THE IMPACT OF WORKING CAPITAL ON PROFITABILITY AND CASH HOLDINGS OF THE COMPANIES LISTED IN TEHRAN STOCK EXCHANGE

[a,b] SOMAYYEH ASADINIYA, [b]ZAHRA FOTOUREHCHI, [c]DAVOUD PANAHI

[a]Department of Accounting, Ardabil Science and Research Branch, Islamic Azad University, Ardabil, Iran
[b]Department of Accounting, Ardabil Branch, Islamic Azad University, Ardabil, Iran
[c]Assistant professor, University of Mohaghegh Ardabili, Ardabil, Iran

Email: [a]somayeh.asadinia@gmail.com,
[b]ZahraFotourehchizf@gmail.com,
[c]davoud.panahi.dp@gmail.com

Abstract. Working capital deals with current assets and liabilities. The current asset of a company constitutes a significant portion of its total assets. The importance of working capital emanate from the fact that working capital levels can influence profitability and risk level imposed on a company and ultimately the extent of cash value held by company. Thus, the present research was performed in order to gather evidence on the influence of working capital on profitability and cash holdings of the companies listed in Tehran Stock Exchange. In the current research, using the screening, 148 companies were analyzed during the period 2010-2014. To analyze the current research, the panel data regression analysis method was used. The results indicate that working capital lacks any significant effect on profitability.

Keywords: Working Capital, Cash Holding, Profitability

1 Introduction

Capital constitutes the basis for financial management issues, and it can be argued that all business activities require capital. Capital consists of all the funds that are used by companies, and in this regard, financial management specifies framework of the relationship between capital and corporations. Considering the importance of capital in management organizational process, its management is of utmost significance. In the meantime, working capital in all companies accounts for a considerable part of capital, and managing it is highly significant. Efficient management of working capital can have a significant impact on the yield, and lack of such capital can bring about great risks for any company. Most corporate insolvencies is due to financial managers' inefficiency in planning and proper management of current liabilities and assets in the companies (Smith, 1980).

In general, managers utilize two strategies for managing the working capital. They can minimize their investment in working capital, i.e. to take the bold policy or choose a conservative policy. Therefore, before deciding on the optimal level of investment in current assets, management should create a balance between expected profitability and risk.

Minimize the investment on working capital (bold policy) may positively affect the company profitability. However, Wang (2002) pointed out that if inventory levels would reduce significantly, the risk of the company increases due to the possible loss of market excess demand. Furthermore, the adoption of restricted credit policy on receivable accounts may lead to a decrease in sales. Similarly, the increase in financing through payable accounts may result in the loss of trade discounts for early payment.

On the other hand, increased investment in working capital (conservative policy) may lead to increased profitability. Maintaining high levels of inventory can contribute to some benefits including a reduction in probable expenses relevant to delay in production process, a reduction in corporate losses due to reduced level of production, a reduction in sales expenses, and also protection of the company against price fluctuation, etc. In addition, unrestricted credit policies contribute to an increase in corporate sale. Business credit can perform effectively same as a price failure, and motivate customers to demand more goods, when demand is low.

Most empirical evidence related to working capital management and profitability corroborate the fact that a bold policy of working capital can increase profitability.

In recent years, many companies have been faced with liquidity poor condition that an investigation of the relevant factors is a matter of great importance. Efficient working capital management as an important aspect of financial management practices is known at all forms of organization. The presence of an extensive literature (discussed in the following parts) shows that the efficient working capital management will affect liquidity and profitability directly. On the other hand, the probability of bankruptcy for companies that are exposed to inappropriate management of working capital (despite their utilization of positive profitability) can be increased. Working capital management deals with current assets and liabilities. A company's working capital constitutes a significant portion of the current assets. The excessive levels of current assets can lead to the realization of return on investment lesser than the standard minimum. However, companies that have little current assets suffer from some shortages and problems in the ordinary course of operations. Efficient working capital management includes planning and controlling current assets and liabilities to be able to resolve the risk of inability to meet short-term commitments on the one hand and avoid excessive investment in current assets on the other hand (Rehman and Nasir, 2007).

