The Impact of Working Capital Policy on Financial Performance of Manufacturing Companies in Developing Countries: A Comparative Analysis of Domestic and Multinational Firms

Said Shah,
Department of Management Sciences, Capital University of Science and Technology
SAF Hasnu
Professor, Department of Management Sciences, COMSATS Institute of Information Technology
Safdar A Butt
Professor, Faculty of Management Sciences, Capital University of Science and Technology

Abstract

Despite the commonly held belief that the prime source of profits for a manufacturing company is the efficiency of its production plant, good financial managers know that they can significantly improve the bottom line (and other important metrics) by adopting the right working capital policy. All investments are expected to produce returns appropriate to their costs - this is equally true of the funds invested by manufacturing companies in the current side of their operations. Using ratio analysis, multivariate and logistic regression techniques, we were able to establish two broad actualities: firstly, multinational firms operating in the manufacturing sector of Pakistan generally use conservative working capital policies and generally produce better overall financial results; and secondly, domestic firms are more inclined towards aggressive working capital policies and generally have poorer financial results. We investigate the extent to which the selection of working capital policy influences the financial performance of these companies and the causes thereof. This article contributes to the published research by exploring the impact of working capital policies on the financial performance of manufacturing companies, both domestic and multinational, operating in Pakistan. However, due to a fair degree of similarity between the manner in which domestic and multinational companies conduct their affairs in most developing countries, we believe the paper has relevance for companies in all such countries.

Keywords: Domestic Firms, Multinational Firms, Ratio Analysis, Working Capital Policy

We asked a group of 48 students, all senior managers, attending a seminar on advance financial strategies, to define working capital (WC) in terms other than "the excess of current assets over current liabilities". Out of these, 46 were unable to offer an alternative way of measuring this very important figure. Only two were able to point out that WC is that part of a firm's long term resources that has been invested in its short term operations. This sadly exemplifies the general attitude towards WC management adopted by the senior executives of most firms. Our literature review also reveals a bias of researchers towards confining their studies on WC to "the inter-play between current

assets and current liabilities of a firm." This undermines the importance of WC management as a key element of firm's capital structure policy. We believe this neglect becomes more pronounced in case of manufacturing companies where more managerial energies are spent on improving the physical efficiency of plant & machinery than on achieving better operational results through careful management of WC operations.

A view offered many decades back (Guthmann & Dougall, 1948) that WC indicates surplus in current assets over current liabilities continues to hold sway to this day. Park and Gladson (1963) defined WC management as "maintaining a proper balance between current assets and current liabilities to maximize profits". Sagan (1955) offered even a more narrow view of WC, confining it to money (or cash balances) and termed it as a lubricant that oils the wheels of industry. This sad view was supported by Sagner (2014) saying firms lack the quality of effective funds management and keep their funds liquid, mobile and available. All these definitions still find their place in textbooks, perpetuating the belief that WC management is nothing beyond monitoring the levels of current assets, cash in particular. The reality is somewhat different.

We did find some pragmatic views on the subject. For example, "most of the business failures are due to lack of proper WC management" (Smith, 1973). Since major portion of firms' sources are invested in short term assets and liabilities, poor short term financing decisions may lead to increase in number of sick industrial units. Due to significant impact of WC management on firms' profitability, an efficient synchronization in assets and liabilities is required (Deloof, 2003). Location (whether a firm operates domestically or internationally) also affects firms' performance. Multinational firms (MNFs) have better WC management policies than domestic firms (DFs) which helps to maximize their value (Ameer, 2010). The main source for multinationals' superior performance is their competitive advantage (Grant, 1987). DFs have obvious advantages over MNFs. Firstly; they know the market better; as almost their entire management team is local. Secondly, their management and staff costs are lower, and thirdly, they have better connections in regulatory circles as well as the supply chain process. MNFs have to incur higher costs to neutralize these advantages; hence they need some additional competencies to remain competitive in the market. These may include superior human resource expertise, more advanced technology, economies of scale, etc.

