



## Examining Relationship between Working Capital Changes and Fixed Assets with Assets Return: Iranian Scenario

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### ABSTRACT

*The present research has investigated the relationship between working capital changes and fixed assets with asset return of listed companies on Tehran Stock Exchange. In this research, in addition to working capital and fixed assets, the relationship between changes these variables and assets return has also been investigated. Statistical community of the study covers listed companies in Tehran Stock exchange during 2005-2010. Pearson correlation, Regression test and Kolmogorov-Smirnov test have been used in determining kind of relationship between dependent and independent variables, hypotheses test and evaluating normality of data respectively. The outcomes of the study suggest that there is a significant relationship between working capital changes and fixed assets with assets return statistically.*

**Keywords:** Working capital, fixed assets, assets return, Tehran Stock Exchange.

### 1. INTRODUCTION

Industry's improvement and product growth is required in investment programs. Today, business units managers' intended to utilize assets which to be productive and profitable and should be guaranteed continuation activity of business unit. All decisions, which are considered by these managers, are depended to this task. Companies should try to provide resources and gain maximum benefit through working capital changes and fixed assets to achieve desired return. Therefore, business units need to manage in working capital and fixed assets to carry out their operating and investment activities (Salehi, 2008; Rostami and Salehi, 2011). If a company increases their assets, it will grow over time, and strive to achieve the suitable condition that promoting in increasing in production capacity and profitability (Namazi and Salehi, 2010). In achieving this aim, long-term loan, annual earnings and capital increments might be used, so that a working capital is not decreased. An active company will gain long-term assets by increasing the working capital. This research mainly emphasizes on rule of working capital changes and fixed assets on assets return. The working capital meets the short-term financial requirements of a business enterprise. It is a trading capital, not retained in the business in a particular form for longer than a

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year. The money invested in it changes form and substance during the normal course of business operations. The need for maintaining an adequate working capital can hardly be questioned (Salehi, 2009). Just as circulation of blood is very necessary in the human body to maintain life, the flow of funds is very necessary to maintain business. If it becomes weak, the business can hardly prosper and survive. Working capital starvation is generally credited as a major cause if not the major cause of small business failure in many developed and developing countries (Rafuse, 1996).

The success of a firm depends ultimately, on its ability to generate cash receipts in excess of disbursements. The cash flow problems of many small businesses are exacerbated by poor financial management and in particular the lack of planning cash requirements (Jarvis et al, 1996).

### **Theoretical issues**

Suppliers investigate in companies which have higher profit in enhancing professional knowledge of financial statements (Salehi and Biglar, 2009). One of the most effective factors in this research is the relationship between working capital changes and fixed assets with assets return. Some theorists such as Sloan (1996) and Fairfield et al., (2003) believed that less working capital changes and long-term assets cause the increment of assets efficiency. Increasing fixed assets represents prediction of production and sale growth in future, because if fixed assets have not grown, company cannot meet market demand in future. Managers use assets efficiency rate for planning and controlling future business operations. Since rate of return used for planning and controlling companies activity and planning of assets, liabilities and capital structure and other type of investment, so senior managers are responsible for both companies operation and assets, liabilities and capital structure and create a balance, if necessary (Salehi and Rostami, 2009). Managers spend significant amounts for investigating in fixed assets, because decisions about fixed assets increasing to predict earning power ability and future profitability that increases company return, subsequently. Also, once development and improvement in technology are associated with production processes; it will be significant effect on working capital. Since return rate used in fixed assets choice and other type of investments, so relationship between working capital changes and fixed assets with assets return will be examined.

Examining effect of working capital changes control and fixed assets on assets return has significant importance both investors, stockholders and financial analysts & companies managers to improve future theoretical studies and to take appropriate decisions (Salehi et al., 2009).

## 2. LITERATURE REVIEW

Peel *et al.*, (2000) revealed that small firms tend to have a relatively high proportion of current assets, less liquidity, exhibit volatile cash flows, and a high reliance on short-term debt.

Howorth and Westhead (2003), suggest that small companies tend to focus on some areas of working capital management where they can expect to improve marginal returns. They believed an efficient working capital management is a vital component of success and survival; i.e. both profitability and liquidity (Peel and Wilson, 1996). They further assert that smaller firms should adopt formal working capital management routines in order to reduce the probability of business closure, as well as to enhance business performance. Grablowsky (1976) showed a significant relationship between various success measures and the employment of formal working capital policies and procedures. Managing cash flow and cash conversion cycle is a critical component of overall financial management for all firms, especially those who are capital constrained and more reliant on short-term sources of finance (Deakins et al, 2001).

