

# The Impact of Working Capital Management Policies on Firm's Profitability and Value: Evidence from Iranian Companies

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## Abstract

The working capital management plays an important role for success or failure of firm in business because of its effect on firm's profitability as well on liquidity. The main objective of this study is to investigate the impact of working capital management policies (aggressive and conservative policies) on the firms' profitability and value. A sample of 28 Iranian Companies listed on Tehran Stock Exchange for a period of 5 years from 2005 to 2009 was selected. The results show that following a conservative investment policy and aggressive financing policy has a negative impact on a firm's profitability and value. Finally, this study finds that firm Size and firm Growth has a positive impact on the firm's profitability and value, while firm leverage show negative impact.

**Keywords:** Working capital management, Tehran stock Exchange, Firm's Profitability and Value, aggressive investment policy, aggressive financing policy.

## 1. Introduction

The management of working capital is defined as the "management of current assets and current liabilities, and financing these current assets." Working capital management is important for creating value for shareholders. Management of working capital management was found to have a significant impact on both profitability and liquidity in studies in different countries.

Working capital management plays an important role in a firm's profitability and risk as well as its value (Smith, 1980). There are a lot of reasons for the importance of working capital management. For a typical manufacturing firm, the current assets account for over half of its total assets. For a distribution company, they account for even more. Excessive levels of current assets can easily result in a firm's realizing a substandard return on investment. However, Van Horne and Wachowicz (2004) point out that excessive level of current assets may have a negative effect of a firm's profitability, whereas a low level of current assets may lead to lowers of liquidity and stock-outs, resulting in difficulties in maintaining smooth operations.

Efficient management of working capital plays an important role of overall corporate strategy in order to create shareholder value. Working capital is regarded as the result of the time lag between the expenditure for the purchase of raw material and the collection for the sale of the finished good. The way of working capital management can have a significant impact on both the liquidity and profitability of the company (Shin and Soenen, 1998). The main purpose of any firm is maximum the profit. But, maintaining liquidity of the firm also is an important objective. The problem is that increasing profits at the cost of liquidity can bring serious problems to the firm. Thus, strategy of firm must be a balance between these two objectives of the firms. Because the importance of profit and liquidity are the same so, one objective should not be at cost of the other. If we ignore about profit, we cannot survive for a longer period. Conversely, if we do not care about liquidity, we may face the problem of insolvency. For these reasons working capital management should be given proper consideration and will ultimately affect the profitability of the firm.

Generally, firms can follow one of the tow (policies) in managing working capital; a conservative policy where the ratio of current assets to total assets is minimized or the aggressive policy by holding high level of current liabilities relative to total liabilities, the policies that the firm adopt can have a n impact on the firm liquidity, hence on firms' profitability (Van Horne and Wachowicz, 2004). In Iran most of the companies are small to medium size companies, they really heavily on short term loans, especially in the absence of well developed bond market, therefore firms' are expected to pay attention to their liquidity position by optimally managing their working capital through efficient investment and financing policies. For this reason, this research is designed to help fill the gap in the literature and to help financial manager to set their optimal financing and investment policies by introducing them to theoretical and empirical test of this subject. The current paper, therefore, is organized as follows: Section 2 introduces the related literature. Section 3 discusses the data and methodology. Empirical results are presented in Section 4. Section 5 Provides the Summary and Conclusions.

## **2. Literature Review**

Prior studies reported that working capital management may have an important effect on the firm's profitability. Shin and Soenen (1998), Lazaridis and Tryfonidis (2006), Raheman and Nasr (2007), among others, measured working capital with cash conversion cycle, which consists of stockholding period, debtors' collection period and creditors' payment period. These researchers supported that greater investment in working capital (the longer cash conversion cycle) leads to reduction in the firm's profitability (Banos-Caballero et al, 2010, and Nazir and Afza, 2003, 2009).

