

The Impact of Firms' Capital Expenditure on Working Capital Management in the Tehran Stock Exchange

Teimoor Hosseini Assl^{1*}, Monireh Shoja², Shahram Begzadeh³, Bahman Isazadeh⁴

^{1,2,3,4} Department of Management, Parsabad Moghan Branch, Islamic Azad University, Parsabad, Iran.

Received: June 9, 2014
Accepted: October 4, 2014

ABSTRACT

The purpose of this research is to investigate the impact of capital expenditure on working capital management in the Tehran stock exchange firms that the method of research is descriptive-applied. For this purpose, data from a sample of 132 firms over the period of 5 years from 2004 to 2008 were studied. The conceptual model of research is derived and modified Ranjith (2008) model. The required data were collected through panel data and regression methods were used for analysis and testing hypothesis. The empirical research found that firms' capital expenditure has a significant and positive impact on working capital management. But there is no significant relationship between capital expenditures and working capital management.

KEYWORDS: Capital expenditure, Tehran stock exchange, working capital, firm

INTRODUCTION

Financial organizations are involved in three kinds of decisions: capital structure decisions, capital budgeting decisions, and working capital management decisions; working capital management is an important financial element because it affects profitability and liquidity and deals with current assets and current liabilities. Working capital management is an important duty of finance manager of a company on many reasons. First, for example, current assets of industrial companies constitute more than half of the sum of their assets. Distribution companies allow even larger shares. Excess level of current assets can result in low investment efficiency. In spite of this, companies which have inadequate current assets may face problems with their performance (Wanhoren, 1977). Efficient working capital management involves planning and controlling current assets and liabilities so that the risk of inability to repay short-term debts is eliminated and on the other hand, excess investment in current assets is avoided (El Jeli, 2004). Many studies have shown that managers spend a considerable amount of daily time on capital decisions while current assets are short-term investments which are continuously converted into other assets (Ra O, 1989). For the case of current liabilities, a company is responsible for fulfilling its obligations. For a developing company, liquidity is, to some extent, dependent on operational cash flows created by corporate assets (Sonnen, 1993). Working capital management of a company is a vital element in financial management of a company and involves making decisions on the level and combination of current assets and investing such assets (Joushi, 1995). Companies look for methods of improving growth, financial performance and reducing risks in the present competitive economic conditions. Working capital amounts can be regarded as hidden savings which can be used for investment growth strategies like capital development. Idle cash flows in stocks and accounts receivables can be used by working capital determinants. Many companies which have been profitable over a long period of time have shown an efficient working capital management. Successful management of working capital is necessary for repaying short-term liabilities and conservation of a company. Efficient working capital management makes a company to respond to unexpected changes in market variables like interest rates, raw materials prices and competitive advantages of competitors. In spite of this, most organizations ignore this matter. Efficient working capital management is different from one company to another company and it depends on production, business area, commercial policies, and strategy and so on. Therefore, finding a way for efficient working capital management for an organization is very important (Apohami, 2008). Many researchers try to find factors which determine working capital of a company. In his studies, Hourijan concluded that corporate growth, corporate size and leverage affect working capital. In general, industry specifications, special corporate characteristics and financial environment are determining factors in working capital. In spite of this, there are still some companies which try to manage working capital while they do not have enough understanding of working capital determining factors. In addition to growth, leverage and corporate size, the type and size of expenditures like financial, operational and capital expenditures also affect working capital. In the present research, we try to investigate the impact of capital expenditures on working capital management considering two indices: net liquidity balance and needed working capital (Hourijan, 1965).

*Corresponding Author: Teimoor Hosseini Assl, Department of Management, Parsabad Moghan Branch, Islamic Azad University, Parsabad, Iran. E-mail: Tha_hosseini@yahoo.com .Tel: (+98) 452-7220031.