Peel and Wilson (1996) have stressed the efficient management of working capital, and more recently good credit management practice as being pivotal to the health and performance of the firm sector. De Chazal Du Mee (1998) revealed that 60% enterprises suffer from cash flow problems. Narasimhan and Murty (2001) stress on the need for many industries to improve their return on capital employed. Deloof (2003) has found a strong significant relationship between the measures of corporate profitability. Their findings suggest that managers can increase profitability by reducing the number of day's accounts receivable and inventories. This is particularly important for small growing firms who need to finance increasing amounts of debtors.

Enayati (2004) studies and explains management of working capital of listed companies on Tehran Stock Exchange. General result of this research shows that management of cash, management of outstanding claims, and financing methods effect on cash situation and management of inventory is not significant, statistically.

Yung-Jang (2002) studied the relationship between cash management with performance results and company value on Japanese and Taiwanese companies. They have used from performance result variable as Return of Efficiency (ROA) and company value variable as Return of Equity (ROE) of shareholders. Final result of this research about Japanese and Taiwanese companies indicated that there is a negative relationship between ROA and cash management as well between ROE and cash management.

Lazaridis and Tryfonidis (2006) have investigated relationship between working capital management and corporate profitability of listed company in the Athens Stock Exchange. The result from regression analysis indicated that there was a statistical significance between profitability, measured through gross operating profit, and the cash conversion cycle. From those results, they claimed that the managers could create value for shareholders by handling correctly the cash conversion cycle and keeping each different component to an optimum level.

Raheman and Nasr (2007) studied the effect of different variables of working capital management on the net operating profitability. From result of study, they showed that there was a negative relationship between variables of working capital management including the average collection period, inventory turnover in days, average collection period, cash conversion cycle and profitability. Besides, they also indicated that size of the firm, measured by natural logarithm of sales, and profitability had a positive relationship.

Afza and Nazir (2009) made an attempt in order to investigate the traditional relationship between working capital management policies and a firm's profitability for firms listed on Karachi Stock Exchange. The study found significant different among their working capital requirements and financing policies across different industries. Moreover, regression result found a negative relationship between the profitability of firms and degree of aggressiveness of working capital investment and financing policies. They suggested that managers could crease value if they adopt a conservative approach towards working capital investment and working capital financing policies.

Abdollahi (1993) studies relationship between ratios of obligated finance and ratios based on cash flows during 1993-1995 period. Results of this research indicate a significance relationship between ROA and CFO.

Fahimzadeh (1998) studies relationship between debt and profit and assets return of listed companies on Tehran Stock Exchange. In this research, he has studied relationship between ratio of debts with profit and return of assets and he has concluded that low ratio of debt compared with other capital resource convinced financial experts that an appropriate combination of equity and debt in financial structure of company can be an effective factor in increasing profits and stockholders' wealth.

### **3. RESEARCH METHODOLOGY**

According to the objective of the study as well review of literature the following hypotheses are postulated in the study:

H<sub>1</sub>: There is a significant relationship between working capital changes and assets return.

H<sub>2</sub>: There is a significant relationship between fixed assets and assets return.

The kind of his research is empirical research and done through deductive – inductive way. In deductive way, we considered to background of theoretical basis by library, article and internet and by inductive way, we collect necessary information for accept or reject of hypothesis.

The statistical society covers all listed companies on Tehran Stock Exchange with following criteria:

- A. End of fiscal year is to end of March.
- B. From 2005 to 2010, there is not any change in fiscal year or company's activity.
- C. Company was not as Investment Company.
- D. Required financial information is in available.

With regard to above mentioned conditions only 50 companies were qualified for the study.

Then, useful information was collected from different reports of Tehran stock exchange as well available software in Tehran Stock Exchange. It should be mentioned that due to lack of information about cash flow in direct way, it has been obtained from sample's financial statements.

In order to testing of hypotheses, at first, we have calculated descriptive statistics including mean, standard deviation ; then relationship between independent and dependent variable is tested by regression method. Also, considering to quantitative nature of all tested variables in analysis of presence or absence relationship between variables, it is evaluated through Pearson correlation coefficient (r).

### Regression Model

Regression model is used for testing of hypotheses. In this research, relationship between working capital changes and fixed assets with assets return was examined. In this model, assumed that dependent variable (assets return) is function of independent variable amounts (working capital changes and fixed assets). If there are a linear relationship between dependent and independent variable, then we can explain observed changes in dependent variable by independent variables, otherwise, we resulted that there are not any linear relationship between dependent and independent variables.

