

Working Capital Management and Profitability: A Case of Industrial Jordanian Companies

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Abstract

This study investigates the relationship between working capital management and profitability and introduces empirical evidence about working capital management and its effect to the profitability of Industrial Jordanian companies listed in Amman Stock Exchange. The effect of different variables of working capital management have been studied including the Average collection period, Inventory turnover in days, Average payment period and Net Trade Cycle on the return of assets for Jordanian companies. The problem statement to be analyzed in this study is: Does working capital management affect profitability of Jordanian companies?

Many parties will benefit from this research like creditors and investors in making their investment decisions and the researchers in explaining market variables and the managers in focusing on liquidity. The study sample consists of 39 companies for the 8 years period from 2004-2011. Applying correlations and multiple regression analysis, the result shows that there are significant negative associations between working capital variables with firm's profitability so it highlights the importance of managing working capital to improve firm's profitability. Yet recommendations based on findings are offered to improve certain factors like the Industrial Jordanian Companies must set a trade-off between profitability and liquidity so that neither the liquidity nor profitability suffers, managing working capital in more efficient ways, enhancing the audit report by adding a liquidity position paragraph, and develop models that increase the detecting liquidity problem ability.

Keywords: Working Capital, Net trade cycle, Profitability, Number of day's accounts receivable, Inventory turnover, average payment days

Introduction

The facts that corporations could not exist without working capital – the time lag between the expenditure for the purchase of raw materials and the collection for the sale of the finished product – is thus, undeniable. Eventually, the management of working capital (WCM) necessitates short term decisions in working capital (WC) and financing of all aspects of both firm's short-term assets and liabilities (Mohamad and MohdSaad, 2010). The main objective of WCM is to ascertain that firm has the ability to continue operating with sufficient cash now for payment of both maturing short-term debt and impending operational expenses. In view of that, working capital management has become one of the most important issues in the organizations where many financial executives strive to identify the basic working capital drivers and the appropriate level of working capital (Lamberson, 1995).

Firms may have an optimal level of working capital that maximizes their value. On one hand, large inventory and a generous trade credit policy may lead to higher sales. Larger inventory reduces the risk of a stock-out. Trade credit may stimulate sales because it allows customers to assess product quality before paying (Long et al., 1993; and Deloof and Jegers, 1996). Because suppliers may have significant cost advantages over financial institutions in providing credit to their customers, it can also be an inexpensive source of credit for customers. The flip side of granting trade credit and keeping inventories is that money is locked up in working capital (Petersen and Rajan, 1997). 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). In traditional view of relationship between cash conversion cycle¹ (as measure of working capital management) and profitability is *ceteris paribus*.

¹ (Inventory conversion period + Receivable conversion period - Payable deferral period)

The shorter firm cash conversion cycle, the better a firm profitability. While, the longer cash conversion cycle will hurt firm's profitability. The Net trade cycle (NTC) actually indicates the number of day's sales the company has to finance its working capital under ceteris paribus conditions. NTC is basically equal to the CCC whereby all three components are expressed as a percentage of sales. The NTC is also closely related to the issue of firm valuation and creation of shareholder value. The shorter the NTC, the higher the present value of the net cash flow generated by the assets and thus, the higher the value of the firm for its shareholders. Thus, firms try to keep an optimal level of working capital that maximizes their value (Afza and Nazir 2007). Likewise, the shorter the NTC, the more efficient the firm is in managing its working capital, the lower the need for external financing and the higher it's financial performance. We, therefore, anticipate an inverse relationship between the firm's NTC and its profitability.

In this study, we investigate the relation between WCM and corporate profitability for a sample of 39 companies listed in Amman Stock Exchange for the 2004-2009 period. Number of day's accounts receivable, inventories and accounts payable are used as measures of trade credit and inventory policies. The net trade cycle is used as a comprehensive measure of WCM. NTC is an easy device to estimate for additional financing needs with regard to working capital expressed as a function of the projected sales growth (Shin & Soenen, 1998).

This study is organized as follows: First Research objectives are shown, and then the literature for the relevant theoretical and empirical work on working capital management and its effect on profitability are reviewed. After that, the methodology and framework which includes sample and the variables used in the empirical analysis is presented. After words, separate section portrays and discusses the data analysis, discussion and statistical results. Finally the conclusion and recommendations are presented.

Research Objectives

This research provides international evidence on working capital management by using Jordanian data. The way in which working capital is managed will have a significant impact on the profitability of firms. Accordingly, for many firms working capital management is a very important component of their financial management. The academic literature has documented a number of studies that attempt to detect and measure working capital management. International results are mixed in this respect most likely due to the problems in measuring the working capital management in different countries. Therefore, further evidence on this area is needed.