Significance of the Study

The objective of this paper is not to identify specific WC policies for any particular class of industry. Our focus is on demonstrating that attention to individual current assets and liabilities levels is not the best

way to manage WC rather investment in WC must form part of a firm's capital structure decision.

Literature Review

The Nature of Working Capital

There are two ways of looking at WC. The first, more common and simpler way is to say WC = Current assets (CA) – Current liabilities (CL). The second, less common but more meaningful way to arrive at WC figure is through revisiting the basic balance sheet equation:

$$C - L = A \quad (1)$$

$$EQ + LTD + CL = FA + CA \quad (2)$$

$$EQ + LTD = FA + (CA - CL) \quad (3)$$

$$EQ + LTD = FA + WC \quad (4)$$

The sum of equity and long term debt represents the total long term resources available to a company for running all of its operations. Hence:

CAPITAL EMPLOYED (CE) = FIXED ASSETS + WORKING CAPITAL

$$CE = FA + WC \quad (5)$$

$$WC = CE - FA \quad (6)$$

When we look at WC as the excess of capital employed over fixed assets, we get a better perspective of its importance in the total scheme of things. Formulating WC policy should therefore be a three step process (1) to decide about the right proportion of investment in fixed assets and WC (2) to decide about the level of current assets to be carried and (3) and to maintain a healthy difference between CA and CL totals.

Prevailing Practices

This paper follows the general practice of assuming that average WC percentage (WC as % of CE) in a given industry in a given market is the standard mark. An aggressive WC policy would mean having a lower WC percentage than the industry average while a conservative working policy would mean having a higher WC percentage than the industry average. Companies having a WC percentage fairly close to the industrial average are deemed to be following a hedging WC policy. Review of previous studies carried out (Teruel & Solano, 2007; Vahid, Ghanavati, khosroshahi & Mohammadreza, 2012) indicates that a large number of firms are using aggressive WC policy. Pecking Order Theory (Myers & Mailuf, 1984) suggests preference order between debt and equity in case of inadequate funds. Weinraub and Visscher (1998) examined the relationship between aggressive and conservative WC practices by computing a ten year industrial average for each ratio and

found that relatively aggressive WC asset policies are balanced by relatively conservative WC financing policies. Optimal level of WC policy may be obtained either by increasing or decreasing investment in WC (Aktas, Croci & Petmezas, 2015). Chukwunweike (2014) analyzed the impact of liquidity on profitability and found a significant positive relation between current ratio (CR) and firms' performance.

Theoretical link has been obtained from Operating Cycle Theory (Park & Gladson, 1963) advocating calculation of WC requirements on the basis of 'natural business year', Financing Theory according to which credit sale is the oldest type of trade credit (Emery, 1987), Liquidity Theory stating that firms having credit constraint prefer trade credit instead of cash credit and firms having easy approach to cash credit avoid trade credit (Nielson, 2002) and Pecking Order Theory (Myers & Mailuf, 1984) as WC is a part of long term funds invested in current assets and the managers need to have an order of priority when selecting the means of financing current assets. According to a recent study (Baig, 2009), multinationals have better WC management policies than the WC management policies of DFs. In a study comparing the strategic choices of local and MNFs in China, Luo and Tan (1998: 21-40) found that a balanced arrangement between strategy and environment will generate high profitability both for multinationals and local firms operating in the same emerging economy due to applicability of the key view of the environment-strategy model in different types of economies.

Previous literature indicates lack of originality and availability of thin scientific research to determine the difference between the effects of WC policy on domestic and multinational manufacturing firms' performance. The studies available are more or less country specific, thus the factors chosen in the existing research to investigate the impact on firms' performance are not necessarily applicable generally. Furthermore, the studies conducted during 2004-2013 (period also covered by our study) reflect that WC management practices were analyzed in developing countries like Pakistan only on the basis of size. This study is a step to cover this gap available in existing research. Theoretically, hedging WC policy is ideal however difficult to apply as such conservative or aggressive policy is actually in practice. The research aims at determining the WC policy most influential in determining the performance and value of firms and the policy actually in vogue by corporate sector by testing the following hypotheses:

Hypothesis 1: There exists a significant relationship between WC policy and firms' performance.