In addition, if working capital management is not performed effectively, a company might be unable to pay its debt and obligations, and its activity fails to continue. Nowadays, the decision to determine the level of cash reserves in the companies has become one of the significant factors in the finance literature. The main advantage of cash holdings in inefficient capital markets is an increase in the company's ability to use valuable investment opportunities and avoid expensive external financing. Due to the important impact of cash holding levels on investment opportunities, and also the role of effective working capital management and the relationship between cash holdings, it is important to investigate the impact of working capital on profitability and cash holdings. Thus, based on what was said, the current research seeks to examine the impact of working capital on profitability and cash holdings in the companies listed in Tehran Stock Exchange.

2 Theoretical foundations and research background

Mohammadi (2008) in an article examined the effects of working capital management on the profitability in a company. The results obtained from the research show that there is a significant inverse relationship between corporate profitability and the factors namely accounts' receivables collection period, payment of creditors' liquidation, and cash conversion cycle (CCC). In other words, by reducing accounts' receivables collection period and inventory turnover period reasonably, managers can increase corporate profitability. In addition, the results from the current research in relation to payment of creditors' liquidation can show that profitable companies have a shorter payment period.

Jannesari (2012) in its research analyzed the effect of working capital management on profitability. The research results show that the company can reduce the number of days of cash cycle as a measure of working capital management and retention of its components (cash conversion period if accounts payable and receivable, material and goods inventories) at the optimal level, thus improve its profitability and create value for its shareholders.

Heidari and Houshmand Zaferanieh (2011) examined the effects of working capital management on corporate profitability. The findings show that there is a significant inverse relationship

between accounts payable workflow and cash conversion cycle (CCC) with profitability, and by reducing accounts' receivables collection period, increase inventory turnover period, and CCC, managers can increase the profitability. However, concerning the relationship between the repayment of payable accounts and companies' profitability, the research performed in this area achieved the same results. All research carried out in this context underline the fact that working capital management can improve corporate profitability.

Rezai and Garkaz (1392) in their research analyzed the effects of changes in working capital on investment opportunities. For this purpose, panel data of 151 companies listed in Tehran Stock Exchange were reviewed in a seven-year period. Using F Limer and Hausman test, the appropriate model was determined, and regression was used to test the hypotheses. The results show that there is a significant inverse relationship between the changes in working capital of companies and investment opportunities.

Raheman and Naser (2007) examined the relationship between with corporate profitability and the factors namely working capital management and liquidity of companies, and the results showed that there is a significant inverse relationship between corporate liquidity and debt and profitability.

Teruel and Solano (2007) examined 8872 small and medium Spanish companies during the years 1996 to 2002, and tested the relationship between working capital management and profitability of small and medium-sized firms. The results showed that management can reduce the number of working days in receivable accounts conversion and also goods and material inventories, thus create value for the company. In addition, shortening the cash conversion cycle (CCC) leads to improved profitability.

In a research performed on the companies listed in Karachi Stock Exchange, Afra and Nazir (2009) examined the relationship between working capital management policies and firms' profitability, and concluded that by adopting a conservative approach to investments in working capital and financing of working capital, managers can change corporate value.

Nyabwanga et al (2012) investigated the effect of working capital on the financial performance of small-scale companies in Kenya. The results showed that working capital management performance was not at a higher level, and the majority lacked working capital management procedures and their financial performance was not satisfactory. The research concluded that working capital management performance can impact the financial performance of small scale companies, and corporate managers are required to improve ways of working capital management as a strategy to improve their financial performance.

Mwalla (2012) performed a research on the listed companies in Oman Exchange Stock to examine working capital management strategies on corporate profitability and corporate value. The results showed that conservative policies can have a positive impact on profitability and corporate value creation, and bold policies can have a negative impact on profitability and corporate value creation.

Wang et al (2013) examined inflation, operating cycle, and cash holdings. The results show that there is a significant negative relationship between inflation indicators and monetary resources, but when inflation indicators reach a certain level, there is an inverse relationship. In addition, there is a U-shaped relationship between operating cycle and cash resources, which are similarly influenced by the changes in inflation level.

Santasaso (2014) studied the effects of debts expense on the company's profitability. The study includes 3,556 companies in 2007-2011 that are accepted at Borsa Italiana. The results show that debts expense can affect corporate profitability.

Sang and Sopeng (2015) in an article investigated working capital, cash holdings and profitability. They examined the impact of cash holdings and working capital on profitability, and the findings showed that working capital and cash holdings can impact profitability.

3 Research Hypotheses and Models

Research Hypotheses

Hypothesis 1: company's working capital can significantly affect profitability.

Hypothesis 2: company's working capital can significantly affect cash holding.

