Working capital management and financial performance of Malaysian construction sector companies

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Abstract

This study examines the effects of working capital management on financial performance of construction companies listed in Bursa Malaysia for the period of 2012 to 2016. The findings show that only a shortening collection period and a positive working capital are significant to improve financial performance of local construction firms. An effective working capital management however does not contribute significantly to operating cash flow and share price of construction firms in Malaysia. The findings of this study suggest the management of account receivable is the most critical factor to improve financial performance for the local construction firms.

Keywords: Working capital management; Cash conversion cycle; Return on asset; Return on equity; Share return

JEL Classification: G30, G32, L25, O25

INTRODUCTION

Construction industry in Malaysia has witnessed an accelerated upward trend since a decade ago due to its remarkable growth in several projects undertaken as well as the strong support of Government initiated by the Construction Industry Master Plan (CIMP) 2006 – 2015. The compilation from Construction Industry Development Board (CIDB) revealed that the construction sector is the most substantial economic driver for Malaysia during the 10th Malaysia Plan (10MP) from 2011 to 2015 with a high average growth of 11 percent. During the period of 10MP, the Government invested heavily in infrastructure, industrial parks and residential buildings. Among them, the residential construction was the largest market and charted a nominal compound annual growth rate (CAGR) of 19.7 percent supported mainly by the Government's affordable housing scheme. Moving forward, Malaysia's mega infrastructure projects are expected to bode well for the growth trajectory of the construction industry and other downstream industries under the 11th Malaysia Plan (11MP) from 2016 to 2020. These projects include the High Speed Rail, the Pan Borneo Highway, East Coast Rail Link, Bandar Malaysia and Vision Valley, are expected to boost the economy by more than 50 percent to RM2 trillion by the end of 11MP.

   Despite the significant contribution of construction industry to economic growth in Malaysia, liquidity has been an issue of major concern as it really gives pressure to firms in managing their cash flow problem. Contractors supervise their projects very closely with the aim to minimise the wastage and optimise the workforce to make sure the scheduled delivery is achieved in time for

the clients. Nevertheless, the industry has been facing a chronic problem of delayed and non-payment disputed by contractors. The payment due is postponed until the resolution of the dispute which is generally take a long duration in the court. Delayed payments can stretch working capital and drive a need to finance these payment delays and hence drive up costs that were not factored into the price of the bid. As a result, a working capital position that can provide a short-term financial cushion to construction companies is essential particularly in a fast growing economy like Malaysia.

Working capital involves investment and financing in short term to ensure a firm can sustain longer and increases the firm value in a longer period. This can be achieved through the management and improvement of firm's liquidity. Basically, the liquidity is the result of the time lag between the expenditure for the purchase of raw materials and the collection for the sales of finished products. The components of working capital are inventories, accounts to be paid to suppliers, and payments to be received from customers after sales. The proportions of these components in the working capital change from time to time during the trade cycle and hence affect the financing and investing decisions. It can be implied that lesser requirement of working capital leads to less need for financing and less cost of capital and hence availability of more cash for shareholders. However, the lesser working capital may lead to lost sales and thus a tradeoff between liquidity and profitability may exist.

The popular measure of working capital management is the cash conversion cycle (CCC). It translates the financial information of companies into a tool that is useful in making strategic investment decisions. CCC provides concrete information about the management of cash flows through the management of receivables, the management of inventories, and the use of trade credit. A shorter CCC can be related with high profitability as it implies a company manages and operates the inventory more quickly, collects cash from receivables in shorter time and delays the cash payments to supplier with least negative impact to its own credit reputation.

This study differs from previous studies as it provides the first and a timely analysis to ascertain the relationship of working capital management and financial performance of 40 local listed construction firms for the period of 2012 to 2016. The study is organised as follows. Section 2 provides some arguments on liquidity and firm's performance. Section 3 describes the data and methodology. Section 4 contains summary of the results and discussion, and Section 5 concludes.

LITERATURE REVIEW

The primary purpose of working capital management is to manage current assets and current liabilities to ensure the company always meets its short-term operating costs and short-term debt obligations. Inefficient management of working capital may lead to bankruptcy even though the company's profitability is constantly positive, while excessive levels of working capital can easily result in a substandard return on assets (Mandiefe, 2016). In a simpler way, firms can increase profitability by reducing the CCC. In the long run, management of cash flow is much more important than profit. Investigating changes in working capital is critical to manage firm's cash flow as an optimal level of working capital is the level expected to have maintain positive cash flow position and hence maximise the shareholders' wealth.

