

# Working Capital Management on Financially Constrained Firm

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**Abstract:** Working capital management is a daily activity that will determine the availability of resources for the company. There are positive and negative effects in increasing the degree of working capital. There is an optimal degree as well. The degree of optimal working capital for each company is different, depends on financial conditions. This paper aims to examine the effect of non-linear working capital on firm performance and analyze the differences in the degree of optimal working capital between financially constrained and unconstrained firms. Data were obtained from OSIRIS with the observation period 2010–2019. Working capital is proxied by the net trade cycle. This study uses panel data regression models, i.e. fixed effect regression and random effect regression. The result of this study shows that working capital has a non-linear effect (U-shaped inverted) on firm performance when using ROA and ROE as a proxy for performance which means the company has an optimal degree of working capital. The result also shows that financially constrained firms grouped based on cash flow, interest coverage, and cost of external financing have lower optimal working capital which means that the benefits of working capital are more used by non-financially constrained firms.

**Keywords:** financial constraints, firm performance, working capital management

## INTRODUCTION

There are three decisions determined by financial managers to maximize the wealth of shareholders. There are investment decisions, funding decisions, and working capital decisions. One of the decisions that need to be considered by managers is making working capital decisions and ensuring the company's operational activities run smoothly (Hanafi, 2013). Working capital decisions are significant for the company because working capital decisions directly affect the company's daily operational activities. Most of the activities of a company's financial manager are allocated to manage current assets because there are certain types of companies, for example, manufacturing, most of their assets are current assets.

There are two perspectives regarding the effect of working capital investment on firm

value. The first perspective explained that high working capital can increase sales and get discounts to increase company value (Deloof, 2003). Meanwhile, the second perspective states that high working capital requires funding and increases the cost, so it can increase the risk of bankruptcy (Kieschink, et.al 2011). Based on these two perspectives, it means that there is a trade-off in determining working capital decisions. In this condition, a firm is required to be able to determine optimal working capital. Optimal working capital is the limit to the extent to which working capital investment can have a positive effect on the company and if working capital investment exceeds the optimal degree, then working capital investment will harm the company. Financial factors such as the availability of capital costs, internal funds, and access to the capital market will affect investments made by working capital management.

Banos -Caballero et al. (2013) argue that optimal working capital for financially constrained firms will be lower than financially unconstrained firms. The imperfect market hypothesis explains that external funding is not the best substitute for internal funding because it increases costs. That makes financially constrained firms more sensitive to working capital investments.

When increasing inventory, financially constrained firms tend to rely on account payables because they will face difficulties to access external funding so financially constrained firms cannot use a discount for early payments if they buy inventory in cash to a supplier. That will be different from financially unconstrained firms. They can get a discount if they buy inventory in cash from a supplier because of having sufficient cash. They can easily access external funding, such as bank loans. The discounts provided by these suppliers will certainly be higher than the interest in order to attract firms to pay in cash. So, the research problem is a trade-off in the working capital decision. Empirical evidence is needed to show that influence. In addition, there are differences in the amount of optimal working capital between financially constrained and unconstrained firms. This paper aims to (1) examine the influence of working capital on firm performance and (2) analyze the differences in the level of optimal working capital between financially constrained and unconstrained firms.

## LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

### Working Capital

According to Hanafi (2016), working capital consists of cash, accounts receivable, and inventory. Besides, working capital also consists

of current debt, including trade debt and accrual debt. In contrast, according to Brigham (604, 2014), working capital symbolizes the company's assets that can be converted into cash to support the company's operations. According to Brigham (604, 2014), working capital management relates to two fundamental questions. First, what is the right amount of working capital both the specific number of accounts and the total amount. Second, how should working capital be funded because working capital is related to funding decisions, so a financial manager must decide on the company's cash amount and the amount of short-term funding for working capital.

