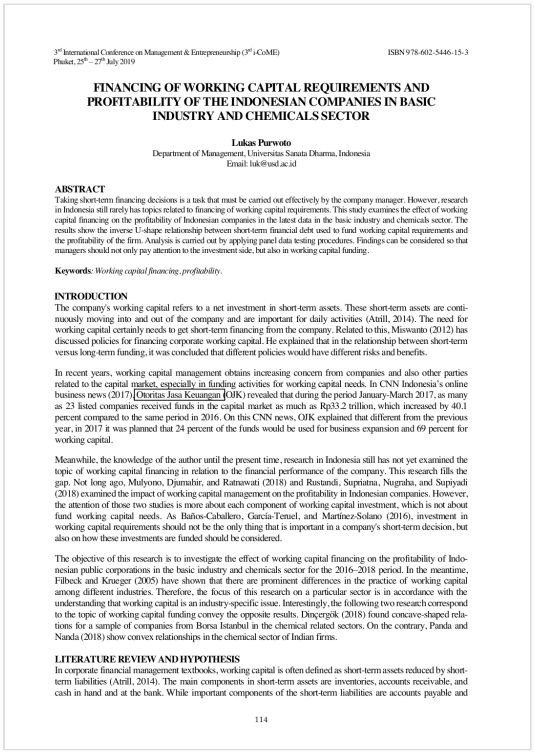

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FINANCING OF WORKING CAPITAL REQUIREMENTS AND PROFITABILITY OF THE INDONESIAN COMPANIES IN BASIC INDUSTRY AND CHEMICALS SECTOR

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ABSTRACT
Taking short-term financing decisions is a task that must be carried out effectively by the company manager. However, research in Indonesia still rarely has topics related to financing of working capital requirements. This study examines the effect of working capital financing on the profitability of Indonesian companies in the latest data in the basic industry and chemicals sector. The results show the inverse U-shape relationship between short-term financial debt used to fund working capital requirements and the profitability of the firm. Analysis is carried out by applying panel data testing procedures. Findings can be considered so that managers should not only pay attention to the investment side, but also in working capital funding.

Keywords: *Working capital financing, profitability.*

INTRODUCTION
The company's working capital refers to a net investment in short-term assets. These short-term assets are continuously moving into and out of the company and are important for daily activities (Atrill, 2014). The need for working capital certainly needs to get short-term financing from the company. Related to this, Miswanto (2012) has discussed policies for financing corporate working capital. He explained that in the relationship between short-term versus long-term funding, it was concluded that different policies would have different risks and benefits.

In recent years, working capital management obtains increasing concern from companies and also other parties related to the capital market, especially in funding activities for working capital needs. In CNN Indonesia's online business news (2017) (Otoritas Jasa Keuangan (OJK) revealed that during the period January-March 2017, as many as 23 listed companies received funds in the capital market as much as Rp33.2 trillion, which increased by 40.1 percent compared to the same period in 2016. On this CNN news, OJK explained that different from the previous year, in 2017 it was planned that 24 percent of the funds would be used for business expansion and 69 percent for working capital.

Meanwhile, the knowledge of the author until the present time, research in Indonesia still has not yet examined the topic of working capital financing in relation to the financial performance of the company. This research fills the gap. Not long ago, Mulyono, Djumahir, and Ratnawati (2018) and Rustandi, Supriatna, Nugraha, and Supiyadi (2018) examined the impact of working capital management on the profitability in Indonesian companies. However, the attention of those two studies is more about each component of working capital investment, which is not about fund working capital needs. As Baños-Caballero, García-Teruel, and Martínez-Solano (2016), investment in working capital requirements should not be the only thing that is important in a company's short-term decision, but also on how these investments are funded should be considered.