Model 1: $ROA_{it} = \beta_0 + \beta_1 WCR_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \beta_4 GDP_{it} + \beta_5 LEV_{it} + \varepsilon_{it}$

Model 2: $CASH_{it} = \beta_0 + \beta_1 WCR_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \beta_4 GDP_{it} + \beta_5 LEV_{it} + \varepsilon_{it}$

Index i relevant to the companies/periods, and index t relevant to time interval.

Dependent variable

ROA_{it} profitability: as independent variable that show return on asset, and is obtained based on profit followed by deduction of tax by assets.

$CASH_{it}$ cash holding: as cash and its equivalent divided by gross asset.

Independent variable

WCR_{it}: working capital as current assets minus current liabilities.

Control variables

$SIZE_{it}$: firm size that is measured by the natural logarithm of total assets (Foroughi and Mohammadi, 2013).

$GROW_{it}$: growth rate that is measured based on sales minus sales last year divided by sales last year.

LEV_{it}: financial leverage based on total asset measured by total debt.

GDP_{it}: the growth rate of production based on production minus the production in the previous year divided by production in the previous year.

The research statistical population is composed of all the companies listed in Tehran Stock Exchange, which should take advantage of the following qualifications:

1-They should be listed in Tehran Stock Exchange in 2009 or earlier.

2-They should not have any change in their fiscal year within research time interval.

3-The firms' fiscal year during the research duration should end in 20 March.

4-The study time interval should be 2010 to 2014.

5-Data relevant to the variables in all of the years under research must be available.

After applying the above limits, a total of 148 companies were selected as the final sample. Thus, the number of observations is 740 years-firms.

4 Results

Two major processing and analysis methods are performed on the data. These two methods include descriptive and inferential statistics. The data analysis in descriptive statistics begins with the calculation of the indices including mean, median, and distribution indices of standard deviation such as skewness, and skewness-kurtosis.

To test whether or not these errors are independent, Durbin-Watson Test is used. If the value of Durbin-Watson statistics becomes 2, it means that the sample is random, and there is no auto-correlation. The coefficients of the variables in the regression model are tested using Student's t-Tests. In the current research, to test the significance of the regression model processed, Fisher (F) statistics at 95% confidence level is used. Using linear regression, the hypotheses are tested. In the research, multivariate regression is used as the statistical method. The main purpose underlying the regression method is to investigate whether the independent variables can significantly affect dependent variable or not. In addition, in this method, to test the hypotheses, pooled data are used. In pooled data methods, to choose between panel and pooling methods, F Limer method is utilized. In case of selecting panel method, Hausman test is performed to select either fixed effect method or random effects. The collected data were modified and classified using software (EXCEL) on the basis of the variables, and then incorporated into EVIEWS7, and final analysis was performed. Finally, the research hypotheses were rejected or approved using the results obtained from the software.

Table 1: Descriptive statistics

Variable	Mean	Standard Deviation	Skewness	Kurtosis	Min.	Max.
Size	13.70846	1.550704	0.623951	3.250298	10.30849	18.45456
LEV	0.649106	0.287765	2.08436	14.62917	0.01796	2.72928
GDP	-0.00308	0.078714	-0.53779	2.124712	-0.13612	0.091505
GROW	0.329173	1.6437	6.6235	59.4875	-0/.98937	19.83248
WCR	-857984	5864080	-6.64787	55.97527	-0.5719204	23755908
ROA	0.25704	1.682853	11.63689	218.1035	-15.0397	31.54154
Cash	0.257807	0.154666	0.814365	3.727351	0.000595	0.87013

Table 1 presents the descriptive statistics relevant to the research variables. For example, the firm size has the mean and standard deviation 1.55 and 13.70, respectively, and the minimum and maximum values of this variable are 10.30 and 18.45, respectively. This statistic for other variables in the research is presented in Table 1.

Before the estimation of each model in Table (2), to check which pooled or panel model is more effective for estimating the research regression models, F Limer test is used. The null hypothesis of this test indicates the suitability of pooled regression.

The results obtained from this test are presented in Table 2. As the significant level of F statistics and Chi-square statistic for Models 1 and 2 are less than 0.05, the null hypothesis of this test is rejected in favor of the alternative hypothesis. Thus, this test shows that the panel model is suitable to estimate Models 1 and 2.