### Firm Performance

Firm performance is the result obtained by the firms through actions and policies taken (Neely, 68, 2004). Performance is a term, generally used for part or all of the actions and activities of an organization in a period with references to the number of standards such as past or projected costs, with the basis of efficiency, accountability or management accountability and so on. Santos and Brito (2012), company performance is a result of the effectiveness of the company in carrying out its activities, both operational and financial.

### Financial Constraints

Firms often face financing constraints on investing. Kaplan and Zingales (1997) suggest that financial constraints occur due to unfavourable financial liquidity and the difficulty of accessing external funding because they face the difference between capital costs from internal funding and capital costs from external funding. According to Fazzari et al. (1988), the existence of asymmetric information results in

external funding costs being more expensive than internal funding, resulting in financially constrained companies' investment decisions tends to be more sensitive to liquidity than non-financially constrained companies. This results when the company gets an investment opportunity, the company will fund its investment by using internal funding then external funding because internal funding raises costs that are cheaper than external funding.

### **The Influence of Working Capital on Firm Performance**

Higher investment in inventories and accounts receivable and inventory can improve company performance. Companies with a more extensive inventory can reduce costs and price fluctuations and prevent disruption of business processes (Blinder and Maccini, 1991). That also allows the firm to provide the best service for customers (Schiff and Lieber, 1974). Besides, giving credit can increase a company's sales, companies can provide discounts on customers effectively, attract customers to make purchases when demand is low, and improve long-term relationships between suppliers and customers. Customers can ensure the quality of products and services before payment so that it can reduce asymmetry information between the seller and the buyer. Emery (1984) argues that trade credit provision will be more profitable than investing in short-term securities and can be used as a liquidity reserve to prevent future cash shortfalls.

However, there are some negative impacts on investment in working capital when it has passed the optimal amount. First, higher inventory can increase costs such as warehouse rental fees, insurance, and security (Kim and Chung, 1990). Second, high working capital requires higher funding as well. That can increase the

financial cost and opportunity cost. In companies that provide high trade credit will increase credit risk. It can also lead companies to financial distress and face bankruptcy (Kieschnick et al., 2011). The existence of positive and negative impacts on working capital reflects trade-offs in working capital decisions. Each company must have an optimal amount of working capital to balance costs and benefits to company performance. This increase in performance will be in line with the increase in working capital until the optimal amount of working capital is achieved. Conversely, when the amount of working capital exceeds the optimal amount, the relationship between working capital and performance will be negative (Banos-Caballero et al. 2013). Based on the following explanation, this study composes the hypothesis as follows. H1: There is an inverted U-shaped impact of working capital on firm performance.

### **The Impact of Working Capital on Financially Constrained Firm**

Suppose there is an inverse U parabolic effect of working capital on company performance. In that case, the optimal amount of investment in working capital will be different for companies with financial constraints and those without financial constraints. That is caused by working capital investment decisions that are strongly influenced by investment opportunities. Financially constrained firms will have difficult access to the capital market and have fewer investment opportunities so they can only rely on internal funding. Since market imperfections have asymmetry information and agency costs, means to get external funding will increase higher costs than internal funding (Greenwald, et al. 1984). External capital is not a perfect substitute for internal capital. In line

with this, Fazzari et al. (1988) show that company investment depends on financial factors such as internal funding availability, access to capital markets, or funding costs. Companies with lively working capital require more funding, so the optimal amount of working capital will be lower for companies with financial constraints. When increasing the degree of inventory, financially constrained firms tend to rely on account payables because they will find difficulties to access external funding. That causes financially constrained firms cannot use a discount facility if they buy inventory in early payments from a supplier. On the one hand, a higher degree of account payable can reduce the working capital. That will be different for financially unconstrained firms. They can use discount facilities if buying supplies in cash to suppliers because they have sufficient cash. Even though it turns out that they do not have enough cash, they can easily access external funding, such as bank loans. The discounts provided by these suppliers will certainly be more significant than the bank interest in order to attract companies to do early payment financially unconstrained firms are relatively more extensive and more mature. Companies with a greater internal funding capacity and higher access to capital markets tend to have higher working capital Hill et al. (2010). Based on the following explanation, this study composes the second hypothesis as follows.