Vural, Sokmen and Cetenak (2012) examined 75 selected listed companies on the Istanbul Stock Exchange and found a significant negative association between the CCC and profitability. Similarly, Ukaegbu (2014) investigated 102 firms in Africa for a period of five years also found a significant increase in profitability by shortening the CCC. In Malaysia, Kasiran, Mohamad and Chin (2016) conducted a study on efficiency of working capital management to profitability of 24 small and medium enterprise (SME) firms for a sampling period of 2009 to 2013. Their findings concluded a significant positive relationship between working capital management and profitability. Another recent study by Bulin, Basit and Hamza (2016) on 50 listed consumer product firms at Bursa Malaysia between 2011 and 2015 also found a consistent result of the impact of working capital management towards the profitability of firms in Malaysia.

As the cash is the most liquid of all assets, an increase in liquidity from working capital management would increase the operating cash flow of the company and vice versa. Based on 184 companies listed on Tehran Stock Exchange, Rashvand and Tariverdi (2015) reported a significant positive relationship between working capital management and the operating cash flow during the period of 2009 to 2013. Recently, Ramesh, Al-Habsi and Al-Sharji (2017) also concluded a significant negative effect of CCC on the return on assets (ROA) based on 19 manufacturing firms listed in Muscat securities market of Oman over a period of 10 years from 2006 to 2015. In contrast, Jakpar, Tinggi, Siang, Johari, Myint and Sadique (2017) examined a sample of 164 listed manufacturing firms from 2007 to 2011 in Malaysia however suggested the firm's capability in cash conversion from the working capital management has no significant impact on firm's profitability.

As the management of working capital may have both negative and positive impact on the firm's liquidity and profitability, which in turn, has negative and positive effect on the shareholders' wealth. For example, Raheman and Nasr (2007) based on a sample of 94 Pakistani firms listed on Karachi stock exchange from 1999 to 2004 have found an increase in CCC will lead to a decreasing profitability of firms. Their findings conclude that managers can create a positive value for the shareholders by reducing the CCC to a possible minimum level. Similar findings and implications are found by Dong and Su (2010) based on listed firms in Vietnam stock market for the period of 2006 to 2008. In Malaysia, Mohamad and Saad (2010) randomly selected 172 listed companies from 2003 to 2007 and associated a significant negative relationship between working capital variables with firm's value measured by Tobin Q, ROA and return on invested capital. On the contrary, Akoto, Dadson and Angmor (2013) based on 13 listed firms in Ghana during 2005 to 2009 found a significant positive relationship between CCC and profitability. Their findings suggest that managers can only create value for their shareholders by creating incentives to reduce the accounts receivable days as it is the only variable significantly negatively influences profitability. Similarly, Bammeri and Dehani (2013) investigated the impact of working capital management on the stock returns of 112 companies in Tehran Stock Exchange and found an efficient management of working capital did not have any influence on stock return between the years 2002 to 2011.

DATA AND METHODOLOGY

The sample is drawn from all the construction companies listed on the Main Market of Bursa Malaysia from 2012 to 2016. These companies are subjected to the following selection criteria: the companies must be available over the test period; the companies are Malaysian-domiciled and not foreign companies; the complete set of financial data is available from the Bloomberg. These selection criteria resulted in a final sample of 40 companies which is detailed by the complete data that is required to calculate the CCC such as the account receivable turnover, account payable turnover and inventory turnover as well as the other financial variables such as return on asset and return on equity.

To examine whether working capital management influences firm's financial performance, five alternative regression models (Model A to Model E) are adopted and their associated variables are defined as follow:

Model A: $Y_1 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$
where β_i is partial regression coefficients which represent expected change in the dependent variable (Y) for each unit change in ith independent variable (X_i), ε is the random error.
Dependent variable: Y_1, where Y_1 = EBITDA to Total Asset ratio (%)
Independent variables: X1, X2, X3, X4
where
X1 = Net Working Capital to Total Asset ratio (%), Net Working Capital is computed as total current assets minus total current liabilities
X2 = Average Collection Period (days)
X3 = Average Inventory Holding Period (days)
X4 = Average Payment Period (days)

Kumaraswamy (2016) studied the relationship between EBITDA and net working capital. He found that average collection period and inventory conversion period are significant factors in predicting the firm profitability, followed by the average payment period.