Deloof M.( 2003) discussed that most firms had a large amount of cash invested in working capital. It can therefore be expected that the way in which working capital is managed will have a significant impact on profitability of those firms. Using correlation and regression tests he found a significant negative relationship between gross operating income and the number of days accounts receivable, inventories and accounts payable of Belgian firms. On basis of these results he suggested that managers could create value for their shareholders by reducing the number of days' accounts receivable and inventories to a reasonable minimum. The negative relationship between accounts payable and profitability is consistent with the view that less profitable firms wait longer to pay their bills.

Braun and Larrain (2005) find that high working capital requirements are a key determinant of a business' dependence on external financing. They show that firms that are highly dependent on external financing are more affected by recessions, and should take more precautions in preparing for declines in the economic environment, including ensuring a secure level of working capital reserves during times of crisis.

Lazaridis and Tryfonidis (2006) Using panel data analysis for a sample of 131 corporations listed in Athens Stock Exchange investigate the traditional relationship between firm profitability and working capital management. The results reveal a significant relationship between firms' profitability

and the cash conversion cycle. They also suggest that if keeping the cash conversion cycle at the optimal level positively affect the shareholders wealth.

Rehman (2006) investigates the relationship between the ability of firms to effectively manage its working capital components and their profitability; he examines the effect of the average collection period, inventory turnover in days, average payment period and the cash conversion cycle on the firms' profitability. Using a sample consist of 94 Pakistani firms, he found a negative relationship between working capital components and firm profitability impaling that a firm' profitability is largely affected by the length of its cash conversion cycle.

Falope and Ajilore (2007) used a sample of 50 Nigerian quoted non-financial firms for the period 1996 -2005. Their study utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for a sample of fifty Nigerian firms listed on the Nigerian StockExchange. Furthermore, they found no significant variations in the effects of working capital management between large and small firms.

Teruel and Solano (2007) aim at investigating the effect of working capital management on firm profitability, using a sample of 8,872 small and medium size European companies. They found that reducing inventory and average collection periods affect positively the firm value, as reducing the cash conversion cycle improves the firm's profitability

Raheman and Nasr (2007) use a sample consists of 94 firms listed in Karachi Stock to investigate the effect of the average collection period, inventory turnover in days, Average payment period, Cash conversion cycle and Current ratio on the Net operating profit. They observed a negative relationship between these variables and firms profitability, which implies that increasing the length of the Cash conversion cycle will negatively affect the firm's profitability. They also observed a negative relationship between firms' level of liquidity and f profitability. Moreover, the results suggest that a firm's profitability is affected by its size and its debt level.

Singh and Pandey (2008) had an attempt to study the working capital components and the impact of working capital management on profitability of Hindalco Industries Limited for period from 1990 to 2007. Results of the study showed that current ratio, liquid ratio, receivables turnover ratio and working capital to total assets ratio had statistically significant impact on the profitability of Hindalco Industries Limited.

Nazir and Afza (2009) investigate the relationship between the policies that firms adopt to deal with the working capital and firms profitability by using data on 204 non- financial firms listed in Karachi Stock Exchange (KSE). The results indicate a negative relationship between firms' profitability and its financing policies, the firm that adopt an aggressive working capital policy generate a lower rate of return than that of those adopting a conservative working capital policy.

Mathuva (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on the Nairobi Stock Exchange (NSE) for the periods 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least square (OLS), and the fixed effects regression models to conduct data analysis. The key findings of his study were that: i) there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers (accounts collection period) and profitability, ii) there exists a highly significant positive relationship between the period taken to convert inventories into sales (the inventory conversion period) and profitability, and iii) there exists a highly significant positive relationship between the time it takes the firm to pay its creditors (average payment period) and profitability.

Using a sample of 88 firms listed on New York Stock Exchange Gill et al (2010) investigate the relationship between the level of a firms' working capital and its profitability. They find a significant relationship between the cash conversion cycle and firms' profitability. They postulate that a firm profitability is increased the shorter the accounts receivable collection period.