Table 2: F Limer Test

Model	Statistics F	Significance Level	Chi-Square Statistics	Significance Level	Test Result
Model 1	2.1843	0.000	322.888	0.0000	***
Model 2	18.4651	0.000	12.779129	0.0000	***

*** Significance at 0.01, ** Significance at 0.05, *Significance at 0.1

In the model relevant to the estimation with the data panel, there are two methods including estimation with fixed effects or random effects, and to determine whether we use fixed effects model or random effects methods for estimating the parameters in Models 1 and 2, Hausman test is applied. The null hypothesis from Hausman test based on the suitability of random effects model is used to estimate the panel data regression models.

The results obtained from Hausman test to choose between fixed and random effects in Models 1 and 2 are presented in Table 3. Given that the significance level of Hausman test for Model 2 is less than 0.05, the null hypothesis regarding the suitability of the random effects in these models can be rejected, and to estimate Model 2, panel method with fixed effects are used. In addition, given that a significant level for Hausman test in Model 1 is greater than the error level of 0.0%, it can be said that regression method with random effects can be applied for Model 1.

Table 3: Hausman Test

Model	Chi-Square Statistics	Significance Level	Test Result
Model 1	4.4317	0.4891	
Model 2	31.3825	0.000	***

*** Significance at 0.01,
** Significance at 0.05,
*Significance at 0.1

Estimation of Model 1

The results obtained from estimating the model 1 using panel data with random effects (4) are shown in Table 4. In this table, the statistics F and its significance level are related to the testing of the certainty of a linear relationship (total regression test) between the dependent and independent variable. Given that significance level of this test for Model 1 is less than 0.1, it can be concluded that the linear relationship between the dependent and independent variables in Model 1 are confirmed. Another hypothesis considered in the regression is independence of errors (the difference between the real values and the values predicted by the regression equation), such that Durbin-Watson statistic is almost 2 and the lack of the correlation between the errors is accepted. According to Table (4), Durbin-Watson statistic for Model 1 has an almost good value.

In Table 4, the coefficient of the variable "working capital" in the model 1 is 0.00000000844. In addition, the significance level of the coefficient obtained is 0.5583, and given that the significance level obtained for the coefficient of working capital is higher than the error level of 0.1, 0.01, and 0.05, working capital has not a significant effect on profitability. Thus, it could be concluded that the hypothesis 1 "the significant impact of working capital on profitability" can be rejected.

Based on the significance level obtained for the variable namely company financial leverage, it can be concluded that this variable can positively and significantly affect company profits (the coefficient obtained is 0.655579 and significance level 0.0168).

Table 4*: Estimation of Model 1

Method	Regression Panel (Random Effects)		
Dependent Variable	ROA		
Variables	Coefficient	Significance Level	
WCR	0.00000000844	0.5583	
SIZE	-0.04162	0.4617	
GROW	0.037905	0.2945	
GDP	-0.33077	0.6446	
LEV	0.655579	0.0168	**
C	0.395735	0.6257	
Statistics F	1.9100		
Significance Level	0.0904		*
Coefficient of Determination	0.0128		
Durbin-Watson Statistic	1.27		

 *** Significance at 0.01, ** Significance at 0.05, *Significance at 0.1

Estimation of Model 2

The results obtained from Table 2 using panel data with fixed effects are shown in Table 5. Given that the level of significance of the test for model 2 is less than 0.05 It can be concluded that the linear relationship between the dependent and independent variables in the model 2 is confirmed 2. Durbin-Watson statistic for the model 2 is a proper amount.

Given that the coefficient of determination for the model 2 is 0.96, it can be concluded that about 96 percent of the changes in the variable namely cash holding and cash are explained by the independent variables

In Table 5, the coefficient of the variable "working capital" in the model 2 was obtained to be 0.00000000203. In addition, the significance level of the coefficient obtained is 0.0098, and given that the significance level obtained is less than the error level of 0.1, 0.05, and 0.01, the significant impact of working capital on cash holding cannot be rejected. Thus, it could be

concluded that the hypothesis 2 "the significant impact of working capital on cash holding" can be rejected at the error level 0.01.

Based on the significance level obtained for the variable namely company size, it can be concluded that this variable can positively and significantly affect company cash holding (the coefficient obtained is obtained to be 0.023388 and significance level 0.000).

Based on the significance level obtained for the variable namely company financial leverage, it can be concluded that this variable can negatively and significantly affect company cash holding (the coefficient obtained is obtained to be -0.6816 and significance level 0.000).

Based on the significance level obtained for the variable namely company growth, it can be concluded that this variable can positively and significantly affect company cash holding (the coefficient obtained is 0.002887 and significance level 0.0109).

