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A Survey of Working Capital Management in Companies Listed on Tehran Stock Exchange (TSE)

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ABSTRACT

An active working capital management is a basic need of organization capability for consistency in a challenging economy and its goal is establishing a sensitive balance between keeping liquidity to support daily operation and maximize short-term investment opportunities. The policies of working capital are divided into aggressive and conservative. The present study aimed to evaluate the relationship between investment in working capital with considering limitations of funding of companies. Generally, this hypothesis is raised as aggressive policy of working capital increases profitability in terms of funding. The study population is companies listed on TSE. The data for study variables are during 2005-2014. The collected data are provided via Excel Software and statistical computations are performed using Excel 2010, SPSS, Version 20, EVIEWS, version 7. The results showed that *t*-statistics of aggressive policy of working capital in terms of funding was bigger than -1.965 and its significance level was smaller than 0.05 . There was a significant and direct relationship between aggressive policy of working capital in terms of funding and return of assets of companies listed on TSE. This result is consistent with the study hypothesis.

Keywords: Working capital, Stock exchange, Funding, Aggressive policy.

1. INTRODUCTION

The foundation of financial management is capital and we can say all commercial activities require capital (Pinovi, 2007). Capital is one of the vital resources for survival of organization and based on its significance in organizational processes, its management is also of great importance. Efficient working capital management is one of the challenging duties of financial managers as working capital includes current items

as received, inventory, paid, cash flow in daily operation and management on current assets requires much attention compared to property, machineries and equipment. Also, investment in each of current assets is changed daily and the managers should investigate these investments continuously and be sure of its reliance. As the investment price in current assets is changed rapidly, funding requirements are also varied. Thus, mis-management in running current assets can have considerable costs (Shabahang, 1994; Isshaq et. al., 2009). Thus, correct management of short-term resources has great effect on continuing economic activities of enterprises as operating activities in current periods depend upon adequate working capital and its good management as the expected results can be fulfilled and the activity is continued in long-term. Thus, in case of lack of adequate working capital, the company can not continue its activity well and it is one of the basic causes of bankruptcy of small business units in most of developing countries (Rafuse, 1996). The highest concentration in financial field of an organization is dedicated to long-term financial decisions as capital budgeting, capital structure and dividend policies. In two recent decades, the focus on working capital management has received much attention by academic experts and financial managers of companies (Lyroudi & Lazaridis, 2000). Many studies have been conducted in this regard evaluating the effective factors on properties of company on working capital management. This study attempts to evaluate working capital and different policies and its effects on profitability and performance of companies listed on TSE to design dynamic working capital management. Working capital management indicates policies and decisions applied in working capital sector to change different types of current assets and short-term financing resources. Minimizing investment in working capital (aggressive policy) has positive effect on profitability of company. On the other hand, high investment in working capital (conservative policy) can lead to profitability as keeping high level of inventory can reduce probable costs of stopping in profit and loss of company due to shortage of production and can reduce production costs and other benefits. This question is raised whether in terms of optimal working capital management, which policy is suitable? Generally, responding this question is easy. Regarding working capital, the best policy can maximize the wealth of shareholders but in practice, this policy is not easy and various variables should be controlled simultaneously. To do this, working capital is divided into four components (average claim collection, inventory turnover period, average debt payout and cash flow conversion cycle) and the effect of each of these components on company performance is investigated by which the managers can recognize the effects of different components of working capital management regarding good level of investment in working capital (Bahar Moghadam, 2011).

Most of the past researches have focused on long-term financial decisions of managers of companies. Namely, researchers mostly analyzed financial structure, investment in fixed assets, cash earnings and stock assessment of companies. The investment in current assets and using short-term funding resources are important balance sheet of companies. Decision making and judgment at the best investment method with the aim if maximizing shareholders wealth is one of the important issues in financial management (Azimi, 2013). As one by one of constituents of working capital and internal relationship between them is of great importance during assessment of their effect on company performance, a few studies have been conducted with empirical evidences to identify the effect of investment in these items and probable effect of working capital funding policies (Cabalrou, 2014). On the other hand, the present study is useful regarding literature of working capital from some dimensions. First, new evidences of the effect of working capital management on company performance have shown that we investigate a non-linear relationship. Second, this study evaluates the relationship between investment in working capital by considering funding limitations

of companies. Third, panel data method is used to eliminate internal relationship between variables. The present study attempts to study the models of working capital among the companies listed on TSE and study the role of working capital policies and identify the model of working capital management.

