

BEYOND MANAGING CASH GAP: CONSTRUCTION COMPANIES IN MALAYSIA

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ABSTRACT

A well-managed cash flow is important to enable the delivery of a successful project within construction industry. Cash gap or cash conversion cycle is used as a dynamic measure of working capital management whereby to reach optimal working capital, managers should control the trade-off between profitability and liquidity. This study empirically examines the relationship between cash conversion cycle and firm profitability and firm size respectively, on a sample of construction companies listed on Bursa Malaysia covering the period 2005 – 2009. The results indicate that there is a negative correlation between the cash conversion cycle and the profitability and the size of the construction firms respectively. This means that by shortening the cash conversion cycle, construction industry in Malaysia may increase their profits. Furthermore, these findings show that smaller construction firms tend to have larger cash gap or cash conversion cycle and suggest that smaller firms should look ways to shorten their cash gap.

Keywords: Cash conversion cycle, profitability, firm size, construction industry

1. INTRODUCTION

The construction industry is regarded as one of the most risky, dynamic and challenging businesses, which suffered a temporary crisis between 1997 and 2000 during the ASEAN financial crisis, but had improved gradually ever since. However, delays still occur in construction projects as the industry is famed for poor management. In addition, findings from a research conducted by Abdul-Rahman *et al.* (2009)

indicate that poor cash flow management was the most significant contribution towards delays in construction projects as stated by four main professional groups related to the construction industry, namely clients, contractors, consultants and bankers. Hence, it is very important for construction industry to manage their cash or liquidity efficiently.

Generally, managing liquidity requires maintenance of day-to-day operations to ensure smooth running and meeting all obligations. Yet, according to Zariyawati *et al.* (2009), this is not a simple task since managers must make sure that business operations is running in efficient and profitable manner. They also stated that there are possibilities of mismatch of current assets and current liabilities during this process. If this happens and firm's manager cannot manage it properly then it will affect firm's growth and profitability. This will further lead to financial distress and finally bankruptcy. In addition, Uyar (2009) stated that problems in managing liquidity may lead firms to use external financing due to having difficulty in paying short-term debts. Unfortunately, every firm is not able to find external financing easily, especially as it is in small firm case.

Therefore, in order to manage cash flow properly, efficient liquidity management is an essential ingredient of the overall corporate strategy for the construction industry. Cash conversion cycle is a measure of ongoing liquidity management, which is designed to avoid default by covering obligations with cash flows. In additions, operating cash flows measures are central to a going concern approach to liquidity analysis (Jose *et al.* 1996). The cash conversion cycle measures the time between cash outlays for resources and cash receipts from product sales. The cash conversion cycle is dynamic in the sense that it combines both balance sheet and income statement data to create a measure with a time dimension.

This study aims to investigate the relationship between the length of the cash conversion cycle with firm size and profitability. The scope of this study covers construction companies listed on Bursa Malaysia for the duration of 5 years (2005 – 2009). There was a study conducted by Zariyawati *et al.* (2009) where they investigate the relationship between working capital management (measured by cash conversion cycle) and corporate performance in Malaysia. Though their study did not test any relationship between the sizes of the firms with cash conversion cycle, their scope covered almost all industries and all listed firms. Concentrating on construction industry in Malaysia, there was also another study by Hassim *et al.* (2003) where they present a simple model that could be used as a guide to estimate minimum working capital for housing construction projects in Malaysia.

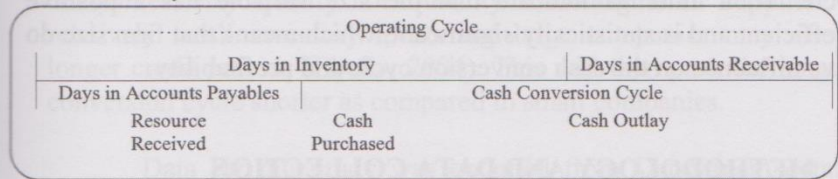
However, their study did not relate the working capital management with the performance in terms of profitability or the size of the construction firms. Therefore, this study attempts to determine the relationships between the length of cash conversion cycle (as a measure of liquidity or working capital management) with the performance and the size of the construction companies in Malaysia.

2. LITERATURE REVIEW

Cash Conversion Cycle

According to Padachi (2006), the cash gap, known also as cash flow cycle or cash conversion cycle, is used as a comprehensive measure of working capital as it shows the time lag between expenditure for the purchase of raw materials and collection of sales of finished goods. Thus, this definition of cash conversion cycle indicates that a shorter cash cycle is desirable to a longer cash conversion cycle since the longer cash cycle would normally require a greater need for external financing and has higher financing costs. Figure 1 provides an illustration of the cash conversion cycle in terms of relationship between accounts payable, accounts receivable, and inventory management. It can be seen from the figure that the management of the firm’s cash conversion cycle involves tradeoffs between liquidity and profitability. An efficient approach to liquidity management results in a lower cash conversion cycle by reducing the inventory period and days in accounts receivable while increasing the accounts payable period (Jose *et al.* 1996).