### 3. Data and Methodology

#### 3.1. Data set and Measurement of Variables

Our data set consists of 28 Iranian companies listed in the Tehran Stock Exchange that had financial data available for the period 2005-2009. These companies belong to Vehicles and Parts Manufacturing economic sector. All data were hand collected from the annual reports of each firm.

In order to arrive at the appropriate sample that is suitable for data analysis, the following sample selection criteria is used:

1. Each firm should have a continuous published data from 2005 to 2009.
2. Any firm with missing data during the study period is excluded.
3. Their financial year ends in Esfand.
4. These companies are not investment or mediating companies.
5. The book value of the companies is not negative.

Considering the above mentioned conditions, from among 33 companies accepted in Tehran stock exchange, Just 28 companies fulfilled all the above-mentioned conditions.

After obtaining requisite data and gauging the parameters of the research by EXCEL software the results and findings are put before SPSS software.

#### 3.2. Methodology

This study follow **Weinraub** and **Visscher** (1998) methodology to investigate the impact on profitability and value of firm polices (conservative or aggressive polices) that are used to manage its working capital. Aggressive investment Policy (AIP) is best measured by comparing the level of firm investment in current assets relative to fixed assets. The increase in the level of investment in the current assets indicates that the manger follows a conservative policy in managing current assets, however, investing less amounts in current assets indicates an aggressive policy. This policy is best measured by dividing the Total Current Assets (TCA) /the Total Assets (TA), a lower ratio indicates a relatively aggressive policy. If looking at the firm financing policies, firm can use current or long term debt to finance its operations. By using long term debt to finance its operation the firm follows conservative financing policy, while if the firm uses more current liabilities to finance its operations then the firm follows aggressive financing policy(AFP), the following ratio is used as proxy to measure the Financing Policy (FP). Financing Policy (FP) = Total Current Liabilities (TCL) / Total Assets.

Where; a higher ratio means a relatively aggressive policy.

To show the effect of the working capital management policies on the firm profitability and firm value, this study used the return on assets (ROA) = income available to common equity (NI) / Total assets (TA).

To show the effect of the working capital management policies on the firm value Tobin's q is used as measurement for the firm value, Tobin's Q introduced by Tobin as an appropriate performance measure in 1969 and is defined as follows:

Tobin's Q= Market value of equity+ book value of debt/ book value of assets

Market Value of Firm is calculated as the firm closing price times the shares outstanding, and the judgment criteria for the Tobin's q value as follows,; if the Tobin's q value is between 0 and 1, this means that the firm assets value higher than the value of the firm stocks, implying that the firm stock price is undervalued and if the value is higher than 1, this means that the firm assets value lower than the value of the firm stocks, implying that the firm stock price is overvalued.

##### 3.2.1. The Model

The following regression equations are used to estimate the impact of working capital policies on the firm's profitability and value (ROA and Tobin's Q).

$$ROA = \alpha + \beta_1 (TCA / TA) + \beta_2 (Lns\text{ize}) + \beta_3 (\text{sales Growth}) + \beta_4 (\text{leverage}) + \epsilon_i.$$

$$\text{Tobin's Q} = \alpha + \beta_1 (TCA / TA) + \beta_2 (Lns\text{ize}) + \beta_3 (\text{sales Growth}) + \beta_4 (\text{leverage}) + \epsilon_i.$$

And

$$ROA = \alpha + \beta_1 (TCL / TA) + \beta_2 (Lnsize) + \beta_3 (sales\ Growth) + \beta_4 (leverage) + \varepsilon_i.$$

$$Tobin's\ Q = \alpha + \beta_1 (TCL / TA) + \beta_2 (Lnsize) + \beta_3 (sales\ Growth) + \beta_4 (leverage) + \varepsilon_i.$$

Where:

$\alpha$  = Intercept,

ROA= Return on assets,

Tobin's q =Value of q,

TCA/TA = Total current assets to total assets ratio,

TCL/TA = Total current liabilities to total assets ratio,

SIZE = Natural log of firm size,

Sales Growth = Growth of annual sales, Leverage = Financial leverage of firms,

$\varepsilon$  = Error term of the model.

