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The Relationship between Working Capital Management Components and Profitability: Evidence from Iran

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Abstract
The purpose of this study is to investigate the relationship between working capital management components withfirms' profitability. Our sample includes 98 Iranian firms accepted at Tehran Stock Exchange (TSE) during 6 years from 2008 to 2012.This research is empirical in term of goal and is descriptive in term of methods. Required data are extracted Using the "library" method. Inventory turnover period, receivables collection period, accounts payable period and cash conversion cycle are used as criteria of working capital management and return on equity used as a measure for profitability. In this research, financial ratios are calculated using the software Excel. Eviews software is used to test the hypotheses. Research findings show that there is a significant negative relationship between measures of working capital management and corporate profitability.

Keywords: Working Capital Management, Profitability, Return on Equity, Cash Conversion Cycle.

Introduction

According to the country's inflation and its impact on profitability, the importance of working capital management in a business enterprise cannot be underplayed. Management of working capital is central to the growth and survival of any business becauseitdepends on the management of company resources. WCM is an essential part of financial management and contributes significantly to a firm's wealth creation as it directly influences organizational profitability and liquidity (Raheman and Nasr, 2007; Naser et al, 2013). All firms, regardless of their size and industry, need to acquire positive cash flow and liquidity (Stewart, 2009).

Harris (2005) opines working capital management as a simple and straightforward concept of ensuring the ability of the organization to fund the difference between the short-term assets and short-term liabilities. Working capital management (WCM) refers to all management decisions and actions that ordinarily influence the size and effectiveness of the working capital (Kaur, 2010).Management strategy focuses on maintaining efficient levels of current assets and current liabilities, this ensures that the company has sufficient cash flow to meet short-term obligations. Working capital basically refers to short-term resources available to a company for financing its day-to-day activities (Korankye, 2013). Business success heavily depends on the ability of financial executives to effectively manage receivables, inventory, and payables, Which are the main components of working capital management (Filbeck and Krueger, 2005).

The purpose of this research is to study relationship between working capital management and profitability of listed companies, and also, is to help investors make better and more relevant decisions. Managers spend a lot of time to make the decisions relating to working capital Working capital management deals with the management of current assets and current liabilities. And make better decisions in the management of current assets and current liabilities plays important role in the profitability and corporate value. This causes changes and shareholder wealth and help investors

to make better decisions. A company's profitability can be anticipated and planned by determining the condition of working capital management.

In this research, we aim to investigate impact of working capital management on company's profitability. In other words, this study examines components of the working capital management including cycle inventories, accounts receivable period, accounts payable period and cash conversion cycle on company's profitability during 2008 to 2012.

Literature Review

Working capital management is an important component of financialand organizationalmanagement because it directly affects companies' liquidity and profitability (Raheman and Nasr,2007). According to many researchers, capital structure and working capital management are two main sections in corporate profitability and in many cases, they change to achieve profit (Deloof,2003).

Vital sections control and performance improvement is one of the main objectives of management accounting. The one part that needs to control and correct management is current assets and current liabilities. As working capital management finance current assets and manage current assets and current liabilities; so it is important to create value for shareholders (Vuralet al., 2012).

As Smith (1980) stated, working capital management plays an important role in corporate profitability, risk and corporate values. Working capital management is an important part of financial management. Many surveys have indicated that managers spend significant time on day-to-day problems that involve working capital decisions (Raheman and Nasr, 2007;Garciaet al., 2011). Generally, working capital management means managing the company's current assets and current liabilities (Teruel and Solano, 2007). A reason that managers spend significanttime on day-to-day problems is that current assets are short-terminvestments that are continually being converted into other types (Rao, 1989; Garciaet al.,2011).

Efficient working capital management involves planning and controlling current assets and current liabilities to prevent the risk of a company's inability to meet due short term obligations on the one hand, and to avoid excessive investment in these assets on the other hand (Eljelly, 2004;Garciaet al.,2011).