The main parties that will benefit from this research are the creditors and investors in making their investment decisions and the researchers in explaining market variables and the managers in focusing on liquidity.

Literature Review

The issue of working capital management has been discussed in academic or the literature for a long period. The review of prior literature reveals that there exists a significant relation between performance and working capital management by using different variable selection for analysis (Mohamad and Mohd Saad, 2010).

Deloof (2003) examined the relations between WCM and corporate profitability. The firms being examined were from a sample of 1,009 large Belgian nonfinancial firms during 1992-1996. The number of days accounts receivable, inventories and accounts payable were used as measurements of trade credit and inventory policies. A comprehensive measure of the WCM is using the cash conversion cycle. Results have shown that by reducing the number of day's accounts receivable and inventories managers can increase corporate profitability.

The efficient Working Capital Management (WCM) that is important for creating value for the shareholders was highlighted by Shin and Soenen (1998), as being very efficient. The relationship between a firm's net-trade cycle and the profitability is investigated of that company and it was examined through using the correlation and regression analysis, by industry and working with the capital intensity. A total for 58,985 firm years during 1975-1994 and in all cases it was shown that a strong negative relation between the length of the firm's net trade cycle and the profitability of the firm. Furthermore, it was concluded that shorter net trade cycles are connected with the higher risk-adjusted stock returns. Eljelly (2004) empirically examined the relationship between liquidity and profitability by measuring them through current ratio and cash gap (cash conversion cycle) on a sample of joint stock companies in the Kingdom of Saudi Arabia. Through the use of correlation and regression analysis the examination concluded that there were significant negative relations between a firm's liquidity level and profitability level, when it was measured by the current level.

This was made even clearer because firms with high current ratio's and longer cash conversion cycles. On the industry level the study found that the cash conversion cycle or cash gap is important but its importance it to measure the liquidity rather than the current ratio that affects profitability. Size variable is also has a significant effect on the profitability of a firm on the industry level. In conclusion the results revealed that over a period of time the results were stable in the period that this investigation was undertaken.

In Ganesan, (2007) the relationship between working capital management efficiency and profitability was analyzed by using correlation and regression analyses. To investigate the impact of working capital management on profitability the ANOVA analysis is used. The analysis studied a sample of 443 annual financial statements of 349 telecommunication equipment companies during 2001-2007. From the study it was concluded that a day's working capital is negatively related to the profitability on the other hand it does not have a major impact on the profitability of telecommunication firms in the equipment industry.

Lyroutdi & Lazaridis, (2000)Used the Greek food industry in and investigated the cash conversion cycle (CCC) as a liquidity indicator of the firms, trying to determine the relationship with the current and the quick ratios, along with the component variables and investigates the implications of the CCC when it comes to profitability, in accordance to firm size. The investigation showed that there was a significant positive relationship between the cash conversion cycle and the traditional liquidity measures of current and quick ratios. At the same time the current and quick ratios had a negative relationship with the debt to equity ratio, and a positive relationship with the times interest earned ratio. It should be noted that there is no real difference between the liquidity ratios of small and large firms.

Raheman and Nasr (2007) used a sample of 94 Pakistani firms listed on the Karachi Stock Exchange, from 1999-2004 were examined to investigate the variable of working capital management including the average collection period, inventory turnover days, average payment period, cash conversion cycle and current ration on the net operating profitability of Pakistani firms. The controlled variable in the investigation was the debt ratio, size of the firm that was measured through the natural logarithm of sales and the financial assets to total assets ratio. For analysis the pooled least square and the general least square with the cross section of the weight models. The investigation revealed that there was a strong negative relationship between variables of the working capital management and profitability of the firm as a whole. The study also revealed that there is an even more negative relationship between profitability and liquidity. It also pointed out that there is a negative relationship between the profitability of a firm in relation to the size of the firm. On the other hand, the study revealed that there is positive relationship between the profitability and the size of the firm.

Methodology

The purpose of this research is to contribute towards a very important aspect offinancial management known as working capital management with reference toJordan.

Here the relationship between working capital management practices and its effects on profitability of 39Industrial Jordanian firms listed on Amman stock Exchange for a period of six years from 2004 – 2009 will be examined. This section discusses the firms and variables included in the study, the distribution patterns of data and applied statistical techniques in investigating the relationship between working capital management and profitability.

Population and Sample

The population will consist of the Industrial Jordanian shareholding companies listed in the first and second markets in Amman Stock Exchange for the study period (2004-20011).There are (86) companies listed from these two sectors in Amman Stock Exchange in year 2004; 38 companies listed in the first market (44% from the population) and 48 companies listed in the second market (56% from the population). (39) Companies will represent the study sample (45% from the population). These companies share prices and financial data are available during the study period.