$\beta_1, \beta_2, \beta_3$  and  $\beta_4$  = sensitivity associated with each corresponding Variables.

In the light of previous studies that used some variables, as control variables that are related to firms working capital and firm profitability, like **Deloof** (2003), **Teruel** and **Solano**(2007) and **Gill et al.** (2010), used the following variables as control variables; firm size , and is measured by taking the Natural logarithm of the firm total assets, sales Growth is calculated as  $[(Sales\ t - Sales\ t - 1)/Sales\ t - 1]$  , and Leverage and is measured as the debt to equity ratio.

## 4. Empirical Results

### 4.1. Summary statistics

Table1 shows that the average value of the Aggressive Investment Policy (AIP) measure by (TCA/ TA) ratio is 70%, implying that the Iranian companies adopt conservative Investment Policy, as they invest more in current asset. The average value for the Aggressive Financing Policy (AFP) measure by (TCL/ TA) ratio is 62%, implying that Iranian companies adopt aggressive financing policy (AFP) by using more short term debt to finance the total assets.

The mean of the Tobin's Q (1.33) is greater than one which revealed the market value of listed companies in the TSE is greater than their book values. This suggests companies should invest more and more in capital. Also the mean ROA (0.085) show that Iranian companies, by considering inflation rate, have a poor performance over the period 2005-2009.

**Table 1:** Descriptive statistics

	Mean	Std. Deviation	Minimum	Maximum	Skewness	Kurtosis
ROA	.0854	.0744	-1.976	.3708	.018	2.668
Tobin's q	1.3308	.6266	.1141	3.5473	.670	1.345
TCA/TA	.6989	.1277	.3689	.9033	-.452	-.740
TCL/TA	.6208	.1498	.1679	.9855	-.466	.344
Sales Growth	.1379	.2431	-5.095	1.2908	1.005	4.831
Leverage	3.3221	3.5677	.2266	1.9047	2.613	7.343
LnSize	1.1491	.7248	1.0356	1.3472	.888	.188

Table2 shows the correlation coefficients between independent variables. It is important for the independent variables to be uncorrelated or to have low correlation between each of them. A high correlation between independent variables affects their jointly power in explaining the dependent variable. The highest correlation is found between Leverage and the Aggressive Financing Policy (69%), which is in fact natural because of the (AFP) measure by (TCL/ TA), where the TCL one of the Leverage component, these results are consistence with Teruel and Solano (2007) in Europe and Deloof (2003) in Belgian. Moreover, the correlation coefficients may be used as an indicator of the presence of Multcollinearity problem. Gujarati, (2003) suggests that acceptance level should not

exceed 0.85. The results presented in Table 2 implies that the model Multicollinearity problem does not exist.

**Table 2:** Pearson correlation matrix among the variables

	TCA/TA	TCL/TA	Sales Growth	LEV	LnSize	ROA	Tobin's q
TCA/TA	1						
TCL/TA	.229**	1					
Sales Growth	-.050	-.020	1				
LEV	.073	.692**	-.120	1			
LnSize	-.421**	.035	.015	.072	1		
ROA	-.154	-.724**	.288**	-.548**	.182*	1	
Tobin's q	-.312	-.360**	.094	-.266**	.216*	.388**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

## 4.2. Regression Results

To be able test the relationship between firms' investment policies and profitability measured by ROA and value measured by the Tobin, regression analysis using panel data analysis is conducted. To determine the impact of the independent variables on the dependent variables the study used Multiple Linear Regression.