Research variables

1. Dependent Variable: in this research, assets return will be examined as dependent variable.
2. Independent Variables: in this research, working capital and fixed assets changes will be examined as independent variables.

Table 1: Types of Variables Based on Relationship

Hypotheses	Independent variable	Dependent variable
First	Working capital changes	Assets return
Second	Fixed assets changes	Assets return

In this section, we considered how to calculate key variables (assets return, working capital changes and fixed assets changes).

Assets return:  $\text{Assets return} = (\text{operating profit}) / (\text{average of total assets})$ .

Working capital changes:  $\text{Working capital changes} = \text{working capital in year (t)} - \text{working capital in year (t-1)}$ .

Working capital = current assets – current liability.

Fixed assets changes:  $\text{Fixed assets changes} = \text{fixed assets in year (t)} - \text{fixed assets in year (t-1)}$ .

**4. TESTING OF HYPOTHESES**

In this section, in order to obtain concise and perceivable information and gain generality from samples' characteristics, we supply and regulate descriptive statistics. It is including mean, standard deviation, minimum, maximum, variance, range of changes, strain coefficient, amplitude coefficient and standard error that descriptive statistics of this study are briefly in Table 2.

Table 2: Descriptive Statistics of Testing Variables (Million Riials)

Variables	Mean	S.D	Min	Max	Range of changes	Strain coefficient	Amplitude coefficient	Standard error
Assets return	0.29	0.16	0.07	0.69	0.62	0.13	0.60	0.12
Working capital changes	2395.78	2234.22	-37994	34572	72566	0.22	0.64	1114.60
Fixed assets changes	2422.22	2116.73	-3600	11464	15064	0.76	0.34	1542.14

In three above variables, amount of mean is higher than standard deviation and consider to value of standard deviation, concluded that data scattering is not high. These descriptive statistics indicate that distribution curve have amplitude to right than normal distribution curve in some years and more data are accumulated in the left side of curve.

#### Kolmogorov – Smirnov Test

Before processing testing of hypothesis, we should examine variables in order to normality test. In this regard, Kolmogorov – Smirnov formula is used which the result has presented in Table 3.

Table 3: Data Normality Test

Variable	Working capital changes	Fixed assets changes	Assets return
Sig.	0.30	0.71	0.34

Above results indicated that all variables have significant level that is higher 0.05. So, normality of all three variables is confirmed.

#### Pearson Correlation

Pearson correlation is one of a significant criterion which used for examining linear relationship of quantities variable. Following test shows Pearson correlation for working capital changes and fixed assets with assets return.

H<sub>1</sub>: There is a relationship between working capital changes with assets return.

Table 4: Correlation of Working Capital Changes with Assets Return

Variable	Test	Assets return
Working capital changes	Pearson correlation	0.513
	Sig.	0.009

According to Table 4 the significant level of Pearson correlation test is equal to 0.009 that less than 0.05. Therefore,  $H_0$  is rejected so there is relationship between working capital changes with assets return.

$H_2$ : There is relationship between fixed assets changes with assets return.

Table 5: Correlation of Fixed Assets with Assets Return

Variable	Test	Asset return
Working capital changes	Pearson correlation	0.523
	Sig.	0.000

According to Table 5, the significant level of Pearson correlation test is equal than 0.000 that less than 0.05. Therefore,  $H_0$  is rejected so there is relationship between fixed asset changes with assets return.

### First Hypothesis Test

First Hypothesis: "There is significant relationship between working capital changes and assets return."

After collecting data, the relationship between assets return (ROA) and changes of working capital (CHWC) was tested. These results are presented as follow for examination relationship between ROA and CHWC in regression analysis table and regression equation on error level equal 0.05.

Regression equation:  $ROA = 0.585 + 0.343 CHWC$

Table 6: Statistic of First Hypothesis Test

Year	Correlation coefficient	Determination coefficient	Modified determination coefficient	Amount of Beta	(t)	Sig.
2005 to 2010	0.513	0.45	0.43	0.343	10.856	0.009

In this test error level is considered 0.05 i.e. confidence level equal to 0.95. Because significant level is 0.009; less than 0.5, so the assumption ( $\beta=0 :H_0$ ) (lack of relationship) is rejected. Therefore, there are a significant relationship between assets return and working capital changes and since Beta coefficient is a positive amount ( $\beta = 0.343$ ), we concluded that, there is a direct relationship between assets return and working capital changes.