Working capital management determines amount and composition of Sources and Expenditure of working capitals and long-term financing decisions for Financial support from current assets(Jahankhany and Parsaeian,2008). Various studies have been conducted on the relationship between working capital management and company's profitability.Different criteria are used for profitability measure. Return on equity and return on assets are performance accounting measurements. Return on equity is the most popular and the most widely used performance accounting measurement (Azarbayjani et al.,2011).it is computed net profit divided by Shareholder's Equity(De Wet and Du Toit,2007). The return on equity is used in decisions relating to the acquisition of assets, purchase, aspects of credits; manage cash flow and current debt level, which have a great influence. Return on assets shows Management effectiveness in applying the available resources for profit education (Azarbayjani et al., 2011). It is computed by dividingnet profit to total assets (Jahankhany and Parsaeian, 2006). In this study, the return on equity is used as a measure of profitability. In this paper, using the concepts and theories of financial management to examine the relationship between working capital management components with firms' profitability listed on Tehran Stock Exchange.

Reviewing the accounting and finance literature shows that many studies have been done about the relationship between working capital management and corporate profitability. These studies are as follows:

Porheydari and Hoshmand(2012)examine the impact of working capital management on performance and market value of Iranian companies. The results show that there issignificantly negative relationship between cash conversion cycle with performance and market value.

Izadinia and Taki(2010) examines the impact of working capital management on the profitability of listed companies on the Stock Exchange of Tehran.The results showed that there is a significant negative relationship between cash conversion cycle and return on assets. As well as increased investment in inventory and accounts receivable decreased profitability.

Yaghobnejad et al. (2010) studied the relationship between working capital management and corporate profitability.The results showed that there is an negative relationship between the different variables of working capital management and profitability.

Rezazadeh and Heydariyan (2010) examined the impact of working capital management on profitability of Iranian companies. The results show that there is a significant relationship between corporate profitability with the inventory turnover period,receivables turnover. The results show that management can create value by reducing inventory levels and the number of days of collection.In addition, the shorter the cash conversion cycle can be improved corporate profitability.

Terueland Solano (2007) investigated the relationship working capital management and profitability relationships in Small and Medium size firms (SME). For this purpose, they collected a panel of 8872 Spanish corporations for the period from 1996 to 2002. They revealed a negative relationship between return on asset and cash conversion cycle, they argued that small and medium-size firms also can increase their profitability by shortening cash conversion cycle.

Mathuva (2009) studied the influence of working capital management components upon corporate profitability by using a sample of 30 companies listed on the Nairobi Stock Exchange (NSE) from 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 findings of his study were that there is a highly significant negative relationship between accounts collection period and profitability. In regard to the relationship between profitability and the inventory conversion period or the average payment period, the results were positive and significant.

Garcia et al(2011) studied the relationship between working capital management components upon corporate profitability by using a sample of 2974 companies listed on the EuropeanStock Exchange from 1998 to 2009. They stated that the profit can be maximizing by taking care of inventory conversion period, receivablesturnover and payable period.

Caballeroet al (2010) studied the relationship between working capital management and SMEs' profitability Spanish. The results show that there is a parabolic relationship between the level of working capital and corporate profitability, which indicates that small and medium enterprises are the optimal level of working capital to maximize their profitability.

Napompech (2012) studied the influence of working capital management upon corporate profitability by using a sample of 255 companies listed on the EuropeanStock Exchange for a period of 3 years from 2007 to 2009. Thus, the results showed an inverse relationship between operating profit and inventory turnover period,receivablesturnover. Increase in debt repayment period does not have any effect on profitability. Also findings show that industry characteristics affect the gross operating profit.

Kofi et al. (2013) examined the relationship between working capital management practices and profitability of listed manufacturing firms in Ghana. The study used secondary data collected

from all the 13 listed manufacturing firms in Ghana covering the period from 2005-2009. Using panel data methodology, the study finds a significantly negative relationship between profitability and accounts receivable days. However, the firms' cash conversion cycle, current asset ratio, size, and current asset turnover significantly positively influence profitability.

Jacob (2014) studied the relationship between working capital management and profitability of food and beverages manufacturing firms listed on the Nigerian Stock Exchange. The study used secondary data of 120 firm-year observationsbetween2002 and 2011. Survey research design was adopted. The study found that there is relatively strong positive and significant relationship between Working Capital management and Net Operating Profit and that a positive but insignificant relationship exist between Cash Conversion Cycle and Net Operating Profit. Also, Account Collection Period has significant negative relationship with Net Operating Profit while Inventory conversion Period and Account payment period have insignificant negative relationship with Net operating profit of food and beverages manufacturing companies in Nigeria.