The objective of this research is to investigate the effect of working capital financing on the profitability of Indonesian public corporations in the basic industry and chemicals sector for the 2016–2018 period. In the meantime, Filbeck and Krueger (2005) have shown that there are prominent differences in the practice of working capital among different industries. Therefore, the focus of this research on a particular sector is in accordance with the understanding that working capital is an industry-specific issue. Interestingly, the following two research correspond to the topic of working capital funding convey the opposite results. Dinçergök (2018) found concave-shaped relations for a sample of companies from Borsa Istanbul in the chemical related sectors. On the contrary, Panda and Nanda (2018) show convex relationships in the chemical sector of Indian firms.

LITERATURE REVIEW AND HYPOTHESIS
In corporate financial management textbooks, working capital is often defined as short-term assets reduced by short-term liabilities (Atrill, 2014). The main components in short-term assets are inventories, accounts receivable, and cash in hand and at the bank. While important components of the short-term liabilities are accounts payable and

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LITERATURE REVIEW AND HYPOTHESIS

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bank loans. Darun, Roudaki, and Radford (2015) discuss the evolution of dynamic working capital management research as a change in managerial focus in reflecting on how companies manage working capital. Following the description of Darun *et al.* (2015), the current research period (1990–2000s) is showing two developing themes, namely effectiveness in working capital management and understanding its practice. In this case, one important concern of the effectiveness of working capital management is the profitability of the company.

A number of previous studies have examined the effect of working capital management on company profitability. Many studies use the cash conversion cycle (CCC) as a popular measure of working capital management in relation to the company profitability. Using Swedish data, Yazdanfar and Ohman (2014) provide empirical evidence that the CCC has a significant effect on the company profitability. Singh and Kumar (2014) examined the findings of previous studies of CCC's influence on the company profitability by applying a meta-analysis technique. They took a set of 46 research papers and the results confirmed that the CCC was related to the profitability of the company.

Some studies use the net trade cycle (NTC) as a measure of working capital management in relation to the profitability of the company. Shin and Soenen (1998) analyzed a sample of US public companies and their results showed a negative effect of the net trade cycle on profitability. By using the data panel of manufacturing listed firms in Pakistan, the results of the study of Raheman, Afza, Qayyum, and Bodla (2010) also shows that the net trade cycle negatively affects company performance. Karadagli (2012) examined the effect of the net trade cycle on firm performance in a sample of Turkish listed companies. However, the findings of the Karadagli's study show that an increase in the net trade cycle improves performance in terms of both the operating income and the stock market return for SMEs.

A number of other studies are interested in each component of working capital management. Deloof (2003) took a sample of large Belgian companies and showed a significant negative relationship between profitability and the length of days for the period of accounts receivable, inventories, and trade payable. Mathuva (2010) examined the effect of working capital management components on the profitability of Kenyan listed firms. This Mathuva's study found a significant negative relationship between collection period accounts and profitability, which means that the short time the cash billing for consumers increases the profitability of the company. However, a significant positive relationship was found in this Mathuva's study between both the inventory conversion period and the period of payment to creditors with profitability. Similar research, testing the item details from working capital management, was also conducted by Kasozi (2017) on the listed manufacturing firms in South Africa and by Lyngstadaas and Berg (2016) in the small-and medium-sized Norwegian firms.

Some other studies consider two approaches to both conservative and aggressive strategies of working capital management. Nazir and Afta (2009) examined the potential relationship of aggressive / conservative policies and the profitability of companies from Pakistani firms. However, a well-known research in this regard is Baños-Caballero *et al.* (2012), Baños-Caballero, García-Teruel, and Martínez-Solano (2014) which began with showing quadratic non-linear relations between working capital management and the company profitability. Similar results from concave relations also shown by Afrifa and Padachi (2016) in small and medium-sized companies listed the UK stock market and Altaf and Shah (2017) in Indian non-financial companies. These results imply the existence of an optimal level of investment in working capital that balances benefits and costs so as to maximize value.

In summary, the results of previous studies suggest that company managers can create value for their shareholders by carrying out working capital management at the right level of investment. Furthermore, the attention of several current studies also leads to funding working capital needs and their relation to the company profitability.