Figure 1.
Cash Conversion Cycle



Source: Belt (1985)

Relationship between Cash Conversion Cycle and Profitability

Managements of the firm’s cash conversion cycle involves trade-offs between liquidity and profitability. Several studies (Deloof 2003; Ejelly 2004; Lazaridis and Tryfonidis 2006; Zariyawati *et al.* 2009; Jose *et al.* 1996) support this relationship. Deloof (2003) found that gross operating income had a significant negative relation with the number of days in accounts receivable, inventories and accounts payable period of Belgian firms. They explain that the negative relation between accounts payable and profitability is true particularly for less profitable firms which require longer period to pay their bills. Another study also found a significant negative relation between profitability

and liquidity (Eljelly, 2004), where the liquidity measured by using both cash gap and current ratio, and the sample was taken from joint stock companies in Saudi Arabia. Likewise, Lazaridis and Tryfonidis (2006) also found the same findings where they measured profitability through gross operating profits and cash conversion cycle as a measure of working capital management efficacy. Their sample consisted of listed companies in Athens. In Malaysia, Zariyawati *et al.* (2009) found the same negative relationship between cash conversion cycle and profitability (operating income + depreciation / total assets) among firms listed on Bursa Malaysia for the year 1996 to 2006. However, specifically for construction industry, Jose *et al.* (1996) found that their cross-sectional relationship between cash conversion cycle and profitability is not significant. Taken the results as a whole (which includes several industries namely natural resources, manufacturing, services, retail, and professional services), their findings indicate a strong evidence that a more aggressive liquidity management (by lowering cash conversion cycle) is associated with a higher profitability.

Relationship between Cash Conversion Cycle and Firm Size

Uyar (2009) in his study found that there is a significant negative correlation between cash conversion cycle and firm size (measured by net sales and total assets) among listed corporations in Istanbul. This indicates that the larger the firm size, the shorter the cash conversion cycle. However, Jose *et al.* (1996) did not test this relationship. Instead, they tested the influence of firm size (measured by sales) on the cash conversion cycle and profitability, where they justify that larger firms tend to be more profitable and tend to have lower cash conversion cycle. Their findings indicate that the size variable has a positive coefficient and is statistically significant, which means that firm size do have influence on the cash conversion cycle and profitability.

3. METHODOLOGY AND DATA COLLECTION

The aim of this study is to investigate the relationship between the length of the cash conversion cycle with the profitability and firm size. This study, therefore, hypothesizes that there is a negative relationship between cash conversion cycle and profitability, and also with firm size.

Cash conversion cycle as illustrated in Figure 1 is measured by the formula:

$$\text{CCC} = \text{Days in inventory} + \text{Days in receivable} - \text{Days in Payables}$$

$$\text{Days in inventory} = \text{Inventory} / (\text{Cost of goods sold} / 365)$$

Days in receivables = Account Receivables / (Sales / 365)

Days in payables = Account Payables / (Cost of goods sold / 365)

As for profitability, it is measured by return on asset (ROA). According to Jose *et al.* (1996), they use ROA because it focuses on operating efficiency and avoid capital structure differences. In addition, Lazaridis and Tryfonidis (2006) agrees that profitability should be measured in terms of operating efficiency because their study attempted to associate operating success or failure with an operating ratio and relates this variable with other operating variables (cash conversion cycle). Next, the firm size is measured by sales because according to Jose *et al.* (1996), it is a common measure of size.

The first part of the hypothesis predicts that there is a negative relationship between the length of cash conversion cycle and profitability. According to Jose *et al.* (1996), a business can be viewed as a process of converting cash to assets and back to cash. Every ringgit of cash available for operations has a multiplier effects determined by the frequency of cash turnover. A low cash conversion cycle allows managers to minimize holdings of relatively unproductive assets such as cash. In addition, a low cash conversion cycle preserves the firm debt capacity since less short-term borrowing is required to provide liquidity.

The second part of the hypothesis also predicts a negative relationship between the cash conversion cycle, and the firm size. Large companies may be able to buy inventory in large quantities in order to obtain quantity discounts. Further, because of their size, large companies may qualify for quantity discounts from supplier with relatively small inventory levels and large companies may also get longer credit periods (Eljelly, 2004). This will then push the length of conversion cycle shorter as compared to small companies.

Data for this study was obtained from DataStream database which consists of financial statements of listed firms in Bursa Malaysia. The sample consists of construction firms which are available during study period of year 2005 – 2009. Some firms with missing data were discarded; thus, a balanced panel set of 430 firm-year observations were obtained, with observations of 86 firms over 2005 – 2009 periods.

4. RESULTS AND FINDINGS

Descriptive Statistics

Table 1 presents the descriptive statistics for the three variables utilized in the study, namely cash conversion cycle (CCC), return on assets

(ROA) and sales. Cash conversion cycle, on average, is 386 days (median is 178 days) and a maximum of 12,105 days. As for the ROA, which measures firms' profitability, the average is 2.95% (median is 4.10%) with a minimum of loss 122%, and a maximum return of 146%. The average for sales, which measures firm size, is RM 370,887,000 (median is RM 172,044,000) with a range of RM 6,471,000 to RM 6,168,891,000.