Hypothesis 2: Corporate sector of Pakistan follows aggressive WC policy irrespective of firms' ownership origin (multinational or domestic).

Hypothesis 3: Firms' ownership origin (i.e. if it is multinational or domestic) affects its performance

Research Methodology

Data Type and Sample Size

Data set includes 153 firms listed on Pakistan Stock Exchange (formerly Karachi Stock Exchange) covering a period of 2004-2013 for ten economic groups excluding financial and those firms for which industrial average is not available. Thus a panel data set of 1,530 firm-year observations has been obtained from State Bank of Pakistan's document "Balance Sheet Analysis" and published annual reports of firms. Data is arranged and presented in pooled form containing both time series and cross sectional observations. Time series in the study presents year wise determination of WC policy and firm's performance measured by calculating various ratios for 10 years from 2004 to 2013 while cross sectional data covers determination of WC policy and firm's performance measured by calculating various ratios separately for each year under review. Sample is selected on disproportionate stratified random sampling basis to give proper representation to each economic group in the sample. Industry-wise and location-wise distribution of sample firms is given in table 1:

Table 1. *Distribution of Sample Firms According to Industry and Location*

Industry	Domestic Firms	Multinational Firms	Total
Textiles	35	0	35
Sugar	16	0	16
Chemicals and Pharmaceuticals	14	14	28
Fuel and Energy	14	5	19
Autos and Engineering	8	12	20
FMCGs, Foods and Allied	5	5	10
Cement	13	1	14
Paper and Board	4	2	6
Tobacco	1	2	3
Jute	2	0	2
Total firms	112	41	153

Variables Used in the Study

The study uses dependent, independent and control variables as detailed in table 2 below:

Table 2. *Dependent, Independent and Control Variables Used in the Study*

Type of variable	Variable	Calculations
Dependent	Return on assets (RoA)	Net profit divided by total assets

Independent	Dummy for domestic and multinational (DDM), representing location	Using dummies, '0' is assigned to DFs and '1' to MNFs
	Current ratio (CR), a proxy of working capital policy*	Current assets divided by current liabilities
	Acid test ratio (ATR), a proxy of working capital policy*	Quick assets (current assets minus inventory) divided by current liabilities
	Cash ratio (CAR), a proxy of working capital policy*	Cash and cash equivalents divided by current liabilities.
Control	Market capitalization (MC7) representing firms' size	Number of outstanding shares multiplied by market price per share
	Sales growth (SG)	(current year's sales - previous year's sales)/ previous year's sales

** Three WC policies are in practice namely Hedging, Conservative and Aggressive (VanHorne & Wachowicz, 2009; Brigham & Houston, 2013). This study determines WC policy on the basis of three liquidity ratios viz; CR, ATR and CAR.*

Results and Discussion

Descriptive statistics indicate average RoA is 6.49% for DFs and 15.40% for MNFs with standard deviations of 15.79 and 13.57 respectively. This shows weak and vulnerable performance of DFs and better and stable performance of MNFs. A narrow range between means of WC policy variables indicates the stability and reliability of WC policies both in DFs and MNFs. Correlation analysis shows consistent, positive and significant results for WC policy and location. All the WC policy variables affect firms' performance positively significant at 1% level. Incorporating all the variables used in the study, ratio analysis, multivariate and logistic regression techniques are used to obtain the results.

Ratio Analysis

In this section, profitability and WC policy variables are compared with their respective industrial averages. Firms with RoA equal to or more than industrial average are considered as good performers and less than industrial average or negative (even if it is more than industrial average), as weak performers. Table 3 reports, good and weak performing firms.

Table 3. *Firms' Performance*

Data Segment	Good performing	Weak Performing	Total firms

	firms		Firms			
	Number	%	Number	%	Number	%
Domestic firms	56	50	56	50	112	100
Multinational firms	21	51	20	49	41	100
Total firms	77	50.33	76	49.67	153	100

As reported in table 3, there are 50.33% good performing firms and 49.67% weak performing firms. Table 3 further shows that the performance of MNFs (51% good firms) is slightly better than the performance of DFs (50% good firms). This finding is supported by Ameer (2010).