Using data from Spanish SMEs, Baños-Caballero, García-Teruel, and Martínez-Solano (2016) examined the relationship between financing of working capital requirements and firm performance. They showed that the right funding strategy for working capital requirements can help companies improve profitability. This finding encouraged Dinçergök (2018) to also conduct similar research on open-air companies in Turkey. The results of his research showed that there are concave-shaped relations between short-term financial debt that are used to fund working capital needs and firm performance. However, Panda and Nanda (2018) found Convex's relationship between the financing of working capital requirements and profitability in a number of Indian public sector companies.

The need for working capital and project investment must be funded so that the company can run. The availability of long-term and short-term sources of finance requires company managers to make choices between the two sources. In this situation, company managers can choose aggressive funding policies or conservative funding policies (Berk & DeMarzo, 2014). When companies finance all permanent working capital using short-term debt, this policy is known as an aggressive funding policy. When yield curves are upward sloping, the interest rate on short-term debt is lower than long-term debt (Berk & DeMarzo, 2014). This encourages firm managers to prefer the use of short-term debt.

However, the benefits of lower short-term interest rates will be masked by the risk that companies may face debt refinancing at higher interest rates in the future, thereby enlarging the firm's equity cost of capital (Berk & DeMarzo, 2014). On the contrary, the company can fund the needs of permanent working capital and its fixed assets by using long-term debt, or what is known as a conservative financing policy. In order to implement such a policy effectively, there will necessarily be periods when excess cash is available—those periods when the company requires little or no investment in temporary working capital (Berk & DeMarzo, 2014). In this policy, corporate loans become less volatile in the short term.

Table 1 summarizes the arguments that mention in the study of Baños-Caballero *et al*. (2016), Dinçergök (2018), and Panda and Nanda (2018) regarding the benefits and risks of using short-term debt in financing working capital needs. Those benefits motivate managers to use short-term debt in order to fund working capital needs. However, the potential risks that could arise would limit the use of short-term debt. Thus, benefits obtained by the company in using short-term debt financing will be limited. In this case, it is expected that inverse U-shaped relations occur between working capital financing and profitability (Dinçergök, 2018). If the ratio of short-term debt to the company's working capital requirements is still low, increasing short-term debt will benefit and therefore increase profitability. However, if the ratio is very high, the addition of short-term loans will increase the risk that increases costs and ultimately reduces profitability. In other words, following Baños-Caballero *et al*. (2016), when the short-term debt used to fund working capital requirements is low, the addition will increase profitability. However, when the short-term debt used to fund working capital requirements is high, the addition will reduce profitability.

This study intends to examine the effect of working capital financing on profitability in the basic industry and chemicals sector. The hypothesis is set:

H_1: The relationship between short-term debt used to fund working capital requirements and the profitability in Indonesian public companies from the basic industry and chemicals sector can be expressed in the form of an inverted U.

Table 1
Use of Short-Term Debt in Financing of Working Capital Requirements

Advantages:	Risks:
• Short-term debt interest rates are smaller than long-term debt. • Acquisition of credit benefits due to good relations with banks but are interwoven from short-term bank loans. • Short-term debt is more easily adjusted to the company's financial needs. • Short-term debt can reduce conflicts between shareholders and long-term debt holders.	• Short-term debt faces the risk of increasing the interest rate in its renewal. • Short-term debt has a problem of extension, especially for companies that have high short-term debt.

Source: Summarized from Baños-Caballero *et al*. (2016), Dinçergök (2018), Panda and Nanda (2018)

RESEARCH METHOD

The Indonesia Stock Exchange divides all companies listed in various sectors based on their characteristics of the business. As discussed in the introductory section, this study focuses on investigating non-financial companies from basic industry and chemicals sector. A number of investigations have demonstrated that the nature of corporate working capital is significantly different between industries, both in terms of statistical measures (Pais & Gama, 2015; Lyngstadaas & Berg, 2016) as well as their effect on profitability (Yazdanfar & Ohman, 2014; Afrifa & Padachi, 2016). Therefore, this study has anticipated the possibility of problems that arise because of industry-specific issues.

