

FINANCIAL LEVERAGE, WORKING CAPITAL MANAGEMENT AND FIRM PROFITABILITY? EMPIRICAL EVIDENCE FROM PAKISTAN STOCK EXCHANGE

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***Abstract.** This study aims to investigate the working capital management practices and its effects on firms' profitability with moderating role of leverage. The Generalized Method of Moments estimation technique under fixed effect specification is used to analyze the cross-industries sample of 210 nonfinancial firms listed on Pakistan Stock Exchange. The result showed that receivable collection period and payable payment period have positive significant impact on profitability of firms, on the other hand cash cycle has significant negative impact on profitability of firms, and where as the impact of payable payment period is found insignificant on profitability. In case of moderation of leverage with respect to relationship of working capital with profitability the results showed that leverage weakens this relationship significantly. The study suggests that managers in nonfinancial sector should take into consideration the moderating role of leverage with respect to working capital management.*

Key words: Working capital, cash conversion cycle, receivable collection period, inventory turnover period, payable payment period, leverage

Introduction

Despite of the fact that most of the finance literature has documented the importance of working capital, but for years firm's long term financial decisions were considered as key and a source of value creation (Aktas, Croci, & Petmezas, 2015; De-Almeida & Eid, 2014). In recent years the significance of short term assets and liabilities management has attracted worldwide attention (Kasiran, Mohamad & Chin, 2016). The efficient management of working capital has evolved as one of the core objective of modern corporate finance, and became a significant factor of firm's value creation (Aktas, Croci, & Petmezas, 2015; Padachi, 2006). To achieve the optimal level, various components of working capital such as inventory, receivables and payable

management need to be adjusted (Hill, Kelly & Highfield, 2010). At the same time managers have to address some key questions. Such as, what is the optimal level of working capital? How it will be financed? (Brigham & Ehrhard, 2013). Likewise, how much liquidity risk can be absorbed by the firm? As decrease in liquid assets against the current liabilities may increase liquidity risk and may hinder the smooth operations of the firm. At the same time, having excessive current assets on the balance sheet may decrease firm's profitability. Thus to achieve an optimal level of working capital a very delicate fine-tuning of various component are required in such a way that, it results in smooth operation with low liquidity risk and high profitability (Van-Horne & Wachowicz, 2005).

In general to increase the profitability, a firm must maintain an appropriate level of inventory, which shall take fewest days to convert into sales (Ukaegbu, 2014). In case of receivables, relax credit policy may lead to higher sales and subsequently results in higher profits, but it will also increase liquidity risk (Napompech, 2012; Samiloglu & Demirgunes, 2008; Teruel & Solano, 2007). Similarly, delayed payment to creditor increases short-term liquidity but it may also lower profitability by not availing the discounts in early payments (Raheman & Nasr, 2007). Another common gauge to access the working capital management of the firm is cash conversion cycle i.e. the time involve in purchase of raw material to selling the finished goods and collecting cash. The firms can increase profitability by shortening the cash conversion cycle (Deloof, 2003; Raheman & Nasr, 2007; Zariyawati *et al.*, 2009).

This study will extend the literature on working capital management and profitability in certain ways. First, it will explore the different proxies of working capital and how it can be employed for value creation. Second, by introducing the leverage as a moderating variable will explore the effects of financial leverage in a capital structure on key working capital management decisions. Third, this study will provide latest empirical evidence of non-financial sector of Pakistan by using panel methodology in order to avoid unobservable heterogeneity.

This article will proceed as per the following scheme, Section 2 will provide the review of relevant literature, Section 3 describes the methodology used for the empirical evidence, Section 4 presents the results of the study and Section 5 concludes the paper.

Literature Review

The fundamental idea of optimal working capital originated from the research of Nadiri (1969). Since then various researchers have presented their results and suggested different financial indicators and level of working capital

required for different types of firms (Gupta, 1969; Gupta & Huefner, 1972). But at any point of time the risk and return trade-off between will be crucial to decide on an aggressive or conservative working capital management policy (Gardner, Mills, & Pope, 1986; Weinraub & Visscher, 1998).