2. THEORETICAL BASICS

Working capital: The difference between current assets and current debts of a company during definite operating period. Working capital is computed based on the following Formula:

$$\text{Working capital} = \text{Current assets} - \text{current debts}$$

Aggressive working capital policies: If the current assets of company are less than its current debts, working capital of company is negative and working capital policy is aggressive.

Conservative working capital policies: If the current assets of company are more than its current debts, working capital is positive and its working capital policy is conservative.

Working capital policy in terms of investment dimension: It shows the investment value in short-term resources among total assets and is computed based on dividing current assets by total assets.

$$\text{WCIP} = \text{Current assets} / \text{total assets}$$

Working capital management: Determining the value and combination of working capital resources as it leads to maximizing shareholders wealth. The aim of working capital management is being assured of optimal use of resources for profitability and maximizing shareholders wealth.

Working capital policy in terms of funding: It is a ratio showing the short-term debts value to total assets and is computed based on dividing current debts by total assets.

$$\text{WCFP} = \text{Current debts} / \text{total assets}$$

Company performance: It is return on assets as used as a criterion for company profitability. This criterion shows that how much the company applies the assets to create profit and how much profit is required for any currency in assets.

$$\text{ROA} = \text{Net profit after tax} / \text{Total assets}$$

Optimal point of working capital: It is investment level of investment of economic enterprise in current assets in which the maximum benefits of these resources are achieved.

Company growth: The changes in annual sale of company compared to the previous year as company growth criterion.

3. REVIEW OF LITERATURE

Umoren, A. and Udi (2015) in a study “Working Capital Management and the Performance of Selected Deposit Money Banks in Nigeria” investigated the effect of working capital management on liquidity and profitability of selected Deposit Money Banks in Nigeria. The results showed that there was an inverse and significant relationship between cash flow conversion and profitability and there was an inverse and

significant relationship between debts payout and liquidity. Claim collection period has direct and significant relationship with liquidity. Singhania et. al., (2014) investigated the relationship between strategies of working capital of a company and its performance among the companies and evaluated the role of macro economic indices. The results of study showed that cash flow conversion had inverse relationship with profitability of company. The managers by reducing received accounts collection and increase of accounts paid can improve company performance. Malik, M.S., Bukharim (2014) studied the effect of working capital policies on performance of selected industries in Pakistan. The results of study showed that short cash flow conversion cycle increased the return on equity in these companies.

Vasiasmann (2013) in a study among companies listed on Malaysia market showed that during economic growth, the companies with low age and small size with low fixed assets had high investment in working capital. Other features for companies with high working capital are conducted as income with low volatility and low level of information asymmetry. Gomes (2013) in a study evaluated the non-linear relationship between working capital management and profitability of Portuguese companies and applied the data of companies during 2004-2009. The results showed that there was a non-linear relationship between working capital management and profitability of companies. Olayinka (2012) conducted a study as effective factors on working capital of Nigeria. The results showed that sale growth, operating cycle and economic activities had direct relationship and financial leverage had inverse relationship with working capital. Yahyazadefar et. al., (2014) evaluated the relationship between working capital management and profitability of TSE companies. The results showed that there was no relationship between working capital management and profitability and the results of study regarding car, chemical products and non-metal mineral products showed that only in chemical products industry, there was an association between working capital management and profitability.

4. STUDY HYPOTHESIS

Aggressive working capital policy in terms of funding increased profitability.

5. STUDY POPULATION, SAMPLING METHOD AND SAMPLE SIZE

The study population is all companies listed in TSE. The sampling is systematic elimination. The sample consists of all existing companies in study population with following criteria:

Their fiscal period leads to 12/29 of each year to put the data together and be applied as panel or pooled form (based on the results of pre-tests)

During the study period, there is no change in fiscal period to compare the financial performance results.

The data are available during 2005-2014 to perform the computations completely.

It is not investment, bank, financial and credit institutes, insurance and holding company.