Table 5: Estimation of Model *2*

Method	Regression Panel (Random Effects)		Test Result
Dependent Variable	Cash		
Variables	Coefficient	Significance Level	
WCR	0.00000000203	0.0098	***
SIZE	0.023388	0.0000	***
GROW	0.002878	0.0109	**
GDP	0.015714	0.3522	
LEV	-0.6816	0.0000	***
C	-0.01722	0.8021	
Statistics F	100.11		
Significance Level	0.0000		***
Coefficient of Determination	0.96		
Durbin-Watson Statistic	1.68		

 *** Significance at 0.01, ** Significance at 0.05, *Significance at 0.1

Hypothesis 1: company working capital has a significant effect on profitability.

According to the findings obtained from the data analysis, it was concluded that working capital does not have a significant impact on profitability. Thus, it can be concluded that the hypothesis 1, i.e. "company's working capital has a significant effect on profitability" is rejected. This finding is inconsistent with the one obtained from the research performed by JanNesari (2012), Heidari and Houshmand Zaferanieh (2012), Mohammadi (2009) and secondary Nyabwanga et al (2012).

Hypothesis 2: working capital can significantly affect cash holding.

According to the findings obtained from the data analysis in Chapter 4, it was concluded that working capital with 99% confidence (given the coefficient mark) has a significant and positive impact on cash holdings. Thus, it can be concluded that hypothesis 2 "working capital can have a significant effect on cash holdings" is not rejected. This finding is consistent with the findings of the research performed by Samadi and Imeni (2013).

Conclusion

In general, working capital and its components can have a significant impact on corporate profitability, and also the results indicate that investment on working capital processes and interlink between working capital management with day-to-day processes are essential for corporate profitability. As an important result, it should be said that firms must include working capital management in their financial planning processes.

Based on the results obtained from the second hypothesis, it was indicated that company working capital has a positive and significant impact on cash holding. To increase cash, working capital is suggested to be increased, such that it can provide more profits for companies, executives, investors and other stakeholders.

One issue that is not addressed in the current article is the impact of corporate governance on the relationship between working capital and profitability and the extent of cash holding. In general, the companies with different ownership structures have a different ownership structure, and can also provide more general results. Researchers can examine the impact of working capital on profitability and corporate cash holdings in various industries.

References

1. Dittmar, A., Mahrt-Smith, J., Servaes, H.: *International corporate governance and corporate cash holdings*. Journal of financial and quantitative analysis. 2003. 38(1), 111–133.
2. JanNesari, S.: *The impact of working capital management on the profitability of small and medium businesses*; Auditor Magazine; 2012. 57, 1-10.
3. Jensen, M.: *Agency costs of free cash flow, corporate finance and takeovers*. American Economic Review, 1986. 76, 323–329.
4. Mohammadi, M.: T*he impact of working capital management on corporate profitability in the companies listed on the Tehran Stock Exchange*. Quarterly Journal of Management, 2008. 6, p. 80-92.
5. Mwalla, M. A.: *The Impact of Working Capital Management Policies on Firm's Profitability and Value: The Case of Jordan*, International Research Journal of Finance and Economics, 2012.
6. Nyabwanga R., Ojera P., Lumumba M., Alphonce J.: *Effect of working capital management practices on financial performance: A study of small scale enterprises in Kisii South District, Kenya*, African Journal of Business Management 2012. 6(18), 5817-5807,
7. Rezaei, F., Abedi, M.: *Explore the impact of organizational culture on companies'* cash holdings; International Conference on Accounting; Financial Management, 2014.
8. Raheman N.: *Working Capital Management and Profitability-Case of Pakistan Firms*" International Review of Business Research Papers, 2007. 3, 279 – 300.
9. Smith, K. V.: *Profitability and liquidity trade off in working capital management*. In Reading on the Management of Working capital. St. Paul: West Publishing Co, 1980. p. 549-562.
10. Samadi, M., Imeni, M.: *Examine the relationship between working capital management and cash holdings of the companied listed in Tehran Stock Exchang*e; Knowledge of Accounting and Management Accounting, 2014. 2, 5-9.
11. Teruel P. J., Martinez-Solano P.: *Effects of Working Capital Management on SME Profitability*, International Journal of Managerial Finance, 2007. 3, 177-164.
12. Wang, Y.J.: *Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan*. Journal of Multinational Financial Management, 2002. 12, 159- 69.