The data used in this research comes from financial statements of publicly listed companies on the Indonesia Stock Exchange. The company is required to have the availability of financial reports published in order to enter into the research sample. The financial statements of the company under study are for a period of three years and on the latest data that can be obtained, namely 2016–2018. In this way, this study uses panel data that contain data across time and across companies.

With reference to the study of Baños-Caballero *et al*. (2016) and Dinçergök (2018), this research estimates the following model to examine the association among working capital funding and company performance:

$$ROE_{it} = \beta_0 + \beta_1 WCF_{it} + \beta_2 WCF_{it}^2 + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \beta_6 FA_{it} + \beta_7 CR_{it} + \beta_8 DIV_{it} + \epsilon_{it} \quad (1)$$

To test the effect of working capital financing on the company profitability, this research uses a measure of accounting-based financial performance as the dependent variable. Following the study of Baños-Caballero *et al*. (2016) and Dinçergök (2018), the dependent variable is return on equity (ROE). In this case, return on equity is a net profit as a proportion of shareholders' equity. In other words, return on equity is computed by dividing profits after taxes by common equity.

The independent variable is working capital financing (WCF). WCF variables are calculated as short-term loans divided by working capital requirements (Baños-Caballero *et al*., 2016; Dinçergök, 2018; Panda & Nanda, 2018). Technically, working capital requirements (WCR) is determined as current assets minus accounts payable, while short-term loans are proxied using short-term bank loans. Then WCF^2 is obtained by calculating the square of working capital financing. Referring to the research hypothesis a concave relation between short-term funding and financial performance, then β_1 is expected to be positive and β_2 is expected to be negative.

Six control variables are SIZE, LEV, AGE, FA, CR, and DIV. SIZE is measured as the natural logarithm of total assets. LEV is calculated by dividing total liabilities by total assets. AGE states the company's long years of establishment. FA is a fixed assets divided by total assets. CR is current assets divided by current liabilities. The DIV is sought by dividing cash dividends by total assets. The selection of the five control variables refers to previous studies that are commonly found in the effect of working capital on company profitability. All research variables are presented in Table 2.

Table 2
Variable Description

Variable Name	Definitions	Calculation
ROE	Return on Equity	Net Income / Total Assets
WCF	Working Capital Financing	Short Term Bank Debt / (Current Assets – Account Payable)
SIZE	Size	Ln (Total Assets)
LEV	Leverage	Total Debt / Total Assets
AGE	Age	Calender Year – Incorporation Year
FA	Fixed Assets	Tangible Net Fixed Assets / Total Assets
CR	Current Ratio	Currents Assets / Current Liabilities
DIV	Dividen	Cash Dividend / Total Assets

Still referring to the study of Baños-Caballero *et al*. (2012) and Dinçergök (2018), the relationship between working capital funding and company performance estimated in equation (1) is examined again for robustness by applying the following model:

$$ROE_{it} = \beta_0 + \beta_1 WCFL_{it} + \beta_2 WCFH_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 AGE_{it} + \beta_6 FA_{it} + \beta_7 CR_{it} + \beta_8 DIV_{it} + \epsilon_{it} \quad (2)$$

Two dummy variables were created in this study, namely WCFL for companies that have low WCF and WCFH for companies that have high WCF. More specifically, if the WCF value of a company is below the WCF median value, WCFL is 1; otherwise, WCFL takes the value of zero. Whereas if the WCF value of a company is above the median WCF value, then WCFH is 1; otherwise, WCFH takes the value of zero. An inverse U-shape relation between short-term funding and profitability is supported if β_1 is positive and β_2 is negative.