6. STUDY VARIABLES

The following model is used for study hypothesis test.

$$ROA_{i,t} = \beta_0 + \beta_1 CL/TA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GWTH_{i,t} + \beta_4 LEVG_{i,t} + \varepsilon_{i,t}$$

where,

Dependent variable:

$ROA_{i,t}$ = Return on assets of company i in year t as the ratio of net earnings to total assets

Independent variable:

$CL/TA_{i,t}$ = Aggressive policy of working capital in terms of funding dimension of company i in year t as the ratio of current debts to total assets

Control variables

$SIZE_{i,t}$ = Firm i size in year t as equal to natural logarithm of total assets

$GWTH_{i,t}$ = Growth of company i in year t as equal to total assets in year t minus total assets in year $t - 1$ divided by total assets in year $t - 1$

$LEVG_{i,t}$ = Financial leverage of company i in year t as equal to the total debts to total assets

$$Q_{i,t} = \beta_0 + \beta_1 NTC_{i,t} + \beta_2 NTC_{i,t}^2 + \beta_3 SIZE_{i,t} + \beta_4 GWTH_{i,t} + \beta_5 LEVG_{i,t} + \beta_6 ROA_{i,t} + \epsilon_{i,t}$$

7. STUDY RESULTS

7.1. Descriptive Statistics

Generally, the methods by which data is collected, processes or summarized is descriptive statistics. This statistics describes the population or sample and its aim is computation of parameters of society or study sample (Azar and Momeni, 2010). The study sample during 2005-2014 is 122 companies. Here, the mean, median (central measures), standard deviation, maximum and minimum (dispersion criteria) are computed and shown in Table 22.1. After eliminating outliers and sorting data, the number of companies-years of study variables is reduced.

Table 22.1
Descriptive indices of studied variables

<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Median</i>	<i>Mean</i>	<i>Study variables</i>
0.784	-0.259	0.631	0.096	0.117	ROA
0.617	0.541	4.739	1.251	1.434	Q-Tobin index
0.198	0.071	0.972	0.663	0.631	Aggressive working capital policy from investment dimension
0.182	0.057	0.936	0.538	0.524	Aggressive working capital policy from funding dimension
1.973	0.017	26.655	1.753	2.138	Net operating cycle
1.475	9.797	19.009	13.251	13.386	Firm size
0.252	-0.428	1.663	0.131	0.176	Company growth
0.177	0.096	0.963	0.633	0.61	Leverage

Mean is the main and important central index showing the balance and gravity of distribution. As shown in Table 22.1, the mean of return on asset is 0.117. This value shows that averagely, net return on assets of companies listed on TSE achieving of dividing net profit on total assets is less than 12% and this ratio is not considerable compared to inflation rate. The median is the point dividing a sample into two equal parts. In other words, 50% of observations are before and 50% of observations after it. As shown in

Table 22.1, the median of return on assets is 0.096. This value shows that middle of net return on assets of companies listed on TSE achieving of dividing net earnings on total assets is less than 10% and similar to the explanation about the mean return on assets, this ratio compared to inflation rate is not considerable and it is low. Generally, dispersion criteria compare the dispersion of observations about the mean. One of the most important dispersion criteria is standard deviation. As shown in the above Table, this criterion for return on assets is 0.784. The highest value of return on assets is 0.631 and its lowest value is -0.259 and the feature of other variables is shown in Table 22.1. Independent variable is aggressive policy of working capital in terms of funding dimension achieved by dividing current debts by total assets of company. High value of this variable shows that the company has conducted high funding in working capital and aggressive policy in terms of working capital funding is considered. The mean of aggressive policy of working capital from funding dimension is 0.524 and its mean is equal to 0.538. These values show that averagely, relative funding of companies listed on TSE is considerable consisting of more than half of total assets. This ratio is maximum 0.936 and minimum 0.057 and standard deviation of this variable is 0.182. These values show that although the difference between maximum and minimum values is considerable, standard deviation of these values is not very much and values are focused on mean and median. In both dimensions of investment and funding, policies of companies are inclined to aggressive policies.

7.2. Investigation of Reliability of Variables

Before the analysis of data of study, reliability should be investigated. The reliability of study variables means that the mean and variance of variables over time and covariance of variables during different years were fixed. These variables don't lead to spurious regression. To do this, Leven, lin, chu, Im, Pesaran, Shin, Dickey-fuller tests are used. Im-Pesaran and Shin test is used in this study. The result of this test is shown in Table 22.2.

