



## WORKING CAPITAL MANAGEMENT AND ITS INFLUENCE ON PROFITABILITY AND SUSTAINABLE GROWTH

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**Abstract.** This study aims to test the effect of working capital management on firms' profitability and the effect of this relationship on sustainable growth. Our sample firms are 136 manufacturing firms listed in the Indonesian Stock Exchange from 2010 to 2017. We use data panel regression with fixed effect estimation model to analyze our data. The results demonstrate that working capital significantly affects firms' profitability. However, working capital management does not exhibit a significant direct influence on sustainable growth but a significant indirect influence through firms' profitability. Thus, this study suggests that firms need to manage their working capital to increase their profits and eventually to achieve sustainable growth. This study contributes by including sustainable growth in the analysis of the relationship between working capital and firm performance. In addition, this study will likely contribute to managers in efforts to increase sustainable growth for their enterprises through working capital management.

**Keywords:** working capital management, profitability, sustainable growth, cash conversion cycle, return on assets, manufacturing industry.

**JEL Classification:** G31, G39, C23.

### Introduction

Working capital management aims to increase profitability and at the same time to enable firms to repay their mature liability by ensuring their liquidity (Pass and Pike 1996). Thus, it is necessary that firms balance these two objectives in their activities (Gitman 2011). Working capital management is closely related to the decisions on firms' asset composition and current liabilities that imply on firms' profitability (Adekola et al. 2017, Deloof 2003, Mannori and Mohammad 2012). Further, Misbah et al. (2015) indicates that working capital management is the essential element of firms' daily operating activities.

Managerial inability to manage working capital will potentially create financial difficulties for firms (Smith 1973). On the contrary, firms with well-managed working capital are likely to demonstrate increased performance (Raheman

and Nasr 2007). Previous studies have shown the effects of working capital management on liquidity (Adekola et al. 2017, Attom 2016) and profitability (Al-abass 2018, Deloof 2003, Hien Tran et al. 2017, Panda and Nanda 2018, Raheman et al. 2010, Raheman and Nasr 2007). The studies not only focus on larger firms as their sample firms (Altaf and Shah 2018, Atta et al. 2017, Bagh et al. 2016) but also on small and medium enterprises (Afrifa 2015, Afrifa and Tingbani 2018, Lamptey et al. 2017).

Firms' ability to manage their working capital will not only increase their profits but also their growth. In relation to firms' growth, Higgins (1977) introduces the concept of sustainable growth rate that indicates firms' maximum sales growth without having to change their financing decisions. Sustainable growth rate refers to firms' maximum growth rate by only relying on internal financing, and not on

additional financing (such as new investors or long-term liabilities). Ashta (2008) and Fonseka et al. (2012) suggest that firms base their operating activities on sustainable growth. Firms that operate above their sustainable growth are potentially prone to financial distress or even bankruptcy because of excessive financial leverage. Meanwhile, firms that fail to achieve sustainable growth run a risk of slow or even stagnant growth.

The ability to manage working capital is closely related to sustainable growth (Churchill and Mullins 2001, Rădășanu 2015). For example, firms that manage their sales policies well will produce sufficient cash flows for their operating activities and eventually increase their profits. Further, profitability plays an important role in sustainable growth (Shapiro and Balbire 2000). Several studies, such as Amouzesch et al. (2011), Mukherjee and Sen (2018) and Manaf et al. (2018) support this argument by demonstrating the effect of profitability on firms' sustainable growth. It then can be predicted that working capital management affects sustainable growth through firms' profitability. Thus, the role of firms' profitability as a mediating variable between working capital management and sustainable growth is an interesting research avenue.

Specifically, this study aims to: (i) test the effect of working capital management on firms' profitability, (ii) investigate the effect of firms' profitability on sustainable growth, and (iii) analyze the effect of working capital management on sustainable growth as mediated by profitability. We focus on manufacturing firms because these firms exhibit a relatively high proportion of working capital and even it is not uncommon that working capital constitutes more than a half of manufacturing firms' total assets (Ahmad and Samim 2018, Deloof 2003, Wasiuzzaman 2015). Besides, manufacturing firms play a strategic role in countries' national economy (Raheman et al. 2010). Specifically, manufacturing firms exhibit the largest contribution to GDP (20.16%) and export (75.99%) of the Indonesian economy. Indonesia even ranks fourth from 15 countries in terms of the contribution of the manufacturing sector to GDP. As a developing country, Indonesia itself exerts a significant influence on the economic growth in South East Asia because it recorded the economic growth of 5% in 2017 (according to Statistics Indonesia) and have the largest GDP in this region.