According to one strand of literature, large investment in working capital will help to reduce supply cost, provide hedge against fluctuations in prices, and minimize loss of sales due to potential stock-outs (Blinder & Maccini, 1991; Corsten & Gruen, 2004; Fazzari & Petersen, 1993). Trade credit also results in higher sales, price discrimination, insure product quality, and build long term customer relationship (e.g., Brennan et al., 1988; Wilson & Summer, 2002). On other hand, over investments in firm's current assets may results in value reduction and agency cost (Khan, Bibi & Tanveer, 2016). Increasing investment in working capital will results in additional financing, interest expense, bankruptcy and opportunity cost (Kieschnick et al., 2013). Too much of investment working capital may also result in missing out on attractive short term investments (Ek & Guerin, 2011). The associated benefits and cost of high working capital presents a classical case of non-linear relationship between firm performance and level of working capital. There is high probability that overinvestment in working capital will results in destruction of firm's value and vice versa.

In previous studies a number of variables are used to analyze the profitability of the firms. Like Return on Equity (ROE) measured as net earnings divided by total equity (Jose *et al.*, 1996 & Wang, 2002), Return on Sales (ROS) obtained by dividing net income by sales (Shin & Soenen, 1998), Gross Operating Profit (GOP) calculated as gross operating profit divided by sales (Deloof, 2003; Lazaridis & Tryfonidas, 2006), Return on Capital Employed (ROCE) measured as net income divided by total capital employed (Meyer & Ludtke, 2006), Net Operating Profit (NOP) measured as net operating profit divided by total sales (Raheman & Nasr, 2007) and Return On Investment (ROI) measured as net income divided by total investments (Haq et al., 2011). But Return on Assets (ROA) is most widely used variable to measure the profitability of firms (Deloof, 2003; Jose et al., 1996; Karaduman et al., 2010; Padachi, 2007; Raheman & Nasr, 2007; Sharma & Kumar, 2011; Shin & Soenen, 1998; Wang, 2002) which is net earnings divided by total assets of the firms. This study used ROA as a measure for profitability.

Conversion Cycle and Firm's Profitability

The cash conversion cycle (CC) is considered most appropriate measure of working capital management (Gitman, 1974; Jose et al., 1996). The CC measures the time laps between cash received from sales and payment for

resources. Majority of empirical studies suggested negative association of CC with profitability (Deloof, 2003; Jose *et al.*, 1996; Karaduman *et al.*, 2010; Padachi, 2007; Raheman & Nasr, 2007; Sharma & Kumar, 2011; Shin & Soenen, 1998; Wang, 2002). Contrarily, some studies reported positive impact of CC on profitability of firms like Padachi (2006), Sharma and Kumar (2011) and Akoto *et al.*, (2013). However Baños-Caballero *et al.*, (2014) found concave association of CC with profitability of firms. Based on above discussion this study hypothesizes that:

H_{1a}: The shorter conversion cycle results in higher ROA of firms.

The use of CC alone while analyzing the relationship of working capital policy with profitability may lead to less convincing results. Therefore, the three components of CC i.e. receivables collection period (RCP), inventory turnover period (ITP) and payables payment period (PPP) are to be analyzed separately (Knauer & Wöhrmann, 2013).

Receivables Collection Period and Firm's Profitability

The RCP measures the average days a company takes to collect its receivables. Previously Deloof (2003) found significant negative impact of RCP on profitability of firms and suggested that firms can increase profitability by shortening the RCP, which is also confirmed by Lazaridis and Tryfonidas (2006) and Raheman and Nasr (2007). Therefore, our second hypothesis is:

H_{2a}: Longer Receivables Collection Period lower will be the ROA of firms.

Inventory Turnover Period and Firm's Profitability

The ITP refers to the average number of days to sell the inventory. The empirical studies like Shin and Soenen (1998), Deloof (2003), Raheman and Nasr (2007), Teruel and Solano (2007) Sharma and Kumar (2011), and Knauer and Wöhrmann (2013) argued that smaller ITP enhance the profitability of firms. So we hypothesize that:

H_{3a}: Reducing the Inventory Turnover Period results in higher ROA of firms.

Payables Payment Period and Firm's Profitability

The PPP is calculated as average number of days a takes to pay its payables. In case of PPP most studies reported negative association with profitability (Deloof, 2003; Knauer & Wöhrmann, 2013; Raheman & Nasr, 2007; Sharma & Kumar, 2011; Soenen, 1998) based on the argument that early payment may results in cash discount and hence increased profitability. However, Lazaridis and Tryfonidas (2007) reported positive impact of PPP on profitability of firms and argued that less profitable firms takes longer to pay its payables. Therefore, we propose that:

H_{4a}: Longer Payables Payment Period results in lowering the ROA of firms.