CR, ATR and CAR are used as proxies of WC policy. Averages of all these variables for the data period are compared with their respective industrial averages. Firms with ratios more than industrial average are considered as following conservative WC policy, equal to industrial average are considered as following hedging approach and firms with less than industrial average are grouped as following aggressive approach. Comparing profitability and WC policy variables with industrial average is in line with previous studies (Singh, 2011). Based on the highest ratio amongst all or majority of the WC proxies, DFs follow aggressive WC policy whereas MNFs use conservative WC policy. Clubbing the results based on all the proxies, overall corporate sector of Pakistan follow aggressive WC policy.

Multivariate Regression Analysis

In this section we discuss the panel diagnostic tests and models used for multivariate analysis of the pooled data. Multicollinearity is checked using variance inflation factor (VIF). Most of the existing literature (O'Brien, 2007) indicates that data having VIF of less than 10 are free of multicollinearity problem. VIF for the data used in this study ranges between 1.002 and 7.765 for all the variables, hence no multicollenearity problem exists. In order to check, heteroscedasticity, Breusch Pagan Godfrey and Park tests (Breusch & Pagan, 1979; Park, 1966) are used. P value is found to be more than 0.05 as such heteroscedasticity does not exist. F-Statistic is more than 4 and p value is 0.000 for sample data which shows that the models used in the study are best fit to estimate the results. Both Wald and Hausman tests suggest fixed effects model for domestic and multinational firms. Fixed effect model has the advantage of assuming firm specific effects however do not estimate dummy variables. The following is the fixed effect model:

$$RoAit = \beta0 + \beta1(CR) + \beta2(ATR) + \beta3(CAR) + \beta4(MC) + \beta5(SG) + \varepsilon \quad (7)$$

Following Deloof (2003) and to bring conformity in the results, this study uses fixed and pooled OLS models for estimation. Following is pooled OLS model:

$$RoAit = \beta0 + \beta1(DDM) + \beta2(CR) + \beta3(ATR) + \beta4(CAR) + \beta5(MC) + \beta6(SG) + \varepsilon \quad (8)$$

For model stability check, Cumulative Sum (CUSUM) Residuals test is used. CUSUM lines for all segments of data are found to be within the critical region as such, the models used for estimating the results are stable. Regression results are reported in table 4. Based both on fixed and OLS models, CR and CAR are positively related with firms' performance significant at 1% in domestic and multinational firms respectively. These results suggest an important role of WC policy in determining firms' performance. DFs (usually small and medium) are forced to manage the level of current ratios due to State Bank of Pakistan rules about CR. Since these firms do most of their business on bank borrowing (meaning low cash at bank figures), their cash ratios are generally insignificant. On the other hand, MNFs (usually large) are able to negotiate better terms with their suppliers and do not extend much credit to their customers leading to low level of receivables and higher levels of cash. Ability to get longer credit from suppliers means their current liabilities are fairly heavy. These findings are supported by previous studies (Chong & Hwang, 2015).

Table 4. *Location-Wise Regression Results (Based on OLS model)*

Variables	Location	Coefficient	Standard Error	t-Statistic	Prob.
C	Domestic	0.0426	0.706	0.060	0.952
	Multinational	11.508	1.297	8.867	0.000
DDM	Domestic	--	--	--	--
	Multinational	--	--	--	--
CR	Domestic	3.898	0.939	4.151	0.000
	Multinational	0.370	1.244	0.297	0.766
ATR	Domestic	1.154	1.119	1.031	0.303
	Multinational	-0.071	1.368	-0.051	0.958
CAR	Domestic	-0.262	0.534	-0.491	0.623
	Multinational	8.947	1.532	5.839	0.000
MC	Domestic	0.001	0.001	0.944	0.345
	Multinational	0.009	0.007	1.362	0.174
SG	Domestic	2.451	0.699	3.502	0.001
	Multinational	-0.583	0.658	-0.886	0.376

Table 5. *Key Model Statistics*

Variables	Model	R^2	F-Statistics
Domestic firms	FE	0.434	6.638
	OLS	0.133	34.283

Multinational firms	FE	0.647	14.830
	OLS	0.122	11.241
'All firms'	OLS	0.160	48.369

Key model statistics presented in table 5 show that using FE and OLS models, independent variables, bring a change of 43.4% and 13.3% respectively in dependent variable.