Data analysis of this study was carried out using panel data analysis. The panel data in this research are characterized by a wider range of cross-sectional data than between years. Panel data like this can be estimated by applying pooled models. However, the application of pooled least squares in pooled models has limitations, especially in less realistic assumptions about the existence of zero error correlations between times in the same company. Therefore, this was solved by applying the cluster-robust standard errors when estimating the regression equation (Hill, Griffiths, & Lim, 2011). Research data processing shows that the Breusch-Pagan test indicates a non-significant result rejecting the null hypothesis. The insignificant results of the Breusch-Pagan test lead to conclusions about the absence of random effects (Hill *et al.*, 2011). Therefore, the equation in the panel data in this research is estimated using the fixed effect model.

FINDINGS

Table 3 shows descriptive statistics of research variables, which include profitability, working capital financing, and other relevant variables. The first variable of concern is return on equity (ROE). During the analysis period, the average ROE of companies in basic industry and chemicals sectors is 0.1021 or 10.21 percent. The second variable is working capital financing (WCF). The average WCF is 0.4530. This means that on average short-term financial debt funds as much as 45.30 percent of working capital needs. Some of the following variables are company size (SIZE), leverage (LEV), company age (AGE), fixed assets (FA), current assets (CR), and cash dividends (DIV). The mean value of SIZE is 22.81, LEV is 54.47 percent, AGE is 34.78 years, FA is 41.79 percent, CR is 2.21 times, and DIV is 0.093 percent. In addition, the table also shows these variable values in standard deviation, 10th percentile, median, and 90th percentile.

Table 3
Descriptive Statistics

Variables	Obs	Mean	Std. Dev.	p10	p50	p90
ROE	189	0.1021	1.9704	-0.1263	0.0409	0.1825
WCF	189	0.4530	1.0567	0.0000	0.2198	0.8809
SIZE	189	22.8052	5.2978	15.1083	25.6195	28.4129
LEV	189	0.5447	0.3691	0.1595	0.5136	0.8406
AGE	189	34.7831	9.6602	22.0000	35.0000	45.0000
FA	190	0.4179	0.2202	0.1419	0.4432	0.6999
CR	189	2.2101	2.3331	0.8037	1.3085	4.8856
DIV	189	0.0093	0.0213	0.0000	0.0000	0.0278

Table 4 provides Pearson correlation between research variables. Overall, the correlation between all research variables is less than 0.5. Furthermore, one test was conducted to make certain the absence of collinearity problems in the analysis of this investigation. One way is to estimate the auxiliary regressions and then check the amount of R^2 from each of the estimated auxiliary regressions (Hill *et al*., 2011). This procedure is done by regressing WCF, SIZE, LEV, AGE, FA, CR, and DIV, which then search for each R^2 for the seven equations. The value of R^2 for the seven equations is 0.0878, 0.1309, 0.2822, 0.0911, 0.2546, 0.4032, and 0.0793. The R^2 value found from the artificial model is not high, so collinearity is concluded not to be a problem with this analysis.

Table 4
Pearson Correlation Matrix

Variables	ROE	WCF	SIZE	LEV	AGE	FA	CR
ROE	1						
WCF	-0.0595	1					
SIZE	0.0038	0.0828	1				
LEV	0.0479	0.1211*	0.0081	1			
AGE	-0.0375	-0.0172	-0.2315***	-0.0512	1		
FA	-0.0976	0.0175	-0.2438***	-0.1026	0.1186	1	
CR	-0.0334	-0.2426***	0.1674*	-0.4170***	0.0925	-0.3665*	1
DIV	0.0014	-0.1318*	-0.0668	-0.2508***	0.0769	0.0397	0.1279*

*p<0.10, **p<0.05, ***p<0.01

Table 5 provides the estimation results from equation (1). The dependent variable of this research is the company's profitability as measured by ROE. The WCF coefficient is positive and statistically significant at the 10 percent

level. The WCF^2 coefficient is negative and statistically significant at the five percent level. These results provide findings as expected, which are positive for the WCF coefficient and negative for the WCF^2 coefficient. Therefore, these results provide support for the H_1 research hypothesis regarding the inverse U relationship between WCF and profitability.