Effect of Leverage on Working Capital Management

The earlier studies like, Fazzari and Petersen (1993) have highlighted importance of financial leverage and confirm the fact that the financial constraints of the firms will signify its ultimate investment in working capital. Similarly Einarsson and Marquis (2001) argue that, one of the major factors associated with the relationship of firm's profitability and working capital management policy is the financial leverage of the firm. Specifically, Hill, Kelly, and Highfield (2010) recommended that investment in working capital is highly sensitive to access to capital market. Especially firm's with high dependence on external finances are more prone to changing economic conditions and its working capital management policy (Enqvist, Graham & Nikkinen, 2014). The efficient management of working capital by firms can significantly reduce its dependence on external finances, which will result in reduction of financing costs (De-Almeida & Eid, 2014), especially in high cost of borrowing countries like Pakistan (Pakistan Interest Rate, 2016; Alam, 2015; Khan, 2015; Zaidi, 2015). Although the investment in working capital will result, in higher sales and early payment by offering customer discount, and hence increases the firm value, but after and optimal level investment in working capital will increase interest expense and credit risk which will negatively affect the firm's value (Baños-Caballero *et al.*, 2014). Due to capital market imperfection, banking sector is the main source of finance to industry and those advances are characterized by unique set of requirements and covenants (Khan, 2015). So, how the financial leverage of the firms affects the relationship between working capital management policy and firm profitability, hypotheses were developed by added financial leverage as a moderating variable.

H_{1b}: The leverage moderates the relationship between cash conversion cycle and ROA of firms.

H_{2b}: The Leverage moderates the relationship between receivable collection period and ROA of firms.

H_{3b}: The leverage moderates the relationship between Inventory Turnover Period and ROA of firms.

H_{4b}: The leverage moderates the relationship between Payables Payment Period and the ROA of firms

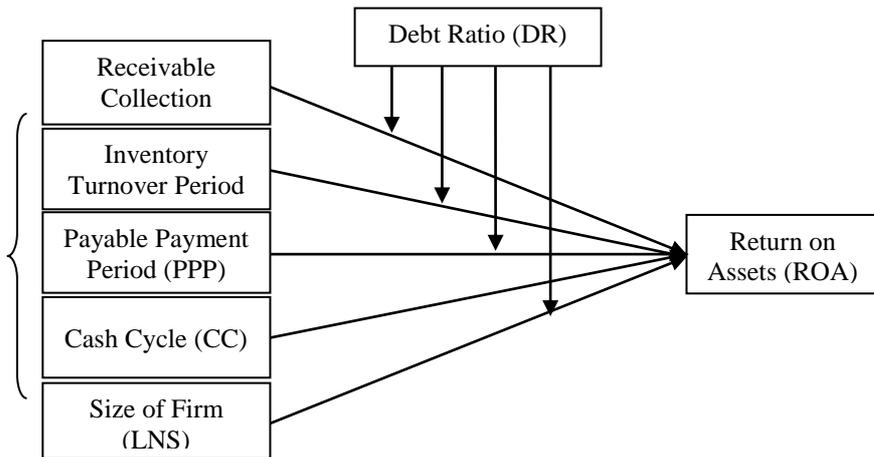


Figure 1 Conceptual Model of the Study

Methodology

This study used secondary data collected from the Balance Sheet Analysis published by State Bank of Pakistan. The sample time period of the study was 8 years from 2007 to 2014. The initial sample of study was comprised of 264 listed nonfinancial firms. The companies with missing and with outliers values in the sample period were excluded which reduced the sample size to 210 firms.

Descriptive statistics and correlation

The descriptive statistics like mean and standard deviation is used to describe the data. Mean value is number representing the whole series while standard deviation is used to describe deviation of data across the mean value. Correlation analysis is used to check paired linear association between the variables.

Model specification

Panel regression models are used to examine the relationship of working capital management practices with profitability of firms. Panel data modeling is considered more useful as it allows more variability, efficiency, degree of freedom as compared to cross-sectional and time-series modeling (Kennedy 2008, Baltagi, 2008). Hausman Test is used to select between fixed effect and random effect panel model, the results suggests that fixed effects is more appropriate, therefore fixed effect specification is used to estimate the models.