The results presented in Table 3 show that the coefficient of the Aggressive Investment Policy (AIP) variable (measured by TCA /TA ratio) is found to be negative, indicating, that the relationship between conservative investment policy and firm profitability is negative. Hence, choosing to follow a conservative investment policy will negatively affect a firm's profitability (ROA). However, firms that follow the aggressive investment policy by using more long term investment may positively affect the firm's profitability (ROA). The Tobin's q estimation results show that following conservative investment policy has a negative impact on the firm's value; hence, managers can enhance the value by adopting aggressive investment policy.

**Table 3:** Regression Analysis of Performance Measures and Working Capital Investment Policy.

Independent Variable	ROA			Tobin's Q		
	Coefficient	t-statistic	Sig	Coefficient	t-statistic	Sig
Constant	-.079	-8.89	.376	.929	.908	.365
Sales Growth	.060	3.381	.001	.129	.637	.525
Leverage	-.009	-7.663	.000	-.044	-3.172	.002
LnSize	.021	3.164	.002	.116	1.549	.124
TCL/TA	-.091	-2.447	.016	-1.151	-2.701	.008
R-square	.424			.149		
Durbin-Watson	1.785			2.039		
Prob	.000			.000		
F-value	22.230			7.106		

Regarding current assets financing policies, the estimation results (as presented in Table 4) show that the coefficient of the Aggressive Financing Policy (AFP) (measured by TCL /TA ratio) is found to be negative, indicating that the aggressive financing policy and firm's profitability are negatively related, hence, using more current liabilities to finance firm activities may negatively affect the firm's profitability (ROA). However, using the conservative policy may improve a firm's profitability. This finding is highly consistent with those reported when these policies are related to firms' value. The independent variables are reasonably related with ROA based on the Adjusted R-square value (42%).

**Table 4:** Regression Analysis of Performance Measures and Working Capital Financing Policy.

Independent Variable	ROA			Tobin's Q		
	Coefficient	t-statistic	Sig	Coefficient	t-statistic	Sig
Constant	.048	.747	Sig	-.068	-.083	.934
Sales Growth	.081	5.092	.457	.205	1.015	.312
Leverage	-.011	-.747	.000	-.006	-.335	.738
LnSize	.021	3.982	.457	.198	2.949	.004
TCA/TA	-.342	-9.624	.000	-1.427	-3.166	.002
R-square	.632			.165		
Durbin-Watson	1.546			2.076		
Prob	.000			.000		
F-value	60.607			7.890		

The results in table 3 and table 4 indicate that all of the control variables used in the regression models. The independent variables are extremely related with ROA based on the Adjusted R-square value (63%). (SIZE, Leverage,) are found to be statistically significant at levels at 5%, except the Sales Growth for firm value (Tobin's Q). The firm size has positive effect on a firm's profitability and value. This may be attributed to the fact that larger firms can take the advantage of any favorable investment opportunity. Moreover, they have more funds to invest or raise external funds whenever required. Sales growth also has been found to have a positive impact on the firm's performance due to the fact that increasing the sales level will generate enough cash flows, keeping liquidity at an acceptable level.

## 5. Summary and Conclusions

The main objective of this study is to investigate the impact of working capital management policies (aggressive and conservative policies) on the firm profitability and value, using annual data for 28 industrial firms listed in Tehran Stock Exchange for the period from 2005 to 2009. The results show that following conservative investment policy by having high level of short term investment have negative effect on the firm's profitability and value, while following aggressive investment policy using long term investment have positive effect on the firm profitability and value. Regarding the financing Policies (aggressive and conservative policies), the results show that following aggressive financing policy by using more current liabilities to finance firm activities will affect negatively the firm profitability and value, while following conservative financing policy by using more long term debt to finance the firm operating activities have a positive effect on the firm profitability and value. This is attributed to the fact that though risk of having long term loans increase but allow firms to longer period to fulfill its financial obligations which is positively reflected on value and profitability. Finally, the results revealed that the firm Size, have positive effect on the firm profitability and value, while the result shows that Sales Growth does not have any effect on the firm value, but have a significant effect on profitability. The results emphasizes the importance of debt financing on firm's value maximization.