Table 22.2
Im, Pesaran and Shin test

<i>Significance level</i>	<i>T statistics</i>	<i>Study variables</i>
0.000	-11.811	ROA
0.000	-18.037	Q-Tobin index
0.000	-10.48	Aggressive working capital policy from investment dimension
0.000	-10.531	Aggressive working capital policy from funding dimension
0.000	-10.605	Net operating cycle
0.000	-9.797	Firm size
0.000	-30.228	Company growth
0.000	-11.118	Leverage

As shown in Table 22.2, significance level of study variables is less than 5% and all study variables are stationary. Then, we identify a good method for data analysis.

7.3. Hypothesis Test

To determine the method of using pooled data and homogeneity or non-homogeneity of them, chu, F-Llmer tests are used. The statistical hypotheses of this test include:

H0 = Pooled Data

H1 = Panel Data

H0 is regarding non-observed individual effect and H1 is regarding non-observed individual effect. If H0 is supported, it means that the model has no non-observed effects. Thus, it is estimated via pooled regression model. If H0 is supported, it means that in the model, there are some non-observed individual effects. If the results of this test are used for using data as panel, for estimation of model, fixed effects model (FEM) or random effect (REM) is used. To select one of these two models, Hausman test is performed.

H0 = Random Effect

H1 = Fixed Effect

Hausman null hypothesis is regarding suitability of random effects model to estimate regression models of panel data.

7.4. Hypothesis Test Method

To estimate the coefficients of model, to determine pooled data and homogeneity or non-homogeneity of them, chu, F-Limer's statistics are used. The results of this test are shown in Table 22.3.

Table 22.3
Results of Chu test

<i>Result of Chu test</i>	<i>Significance level</i>	<i>F statistics</i>	<i>H0</i>
H0 is rejected	0.000	8.376	Using pooled data model

As shown in Table 22.3, the result of Chu test shows that probability for F-Limer's statistics is less than 5%. To test this model, the data are panel. In Table 22.3, by Hausman test, fixed or random effects can be used.

Table 22.4
The results of Hausman test

<i>Result of test</i>	<i>Significance level</i>	<i>Chi-square statistics</i>	<i>H0</i>
H0 is rejected.	0.000	61.931	Using random effects model

As shown in Table 22.4, significance level of Hausman test is less than 0.05 and to estimate the coefficients of mentioned model, we should use fixed effect model. The result of mentioned model test by fixed effects and estimate generalized least square (EGLS) is shown in Table 22.5.

Based on the results of Table 22.5, as *t*-statistics of aggressive policy of working capital from funding dimension is bigger than -1.965 and its significance level is smaller than 0.05. There is significant and direct relationship between aggressive policy of working capital from funding dimension and return on assets of companies listed on TSE. This result is consistent with the study hypothesis (aggressive working capital policy from funding dimension can increase profitability).

As *t*-statistics of firm size is bigger than -1.965 and its significance level is smaller than 0.05, there is a significant and inverse relationship between firm size and return on assets of companies listed on TSE. As *t*-statistics of company growth is bigger than +1.965 and its significance level is smaller than 0.05, there is a significant and direct relationship between company growth and return on assets of companies listed on TSE. As *t*-statistics of financial leverage is bigger than -1.965, its significance level is smaller than 0.05 and

there is a significant and inverse relationship between financial leverage and return on assets of companies listed on TSE.

Table 22.5
The results of second hypothesis test

$ROA_{i,t} = \beta_0 + \beta_1 CL/TA_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 GWTH_{i,t} + \beta_4 LEVG_{i,t} + \epsilon_{i,t}$ $ROA_{i,t}$ = Return on asset of company i in year t $CL/TA_{i,t}$ = Aggressive policy of working capital from funding dimension of company i in year t $SIZE_{i,t}$ = Firm size of company i in year t $GWTH_{i,t}$ = Growth of company i in year t $LEVG_{i,t}$ = Leverage of company i in year t				
Significance level	T statistics	Standard error	Coefficients	Variable
0.000	15.026	0.033	0.501	Constant
0.003	2.91	0.018	0.053	Aggressive policy of working capital from funding dimension
0.000	5.301-	0.002	0.013-	Firm size
0.000	9.104	0.007	0.067	Company growth
0.000	17.405-	0.022	0.391-	Leverage
	0.826	Coefficient of determination	40.282	F statistics
	0.806	Adjusted coefficient of determination	0.000	Significance level of F statistics
	2.118	Durbin-Watson value		EGLS method (eliminating the probable effects of non-homogeneity of variance)

Durbin-Watson statistics is 2.118 ranging 1.5-2.5. Significance level of F statistics is 0.000 lower than 0.05 and it shows significance of model. Another important point in Table 22.5 is adjusted coefficient of determination of model. The adjusted coefficient of determination is 80% and it shows that about 80% of changes of dependent variable are explained by independent and control variables as considerable. It is worth to mention that using EGLS and correction of white diagonal can lead to eliminating variance non-homogeneity. The chart of disturbance terms is shown in Figure 22.1. Although Jarque-Bera test shows non-normality of disturbance terms, the chart of its values has similar distribution of normal distribution and there is no problem in this regard.