Research Hypothesis:

This research focused on following hypothesis:

H 1.There is a significant relationship between inventory holding period and profitability.

H 2 .There is a significant relationship between accounts receivable period and profitability.

H 3..There is a significant relationship between accounts payable period and profitability.

H4.There is a significant relationship between cash conversion cycle and profitability.

Research Methodology

The orientation of the present research is "empirical" objectively and "descriptive" administratively. The research sample includes financial statements and reports of the accepted companies in TSE. In order to do this research, the listed companies in Tehran Stock exchange areconsidered as statistical population and the statistical sample is selected by considering following limitations:

End of Isfandis the end of financial year;

Firms don't change their activity type during the mentioned financial years.

Firms shouldn't be investment and financing and leasing companies.

Their financial information should be available.

Firms are accepted in TSE before 2008.

Sample includes 98 companies from 37industry that have been studied between the years 2008 to 2012.Required data relating to the financial statements of these companies were collected by computerized databases such as TadbirPardaz company software, Database of Tehran Stock Exchange, Financial Information Processing of Iran,research, development and Islamic Studies site, codal site. Then the calculation was done using Excel software. Descriptive statistics(mean and standard deviation) and inferential statistics (correlation coefficient, coefficient of determination and regression model) is used for statistical analysis of data and testing hypotheses. We have used EVIEWS software In order to testing significance of regression coefficient in hypothesis and calculation of probability, 7.we've investigated the comparison of ratio's average in 5% error level.

Research models

Research models for each Hypothesis is as follow:

$$ROEit= \alpha0+ \alpha1INVit + \alpha2INV/CAit + \alpha3CA/TAit + \alpha4FA/TAit + \alpha5LEVit + \alpha6TALOGit + \varepsilon it$$

$$ROEit= \alpha0+ \alpha1ARit + \alpha2INV/CAit + \alpha3CA/TAit + \alpha4FA/TAit + \alpha5LEVit + \alpha6TALOGit + \varepsilon it$$

$$ROEit= \alpha0+ \alpha1APit + \alpha2INV/CAit + \alpha3CA/TAit + \alpha4FA/TAit + \alpha5LEVit + \alpha6TALOGit + \varepsilon it$$

$$ROEit= \alpha0+ \alpha1CCCit + \alpha2INV/CAit + \alpha3CA/TAit + \alpha4FA/TAit + \alpha5LEVit + \alpha6TALOGit + \varepsilon it$$

Dependent Variables

In this study, following Deloof (2003),Tryfonidis and Lazaridis(2006),Solano and Tereul(2007), Raheman and Nasr (2007) and Tauringana and Adjapong (2013), below variables are used to measure working capital management (Tauringana and Adjapong,2013):

INV: Inventory holding period calculated by dividing inventory by cost of sales multiplied by365 days. This represents the average number of days a company is holding the inventory.

AR: The average number of days the firm takes to collect receivables from customers. This is calculated by dividing accounts receivables by sales multiplied by 365 days.

AP ;The average number of days it takes a firm to pay trade creditors. This is computed bydividing accounts payables by cost of sales multiplied by 365 days.

CCC :The CCC is calculated as (INV +AR - AP), which represents the average timing

difference between when a firm pays for its suppliers and the time it takes to recoup amount invested in debtors and inventory.

Independent Variables

ROE is return on equity is the dependent variable in the study. This ratio has been used by several authors in the financial literature including Gatsi and Akoto (2010) and Kofi et al (2013) to proxy firms' profitability. Return on equity is computed net profit divided by Shareholder's Equity.

Control variables

The control variables were identified on the basis of prior research (Padachi, 2006; Banos-Caballero et al., 2010; Raheman et al., 2010; Tauringana and Adjapong,2013).