Model B: $Y_2 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$
Dependent variable: Y_2, where Y_2 = Operating Cash Flow to Total Asset ratio (%)
Independent variables: X1, X2, X3, X4

Kroes and Manikas (2013) examined the relationships between changes in cash flow measures and changes in firm financial performance. They concluded that changes in both average collection period and average inventory holding period are negatively and significantly associated with changes in cash flow. Average payment period however is not significant to the changes in cash flow measures.

Model C: $Y_3 = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$
Dependent variable: Y_3, where Y_3 = Return on Asset (%)
Independent variables: X1, X2, X3, X4

Obermaier and Donhauser (2012) found that firms with the lowest inventory level have the worst performance level. Their findings of net working capital to total asset is significant with return on asset is consistent with a recent study by Sheikh, Rafique and Nauman (2016).

Model D: $Y4 = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \varepsilon$
Dependent variable: Y4, where Y4 = Return on Equity (%)
Independent variables: X1, X2, X3, X4, X5, where X5 = Long-Term Debt to Total Asset ratio (%)

Abor (2005) explored the impacts of capital structure on the firm performance and observed a negative insignificant association between long-term debt to total asset ratio and return on equity.

Model E: $Y5 = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \varepsilon$
Dependent variable: Y5, where Y5 = Annualised Share Return (%), computed from compounded monthly returns
Independent variables: X1, X2, X3, X4, X5

Mohamadlua and Kashmari (2016) studied the effect of working capital management on stock returns of companies and found the CCC has a significant effect on stock returns.

Specification of Variables:
Y1 = EBITDA / Total Asset
Y2 = Operating Cash Flow / Total Asset
Y3 = Net Income / Total Asset, i.e. return on asset (ROA)
Y4 = Net Income / Shareholder's Equity, i.e. return on equity (ROE)
Y5 = (Principal + Gain/Principal) ^ (1/Years) - 1
X1 = (Total Current Asset – Total Current Liabilities) / Total Asset
X2 = Accounts Receivable / Total Sales × 365
X3 = Inventory / Cost of Sales × 365
X4 = Accounts Payable / Cost of Sales × 365
X5 = Long-Term Debt / Total Asset

To test the usefulness of the overall models:
H0: $\beta0 = \beta1 = \beta2 = \beta3 = \beta4 = \beta5 = 0$
H1: $\beta j \neq 0$ for at least one j

To test the significance of each independent variables:
H0: $\beta j = 0$
H1: $\beta j \neq 0$, where j = 1, 2, 3, 4 or 5

FINDINGS

Descriptive statistics for each of the ten variables are obtained in Table 1. The results in Table 1 show that the operating cash flow to total asset ratio has the lowest mean compare to other ratios with a negative value of negative 0.67 percent suggesting a larger expenses or loses on operating activities. The annualised share return has the highest mean of 10.18 percent which is a reasonably high return to investors but with notably highest standard deviation of 36.5 percent indicating the construction industry in Malaysia exposed to a greater investment risk. The return on asset has the lowest standard deviation of 5.48 percent and an average of 4.32 percent suggesting companies are sound in managing its assets to generate earnings. Correspondingly, the net working capital to total asset with a mean of 27.28 percent indicates the strong ability of construction companies in using short-term assets to cover its short-term debt with a standard deviation of 16.66 percent. The average value of long-term debt to total asset ratio is 12.5 percent indicates percentage of assets financed with long-term debt for the construction industry is fairly low during the period, implying a strong cash flow generated by the companies consistent with the strong growth rate of the industry. The average inventory holding period is 436.28 days (or 1.2 years) with a very high standard deviation of 1049.24 days (or 2.87 years) suggesting a severe problem of oversupply and unsold units. The respective mean for average collection period and payment period of 246.33 days and 214 days are considered healthy and normal for construction industry, suggesting working capital management is of great concern for local companies probably due to rising costs in a highly competitive market.