This study contributes to the literature by extending the working capital research model that heavily focuses on profitability. Most of the previous studies focus on only the impact of working capital on profitability (Deloof 2003, Hien Tran et al. 2017, Raheman et al. 2010) although profitability itself affects sustainable growth (Amouzesch et al. 2011, Hien Tran et al. 2017, Manaf et al. 2018, Shapiro and Balbire 2000). Further, working capital management is also closely related to sustainable growth (Churchill and Mullins 2001, Rădășanu 2015). However, so far there are no studies

that investigate the effect of working capital management on sustainable growth. It is also expected that this study offers a managerial implication by suggesting that managers prepare more specific working capital management to enhance their profitability and to achieve sustainable growth.

## 1. Literature review and hypothesis development

The importance of working capital management is closely related to the fact that most companies invest large amounts of money into current assets and rely on current liabilities as a source of financing (Deloof 2003, Korallun-Bereznicka 2014) Working capital management consists of all decisions that are related to the management of current assets and liabilities, i.e. determining the optimal amount of cash, receivables, inventory, and current liabilities and the relationship between current assets and current liabilities (Abuzayed 2012). Working capital management also refers to financing and investing activities and net current asset control through various firms' policies (Padachi et al. 2012). By managing their working capital, firms can shorten their operating and cash cycles and eventually increase their profitability (Hien Tran et al. 2017, Raheman et al. 2010). The shorter the firms' operating and cash cycles, the more likely are firms to generate profits.

In recent years, scholars have begun to demonstrate their interests in investigating the strategic role of working capital management in firms. Most previous studies indicate that working capital management affects profitability. Raheman et al. (2010) analyze the relationship between working capital management and profitability in 204 listed manufacturing firms in the Karachi Stock Exchange, Pakistan, from 1998 to 2007. The findings suggest the negative relationship between working capital management as indicated by inventory and receivable turnover with firms profitability (as indicated by net operating profit). Using 88 US firms listed in the New York Stock Exchange in 2005–2007 as the sample firms, Gill et al. (2010) show that shortening the receivable collection period arguably increases profitability. Vural (2012) have also investigated the role of working capital management in explaining profitability. Using 75 manufacturing firms listed in the Istanbul Stock Exchange in 2002–2009 as the sample, they demonstrate that the receivable collection period and cash cycle are negatively related to firms' profitability. Thus, the results imply that longer receivable collection period will negatively affect firms' profitability. In a similar vein, the longer cash cycle reduces firms' profitability. Further, using 200 Vietnamese manufacturing firms listed in the Hanoi Stock Exchange (HSE) from 2010 to 2012, Hien Tran et al. (2017) show that working capital management significantly affects profitability. Based on the previous arguments and empirical studies, the following is our first hypothesis:

*H1: Working capital management significantly affects firms' profitability.*

Sustainable growth indicates annual sales growth that is consistent with firms' financing policy (Higgins 1977). Based on firms' financing policy, managers will be able to determine the maximum sales level of their firms (Momčilović et al. 2015) that will not negatively affect their cash flows (Ashta 2008). Firms' financing policy is related to their decisions not to issue new shares and maintain their debt to equity (DER) ratio at certain levels. Consequently, the focus of sustainable growth is not only the funds needed to achieve expected growth rate but also the extent of firms' ability to develop by using their existing internal financing sources (Shapiro and Balbirer 2000).