The following four models are used:

$$ROA_{it} = a_i + \beta_1 LNS_{it} + \beta_2 DR_{it} + \beta_3 RCP_{it} + \beta_4 RCP_{it} * DR_{it} + \mu_{it} \quad (1)$$

$$ROA_{it} = a_i + \beta_1 LNS_{it} + \beta_2 DR_{it} + \beta_3 ITP_{it} + \beta_4 ITP_{it} * DR_{it} + \mu_{it} \quad (2)$$

$$ROA_{it} = a_i + \beta_1 LNS_{it} + \beta_2 DR_{it} + \beta_3 PPP_{it} + \beta_4 PPP_{it} * DR_{it} + \mu_{it} \quad (3)$$

$$ROA_{it} = a_i + \beta_1 LNS_{it} + \beta_2 DR_{it} + \beta_3 CC_{it} + \beta_4 CC_{it} * DR_{it} + \mu_{it} \quad (4)$$

Whereas LNS is natural log of sales and act as control variable, DR is the debt ratio, CR is current ratio, CC is cash conversion cycle, RCP is receivables collection period, ITP is inventory turnover period, PPP is payables payment period. The RCP*DR, ITP*DR, PPP*DR, CC*DR are interaction terms to check for moderation of Debt Ratio and μ_{it} is error term.

Table 1 *Measurement of Variables and Abbreviations*

Variables	Type	Measurement	Abbreviation
Return on Assets	Dependent Variable	Net Earnings /Total assets	ROA
Size of the Firm	Control Variable	Natural log of sales	LNS
Debt Ratio	Moderating Variable	Total financial debt/ total assets	DR
Receivables Collection Period	Independent Variable	Receivables/Sales * 365	RCP
Inventory Turnover Period	Independent Variable	Inventory / Cost of Sales *365	ITP
Payables Payment Period	Independent Variable	Accounts payables/ purchases * 365	PPP
Cash cycle	Independent Variable	RCP + ITP – PPP	CC

Results and Discussions

This section provides the discussion on the results of study, including descriptive statistics, regression analysis and hypothesis testing.

Descriptive statistics and correlation matrix

Table 2 shows the descriptive statistics and coefficient of correlation. The average ROA is recorded 6.395% while standard deviation remained 13.456% across mean value. The average size of the firm in sample remained 15.031 while deviation in size remained 1.801. The average DR of firms is recorded 0.173 or 17.3% with standard deviation of .162 or 16.2%. The mean value of

RCP remained 53.903 days, however, standard deviation across mean value remained 189.453 days. The mean value of ITP is 89.071 days with standard deviation of 205.356 days. The mean value of PPP is 193.048 and standard deviation of 1040.247. The mean value of CC remained -50.074 days with standard deviation of 915.804 days.

Table 2a *Descriptive Statistics*

	ROA	LNS	DR	RCP	ITP	PPP	CC
Mean	6.40	15.030	17.53	90.90	89.07	193.05	-50.07
Std. Dev.	13.46	1.80	0.161	189.452	205.361	1040.25	915.80

Table 2b *Correlation Matrix*

	ROA	LNS	DR	RCP	ITP	PPP	CC
ROA	1.00						
LNS	0.32***	1.00					
DR	-0.24***	-0.10***	1.00				
RCP	-0.13***	-0.28***	-0.04*	1.00			
ITP	-0.05**	-0.19***	-0.05**	0.44***	1.00		
PPP	-0.09***	-0.19***	0.05**	0.34***	0.52***	1.00	
CC	0.06***	0.12***	-0.07***	-0.08***	-0.28***	-0.95***	1.00

*** significant at .01 level; ** significant at .05 level; * significant at .10 level

The correlation matrix showed that all the control and independent variables have statistically significant association with profitability of firms in non-financial sector. The Size and Cash Cycle has positive association with profitability. Whereas Debt Ratio, Receivable Collection Period, Inventory Turnover Period, and Payable Payment Period have negative linear association with profitability.

Regression Models

Four Panel regression models under fixed effect specification were used to test the hypothesis developed in section 2 and results are presented in Table 3. The size of firms (LNS) is positively associated with ROA which implied that firms in textile sector can enhance their profitability by increasing the sales. On the other hand the debt ratio (DR) showed negative relationship with ROA that signify that higher level of debts decreases the profitability of firms because of higher debt cost. The two main reasons of high cost of debt is higher interest rates (*Discount rate was as high as 14%*), and second reason is reluctance of financial institutions to provide funds to industry, especially in backdrop of global financial crisis, and at the same time availability if very high earning

government securities (Alam, 2015; Zaidi, 2015; Khan, Sohail, & Ali, 2016; & Pakistan Interest Rate, 2016).