Table 1: Descriptive statistics of the independent and dependent variables

	Variables	Mean	Standard Deviation	Min	Max	Lower Quartile	Upper Quartile
Y1	*EBITDA to Total Asset ratio (%)*	6.83	6.35	-23.23	22.24	3.34	10.09
Y2	*Operating Cash Flow to Total Asset ratio (%)*	-0.67	10.02	-28.11	36.22	-6.49	4.04
Y3	*ROA in % (Net Income / Total Asset)*	4.32	5.48	-20.67	20.94	1.76	6.81
Y4	*ROE in % (Net Income / Common Stockholders' Equity)*	8.50	13.91	-72.46	38.45	4.91	14.30
Y5	*Annualised Share Return (%)*	10.18	36.50	-38.93	181.82	-10.42	26.18
X1	*Net Working Capital to Total Asset (%)*	27.28	16.66	-29.62	68.90	21.26	35.72
X2	*Average Collection Period (days)*	246.33	714.81	23.72	6241.96	99.61	192.52
X3	*Average Inventory Holding Period (days)*	436.28	1049.24	6.83	5051.06	18.50	311.65
X4	*Average Payment Period (days)*	214.00	425.46	8.14	3546.55	85.42	200.12
X5	*Long-Term Debt to Total Asset ratio (%)*	12.50	12.59	0.00	52.34	1.67	20.61

Regression statistics, ANOVA F-test and t-test have been conducted for each of the five models. The results are summarised in Table 2. The results in Table 2 show that three models are useful for predicting financial performance of construction firms in Malaysia where the significance F is smaller than 0.05 which indicates the results are reliable. These results suggest that at least one independent variable in each of the Model A, C and D is useful in estimating their respective dependent variables. As such, the null hypotheses of these models are rejected. The coefficient of determination, R-square and adjusted R-square of these three models are above 40 percent, suggesting the variation in the dependent variables can be well explained by the independent variables of respective model. On the contrary, Model B and E are not statistically useful in predicting financial performance of construction industry. As such, these two models have failed to reject the null hypotheses.

A closer examination reveals that average collection period (X2) is statistically significant to EBITDA to total asset (Y1), ROA (Y3) and ROE (Y4), while net working capital to total asset ratio (X1) is significant to EBITDA to total asset (Y1) and ROA (Y3) only. Specifically, the predictive power of average collection period (X2) is negative suggesting the shorter the average collection days in working capital management for construction firms in Malaysia contributes significantly to higher earnings before- and after-tax hence a higher return of equity for shareholders. In addition, the results show a positive net working capital in relation to its total asset leads to a higher earnings before- and after-tax but not a higher return of equity for shareholders. These results suggest the cash flow from shortening collection from account receivables exhibits a more vital role in the working capital management of construction industry in Malaysia due to its unique business nature. As such, the local construction firms should act more prudent in sourcing credible contractors to avoid or minimise the potential problem of delayed and non-payment by contractors.

In contrast, the results of this study show that the length of time holding inventory, payment to the creditors or suppliers, and leverage are not statistically significant in achieving a better financial performance for the construction companies in Malaysia. These results suggest the local construction firms to certain extent are efficient in holding their inventory, managing their payment, and also less dependent on external financing especially through long-term debts.

Table 2: Summary of the coefficients for the models

Models	Independent Variables	Coefficient	Std. error	t-statistics	P-values
A	X1	0.183	0.032	5.659	0.000*
	X2	-0.004	0.001	-5.148	0.000*
	X3	0.000	0.001	-0.720	0.474
	X4	-0.001	0.002	-0.482	0.631
	F-value	22.640			0.000*
	R-Sq.	56%			
	Adj. R-Sq.	54%			
B	X1	0.068	0.074	0.911	0.365
	X2	-0.003	0.002	-1.656	0.102

	X3	0.001	0.001	0.520	0.605
	X4	-0.001	0.004	-0.276	0.784
	F-value	1.442			0.229
	R-Sq.	8%			
	Adj. R-Sq.	2%			
C	X1	0.124	0.031	3.981	0.000*
	X2	-0.003	0.001	-4.669	0.000*
	X3	0.000	0.001	0.589	0.558
	X4	0.000	0.001	-0.191	0.849
	F-value	14.533			0.000*
	R-Sq.	45%			
	Adj. R-Sq.	42%			
D	X1	0.184	0.076	2.432	0.018
	X2	-0.012	0.002	-7.254	0.000*
	X3	0.001	0.001	0.549	0.585
	X4	-0.001	0.003	-0.252	0.802
	X5	-0.040	0.095	-0.426	0.672
	F-value	16.866			0.000*
	R-Sq.	55%			
	Adj. R-Sq.	52%			
E	X1	0.316	0.285	1.110	0.271
	X2	-0.009	0.006	-1.343	0.184
	X3	-0.002	0.005	-0.291	0.772
	X4	0.006	0.013	0.420	0.676
	X5	-0.203	0.358	-0.568	0.572
	F-value	1.030			0.407
	R-Sq.	7%			
	Adj. R-Sq.	0%			

* Significant at the 5% level.