Study Period

The study covers the period from 2004 to 2009, only net sales data required for year 2003 to computing sales variance. The reason for restricting to this period was thatthe latest data for investigation was available for this period. The required data include the following:-

1. Net Income from 2004 to 2011.
2. Net Sales from 2003 to 2011.
3. Total Assets from 2004 to 2011.
4. Closing Prices from 2004 to 2011.
5. Net Cash Flow from Operating Activities from 2004 to 2011.
6. Total Fixed Assets from 2004 to 2011.
7. Cost of Goods sold from 2004 to 2011.
8. Net Income before Interest and Tax (EBIT) from 2004 to 2011.
9. Net Income before Tax (EBT) from 2004 to 2011.
10. Total Liabilities from 2004 to 2011.
11. Long term Liabilities from 2004 to 2011.
12. Current Liabilities from 2004 to 2011.
13. Accounts Payable from 2004 to 2011
14. Accounts Receivable from 2004 to 2011.
15. Current Assets from 2004 to 2011.
16. Inventory from 2004 to 2011.
17. Total Shareholders' Equity from 2004 to 2011.

Research Hypotheses

H₀₁: There is no relationship between number of day's accounts receivable and profitability.

H₀₂: There is no relationship between number of day's inventories and profitability.

H₀₃: There is no relationship between number of day's accounts payable and profitability.

H₀₄: There is no relationship between net trade cycle and profitability.

Research Variables and Models

Regression analysis is used to investigate the impact of WCM on corporate profitability. This study undertakes the issue of identifying key variables that influence working capital management of Industrial Jordanian firms. Choice of the variables is influenced by the previous studies on working capital management².

All the variables stated below have been used to test the hypotheses of our study. They include dependent, independent and some control variables: The following regression models are estimated:-

$$1. ROA_{it} = \beta_0 + \beta_1 SG + \beta_2 DR_{it} + \beta_3 ACP_{it} + e_{1it}$$

$$2. ROA_{it} = \lambda_0 + \lambda_1 SG + \lambda_2 DR_{it} + \lambda_3 ITID_{it} + e_{2it}$$

$$3. ROA_{it} = \gamma_0 + \gamma_1 SG + \gamma_2 DR_{it} + \gamma_3 APP_{it} + e_{3it}$$

$$4. ROA_{it} = \alpha_0 + \alpha_1 SG + \alpha_2 DR_{it} + \alpha_3 NTC_{it} + e_{4it}$$

Where:

ROA is return on total assets.

SG: Sales Growth.

DR: Debit Ratio.

ACP: Average Collection Period

ITID: Inventory Turnover in Days

APP: Average Payment Period

NTC: Net Trade Cycle.

$\beta_0, \lambda_0, \gamma_0, \alpha_0$: The intercept of equation.

$\beta, \lambda, \gamma, \alpha$: coefficients for independent variables.

t : Time = 1, 2, ..., 6 years.

i = firm 1, 2, ..., 39 firms.

e_{it} = Error term.

Profitability is measured by ROA, which is defined as earnings before interest and tax divided by total assets.

Number of days accounts receivable is calculated as [accounts receivable x 365]/sales. Number of days inventories is [inventories x 365]/cost of sales. Number of days accounts payable is [accounts payable x 365]/ purchases.

²See for example, Raheman and Nasr (2007), Deloof (2003) and Shin and Soenen (1998).

Net trade cycle is considered as a comprehensive measure of WCM. Net trade cycle is simply [accounts receivable + inventory —accounts payable] x 365/sales. Some previous studies used cash conversion cycle as a proxy for working capital management like Deloof (2003). NTC is basically equal to the CCC whereby all three components are expressed as a percentage of sales.

To check the debt financing and its relationship with the profitability the debt ratio (obtained by dividing the total debt of the company by the total assets) is used as a control variable (Raheman and Nasr, 2007). To check the size growth of the firm and its relationship with profitability, sales growth (this year's sales - previous year's sales / previous year's sales) is used as a control variable (Deloof, 2003).

Regression model (1) includes number of day's accounts receivable as a measure of accounts receivable policy. The study used this model to test the first hypothesis. In the second regression model number of day's inventories is added as the independent variable to test the second hypothesis. To test the third hypothesis a regression model (3) is used which includes number of day's accounts payable as the independent variable. At the end, Net trade cycle is included in regression model (4) with profitability as the dependent variable to test the last hypothesis.

