Working capital management and corporate performance:

Case of Malaysia

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Abstract: Working capital always being disregard in financial decision making since it involve investment and financing in short term period. However, it is an important component in firm financial management decision. An optimal working capital management is expected to contribute positively to the creation of firm value. To reach optimal working capital management firm manager should control the trade off between profitability and liquidity accurately. The intention of this study is to examine the relationship between working capital management and firm profitability. Cash conversion cycle is used as measure of working capital management. This study is used panel data of 1628 firm-year for the period of 1996-2006 that consist of six different economic sectors which are listed in Bursa Malaysia. The coefficient results of Pooled OLS regression analysis provide a strong negative significant relationship between cash conversion cycle and firm profitability. This reveals that reducing cash conversion period results to profitability increase. Thus, in purpose to create shareholder value, firm manager should concern on shorten of cash conversion cycle till optimal level is achieved.

Key words: working capital management; cash conversion cycle; profitability

1. Introduction

Working capital is an important issue during financial decision making since it is being a part of investment in asset that requires appropriate financing investment. However, working capital is always being disregard in financial decision making since it involve investment and financing in short term period. Furthermore, it also acts as a restrain in financial performance, since it does not contribute to return on equity (Stanger, 2001). Though, it should be critical for firms to sustain their short term investment since it will ensure the ability of firm in longer period.

The crucial part in managing working capital is required maintaining its liquidity in day-to-day operation to ensure its smooth running and meets its obligation (Eljelly, 2004). Yet, this is not a simple task since managers must make sure that business operation is running in efficient and profitable manner. There are the possibilities of mismatch of current asset and current liability 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

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finally firms go bankrupt.

In traditional view of relationship between cash conversion cycle (as measure of working capital management) and profitability is ceteris paribus. The shorter firm cash conversion cycle, the better a firm profitability. This shows that less of time a dollar tied up in current asset and less external financing. While, the longer cash conversion cycle will hurt firm's probability. The reason is that firm having low liquidity that would affect firm's risk. However, if a firm has higher level of account receivable due to the generous trade credit policy it would result to a longer cash conversion cycle. In this case, the longer cash conversion cycle will increase profitability. Thus, the traditional view cannot be applied to all circumstances.

Dilemma in working capital management is to achieve desired trade off between liquidity and profitability (Smith, 1980; Raheman and Nasr, 2007). Referring to theory of risk and return, investment with more risk will result to more return. Thus, firms with high liquidity of working capital may have low risk then low profitability. Conversely, a firm that has low liquidity of working capital, facing high risk results to high profitability. The issue here is in managing working capital, firm must take into consideration all the items in both accounts and try to balance the risk and return.

The purpose of this study is hopefully to contribute towards a crucial element in financial management which working capital management. It is almost untouched in Malaysian or very little research has been done in this area. Working capital management and its effects on profitability is focused in this study. Specific objectives are to examine a relationship between working capital management and profitability over a 11 years period, to establish a relationship between the two objectives of liquidity and profitability of the firms and to investigate the relationship between debt used by the a firm and its profitability.

Most previous studies focus on developed market (Peel and Wilson, 1996; Shin and Soenon, 1998; Deloof, 2003). Thus investigating this issue could provide additional insights and perhaps different evidence on the working capital management in emerging capital market. This will surely enrich the finance literature on this issue. Additionally, the results of this study would provide firm managers better insights on how to create efficient working capital management that have ability to maximize firm's value. As a result, it will build up confidence in investor to invest in that firm. Further, the confidence of investors to invest in Malaysia will influence the growth of economic. The results of this study would also assist policy-makers to implement new sets of policies regarding the working capital market in Malaysia to ensure continuous economic growth.