Statistical findings confirmed that there is a significant relationship between working capital changes and assets return. Coefficient of modified determination means that about 43 per cent of dependent variable changes (assets return) could be described by independent variable (working capital changes). Meanwhile, consider to positive amount of Beta amount, we concluded that there is a direct relationship between variables. In other words, the research hypothesis is confirmed.

### Second Hypothesis Testing Basis on Size of Company

In second hypothesis, companies were divided into two groups, large and small, basis on total mean of their assets and companies which are higher than mean amount considered as large company and companies which are less than mean amount regarded as small company. Number of samples in each group is 50 (25 big company and 25 small company) that for each group was done separated test. Results are as follows:

#### Pearson Correlation

Pearson correlation for working capital changes with assets return for small and big companies are shown in below test.

First Hypothesis: There is relationship between fixed assets with assets return basis on size of company.

Statistical hypothesis test:

$H_0$  =Variables have not relationship

$H_1$  = Variables have relationship

Table 7: Correlation of Fixed Assets Changes with Assets Return Basis on Size of Company

Variable	Test	Assets return
Fixed asset changes of big companies	Pearson correlation	0.296
	Sig.	0.002

Working capital changes of small companies	Pearson correlation	0.328
	Sig.	0.020

Significant level of Pearson correlation test related to big and small companies is less than 0.05 and so  $H_0$  is rejected. Therefore, there is a relationship between fixed assets and assets return of big and small companies.

Table 8: Result of Second Hypothesis Basis on Size of Company

Name	Correlation	Determination coefficient	Modified determination coefficient	Beta coefficient	Statistic (t)	Sig.	Result
Big companies	0.296	0.087	0.079	0.453	00.79	0.002	$H_0$ is rejected
Small companies	0.328	0.108	0.089	0.464	0.089	0.020	$H_0$ is rejected

For studying hypothesis, error level is considered 0.05 i.e. confidence level equal 0.95.

Basis on obtained results from first hypothesis test in terms of size of company, we concluded that because significant level is less than 0.05, so the assumption ( $\beta=0 :H_0$ ) (lack of relationship) is rejected. Therefore, by error level equal 0.05, there are a significant relationship between assets return and working capital changes. Since Beta coefficient is a positive amount, we concluded that, there a direct relationship between assets return and fixed assets changes.

Significant level of hypothesis test was 0.009 that is less than error level (0.05) and it is implied to confirm of research hypothesis, that it means there are significant relationship between working capital changes and assets return and because amount of regression equation Beta is positive, ( $\beta > 0$ ), then there are direct relationship between working capital changes and assets return. Classification of companies was done in terms of their size and activities. Then the first hypothesis was evaluated in each item. Results indicated that there is significant relationship between working capital changes and assets return. Significant level of hypothesis test was 0.000 that is less than error level (0.05) and it is implied on confirm of research hypothesis, that it means there are significant relationship between fixed assets changes and assets return and because amount of regression equation Beta is positive, ( $\beta > 0$ ), then there are direct relationship between fixed assets changes and assets return. Also, classification of companies was done in terms of their size and activities. Then

the second hypothesis was evaluated in each item. Results indicated that there is significant relationship between fixed assets changes and assets return.

## 5. CONCLUSION AND RECOMMENDATIONS

Results indicate if developing and improving technology related to production cycle, it will have significant effect on working capital, because purchasing new equipment cause to increase the raw material in production and it led to increase production. Therefore, production volume, sale volume and cash flow resulting from sale are main factors of working capital. Among this, companies which have continuous growth in sale require to changes in their working capital. Therefore, real and predicted sale have significant effect on amount of working capital that a company used.

Analysis of results shows high tax rates cause to depreciation expense create an impediment tax in research period because these expenses was not guarantees for exiting cash flow and Tehran stock exchange used this impediment tax was protected sale and applying new fixed assets. Also, these results indicated that long-term asset changes will increase production and benefit capacity because this investment will follow profitability power and finally it will increase total value of company. Changes in fixed assets were reflecting organizations & business units' basic guidelines, particularly productive units and have significant effect on economic successes in long – term. A business unit must obtain reasonable return of invested funds to realize its long-term goals. When companies can optimal use from assets, their long – term assets can create a high output for stockholders. Also, reducing or increasing long-term assets led to negative or positive outputs on stock's companies and it will affect on company's value. In this hypothesis, we argued that productive assets are main factors in companies and changes will affect on production and finally it will change profitability power of companies. Consequently, long-term assets changes regarded as independent variable and can affect on company's output.

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