Logistic Regression Analysis

. This section identifies the type of WC policy significantly affects firms' performance using CR. CR is preferred over ATR and CAR due to its widespread usage by corporate units for liquidity reporting purposes and inclusion by State Bank of Pakistan (Central Bank of the country) in its prudential regulations as a measure of firms' liquidity position. Logistic regression results are reported in table 6. The pooled logistic regression model is:

$$DROA = \beta 0 + \beta 1\ (CRA) + \beta 2\ (CRH) + \beta 3\ (CRC) + \varepsilon \quad (9)$$

Table 6. *Logistic Regression Results*

Variables	Beta	Standard error	Wald	Degree of freedom	Significance level	Odd Ratio Exp (B)
CRA	-.602	.423	2.021	1	.155	.548
CRH	-20.866	8987.421	.000	1	.998	.000
CRC	1.116	.421	7.040	1	.008	3.053
Constant	-.336	.414	.660	1	.416	.714

As reported in table 6, conservative policy (CRC) is the only WC policy to improve firms' performance with an Odd ratio of 3.053. Using the coefficients of logistic regression reported in table 6, we can predict the odd values for each explanatory variable employing the following odds prediction equation:

$$\text{Odds value} = e^{b0 + biXi} \quad (10)$$

On the basis of odd values too, conservative policy (CRC) remained on the top with the highest odd value of 1.831 to contribute in improving firms' performance (table 7).

Table 7. *Ranking of Working Capital Policies Based on Odd Values*

Policy	Odd Value	Ranking
Conservative (CRC)	1.831	1
Aggressive (CRA)	0.113	2

Hedging (CRH)	-20.151	3

Conclusions

We investigated the impact of location and WC policy on firms' performance using ratio, multivariate and logistic regression analyses. Ratio analysis indicates that DFs follow aggressive WC policy whereas MNFs use conservative WC policy. Since major portion of sample consist of DFs, overall corporate sector of Pakistan appears to follow aggressive WC policy. Ratio analysis further shows that the performance of MNFs is better than DFs. Positive and significant relationship of CR in DFs is because of statutory requirement of the central bank regarding liquidity maintenance as well as maximum dependence on bank borrowing. The positive and significant relationship of CAR in MNFs is due to availing credit for longer period from their suppliers and allowing credit for shorter period to their customers. Logistic regression results indicate that conservative WC policy is the most effective amongst all approaches.

WC investment influences the value of the firm, we believe that if the conclusions and recommendations of this study are taken seriously by financial managers and if due attention is paid to our contention that WC should be managed as a part of CE, not in relation to CA: CL balance, we think considerable improvement in financial results can be obtained in developing countries like Pakistan. In turn this can lead to better share price and higher value for shareholders. The policy makers at government level can also gain an understanding of the needs of industrial firms. For example, in Pakistan financial institutions are barred by State Bank regulation from extending loans to firms with a CR of less than 1. Such restrictions are helpful in certain economic situations but may be harmful to particular firms in particular sectors and in particular economic environments.

Based on the resemblance of the state of economies of developing countries, DFs of these countries are generally expected to trail behind MNFs (having more advanced technology, better performance by product differentiation, international diversities, ability to exploit economies of scales due to better access to financial resources and superior corporate governance mechanisms) but this may not be necessarily so as our results clearly show that in certain areas DFs perform better than MNFs both in terms of operational policies as well as governance issues. We do not pretend that choosing the right WC policy is the only tool of improving financial performance. But our study clearly demonstrates that it does have significance. More profitable companies mean a better economy, more jobs, higher purchasing power and a better quality of life for everyone. This message applies to all companies in the developing economies.