In this study, variables are: ratio of inventory to current assets (INV/CA), the ratio of current assets to total assets (CA/TA), ratio of fixed assets to total assets (FA/TA), leverage (LEV) and size measured by log of total assets (TALOG).

Descriptive statistics

Descriptive statistics including mean, standard deviation, skewness and elongation variables has been shown in Table (1).

Table 1:Descriptive Statistics

Variables	Minimum	Maximum	Mean	Std. Dev.	Skewness	Kurtosis
ROE	-125.6	660.7	247.51	62.324	2.1485	0.9697
Inventory holding period	9	515	296.32	14.745	-1.147	0.7269
accounts receivable period	1	567	286.15	7.158	1.6259	-1.6925
accounts payable period	4	184	92.63	11.025	0.96526	0.5214
cash conversion cycle	7	457	318.62	24.262	0.5845	0.1547
ratio of inventory to current assets	0.12415	0.82982	0.36423	0.17698	2.1748	1.6236
the ratio of current assets to total assets	0.07123	7.91670	0.67146	0.12025	-0.5569	0.4789
ratio of fixed assets to total assets	0.13077	0.62254	0.32502	0.14225	-1.0226	-0.7789
log of total assets	1.02325	8.21625	3.62502	0.55142	0.7487	0.9965
leverage	0.12524	0.72114	0.34106	0.16311	0.9962	0.5639

Results

Findings according to each of the hypotheses are as follows:

1) Findings of testing first hypotheses:

Results of testing first hypothesis shows that there is a significant relationship between inventory holding period and profitability. The adjusted determinant coefficient in table (3)shows that 58.2% of the total variation in research dependent variable depend on independent and control variable. Also, influence coefficient of inventory holding period and profitability in table (2) is -0.306 that represent the opposite relationship between inventory maintenance period and profitability. As a result, if the inventory holding period reduced, the firm profitability will be increased. As it's shown in table (3), Durbin-Watson stat is between 1.5and 2.5in the model, it implies that the successive values of estimated residuals aren't dependent on each other and there is no autocorrelation problem in the model.

Table 2:Regression testing first hypothesis

Variables	Coefficient	Std.Error	t-statistics	Prob
C	0.441	0.514	1.748	0.019*
Inventory holding period	-0.306	0.278	-2.115	0.007*
ratio of inventory to current assets	-0.147	0.147	-1.215	0.091
the ratio of current assets to total assets	0.369	0.521	1.965	0.012*
ratio of fixed assets to total assets	0.074	0.378	1.312	0.088
log of total assets	0.441	0.396	0.745	0.196
leverage	-0.059	0.552	-2.154	0.003*

* Error level of 5%

Table 3:Explanation and significant whole model capability

R		Durbin-Watson	ANOVA	
R Square	Adjusted R Square		F	Sig.
0.596	0.582	1.996	9.001	0.000**

**Error level of 1%

2)Findings of testing second hypotheses:

The test of second hypothesis shows that there is a significant relationship between accounts receivable period and profitability. The adjusted determined coefficient in table (5) shows that 53.2%of the total variation in research dependant variable depend on independent and control variable in this model.

Table 4:Regression testing second hypothesis

Variables	Coefficient	Std.Error	t-statistics	Prob
C	0.574	0.311	1.457	0.037*
accounts receivable period	-0.265	0.441	-2.154	0.004*
ratio of inventory to current assets	-0.099	0.218	-0.557	0.214
the ratio of current assets to total assets	0.244	0.620	1.224	0.107
ratio of fixed assets to total assets	0.096	0.421	2.055	0.007*
log of total assets	0.455	0.087	2.114	0.004*
leverage	-0.339	0.478	-1.442	0.062

* Error level of 5%

Table 5:Explanation and significant whole model capability

R		Durbin-Watson	ANOVA	
R Square	Adjusted RSquare		F	Sig.
0.541	0.532	1.745	9.254	0.000**

**Error level of 1%

Also, influence coefficient of accounts receivable period and profitability in table (4) is -0.265that represent the opposite relationship between accounts receivable period and profitability. As a result, if the accounts receivable period reduced, the firm profitability will be increased. As it's shown in table(5), Durbin-Watson stat is between 1.5and 2.5in the model, it implies that the successive values of estimated residuals aren't dependent on each other and there is no autocorrelation problem in the model.