H2: Financially constrained firms will have a lower degree of optimal working capital than financially unconstrained firms.

## METHODOLOGY

The sample in this study is non-financial companies listed on the Indonesia Stock Ex-

change during the period 2010–2019. Sources of data in the study came from OSIRIS. This research is quantitative. Based on the hypothesis and research analysis model, the variables in this study consist of dependent variables, independent variables, company grouping variables with financial constraints, and control variables. The dependent variable in this study is firm performance which is measured by accounting performance. Accounting performance is proxied by ROA and ROE.

The independent variable in this paper is the working capital of the company. The net trade cycle is a proxy for measuring working capital. According to Banos-Caballero et al. (2013) and Shin and Soenen (1998), the net

Table 1 Variable Measurements

Measurement	Proxy
<b>Dividend Pay-out Ratio</b> If the firms have interest coverage above the median then they are financially unconstrained firms, and vice versa.	Dividend Pay-out Ratio: $\text{Dividend paid}_{i,t} / \text{Net Income}_{i,t}$
<b>Cash Flow</b> If the firms have cash flow above the median then they are financially unconstrained firms, and vice versa.	$\text{Cash Flow}_{i,t} = (\text{earning before interest taxes}_{i,t} + \text{depreciation}_{i,t}) / \text{total asset}_{i,t}$
<b>Interest coverage</b> If the firms have interest coverage above the median then they are financially unconstrained firms, and vice versa.	$\text{Interest coverage}_{i,t} = \text{EBIT}_{i,t} / \text{Interest expenses}_{i,t}$
<b>Cost of external financing</b> Companies that have a dividend pay-out ratio above the median are classified as companies with financial constraints. Conversely, if the company has a dividend pay-out ratio below the median, it is classified as a company with financial constraints.	$\text{Cost of external financing}_{i,t} = \text{financial expenses}_{i,t} / \text{total debt}_{i,t}$

trade cycle is a proxy for measuring working capital. The net trade cycle is measured by the following formula.

$$NTC_{i,t} = (\text{Account Receivables}_{i,t} / \text{Sales}_{i,t}) * 365 \text{ days} + (\text{Inventories}_{i,t} / \text{Sales}_{i,t}) * 365 \text{ days} - (\text{Account payables}_{i,t} / \text{Sales}_{i,t}) * 365 \text{ day}$$

Furthermore, in this study the group of financially constrained firms or financially unconstrained firms based on dividends, cash flow, cost of external financing, and interest coverage. The score is 1 for a financially constrained firm and 0 financially unconstrained firm.

The estimates of the models are as follows:

Hypothesis 1

$$Perf_{i,t} = \beta_0 + \beta_1 NTC_{i,t} + \beta_2 NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \quad (1)$$

Hypothesis 2

$$Perf_{i,t} = \beta_0 + \beta_1 NTC_{i,t} + \delta_1 DFC_{i,t} * NTC_{i,t} + \beta_2 NTC_{i,t}^2 + \delta_2 DFC_{i,t} * NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \varepsilon_{i,t}$$

Simplify the equation:

$$Perf_{i,t} = \beta_0 + (\beta_1 + \delta_1 DFC_{i,t}) NTC_{i,t} + (\beta_2 + \delta_2 DFC_{i,t}) NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \varepsilon_{i,t} \quad (2)$$

Based equation (1), the optimal degree of working capital can be measured by determine the turning point obtained from:

$$-\beta_1 / 2\beta_2$$

If there is maximum turning point form equation (1), then equation (2) can be estimated. The optimal degree of working capital can be measured by determine the turning point obtained from equation (2):

$$-(\beta_1 + \delta_1) / 2(\beta_2 + \delta_2)$$

## RESULT AND DISCUSSION

The sample in this study was a non-financial companies listed on the Indonesia Stock Exchange during the period 2010–2019. Data were obtained from OSIRIS database. During sample selection, firms that have negative equity and delisted were removed. Therefore, the final sample consisted of 435 firms. This work used a panel regression model to test the hypothesis.