2. Literature review

In intention to discover the relationship between efficient working capital management and firm's profitability, Shin and Soenen (1998) used net-trade cycle (NTC) as a measure of working capital management. NTC is basically equal to the CCC whereby all three components are expressed as a percentage of sales. The reason by using NTC because it can be an easy device to estimate for additional financing needs with regard to working capital expressed as a function of the projected sales growth. This relationship is examined using correlation and regression analysis, by industry and working capital intensity. Using a compustat sample of 58,985 firm years covering the period 1975-1994, in all cases, they found, a strong negative relation between the length of the firm's net-trade cycle and its profitability. In addition, shorter NTC are associated with higher risk-adjusted stock returns. In other words, Shin and Soenen (1998) suggest that one possible way the firm to create shareholder value is by reducing firm's NTC.

The study of Shin and Soenen (1998) was consistent with later study on the same objective that done by Deloof (2003) by using sample of 1009 large Belgian non-financial firms for the period of 1992-1996. However, Deloof (2003) used trade credit policy and inventory policy are measured by number of days accounts receivable, accounts payable and inventories, and the cash conversion cycle as a comprehensive measure of working capital management. He founds a significant negative relation between gross operating income and the number of day's accounts receivable, inventories and accounts payable. Thus, he suggests that managers can create value for their shareholders by reducing the number of day's accounts receivable and inventories to a reasonable minimum. He also suggests that less profitable firms wait longer to pay their bills.

Recent study by Raheman and Nasr (2007) is to examine working capital management effect on liquidity as well on profitability of the firm. In this study, they use sample of 94 Pakistani firms listed on Karachi Stock Exchange for a period of 6 years from 1999–2004. Similar to Shin and Soenen (1998), Deloof (2003), results of this study show that a strong negative relationship between components of the working capital management and profitability of the firm

In other study, Lyroudi and Lazaridis (2000) used food industry in Greek to examined the cash conversion cycle (CCC) as a liquidity indicator of the firms and attempts to determine its relationship with the current and the quick ratios, with its component variables, and investigates the implications of the CCC in terms of profitability, indebtness and firm size. The results of their study indicate that there is a significant positive relationship between the cash conversion cycle and the traditional liquidity measures of current and quick ratios. The cash conversion cycle also positively related to the return on assets and the net profit margin but had no linear relationship with the leverage ratios. Conversely, the current and quick ratios had negative relationship with the debt to equity ratio, and a positive one with the times interest earned ratio. Finally, there is no difference between the liquidity ratios of large and small firms.

3. Data and variables

Data of this study is obtained from DataStream database which consists of financial statements listed firms in Bursa Malaysia. The sample was constructed as follows. Firms must be available during study period of year 1996 to year 2006. Because of the specific nature of their activities, firms in economic sector of Finance are excluded from the sample. Some firms with missing data were also removed. To analyze the effect of working capital management on economic sector, thus, economic sectors that have less than 10 firms were also removed from the sample. Thus a balanced panel set of 1628 firm-year observations was obtained, with observations of 148 firms over 1996-2006 periods. Table 1 shows the sample distribution by type of economic sector. Numbers of firms for each economic sector are not balance. Sector of Industrial Product is the major sample with 40 firms while the least is sector of property with 11 firms.

In order to analyze the effects of working capital management on the firm's profitability, (operating income + depreciation)/total asset (OI) as measure of profitability was used as the dependent variable. With regards to the independent variables, working capital management was measured by cash conversion cycle (CCC). CCC focuses on the length of time between when a firm makes payment and when firm receives cash inflow. The lower the value is better due to reveal that firm has high liquidity which easily converts its short term investment in current asset to cash. However, longer value of CCC indicate greater investment in current assets, and hence the greater the need for financing of current assets. CCC is calculated as the number of days accounts receivable (AR) plus

the number of days of inventory (INV) minus the number of day's accounts payable (AR).

<p style="text-align:center">Table 1   Sample distribution for year 1996-2006</p>

Economic sector	No. of firms
Construction	12
Consumer product	28
Industrial product	40
Plantation	18
Property	11
Trade/Service	39
Total	148

In this respect, AR is calculated as accounts receivable/ (sales/365). AR represents the number of days that a firm takes to collect payments from its customer. We calculated the INV as inventories/ (sales/365). This variable reflects the average number of days of stock held by a firm. Longer storage times represent a greater investment in inventory for a particular level of operations. AP is calculated by accounts payable/ (cost of sale/365). This measure indicates the average time firm takes to pay their suppliers. The higher the value, the longer firms take to settle their payment commitments to their suppliers.