Analysis and Results

In quantitative analysis we applied two methods: First: we used correlation models, specifically Pearson correlation to measure the degree of association between different variables under consideration. Second: we used Regression analysis to estimate the causal relationships between profitability variable, liquidity and other chosen variables.

Table (1) shows the descriptive measures for the main variables; study sample companies need 95 days on average to collect their receivables, 167 days to sell their goods, and 62 days to pay their credit obligations.

This means that the Industrial Jordanian companies have about 33 day gap between paying their obligations and collecting the money and this will create a liquidity problem. In other hand, the Industrial Jordanian companies can sell their goods only two times during the year; this will postpone receiving money that can decrease their capabilities and activities. In addition, they have to pay more for storage cost and warehouses expenses like rent and utilities... etc. So the companies have to adjust their marketing plans to enhance the inventory turnover.

About the other variables, the Industrial Jordanian companies total sales increase by 10% annually, and 31% of their finance resources come from external sources like creditors, banks and suppliers and this is assert that Industrial Jordanian companies rely more on internal sources of funds like retained earnings and shareholders wealth.

Table (1) Descriptive Measures

Variable	ROA	NTC	Days Receivable	Days Inventory	Days Payable	Sales Growth	Debt Ratio
Mean	0.04	176	95	167	62	0.10	0.31
Median	0.05	142	68	141	47	0.05	0.27
SD	0.11	156	100	129	63	0.54	0.22
Minimum	-0.59	-530	0	0	2	-1	0
Maximum	0.52	829	698	829	689	6.30	0.94

Looking at the Pearson correlations coefficients matrix among the study measures in Table (2) Ifind a significant negative relationship between ROA from one hand and net trade cycle, number of day's inventory and number of days accounts payable on the other hand. This is consistent with the view that the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods is too long, and that decreasing this time lag increases profitability. A negative relationship between number of day's accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills. In that case, profitability affects accounts payable policy, and not vica versa.

Table (2) Correlation matrix

Variable	NTC	Days Receivable	Days Inventory	Days Payable	Sales Growth	Debt Ratio
ROA	(-0.14)*	-0.084	(-0.161)**	(-0.23)***	(0.225)**	(-0.155)**
NTC		(0.727)**	(0.717)**	0.003	(-0.148)*	(-0.165)**
Days Receivable			(0.223)**	(0.254)**	(-0.128)*	-0.102
Days Inventory				(0.287)**	(-0.144)*	(-0.241)**
Days Payable					-0.089	0.056
Sales Growth						0.058

* Correlation is significant at the 0.1 level.

** Correlation is significant at the 0.01 level.

Regression Analysis

Regression (1) includes number of day's receivable as a measure of accounts receivable policy. Cash flow is the most important short term factor in business survival. The days in accounts receivable ratio is a key barometer of the funding situation of a company. A company that provides customers credit, or that allows payments over time needs to have a good understanding of when they can be expect to be paid.

If the number is increasing from a prior year, it may indicate a problem. The company can positively impact the ratio by becoming more aggressive in collecting debts. Table (3) shows that the number of day's receivable coefficient is negative, but it is not significantly different from zero; so there is no significant relationship between number of day's receivable and profitability. This result differs than what is reached by Deloof, (2003), Shin and Soenen (1998) and Deloof and Jegers (1996). This result is explained depending on the Jordanian environment; the suppliers do not differentiate between credit and cash sales and they give a little cash sales discount percentage that cannot affect the income statement bottom line.

Another explanation is that some companies try to enhance their sales by increasing the credit sales and this is the new trend in Jordan; the customers have many installments offers with zero interest. This will allow the customer to assess product quality before paying (Long et al., 1993) and this will lead to an actual liquidity problem that fit with the descriptive analysis measures in Table (1). Or I can say that the higher profit companies will increase accounts receivable because they own the sufficient cash, so there is no relationship between number of day's receivable and profitability.

Then, in regression (2) we define number of day's inventories as independent variable to measure its ability to measure the changes in profitability as dependent variable. It is obvious from Table (3) that there is a significant negative relationship between the two variables and this result consistent with the previous studies like Deloof, (2003). Firstly, keeping inventory mean increasing expenditures so the high inventory leads to high expenses and low profits. Then, in spite of keeping a high inventory level reduces the risk of stack-out (Long, et al. 1993), (Deloof and Jegers, 1996); this will lead to reduction of the available cash and the expected revenues. Finally, weak marketing strategy inside companies will lead to accumulate the goods in warehouses which will decrease the creativity in creating a new product lines that will decrease the market share and company profitability. In total, that there is a negative significant relationship between number of day's inventories and profitability.