Using panel data allows us to minimize unobservable heterogeneity and eliminate the risk of obtaining biased (Greene, 2000). This work used a Hausman test to choose using a fixed-effect or random-effect model. Table 2 provides summary variables of this study.

### Hypothesis 1 Testing

The results show a non-linear effect on company performance when using ROA and ROE as proxies for performance variables. That means that there is a non-linear effect of working capital on company performance. The NTC coefficient is significantly positive, and the coefficient of NTC2 has a significant negative value which means that the form of the effect is an u-shaped inverted curve that shows the maximum point. In line with hypothesis 1 shows that the firm has an optimal degree of working capital. The optimal degree of working capital can be calculated using the maximum point formula  $(-\beta_1 / 2\beta_2)$ .

Table 2 Summary Statistics

	Mean	Median	Min	Max	Std. Dev
NTC	93.2896	65.61	-778.08	1070.33	127.306
NTC <sup>2</sup>	24902.84	4748.5881	1.00E-04	1145606.3	67239.95
ROA	0.0362	0.03234	-0.6193	0.54333	0.080895
ROE	0.0586	0.07127	-13.835	5.173837	0.434555
Size	20.952	21.0269	15.1862	25.0191	1.6885
Lev	0.2688	0.25697	4.3E-03	537.563	0.18087
Growth	0.6305	0.09329	-0.8772	0.9386	12.0623
CF	0.1013	0.092544	-0.504	0.6943	0.08624
DPR	0.4140	0	0	0.8742	0.9384
Intcov	777.95	3,362	-1185,2	1000665	25631,45
Coexf	0.503	0.079	0	245.774	7.710

NTC: net trade cycle, ROA: return on asset, ROE: return on equity, Size, Leverage, Growth, CF: cash flow, DPR: dividend pay-out ratio, Intcov: interest coverage, Coexf: cost of external financing.

### Hypothesis 2 Testing

The results show that the NTC coefficient is significantly positive and the coefficient of NTC2 has a significant negative value which

Table 3 Hypothesis 1 Testing

Independent Variables	Dependent Variables	
	ROA	ROE
NTC	.000198***	.0006894*
NTC <sup>2</sup>	-3.65e-07***	-1.29e-06 *
Size	.0031396	-.0877535
Leverage	-.082075**	-.2765073
Growth	.0002436***	-.0003085
R <sup>2</sup>	0.2095	0.005

means that the form of the effect is an u-shaped inverted curve that shows the maximum point. The results also show a significant interaction coefficient between DFC and NTC and on DFC and NTC<sup>2</sup> on grouping financially constrained firms based on size, cash flow, and dividend pay-out ratio. Both coefficients can be used to calculate working capital for financially constrained firms. So, the next step for hypothesis 2 testing is calculating the firm's optimal working capital for financially constrained and

unconstrained firms. That obtained from  $-\beta_1/2\beta_2$  dan  $-(\beta_1\delta_1)/2(\beta_2+\delta_2)$ . The results supported H2 that financially constrained firms will have a lower degree of optimal working capital than financially unconstrained firms.

CONCLUSION

The results show that working capital has a nonlinear effect (U-shaped inverted) on the performance when using ROA and ROE as performance measurement, which means there is a maximum point. The optimal degree of working capital for the ROA and ROE as performance is 271.23 days and 267.20 days, respectively. This study answers the contradictions of previous studies, which showed a positive effect of working capital on firm perfor-