Control variables are introduced as the growth in firm sales and its leverage. Sales growth (SG) is calculated by $(Sales_1 - Sales_0)/Sales_0$. The leverage (DR) measures by debt ratio as calculated by total debt over total asset. In addition current ratio (CR) which calculated by current asset over current liability, was included as one of independent variable. The reason is current ratio always been used as measure of corporate liquidity conventionally.

4. Descriptive statistics

Table 2 gives the descriptive statistics for variables that used in this study. The average profitability (OI) for the whole sample is 6.1% with Trade/Service (TS) sector having the highest profit of 7.8% and the lowest is Property (PR) sector with 3.1%. CCCS is cash conversion cycle divide by 100. Sector Plantation (PL) is the lowest CCCS with 67 days and 344 days standard deviation. The average of current ratio is 2.1 and the lowest is sector of Construction (C) with 1.7. Due to the nature of business, sector of Construction and Industrial Product (IP) have more than 35% debt compare to total asset which 38.6% and 35.4% respectively. On average firms sales growth is 15.8% and the least sale growth by firm in sector of Consumer Product (CP) with only 10%.

<p style="text-align:center">Table 2   Eleven years means and standard deviation for the variables</p>

Variables		Economic sectors						
		All	C	CP	IP	PL	PR	TS
OI	Mean	0.0612	0.0354	0.0750	0.0524	0.0615	0.0307	0.0779
	Std Dev.	0.0912	0.0718	0.1003	0.1077	0.0680	0.0720	0.0767
CCCS	Mean	1.5136	3.1723	1.0810	1.4037	0.6768	4.5501	1.2082
	Std Dev.	3.2603	4.0622	1.8611	2.4948	3.4416	6.9127	2.6265
CR	Mean	2.1440	1.6926	2.1014	1.9968	3.5361	2.5547	1.7191
	Std Dev.	2.8331	1.1663	3.6037	2.2241	4.5263	2.5113	1.7885
DR	Mean	0.3072	0.3857	0.2719	0.3538	0.1758	0.1807	0.3497
	Std Dev.	0.3598	0.1896	0.2443	0.5424	0.2207	0.1690	0.2464
SG	Mean	0.1582	0.1670	0.0999	0.1520	0.2091	0.1460	0.1840
	Std Dev.	1.1882	0.6209	0.5441	1.3214	0.9360	0.5352	1.6163

5. Results and analysis

First, the relationship is examined between cash conversion period and firm profitability. Next, a regression analysis is applied to a pooled sample and six economic sectors.

5.1 Correlation analysis

Spearman's Correlation analysis is used to see the relationship between working capital management and profitability. If efficient working capital management increases profitability, one should expect a negative relationship between the measures of working capital management and profitability variable. Table 3 exhibit result of correlation coefficients and p-values are listed in parenthesis. The result shows a negative relationship between CCCS and OI. This means that result is support the expectation that a cash conversion cycle (CCC) is associated with higher profitability. However, the current ratio is, positively related to profitability. This reveals that CCC is measuring liquidity differently from the conventional current ratio. Generally, traditional liquidity ratios such as current ratio have been understood that have lack in measuring the efficiency of the firm's working capital management. For example is that they incorporate assets that are not readily convertible into cash and ignore the timing of cash conversion (Shin & Soenen, 1998).

Table 3   Spearman correlation coefficients and probabilities

Variables	OI	CCCS	CR	DR	SG
OI	1.0000				

CCCS	-0.2721	1.0000			
	(0.0000)	-----			
CR	0.3003	0.0566	1.0000		
	(0.0000)	(0.0223)	-----		
DR	-0.2879	0.1332	-0.6544	1.0000	
	(0.0000)	(0.0000)	(0.0000)	-----	
SG	0.2437	-0.1904	0.0667	-0.0817	1.0000
	(0.0000)	(0.0000)	(0.0071)	(0.0010)	-----

Note: The *p*-value is given in parentheses.