Table 3 Results of Panel Regression (GMM Approach)

Variable	Model I	Model II	Model III	Model IV
C	-17.22 (4.25)***	-24.09 (4.70)***	-32.56 (5.31)***	-31.13 (5.06)***
LNS	1.65 (0.28)***	2.12 (0.31)***	2.66 (0.35)***	2.58 (0.34)***
DR	-5.77 (2.28)***	-10.06 (2.29)***	-7.86 (2.25)***	-8.04 (2.23)***
RCP	0.00 (0.00)***			
ITP		-0.00 (0.00)		
PPP			0.00 (0.00)***	
CC				-0.00 (0.00)***
RCP*DR	-0.05 (0.01)***			
ITP*DR		0.03 (0.01)***		
PPP*DR			-0.00 (0.00)	
CC*DR				0.01 (0.00)***
R-Squared	0.60	0.60	0.60	0.60
Adjusted R-squared	0.54	0.54	0.54	0.54
F-Statistics	10.29	10.21	10.31	10.38
P-Value	0.00	0.00	0.00	0.00
Durbin-Watson	1.97	1.94	1.94	1.93

*** significant at .01 level; ** significant at .05 level; * significant at .10 level

In Model I the RCP is found to have significant positive impact on profitability of firms, which means that relaxed credit policies with regard to receivables leads to higher profitability of firms. However, the interaction term RCP*DR has negative significant effect on profitability which suggested the Debt Ratio plays the role of moderation by weakening the positive impact of

RCP on ROA. Because the firms with high leverage will prefer to reduce the RCP, so that timely interest and principal payments are insured. At the same time, with weak debt market, financial institutions are the main source of assets financing in Pakistan and they will prefer high current ratios and cash flow generation to insure their loans repayment (Saeed & Sameer, 2015).

The results of Model II shows that ITP has negative impact on profitability of firms, however the relationship is statistically insignificant. The interaction term ITP*DR has significant positive impact on profitability of firms, which implies that the leveraged firms have to maintain higher level of inventory and hence higher ITP. The main reason behind this rather unusual behavior is, various covenants imposed in different financing facilities (i.e. loan commitments, revolving credit, trade finance) by the financial institutions, to maintain certain target level of inventory (Claessens & Tzioumis, 2006; Khan, 2015; Zia, 2008).

In case of Model III the PPP is found to have statistically significant and positive impact on profitability of firms which means that delayed payments to creditor remained profitable in nonfinancial sector. However, interaction term PPP*DR has found have negative but statistically insignificant impact on profitability of firms. In Model IV the results showed that CC has statistically significant negative impact on ROA. This means that shorter Cash Cycle remained profitable for the sampled firms. The result is consistent with empirical findings of Jose *et al.*, (1996), Shin and Soenen (1998), Wang (2002), Deloof (2003) and Raheman and Nasr (2007). The interaction term CC*DR is found to have significant positive impact on profitability of firms. As in case of the components of cash cycle like RCP, ITP and PPP, the moderation of leverage reduce the impact of these components on profitability, and hence the overall impact of CC with profitability is also influenced negatively by the moderation of leverage.

The explanatory power i.e. R^2 of model I, II, III and IV is 59.8%, 59.6%, 59.9% and 60.1% respectively. F-Statistics of all the models showed that all models are statistically highly significant. The values of Durban Watson test show that autocorrelation is at acceptable level.

Conclusions

The primary objective of this research study was to investigate the working capital management practices in nonfinancial sector and its impact on firms' profitability with moderating role of leverage. This study concluded that financial managers can increase profitability of firms by increasing Size of firms in terms of sales (LNS). However, by lowering Debt Ratio (DR) profits of firms can also be increased. By increasing receivables collection period

(RCP), Payables Payment Period (PPP) and decreasing Inventory Turnover Period (ITP) and Cash Cycle (CC) the management of nonfinancial sector can increase profitability. The results also suggested the interaction of Debt Ratio with the proxies of working capital management weaken the strengths of direct relationship of working capital management and profitability. These lead to the conclusion that working capital management policies are highly affected by the introduction of financial leverage in the capital structure (Fazzari & Petersen, 1993; Einarsson & Marquis, 2001; Hill, Kelly & Highfield, 2010). Therefore the managers in nonfinancial sector should take into consideration the moderating role of leverage with respect to working capital management (Enqvist, Graham & Nikkinen, 2014).

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