References

Aktas, N., Croci, E. & Petmezas, D. 2015. Is working capital management value enhancing? Evidence from firm performance and investments, Journal of Corporate Finance, 30: 98-113.

Ameer, R. 2010. The role of institutional investors in the inventory and cash management practices of firms in Asia, Journal of Multinational Financial Management, 20: 126-143.

Baig, V.A. 2009. Working capital management: A comparative study of different ownerships, Management & Change, 13 (1): 85-130.

Breusch, T.S. & Pagan, A.R. 1979. A simple test for heteroskedasticity and random coefficient variation, Econometrica, 47: 1288-1290.

Brigham, E.F. & Houston, J.F. 2013. Fundamentals of financial management. (13th ed.), Mason, USA: South-Western Cengage Learning.

Chong, B & Hwang, I.D. 2015. Credit ratings and short-term debt financing: An empirical analysis of listed firms in Korea, Asia-Pacific Journal of Financial Studies, 44: 88-128.

Chukwunweike, E.V. 2014. The impact of liquidity on profitability of some selected companies: The financial statement analysis (FSA) approach, Research Journal of Finance and Accounting, 5: 81-90.

Deloof, M. 2003. Does working capital management affect profitability of Belgian firms?', Journal of Business Finance and Accounting, 30: 573-587.

Emery, G.W. 1987. An optimal financial response to variable demand, Journal of Financial and Quantitative Analysis, 22: 209-225.

Grant, R.M. 1987. Multinationality and performance among British manufacturing companies', Journal of International Business Studies, 18 (3): 79-89.

Guthmann, H.G. & Dougall, H.E. 1948. Corporate financial policy (2nd ed.) New York. Prentice Hall.

Luo, Y. & Tan, J.J. 1998. A comparison of multinational and domestic firms in an emerging market: A strategic choice perspective, Journal of International Management, 4 (1): 21–40.

Myers, S.C. & Mailuf, N.S. 1984. Corporate financing and investment decisions, when firms have information that investors do not have, Journal of Financial Economics, 13: 187-221.

Nielson, J. 2002. Trade credit and the bank lending channel, Journal of Money, Credit and Banking, 34: 226-253.

O'Brien, R.M. 2007. A caution regarding rules of thumb for variance inflation factors, Quality & Quantity, 41: 673-690.

Park, C. & Gladson, J.W. 1963. Working capital (1st ed.) New York. The Macmillan Co.

Park, R. E. 1966. 'Estimation with heteroscedastic error terms', Econometrica, 34: 888.

Sagan, J. 1955. Towards a theory of working capital management, The Journal of Finance, 10: 121-129.

Sagner, J. 2014. Working capital management: Applications and case studies, (Wiley) ISBN: 978-1-118-93383-1

Singh, D.P. 2011. Net working capital level and return on capital employed in firms of cement industries in India'. VSRD International Journal of Business & Management Research, 1: 269-280.

Smith, K.V. 1973. State of the art of working capital management, Financial Management, 2: 50-55.

State Bank of Pakistan, 2011. Balance sheet analysis of joint stock companies (2004-2011)' URL: www.sbp.org.pk.

Teruel, P.j.G. & Solano, P.M. 2007. Effects of working capital management on SME profitability, International Journal of Managerial Finance, 3: 164 –177.

Vahid, T.K., Ghanavati, E, khosroshahi M.A. & Mohammadreza, E. 2012. Working capital management and corporate performance: Evidence from Iranian companies, Procedia - Social and Behavioral Sciences, 62: 1313–1318.

VanHorne, J. C. & Wachowicz, J. M. 2009. Fundamentals of financial management (13th ed.) Harlow. FT Prentice Hall.

Weinraub, H.J. & Visscher, S. 1998. Industry practice relating to aggressive conservative working capital policies, Journal of Financial and Strategic Decisions, 11: 11-18.