5.2 Regression analysis

To further investigate the impact of working capital management on profitability, the model used for the regressions analysis is expressed in the general form as given in equation below:

$$\text{Profitability} = b_0 + b_1 \text{CCC}_t + b_2 \text{Current Ratio}_t + b_3 \text{Debt Ratio}_t + b_4 \text{Sales Growth}_t$$

The equation above is estimated using the regression-based framework Pooled Ordinary Least Squares (OLS) as employed by Shin & Soenon (1998). Model of this study differs by using CCC as a comprehensive measure of working capital management. The data set used for this part is pooled across firms and years, given a balanced panel data set of 1628 firm-year observations. Result of Hausman Test implies that this study should estimate by fixed effect model. Where the fixed effects estimation assumes firm specific intercepts, which capture the effects of those variables that are particular to each firm and that are constant over time. In all regressions, standard errors are calculated using White's correction for heteroscedasticity.

The regression results are present in Table 4. The results offer strong evidence of a negative relationship between the cash conversion cycle and firm profitability. The negative regression coefficient for CCCS is highly

significant (p-value = 0.000 & 0.0046) for both regression implies that a firm with a relatively shorter period of cash conversion cycle is more profitable. Therefore, reducing the firm's CCC is potential way for the firm to create additional shareholder value.

For conventional measure of liquidity that current ratio, it positively related to profitability. This relationship that is not consistent to study Shin and Soenon (1998). However the positive relationship is not significant. Furthermore, current year profitability is negatively associated with current year's leverage which is measure by debt ratio. Both of debt ratio coefficients are also exhibit the highly significant with p-value = 0.0001 and 0.0012 respectively. For the sales growth, evidence is positively related to profitability. This is consistent with often argument that growth a part of feature for firm profitability and the creation of shareholder value. But, this argument inappropriate to this study since the positive relationship is not significant at all.

Table 4   Regression for profitability on cash conversion cycle

Dependent		Intercept	CCCS	CR	DR	SG	R^2	Adj. R^2
		Panel A						
ALL_OI	Pooled OLS	0.0827	-0.0049	0.0005	-0.0504	0.0021	0.074	0.0717
		(0.0000)	(0.0000)	(0.5588)	(0.0001)	(0.3878)		
	Fixed effect	0.0715	-0.0026	0.0014	-0.0306	0.0003	0.4959	0.4443
		(0.0000)	(0.0046)	(0.1244)	(0.0012)	(0.9133)		

Note: The *p*-value (robust for heteroscedasticity) is given in parentheses.

5.3 Analysis for economic sector

A significant industry effect subsists on a firm's investment in working capital is well recognized. One of the reason is due to no single policy is necessary optimal to all firm (Moyer, Mcguigan, & Kretlow, 2003). To further investigate the impact of working capital management on firm profitability whether different in particular industry, the regression analyses are applied to each economic sector in the sample.

Table 5 summarizes regression result between working capital management and profitability for each economic sector. It reveals that all economic sector relationship between CCC and OI is significantly negative except for Industrial Product for both regressions, while Consumer Product and Plantation for fixed effect regression. No significant between CCC and OI for both regression analysis for Industrial Product may be caused by nature of business that depend more on long term assets compare to short term assets that have higher liquidity.

Plantation is the only one economic sector that has significantly negative relationship between profitability and current ratio for both regressions. In addition, consumer product also significantly negative evident by OLS. Besides, Property sector has highly positive significant between current ratio and profitability with p-value = 0.0000. This is may cause by the having the lowest profitability, 3.1% compare to other sectors.