CONCLUSION

This study concludes that there an effective working capital management is essential to the financial performance of construction firms in Malaysia. The findings reveal that ability to efficiently collect payments in a timely manner is important for construction firms in generating earnings before any contractual obligations must be paid and contributes to higher return on equity shareholders have invested. Within this context, an improved short-term liquidity measured by net working capital does not provides shareholders with a higher return on the amount they invested in these construction firms. The findings further conclude that the power to hold inventory, time takes to pay off credit purchases and long-term borrowings do not exhibit significant impact for construction firms in Malaysia. In addition, working capital management for construction firms does not affect significantly to operating cash flow and firm value

measured by the share price. In summary, debtor management is the most critical determinant for the financial performance of construction companies in Malaysia.

REFERENCES

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *The Journal of Risk Finance*, *6*, 438–45.

Akoto, R.K., Dadson, A., & Angmor, P.L. (2013). Working capital management and profitability: Evidence from Ghanaian listed manufacturing firms. *Journal of Economics and International Finance*, *5(9)*, 373–379.

Bameri, O. & Dehani, N. (2013). The effect of capital management on stock returns of accepted companies in Tehran Stock Exchange. *European Online Journal of Natural and Social Sciences, 2(3),* 1061-1069.

Bulin, S., Basit, A., & Hamza, S.M. (2016). Impact of working capital management on firm's profitability. *International Journal of Accounting & Business Management*, *4(2)*, 227-241.

Dong, H.P. & Su, J. (2010). The relationship between working capital management and profitability: A Vietnam case. *International Research Journal of Finance and Economics*, *49*, 59–67.

Jakpar, S., Tinggi, M., Siang, T.K., Johari, A., Myint, K.T., & Sadique, M.S. (2017). Working capital management and profitability: Evidence from manufacturing sector in Malaysia. *Journal of Business & Financial Affairs, 6(2),* 1–9.

Kasiran, F., Mohamad, N., & Chin, O. (2016). Working capital management efficiency: A study on the small medium enterprise in Malaysia. *Procedia Economics and Finance, 35*, 297-303.

Kroes, J.R. & Manikas, A.S. (2013). Cash flow management and manufacturing firm financial performance: A longitudinal perspective. *International Journal of Production Economics,* 37-50.

Kumaraswamy, S. (2016). Impact of working capital on financial performance of Gulf cooperation council firms. *International Journal of Economics and Financial Issues, 6(3),* 1136-1143.

Mandiefe, S.P. (2016). How working capital affects the profitability of commercial banks: case of Afriland Cameroon. *Arabian Journal of Business and Management Review, 6(6),* 1-9.

Mohamad, N.E.A. & Saad, N. (2010). Working capital management: The effect of market valuation and profitability in Malaysia. *International Journal of Business and Management, 5(11)*, 140–147.

Mohamadlua, A. & Kashmari, A. (2016). Effect of working capital management on stock return and profitability (elected glassmaking companies of Iran). *International Journal of Humanities and Cultural Studies,* 2007–2020.

Obermaier, R. & Donhauser, A. (2012). Zero inventory and firm performance: A management paradigm revisited. *International Journal of Production Research, 50(16)*, 4543–4555.

Raheman, A. & Nasr, M. (2007). Working capital management and profitability – case of Pakistani firms. *International Review of Business Research Papers, 3(1)*, 279–300.

Ramesh, G., Al-Habsi, H., & Al-Sharji, T. (2017). Effect of working capital management on the financial performance of manufacturing firms in Sultanate of Oman. *Innovative Journal of Business and Management, 6(3)*, 38–42.

Rashvand, A. & Tariverdi, Y. (2015). Effect of working capital management on operating cash flow. *Journal of Applied Environmental and Biological Sciences, 5(11S)*, 39–46.

Sheikh, N.A., Rafique, A., & Nauman, A. (2016). Impact of working capital on performance of textile firms Listed on PSX. *Pakistan Journal of Social Sciences (PJSS)*, *36*, 409-419.

Vural, G., Sokmen, A.G., & Cetenak, E.H. (2012). Affects of working capital management on firm's performance. *International Journal of Economics and Financial Issues, 2*, 488-495.

Ukaegbu, B. (2014). The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Research in International Business and Finance, 31*, 1-16.