Rădășanu (2015) explains that working capital management is closely related to sustainable growth. An effective working capital management helps firms maintain their liquidity that enables them to have sufficient cash flows to repay mature short-term liabilities and to acquire lower cost of capital (Barine 2012). Further, previous studies of Amouzesh et al. (2011) and Fonseka et al. (2012) find that liquidity affects sustainable growth. Besides, effective working capital helps firms reduce the stock-out risk and acquire sufficient financing sources to operate. Thus, firms will manage to achieve sustainable growth. Based on these arguments, we propose our second hypothesis:

*H2: Working capital management significantly affects sustainable growth.*

Sustainable growth is in line with the pecking order theory that argues that firms should prioritize internal financing sources over the external ones such as debt and share issuance because internal financing sources have a lower cost of capital. Issuing new shares potentially provide a negative signal because firms issue new shares usually when they lack sufficient internal funds and firms cannot issue new debts (Palombini and Nakamura 2012).

The availability of internal financing is closely related to firms' ability to generate profits. Thus, firms have to constantly strive for increasing their profitability. Amouzesh et al. (2011) find the relationship between profitability and sustainable growth. Further, Manaf et al. (2018) also demonstrate a significant positive relationship between profitability and sustainable growth. All in all, these studies suggest that higher profitability will increase sustainable growth. It is possible that working capital management affects sustainable growth through profitability. As stated by Churchill and Mullins (2001) if firms manage to shorten their operating cycles, to reduce cash needed during their operating cycles, and to generate more cash during their operating cycles, they can increase their profits and eventually their sustainable growth. Consistent with the previous arguments and empirical studies, the following is our third hypothesis.

*H3: Firms' profitability mediates the significant effect of working capital management on sustainable growth.*

## 2. Research method

### 2.1. Data sample

Our sample firms are all manufacturing firms listed in the Indonesian Stock Exchange (IDX) from 2010 to 2017 (136 firms). We use the 2010–2017 period as our observation years because in these years firms have arguably survived the latest global financial crisis in 2008. Thus, their financial condition is less likely to be affected by the crisis. We generate our data from sample firms' relevant published financial statements. Our panel data approach compares the financial condition of firms from the same industry in a single country (Indonesia). Specifically, our data sources are firms' formal websites, the website of the Indonesian Stock Exchange (<http://www.idx.co.id>) and IDN Financials (<https://www.idnfinancials.com>).

### 2.2. Variables measurement

The dependent variable is sustainable growth. We measure this variable by using the sustainable growth rate (SGR) that is the multiplication between ROE and Retention Rate (Higgins 1977). Meanwhile, our independent variable is working capital management as empirically indicated by cash cycle (CCC) because theoretically cash cycle shows the period needed by firms to convert their cash outflows to cash inflows. This indicator strongly represents firms' working capital management (Hien Tran et al. 2017). Further, profitability, as measured with return on assets or ROA (Mehta 2017, Oseifuah and Gyekye 2016) is the mediating variable. Lastly, our control variables are the firm size (FRSIZE), sales growth (SALESGR), leverage (LEV) and total asset turnover (TATO). We use these control variables to mitigate the size effect. Several previous studies on working capital management use leverage as the control variable because this variable is likely to be closely related to the change in working capital management (Deloof 2003, Hien Tran et al. 2017, Vural 2012).

### 2.3. Analytical technique

We empirically test the relationship between variables and to analyze the presence of the mediating variable in this relationship using STATA version 14. In line with the formulation of the hypothesis, we use the following estimation model:

$$ROA_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 SALESGR_{it} + \beta_3 FRSIZE_{it} + \beta_4 LEV_{it} + \beta_1 TATO_{it} + \varepsilon_{it}; \quad (1)$$

$$SGR_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 SALESGR_{it} + \beta_3 FRSIZE_{it} + \beta_4 LEV_{it} + \beta_1 TATO_{it} + \varepsilon_{it}; \quad (2)$$

$$SGR_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 ROA_{it} + \beta_3 SALESGR_{it} + \beta_4 FRSIZE_{it} + \beta_5 LEV_{it} + \beta_6 TATO_{it} + \varepsilon_{it}. \quad (3)$$

Note:

SGR – Sustainable Growth Rate, dependent variable  
 CCC – Cash Conversion Cycle, independent variable  
 ROA – Return on Assets, mediating variable  
 SALESGR – Sales Growth, control variable  
 FRSIZE – Firm Size, control variable  
 LEV – Leverage, control variable  
 TATO – Total Assets Turnover, control variable  
 $\beta_0$  – Constant  
 $\beta_{1-6}$  – Regression Coefficient

Model I demonstrates the direct effect of the CCC variable as an indicator of the working capital management variable on ROA as an indicator of profitability. Meanwhile, model II explains the direct effect of the CCC variable on the SGR variable. Lastly, model III shows the impact of the CCC variable on the SGR variable through ROA as a mediating variable. The conceptual relationship among dependent, mediating and independent variables used in this study is presented in Figure 1.