Furthermore, no significant relationship between debt ratio and profitability is found for Property. However, highly negative significant between debt ratio and profitability is found in sector Consumer Product and Trade/service. These shows the both sector have fully utilize the firm leverage to generate firm profit. The evident shows in Table 3 that the profit of Consumer Product and Trade/Service are higher than average. It is probably of all sectors that not provide any significant relationship between sales growth and profitability thus results to insignificant relationship result for across industries. However, Plantation sector provide strong evident of a positive association between sales growth and profitability thus results to insignificant relationship result for across industries. However, Plantation sector provide strong evident of a positive association between sales

growth and profitability (p-value = 0.0143 & 0.0000 respectively for both regression). This may results of the lowest CCC of this sector which is 67 days.

Table 5   Regression for profitability on economic sectors

Dependent		Intercept	CCCS	CR	DR	SG	R^2	Adj. R^2
	Panel B							
C_OI	Pooled OLS	0.0842	-0.0051	0.0134	-0.1505	0.0156	0.4077	0.3852
		(0.0003)	(0.0002)	(0.0677)	(0.0011)	(0.1085)		
	Fixed effect	0.0793	-0.0049	0.0036	-0.095	0.0124	0.5097	0.4433
		(0.0030)	(0.0443)	(0.4100)	(0.0860)	(0.2355)		
CP_OI	Pooled OLS	0.1383	-0.0066	-0.0015	-0.2202	0.0235	0.3805	0.3723
		(0.0000)	(0.0023)	(0.0150)	(0.0000)	(0.0317)		
	Fixed effect	0.1176	-0.0046	0.0006	-0.1647	0.0141	0.6968	0.6627
		(0.0000)	(0.2301)	(0.4157)	(0.0007)	(0.1381)		
IP_OI	Pooled OLS	0.0597	0.0007	-0.0016	-0.0137	-0.0017	0.0051	0.0032
		(0.0000)	(0.3175)	(0.6797)	(0.0683)	(0.4052)		
	Fixed effect	0.0427	0.0001	0.0069	-0.0114	-0.0018	0.3851	0.3189
		(0.0012)	(0.9025)	(0.1427)	(0.2464)	(0.3751)		
PL_OI	Pooled OLS	0.0962	-0.0027	-0.0029	-0.1382	0.0076	0.2124	0.196
		(0.0000)	(0.0007)	(0.0003)	(0.0000)	(0.0143)		
	Fixed effect	0.071	-0.0003	-0.0013	-0.0364	0.0126	0.6064	0.5595
		(0.0000)	(0.7902)	(0.0088)	(0.1189)	(0.0001)		
PR_OI	Pooled OLS	0.0304	-0.0051	0.0109	-0.0356	0.0129	0.146	0.1096
		(0.0427)	(0.0003)	(0.0000)	(0.3485)	(0.2932)		
	Fixed effect	0.0043	-0.0031	0.0084	0.0954	0.0115	0.4044	0.3213
		(0.7928)	(0.0911)	(0.0383)	(0.1192)	(0.2567)		
TS_OI	Pooled OLS	0.1153	-0.0081	0.0053	-0.1067	0.0022	0.2383	0.2311
		(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.2783)		
	Fixed effect	0.1052	-0.0079	0.0038	-0.0686	-0.0006	0.545	0.4955
		(0.0000)	(0.0002)	(0.0678)	(0.0016)	(0.7020)		

Note: The *p*-value (robust for heteroscedasticity) is given in parentheses.

6. Conclusion

Working capital management is an important part in firm financial management decision. The ability of the firm to continuously operate in longer period is depends on how they deal with investment in working capital management. The optimal of working capital management could be achieved by firm that manage trade off between profitability and liquidity. The objective of this study is to investigate the relationship between working capital management and firm profitability. Results of this study found that cash conversion cycle are significantly negative associated to the firm profitability. Consistent with previous researcher (Shin and Soenen, 1998; Deloof, 2003; Rahemen and Nasr, 2007), this study also suggests that firm manger should concern on reduction of cash conversion period in intention of creation shareholder wealth.

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