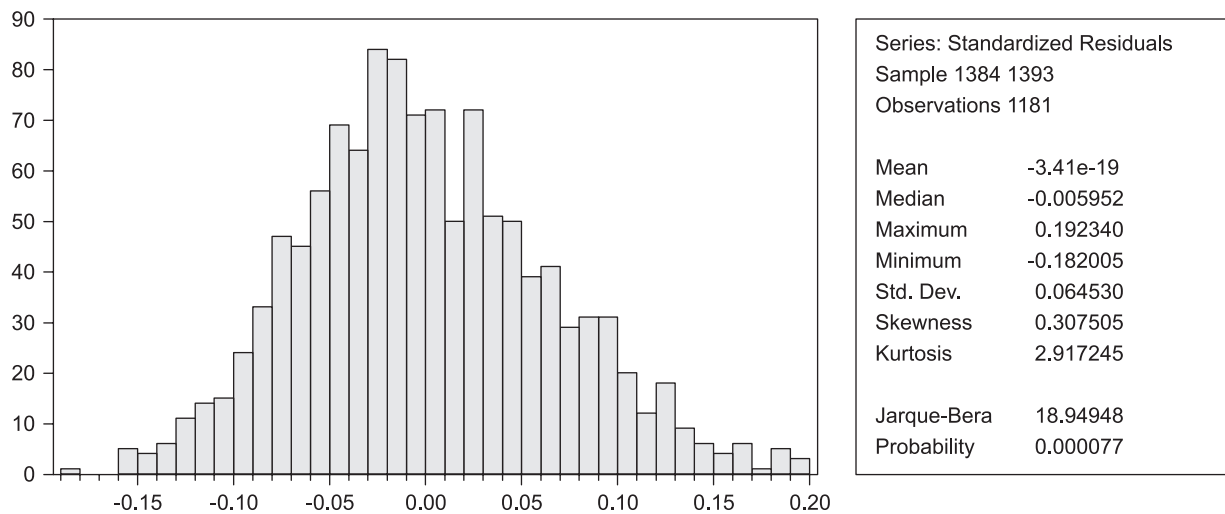


Figure 22.1: Dispersion chart of disturbance terms

8. CONCLUSION

In this study, we evaluate the effect of policies of working capital on financial performance and market of companies listed on TSE. For data analysis, Eviews9 software is used. Excel software is used in sorting data and sampling. In this study, study hypotheses are tested based on collection of 122 companies listed on TSE during 2005-2014 and by pooled regression analysis. At first, descriptive statistics of dependent, independent and control variables are presented. Then, the hypothesis is tested. The results of significance test based on fitted regression equations showed that aggressive policy of working capital from funding dimension increased profitability. The collected data based on regression model for hypothesis test are studied to define the correlation and direction of the relationship between variance for each equation separately. The statistics of mean, standard deviation and F values are investigated by ANOVA. The results of hypothesis test showed that *t*-statistics of aggressive policy of working capital from funding dimension was bigger than +1.965 and its significance level was smaller than 0.05. There was a significant and direct relationship between aggressive policy of working capital from funding dimension and return on asset of companies listed on TSE. This result is consistent with the study hypothesis (aggressive policy of working capital from funding dimension increased profitability). On the other hand, *t*-statistics of firm size is bigger than -1.965 and its significance level is smaller than 0.05. There is an inverse and significant relationship between firm size and return on assets of companies listed on TSE and as *t*-statistics of growth of company is bigger than +1.965, its significance level is smaller than 0.05. There is a direct and significant relationship between firm growth and return on assets of companies listed on TSE. On the other hand, as *t*-statistics of leverage is bigger than -1.965 and its significance level is smaller than 0.05, there is a significant and inverse relationship between leverage and return on assets of companies listed on TSE.

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