Table 4 Hypothesis 2 Testing

Dependent Variable: ROA				
	DPRdummy	CFdummy	Intcovdummy	Coexfdummy
NTC	.0002254***	.0005925***	0,000376***	0,0001771**
NTC <sup>2</sup>	-3.80e-07***	-8.44e-07***	-6,8e-07***	-3,62e-07**
DFC*NTC	-.0001118**	-.0004255***	-0,00035***	-0,0000954**
DFC* NTC <sup>2</sup>	1.74e-07**	5.15e-07**	5,33e-07***	1,57e-07*
Size	.0029461	.0007259	0,017867**	0,018717**
Leverage	-.0955525***	-.0789955**	-0,0745885**	-0,085418**
Growth	.0002257***	.0002572**	0,00015777*	0,0003976**
Constant	-.0067677	0201579	-0,3209886**	-0,33126**
R <sup>2</sup>	0.2853	0.2749	0,2572	0,1525
Dependent Variable: ROE				
	DPRdummy	CFdummy	Intcovdummy	Coexfdummy
NTC	.0005848**	.0016575**	0,0009426***	0,0003778***
NTC <sup>2</sup>	-9.86e-07**	-2.57e-06**	-1,45e-06***	-7,02e-07***
DFC*NTC	-.000275**	-.0010391**	-0,0006951***	-0,0003128***
DFC* NTC <sup>2</sup>	4.43e-07*	1.38e-06*	1,05e-06***	5,70e-07**
Size	-.0925937	-.093267	0,0348592***	0,0337162***
Leverage	-.3056945	-.2701036**	-0,1712547**	-0,2627797***
Growth	-.000522	-.0002748	0,0003015**	0,0005083*
Constant	2.066393	2.023086	-0,6357135***	-0,8247029***
R <sup>2</sup>	0.0136	0.0318	0,1608	0,1186

mance (Schiff and Lieber, 1974; Blinder and Maccini 1991; Charitou, Lois, and Santoso, 2012) and showed a negative effect of working capital on firm performance. (Kim and Chung, 1990; Mohamad and Saad, 2010; Kieschnick et al., 2011).

Table 5 Summary of Hypothesis 1 Testing

Dependent Variables	Result
ROA	271,23 days
ROE	267,20 days

Table 6 Summary of Hypothesis 2 Testing

Dependent Variable: ROA				
	DPRdummy	CFdummy	Intcovdummy	Coexfdummy
NFC	296.57 days.	351 days	166.66 days	195.45 days
FC	275.72 days	253,21 days	309.21 days	244.61 days
Dependent Variable: ROE				
	DPRdummy	CFdummy	Intcovdummy	Coexfdummy
NFC	296.551 days	322.47 days	309.375 days	246.21 days
FC	285,26 days	259.83 days	325.03 days	269.08 days

Besides, the results also show that there is an interaction impact between the financial constraints dummy and working capital when using financially constrained firms grouped based on cash flow, size, and dividend pay-out ratio using ROA and ROE as performance. The next step is calculating the optimal degree of working capital for financially constrained and unconstrained firms. The results show that financially constrained firms have lower optimal working capital than financially unconstrained firms. This shows that the benefits of working capital are more used by financially unconstrained firms.

This study has implications for management to consider the optimal degree of working capital. First, working capital can have a positive impact on firms performance, but when a firm has working capital that exceeds the optimal degree, it will harm firm performance. So

the manager must be able to decide the optimal degree of working capital in order to produce maximum financial performance. Besides, the optimal degree of working capital owned by each company will be different depending on several factors; one of them is the financial condition of the firm. Financially constrained firms will have a lower degree of optimal working capital than unconstrained firms. So the manager must consider the financial condition in determining the degree of working capital in order to produce maximum financial performance.

This study has the following limitations:

1. The study has not separated the sample of working capital so that the working capital range is still too broad
2. The study only relates the amount of optimal working capital to the financial condition yet to associate with other factors.
3. Grouping of financially constrained firms are only based on the median of the sample is not strong enough to provide that the company is classified as a financially constrained or financially unconstrained firm. The grouping is only separated the sample into two groups.

Then further research can confirm the findings of whether a firm that has a low degree of working capital will increase its performance if working capital is extended and vice versa by the following research suggestions:

1. For further research, it can be used by separating the sample first based on the firm's working capital.
2. For further research, the optimal degree of working capital can be related to other factors such as the business life cycle or bargaining power.

3. For further research can be used other proxies, especially grouping companies financially constrained firms more comprehensive, for example using specific scores.

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