Table 1.
Descriptive statistics

	CCC	ROA	Sales (RM'000)
Mean	385.80	2.95	370,887.03
Std deviation	978.50	13.99	6.05
Minimum	-394.90	-121.37	6,471
Maximum	12,104.75	146.31	6,168,891
Percentiles			
25	107.66	-0.88	74,911.50
50	177.68	4.10	172,043.50
75	321.06	8.54	400,748.75

Correlation Analysis

Next, this study tested the relationship between two variables, and Spearman correlation coefficient was used to test both hypotheses. In efficient liquidity management, one should expect a negative relationship between the measures of liquidity (i.e. cash conversion cycle) and profitability variable (measured by ROA). In addition, another negative relationship is expected between cash conversion cycle and firm size where smaller firm are expected to have longer cash gap or cash conversion cycle.

Table 2 shows the results from spearman correlation coefficients matrix between cash conversion cycle, ROA and sales. The table indicates a significant negative relationship between cash conversion cycle (CCC) and ROA ($\rho = -0.357$; significance at 0.05level). This finding supports the first hypothesis where there is a negative relationship between cash conversion cycle and profitability. The negative correlation obtained indicates that shortening the cash conversion cycle is associated with higher profitability. This justifies the effect that a more efficient management of working capital would bring about profitability among construction companies in Malaysia.

Table 2 also shows the negative relationship between cash conversion cycle and sales ($\rho = -0.475$; significance at 5% level). This finding supports the second part of the hypothesis that there is negative relationship between cash conversion cycle and firm size as measured by sales. This means that the larger the firm size, the shorter the cash conversion cycle or the smaller firm size tend to have longer cash gap.

Another significant finding from Table 2 is the positive relationship between ROA and sales. This indicates that firms with

higher sales, as a measure of firm size, tends to have higher profits, which means that the larger the firm the higher the profitability.

Table 2.
Spearman Correlation Coefficients Matrix

		CCC	ROA	Sales
CCC	Correlation coefficient	1.00	-.357**	-.475**
	Sig. (2-tailed)	.00	.00	.00
ROA	Correlation coefficient		1.00	.466**
	Sig. (2-tailed)		.00	.00
Sales	Correlation coefficient			1.00
	Sig. (2-tailed)			.00

Notes: ** Correlation is significant at the 0.05 level.

Regression Analysis

In order to further investigate the impact of cash conversion cycle on profitability, regression analysis was used. The dependent variable is ROA which is a measure of profitability. The independent variables are days in inventory, days in receivables and days in payables which are used as a measure of cash conversion cycle.

Table 3 shows the result of regression analysis. In general, the results show that the model fits the data well which was shown by high F statistics. The table indicates that days in inventory are not significant. However, the coefficient of the days in receivables is significant and the sign is negative. This implies that 1 day increase in accounts receivable would bring about a decline in profitability by 0.122%, all other things being equal. Deloof (2003) clarifies that the most plausible explanation for the negative relation between days in receivables and profitability could be that customers want more time to assess the quality of products they buy before they pay the cash to the firm with declining profitability.

As for days in payables, the table also shows a significant negative relationship with ROA. This signifies that 1 day increase in accounts payable would decrease profitability by 0.197%, holding other factors constant. According to Deloof (2003), the possible explanation for the negative relation between days in payables and profitability is that less profitable firms tend to delay their bill payment.

Table 3.
Regression analysis for profitability on cash conversion cycle measurement
Dependent variable: ROA

	Unstandardized Beta	Standardized Beta	T	Sig.
Days in inventory	-.001	-.042	-.870	.385
Days in receivables	-.003	-.122	-2.556	.011
Days in payables	-.026	-.197	-4.049	.000
R ²	=.068			
F-value	= 10.367*			
*Significant at 1% level.				

5. CONCLUSIONS

Cash gap or cash conversion cycle is only part of firms' financial management. However, it is a very important component of financial management, especially to the construction companies. The ideal working capital management could be achieved by firms that manage trade-off between profitability and liquidity. Results from this study show that cash conversion cycle is significant and negatively associated with the firm profitability. The correlation analysis shows that cash conversion cycle is negatively related to ROA and sales. This is consistent with prior research (Deloof 2003; Ejelly 2004; Lazaridis and Tryfonidis 2006; Zariyawati *et al.* 2009; Jose *et al.* 1996).

Moreover, this study also found that there is significant negative correlation between cash conversion cycle and the size of the firm. This indicates that small firm tends to have larger cash gap. Hence, in order for them to increase their profitability, this study suggests that smaller firms should attempt to shorten their cash gap.

When the components of cash conversion cycle is broken into three measures: days in account receivable, days in inventories, and days in accounts payable, only days in accounts receivable and days in accounts payable are found to be significant. The two independent variables are found to be negatively related with ROA. This somewhat suggests that construction firms should attempt to enhance their management of accounts receivable and accounts payable.

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