3)Findings of testing third hypotheses:

The test of third hypothesis shows that there is a significant relationship between accounts payable period and profitability. The adjusted determined coefficient in table (7) shows that 47.5%of the total variation in research dependant variable depend on independent and control variable in this model. Also, influence coefficient of accounts payable period and profitability in table (6) is -0.218that represent the opposite relationship between accounts payable period and profitability. As a result, if the accounts payable period reduced, the firm profitability will be increased. As it's shown in table (7), Durbin-Watson stat is between 1.5and 2.5in the model, it implies that the successive values of estimated residuals aren't dependent on each other and there is no autocorrelation problem in the model.

Table 6:Regression testing third hypothesis

Variables	Coefficient	Std.Error	t-statistics	Prob
C	0.225	0.745	2.115	0.004*
accounts payable period	-0.218	0.419	-2.203	0.002*
ratio of inventory to current assets	-0.452	0.095	-2.111	0.004*
the ratio of current assets to total assets	0.277	0.265	0.955	0.241
ratio of fixed assets to total assets	0.077	0.421	0.487	0.365
log of total assets	0.254	0.155	1.775	0.047*
leverage	-0.622	0.275	-1.269	0.099

* Error level of 5%

Table 7:Explanation and significant whole model capability

R		Durbin-Watson	ANOVA	
R Square	Adjusted R Square		F	Sig.
0.489	0.475	2.114	8.945	0.000**

**Error level of 1%

4)Findings of testing fourth hypotheses:

The test of fourth hypothesis shows that there is a significant relationship between cash conversion cycle and profitability. The adjusted determined coefficient in table (9) shows that 60.9%of the total variation in research dependant variable depend on independent and control variable in this model. Also, influence coefficient of cash conversion cycle and profitability in table (8) is -0.519that represent the opposite relationship between cash conversion cycle and profitability. As a result, if the cash conversion cycle reduced, the firm profitability will be increased. As it's

shown in table 9, Durbin-Watson stat is between 1.5and 2.5in the model, it implies that the successive values of estimated residuals aren't dependent on each other and there is no autocorrelation problem in the model.

Table 8:Regression testing fourth hypothesis

Variables	Coefficient	Std.Error	t-statistics	Prob
C	0.047	0.623	1.259	0.084
cash conversion cycle	-0.519	0.157	-2.057	0.008*
ratio of inventory to current assets	-0.288	0.336	-1.996	0.014*
the ratio of current assets to total assets	0.478	0.157	1.975	0.019*
ratio of fixed assets to total assets	0.155	0.623	0.766	0.247
log of total assets	0.196	0.552	1.144	0.166
leverage	-0.512	0.302	-2.119	0.002*

* Error level of 5%

Table 9:Explanation and significant whole model capability

R		Durbin-Watson	ANOVA	
R Square	Adjusted R Square		F	Sig.
0.622	0.609	1.759	9.144	0.000**

**Error level of 1%

Discussion and Conclusion

This study examines the relationship between working capital management components with profitability in listed companies in Tehran Stock Exchange. Sample includes 98 companies that have been studied between the years 2008 to 2012.Findings show that there is a negative relationship between inventory turnover periods, receivables collection period, accounts payable period and cash conversion cycle with profitability. This result confirmed the findings of Deloof(2003), Raheman and Nasr (2007),Tryfonidis and Lazaridis (2006), Rezazadeh and Heydariyan (2010) and Yaghobnejad et al. (2010) .The results of this study could improve the decision making of managers, researchers and Tehran Stock Exchange and the shareholders and investors companies, and also lead to better planning for the liquidity and profitability of companies. It is recommended that to create a positive value and profitability for shareholders, we should reduce the logical inventory turnover period, receivables collection period, accounts payable period and cash conversion cycle. This will be possible with proper management of inventory, accounts receivable and accounts payable. Also, according to the survey results, we can increase corporate profitability by reducing the cash conversion cycle that is an important component of working capital management. As a result, working capital management should be considered in order to create value for shareholders. It is also recommended that we should separately focus on each component of working capital role on company, industry and economy.

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