According to Baron and Kenny (1986), there are three alternative results of the mediating effect. Firstly, the effect of the independent variable on the dependent variable becomes insignificant (or vice versa) in the presence of the mediating variable. This effect implies that the mediating variable acts as the full mediator in the relationship. Secondly, the effect of the independent variable on the dependent variable remains significant in the presence of the mediating variable, suggesting that partial mediation exists. Thirdly, when these two conditions are absent, the mediation effect is considered insignificant.

Baron and Kenny (1986) explain that there are two conditions that have to be fulfilled for the method to qualify, namely the a, b, and c coefficients should be significant and the c' coefficient < c. However, the significance of the a and b coefficients is sufficient to indicate the mediating effect although the c coefficient is insignificant (MacKinnon 2008), implying that it is likely that the relationship between the independent variable and the dependent variable must be through the mediating variable. Besides, there is an

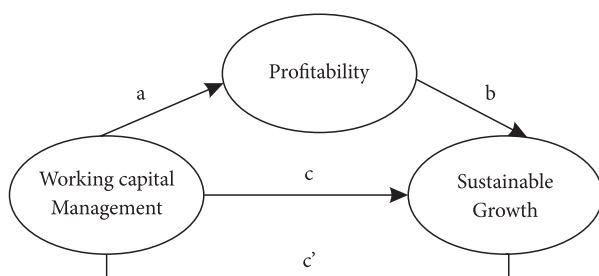


Figure 1. Mediating effect

alternative method to statistically ensure the significance of the mediating effect, namely by multiplying the a and b coefficients and then dividing the results with the standard errors of both coefficients ( $S_{ab} = \sqrt{b^2 S_a^2 + a^2 S_b^2 + S_a^2 S_b^2}$ ). This method, labeled as the product of the coefficient method, searches for Z value. If Z value is greater than the value of  $Z_{table}$ , then there is an indirect effect of the independent variable on the dependent variable or, in other words, the mediating effect exists. Sobel test, Arorian test, and Goodman test use this approach to test the significance of the mediating effect.

Before testing our hypothesis, we initially determine the appropriate panel data estimation model using the following tests: Chow test, Hausman test, and Lagrange Multiplier. Chow test aims to determine whether a common effect or fixed effect model is more appropriate to estimate panel data (H0: common effect model, H1: fixed effect model). Meanwhile, the Hausman test selects a fixed effect or random effect model (H0: random effect model, H1: fixed effect model). Further, the Lagrange multiplier test selects random or common effect (H0: common effect model, H1: random effect model). If p-value of each test < 0.05 then H0 is rejected and vice versa. We run a Lagrange multiplier test after Chow test or Hausman test.

### 3. Findings and result

#### 3.1. Descriptive statistics

The descriptive statistics describe our data by using the mean, standard deviation, minimum, and maximum values as the indicators. This study uses data from 136 Indonesian manufacturing firms from 2010 to 2017. We generate the data for our independent, mediating, dependent, and control variables from the Indonesian Stock Exchange and IDN Financials websites.

Table 1 shows that the mean value of the sustainable growth rate of Indonesian manufacturing firms is 3.45%. Although Indonesian manufacturing firms grow, they still lack internal funds to facilitate their growth. Long-term

Table 1. Descriptive Statistics (secondary data, processed)

Variables	Mean	Standard Deviasi	Minimum	Maximum
SGR (%)	3.45	30.23	-483.04	192.29
CCC (days)	131.57	109.57	-548.53	729.54
ROA (%)	5.24	10.77	-81.11	74.07
SALESGR (%)	11.55	37.28	-100	594.73
FRSIZE	21.26	1.57	17.13	26.40
LEV (%)	33.72	45.35	0.04	478.05
TATO (times)	1.08	0.57	0.02	4.14

liabilities remain important financing sources for these firms. Meanwhile, the mean value of firms' profitability is only 5.24% and relatively varies between firms as indicated by the standard deviation and the range between the minimum and maximum values. On the other hand, in general, Indonesian manufacturing firms exhibit cash cycles. Specifically, firms in machinery and heavy equipment sub-sectors exhibit cash cycles. Besides, firms in cigarette and textile and garment subsectors have greater inventory, causing their inventory periods to be also high. We conjecture that firms with greater inventory levels aim to ensure the availability of their materials.