Table 6 presents the estimation results from equation (2) to further test the research data. The dependent variable is still the company's profitability as measured by ROE. The WCFL coefficient is positive and statistically significant at the 1 percent level. But unfortunately the WCFH coefficient is not statistically significant. The expectation of the coefficient sign is positive for WCFL and negative for WCFH. This finding is discussed in the discussion in the next section.

Table 5
Financing of Working Capital and Profitability

Variables	Coef.	Robust Std. Err.	*t*	*P>t*
WCF	0.8812*	0.4933	1.7900	0.0790
WCF^2	-0.0936**	0.0467	-2.0000	0.0490
SIZE	-0.0404	0.0298	-1.3600	0.1800
LEV	4.5933*	2.6597	1.7300	0.0890
AGE	0.0723	0.0471	1.5300	0.1300
FA	-1.2342*	0.7218	-1.7100	0.0920
CR	-0.0051	0.0513	-0.1000	0.9210
DIV	0.8947	1.0676	0.8400	0.4050
Constant	-3.7524*	2.0116	-1.8700	0.0670
Number of obs.	189			
Number of firms	66			

*p<0.10, **p<0.05, ***p<0.01

Table 6
Financing of Working Capital and Profitability: Additional Estimation

Variables	Coef.	Robust Std. Err.	*t*	*P>t*
WCFL	0.1117***	0.0343	3.2500	0.0020
WCFH	0.2378	0.2772	0.8600	0.3940
SIZE	-0.0373	0.0297	-1.2500	0.2150
LEV	3.3386	2.1982	1.5200	0.1340
AGE	0.0620	0.0436	1.4200	0.1600
FA	-0.8136	0.5931	-1.3700	0.1750
CR	0.0042	0.0453	0.0900	0.9270
DIV	1.2596	0.7993	1.5800	0.1200
Constant	-2.8775*	1.6204	-1.7800	0.0800
Number of obs.	189			
Number of firms	66			

*p<0.10, **p<0.05, ***p<0.01

DISCUSSION

This research is concerned with relatively small debt funding for working capital needs of Indonesian public companies in basic industry and chemicals sector. The median value of working capital financing (WCF) is 0.2198. This finding means that in the median value, short-term financial debt funds around 22 percent of working capital needs. Half of the firms in the sample have WCF below 0.2198, and the other half have WCF above 0.2198.

The results of this study provide findings as expected in the research hypothesis regarding concave relationships between WCF and profitability. The findings of this study confirm the study findings of Baños-Caballero *et al.* (2016) and Dinçergök (2018). This research provides empirical evidence from Indonesian public companies in basic industry and chemicals sector. In this case, if the company's relatively small debt ratio to working capital requirements is still low, adding short-term debt will increase the financial performance of the firm. However, if that ratio is very high, then profitability increases with a decrease in short-term loans.

However, the results of the robustness test of this study further confirm the relationship that occurred at the time the company WCF was lower than high. In this situation, if the ratio of relatively short debt to the company's working capital requirements is still low (below the median), then adding short-term debt will enjoy the benefits and therefore increase profitability. In other words, when the relatively short debt used to fund the working capital requirements is low, the addition will increase profitability.

CONCLUSIO

This research aims to examine the influence of working capital financing on the fitability of Indonesian public companies in the basic industry and chemical sector for the period of 2016–2018. The results of this research show that the relationship between working capital funding and profitability can be expressed in an inverted U shape. Here opportunities for improvement arise, especially for companies that still have a relatively short amount of funds for working capital needs. In these companies, performance can be sought to increase by appending the proportion of short-term funding. Therefore, this research presents practical recommendations so that company managers increase the proportion of relatively short debt funding when the proportion is still low.

This research has disadvantages. First, this research is not able to convey how much the optimal level of relatively short funding for working capital needs. This can be interesting in terms of short-term funding practices that provide policy guidance for managers of Indonesian companies. Therefore, future research is good if it can arrive at the calculation of the optimal level. The second weakness is this research is still limited to the basic industry and chemicals sector. For this reason, one option for future research is to explore samples of companies from other sectors. This will add a complete insight into understanding.

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