Number of day's accounts payable is added to regression (3), Table (3) shows that there is a significant negative relationship between this variable and profitability. This result confirms the negative correlation between operating income and number of days account payable in Table (2) and consistent with Deloof (2003), and La Poita et al. (1997 and 1998), who apply their studies on Belgium and find that Belgium with poorer investor protection have smaller and narrower external capital markets, shows that Belgium has weak legal protections of corporate shareholders and creditors, making bank financing and trade credit more attractive.

Fisman and Love (2001) argue that trade creditors mitigate weak creditor protection and imperfect information better than formal lenders, and find that firms in countries with less developed financial markets use informal credit provided by their suppliers to finance growth. Speeding up payments to suppliers might increase profitability because firms often receive a substantial discount for prompt payment (Raheman and Nasr 2007).

The financial crises and liquidity problems in Jordan will increase the account payable which decrease in profitability because the uncollectable checks amounts phenomena³.

Regression (4) focuses on the relationship between net trade cycle and profitability; the results represent the significant negative relationship between these two variables and confirm this study results. Shin and Soenen (1998) reaches also to a strong negative relationship between the length of the firm's net-trade cycle and its profitability. This result implies that a firm with a relatively short net trade cycle is more profitable. The negative relationship between profits on sales and NTC could be explained by market power or market share, i.e. a shorter NTC because of bargaining power with suppliers and/or customers as well as higher profitability due to market dominance (Shin and Soenen, 1998).

Table (3) Regression Analysis

Dependent Variable	Return on Assets (ROA)			
	(1)	(2)	(3)	(4)
Regression Model				
Sales Growth	0.048 (4.061)***	0.096 (-3.219)***	0.046 (3.958)***	0.045 (3.837)***
Debt Ratio	-0.090 (-3.185)**	-0.113 (-3.851)***	-0.084 (-2.967)***	-0.099 (-3.492)***
Days Receivable	-8.4 (-1.335)			
Days Inventories		0.00 (-3.219)***		
Days Payable			-0.000 (-3.676)***	
Net trade cycle				0.00 (-2.627)***
F-Test	(9.329)***	(12.313)***	(13.690)***	(11.065)***
Adjusted R ²	0.075	0.102	0.112	0.090

- * Correlation is significant at the 0.1 level.
- ** Correlation is significant at the 0.05 level.
- *** Correlation is significant at the 0.01 level.

Conclusion and Recommendations

In Jordan most industrial companies invest cash in their working capital. So it is safe to assume that the way the working capital is managed will have a deep impact on the profitability of those companies. The investigation undertaken to study this used a sample of firms registered under the Industrial Jordanian Companies listed on the Amman Stock Exchange. The investigation has found that there is in fact a negative relationship between profitability and net trade cycle, average number of day’s inventories and the number of day’s payable.

Through analysis the firm has concluded that if a firm is able to reduce time periods than that firm is efficient in managing its working capital. That efficiency will lead to an increase in profitability and that also indicated that the two goals of liquidity and profitability have an inverse relationship.

These results assert what the Jordanian investors suffer from liquidity deficit. In spite of some companies have high profitability indicators they cannot enter many projects. In addition to the liquidity problems the global financial crises lead Jordanian banks to put difficult conditions before giving loans.

³ Retuned checks amounts were 342.6 million JD in January and February, 2009 and 257.1 million JD in January and February, 2008. The total checks in 2008 reach 40.1 billion JD, 2.1 billion JD out of them are returned (5.2%) (Central Bank of Jordan Website <http://www.cbj.gov.jo>).

In addition to the positive and significant association between sales growth and profitability a positive relationship that should not be ignored is between profitability and size. That is an indicator that higher sales growth percentage companies are more profitable, in comparison to companies of lower growth percentage. The debt ratio is used as a proxy for leverage; it shows a significant negative relationship with the dependent variable, which means that, when leverage of the firm increases, it will adversely affect its profitability (Raheman and Nasr 2007).

Based on these results the following recommendations are suggested:-

1. The Industrial Jordanian Companies must set a trade-off between profitability and liquidity so that neither the liquidity nor profitability suffers.
2. The Industrial Jordanian Companies have to manage their working capital (management of current assets and current liabilities, and financing these current assets) in more efficient ways to increase profitability.
3. The audit quality report may be enhanced if the auditors add a paragraph that talk about liquidity position.
4. Further research is to be undertaken to develop models that generate better specified and more powerful tests that will further enhance the researchers' ability to detect liquidity problems.
5. Further research scope may be extended to include cash, marketable securities and inventory management.
6. Jordan Securities Commission may benefit from this research results by adding net trade cycle ratio to the financial ratios at the Commission website.

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