### 3.2. Hypothesis testing and discussion

This study uses the Pearson correlation matrix of the total sample and *VIF* (Variance Inflation Factor) to test the multicollinearity between explaining variables. Table 2 displays the results of the Pearson correlation and *VIF*. The results suggest that no correlation coefficient is higher than 0.7 and relatively low while no *VIF* value is greater than 10. Thus, it can be concluded that there is no multicollinearity problem.

We run panel data regression to test our hypotheses. This method offers an advantage that is absent in the time-series

and cross-section methods. In this respect, the panel data method manages to overcome several problems such as heteroscedasticity and multicollinearity (Baltagi 2005). Initially, we run several tests to determine the appropriate panel data estimation method. Specifically, the Chow test determines whether the pooled regression or fixed effect is more appropriate to determine the panel data estimation method. As shown by Table 3, the results of the Chow test indicates that the fixed effect is more appropriate to estimate all regression models ( $\text{prob} > F$  is less than 0.05). We then run Hausman test to select a fixed effect or random effect. The results of the Hausman test suggest that fixed effect is more appropriate for all models. To ensure the robustness of our results, we apply the robustness fixed effect test (Table 3).

The table demonstrates that working capital management exhibits a significantly positive influence on firms' profitability (Model 1). In other words, longer cash conversion cycles even increase firms' profitability. We explain these findings by suggesting that longer cash cycles due to higher levels of inventories will reduce costs driven by stock-outs. Thus, firms are willing to stock more inventories to ensure the continuity of their business processes. Besides, longer cash cycles are likely to be affected by firms' decisions

Table 2. Correlation Matrix (secondary data, processed)

	<i>SGR</i>	<i>CCC</i>	<i>ROA</i>	<i>SALESGR</i>	<i>FRSIZE</i>	<i>LEV</i>	<i>TATO</i>	<i>VIF</i>
<i>SGR</i>	1							
<i>CCC</i>	-0.097	1						2.59
<i>ROA</i>	0.400	-0.117	1					1.55
<i>SALESGR</i>	0.103	0.001	0.095	1				1.17
<i>FRSIZE</i>	0.044	-0.206	0.148	0.021	1			7.99
<i>LEV</i>	-0.110	0.095	-0.320	-0.017	-0.020	1		1.75
<i>TATO</i>	0.177	-0.372	0.318	0.050	-0.165	-0.030	1	5.33

Table 3. Regression Results (secondary data, processed)

Variables	Model 1 ( <i>CCC-ROA</i> )		Model 2 ( <i>CCC-SGR</i> )		Model 3 ( <i>CCC-ROA-SGR</i> )	
	Fixed Effect	Fixed Effect Robust	Fixed Effect	Fixed Effect Robust	Fixed Effect	Fixed Effect Robust
<i>SGR</i>						
<i>CCC</i>	0.02***	0.02***	-0.06***	-0.06	-0.08***	-0.08*
<i>ROA</i>					1.70***	1.70*
<i>SALESGR</i>	0.04***	0.04***	0.12***	0.12	0.07*	0.07
<i>FRSIZE</i>	-0.46	-0.46	2.73	2.73	3.38	3.38
<i>LEV</i>	-0.11***	-0.11***	-0.05	-0.05	0.14**	0.14**
<i>TATO</i>	6.46***	6.46***	12.57**	12.57*	2.44	2.44
F-test	35.19***	17.71***	6.81***	3.12**	22.92***	3.21**
R-square	0.1719		0.0426		0.1211	
Chow Test	9.08***		2.09***		2.14***	
Hausman Test	19.69***		14.26**		28.34***	

Notes: \*significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%.

to invest in receivables to realize their sales. Although we fail to empirically show that short cash cycles affect firms' profitability, our results are in line with Abuzayed (2012) who also demonstrate the positive relationship between working capital management and profitability.