## References

- [1] Deloof M (2003), "Does Working Capital Management Affect Profitability of Belgian Firms?", *Journal of Business, Finance and Accounting*, Vol. 30, Nos. 3-4, pp: 573-587.
- [2] Dong. Huynh, and Su. Jyh-tay,(2010)," The Relationship between Working Capital Management and Profitability: A Vietnam Case", *International Research Journal of Finance and Economics*, Issue 49 (2010),pp:59-67.
- [3] Eljelly, A. 2004. "Liquidity-Profitability Tradeoff: An empirical Investigation in an Emerging Market", *International Journal of Commerce & Management*, Vol 14 No 2 pp. 48 - 61

- [4] Gill. Amarjit, Biger. Nahum and Mathur. Neil(2010)," The Relationship Between Working Capital Management And Profitability: Evidence From The United States", *Business and Economics Journal*, Volume 2010, pp:1-9.
- [5] Lamberson M (1995), "Changes in Working Capital of Small Firms in Relation to Changes in Economic Activity", *Mid-American Journal of Business*, Vol. 10, No. 2, pp. 45-50.
- [6] Lazaridis I and Tryfonidis D (2006), "Relationship between Working Capital Management and Profitability of Listed Companies in the Athens Stock Exchange", *Journal of Financial Management and Analysis*, Vol. 19, No. 1, pp. 26-35.
- [7] Mathuva D, (2009). "The influence of working capital management components on corporate profitability: a survey on Kenyan listed firms". *Research Journal of Business Management*, Vol 3: pp:1-11.
- [8] Modigliani, F. and M. Miller (1958), "The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, pp. 261-297.
- [9] Mona Al-Mwalla (2012), *The Impact of Working Capital Management Policies on Firm's Profitability and Value: The Case of Jordan*, *International Research Journal of Finance and Economics*, Vol.3, No.2, pp. 147-153.
- [10] Nazir, M, Sajid and Afza, Talat(2009)," Impact of Aggressive Working Capital Management Policy on Firms' Profitability", *The IUP Journal of Applied Finance*, Vol. 15, No. 8, pp.19-30.
- [11] Raheman. Abdul, and Nasr. Mohamed (2007)," Working Capital Management and Profitability– Case of Pakistani Firms", *International Review of Business Research Papers*, Vol.3 No.1, March 2007, pp.279 – 300
- [12] Shah, A. and A. Sana, (2006). "Impact of Working Capital Management on the Profitability of Oil and Gas Sector of Pakistan", *European Journal of Scientific Research*. 15(3), 301 - 307.
- [13] Shin, H.H and Soenen, L. 1998. "Efficiency of Working Capital Management and Corporate Profitability", *Financial Practice and Education*, Vol 8 No 2, pp 37-45
- [14] Smith K (1980), *Profitability versus Liquidity Tradeoffs in Working Capital Management*, in *Readings on the Management of Working Capital*, West Publishing Company, St. Paul, New York.
- [15] Teruel P J G and Solano P M (2007), "Effects of Working Capital Management on SME Profitability", *International Journal of Managerial Finance*, Vol. 3, No. 2, pp. 164-177.
- [16] Van Horne J C and Wachowicz J M, (2004), *Fundamentals of Financial Management*, 12<sup>th</sup> Edition, Prentice Hall Publishers, New York.
- [17] Wang, Y.J. (2002). *Liquidity Management, Operating Performance, and Corporate Value: Evidence from Japan and Taiwan*. *Journal of Multinational Financial Management*. 12, 159-169.
- [18] Weinraub H J and Visscher S (1998), "Industry Practice Relating to Aggressive Conservative Working Capital Policies", *Journal of Financial and Strategic Decision*, Vol. 11, No. 2, pp. 11-18.