Meanwhile, for model 2, the results of the fixed effect robustness show that working capital management does not directly affect sustainable growth. These findings are inconsistent with Fonseka et al. (2012) who show that working capital management affects sustainable growth. As empirically shown by the next model, we argue that it is likely that our insignificant results are due to the presence of other variables that mediate the effect of working capital management on sustainable growth.

However, after including firms' profitability in the specification, working capital management significantly affects sustainable growth (Model 3). Also, the results suggest that firms' profitability significantly affects their sustainable growth. Increased firms' ability to generate profits will enhance their sustainable growth. Our results are in line with previous studies that demonstrate that profitability affects firms' sustainable growth (Amouzesh et al. 2011, Fonseka et al. 2012, Manaf et al. 2018, Rahim 2017). These findings suggest that increased profitability will provide more internal funds for firms to support sustainable growth. Besides, the inclusion of the profitability variable in the specification that changes the significance of the effect of working capital management and sustainable growth (from an insignificant effect to a significant effect), we conclude that profitability is a variable that mediates the relationship between these two variables.

Besides, the results of the Sobel test, Goodman (Arorian) test, and Goodman test in Table 4 confirm that profitability mediates the relationship between working capital management and sustainable growth. Accordingly, firms can increase their sustainable growth by increasing their ability to generate profits or profitability. Increased profitability facilitate firms to generate internal funds that are important to increase their sustainable growth. In this condition, firms are likely to grow without having to rely much on external financing with higher financing costs for their investments in current and fixed assets. Thus, working capital management that is closely related to the way firms manages their business operations becomes very crucial. Firms can adopt appropriate working capital management policies. Further,

because our empirical findings demonstrate that longer cash cycles positively affect profitability, conservative investment policies in current assets and current assets financing can be alternative working capital policies for manufacturing firms. However, firms should not invest in cash, securities, receivables, and inventory too much because it will increase their holding cost and financing cost that harm their profitability and eventually their sustainable growth.

## Conclusions and future research

This study analyzes the relationship between working capital management, firms' profitability, and sustainable growth. The results demonstrate that working capital management is significantly associated with firms' profitability. Further, although not directly affecting sustainable growth, working capital management significantly affects sustainable growth through firms' profitability. Our empirical results offer both theoretical and practical implications. Theoretically, this study contributes by extending the literature in working capital management that mainly focuses on profitability and not investigates further the effect of working capital management on sustainable growth as mediated by firms' profitability. Practically, by demonstrating that profitability is a variable that mediates the relationship between working capital management and sustainable growth, our study advises firms to focus on their working capital management to enhance their profitability and eventually their sustainable growth. Increased profitability facilitates firms to acquire more internal funds that will eventually enhance their sustainable growth. In this condition, firms could grow without having to rely much on external financing sources with higher financing costs for their investments both in current assets and fixed assets. Thus, firms have to pay considerable attention to working capital management. Further, although our findings show that longer cash cycles positively affect firms' profitability, firms should not invest excessively in cash, marketable securities, receivables, and inventories and take the holding cost and financing cost of these assets into consideration to maintain their profitability and eventually their sustainable growth.

Previous studies show inconsistent results in investigating the effect of working capital management on firms' profitability. These inconsistent results offer a research avenue on the possible non-linear relationship between these two variables. Further, there are no studies that use the Indonesian context and test the non-linear relationship between working capital management and profitability. The condition provides an ample opportunity to investigate such issue in Indonesia. Besides, different industry characteristics cause greater variability in firms' cash cycles. We then advise future studies focus on the cross-country analysis of firms in the same industries to generate a better understanding of firms' working capital management.

Table 4. The results of the mediating effect (secondary data, processed)

Mediation Test	Coefficient
Sobel	0.0111***
Goodman-1 (Aroian)	0.0111***
Goodman-2	0.0111***

Notes: \*significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%.

## Disclosure statement

Authors declare that they have no competing financial, professional, or personal interests from other parties

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