Working capital management

According to Vanhoren, working capital management is management of current assets like cash, negotiable securities, accounts receivables and inventory (Vanhoren, 1977). Osisiuma defined working capital management as adjustment and control of current assets and current liabilities balance in a company when mature obligations are fulfilled and fixed assets are used correctly. In order to manage working capital effectively, there must be two factors like essential component and favorable values in order to manage working capital effectively. Osisiuma showed that a good working capital management must achieve an acceptable relationship with different elements of working capital and achieve an efficient combination so that capital adequacy is guaranteed. Therefore, working capital management must guarantee that an acceptable level of every element of working capital must be accessible for management (Osisiuma, 1997).

Smith identified 8 effective theoretical approaches to working capital management. He emphasized on need for development of a comprehensive model with profitability and liquidity financial targets and argued that only these models will help financial managers' performance in their daily decision-making (Smith, 1973). Important elements of organizations working capitals depend on the area of business or industry they are active in. cash, debtors, receivables, inventory, negotiable securities and redeemable futures can be identified as ordinary elements of organizational working capital. In spite of this, it is important to identify factors which determine adequacy of working capital based upon growth, size, and operational cash flow and so on. Inability to identify effective factors and measurement of appropriate values of working capital may end up in organizational bankruptcy (Apothami, 2008).

Capital expenditures

Capital expenditures include long-term obligations for acquiring future benefits. Capital budgeting is one of the main elements of management decision-making. The importance of expenditures (resources) used and the time necessary for investment return makes it necessary to do exact analyses. Capital expenditures cause long-term obligations and bring future benefits. These expenditures reflect basic targets of a business unit and have important long-term impacts on its importance. These expenditures bring long-term benefits and managerial mistakes in this field may cause huge expenditures over a long period of time. Proper control of capital expenditures takes place before the expenditures are incurred. Managerial control involves receiving information on engineering estimates, expected sales volume, production costs and distribution and sales costs. Basically, management tends to make sure of improvement of financial status of business unit (Navisi *et al.*, 2001).

Research objectives

The main target of the present research is to investigate the impact of capital expenditures on calculated working capital with respect to net liquidity balance and necessary working capital.

Special targets of the research include:

- Investigation of the presence or absence of relationship between capital expenditures and working capital.
- Description of relationship between nature of expenditures and working capital.
- Investigation of the impact of different factors which affect working capital in net liquidity balance and needed working capital.
- Understanding of the application of net liquidity balance and working capital needed as the base of measurement of working capital management.
- Investigation of relationship between corporate performance and working capital management.

RESEARCH METHODOLOGY

The present research is an applied study in which present real information and statistical methods are used for investigation of relationships. It is also a descriptive study based on its methodology and correlation method was used to test the hypotheses (Khaki, 2008). Since the present research is based upon financial data, the main sources of data were financial statements like income statement, balance sheet and cash flows statement of companies registered with Tehran Stock Exchange over 2004-2008 (a 5-year period of time) and necessary information was collected by means of library study. Then, we used Excel and Eviews software to do estimations. Regression analysis was conducted using Panel data model and pooled least squares method without weight.

Statistical sample and population

Data were collected from audited financial statements of companies registered with Tehran Stock Exchange due to validity of data and ease of access. Statistical population included all companies registered with Tehran Stock Exchange over 2004-2008. In this research, limited sampling was conducted. First, we

eliminated investment companies, financial brokerage institutes and banks and credit institutes due to their special nature of activity and absence of necessary information for calculation of some of the research variables. then, other companies were selected if: 1. they were registered with Tehran Stock Exchange since the beginning of 2004. 2. Their financial period ended in 29th of Esfand (the final day of a year in solar system). They did not experience any change over the financial year. 3. Financial statements of the companies was reliable and accessible. 4. Their annual financial audit had been conducted by Tehran Stock Exchange over the time period. The statistical sample in this research included 132 companies with 660 company-year (according to table 1).

Table 1.the list of the type industries and the number of companies under investigation

row	Industry type	number	percentage
1	Agriculture and affiliated industries	1	0.76
2	Automobile and parts manufacture	20	15.15
3	Basic metals	13	9.85
4	Cement, lime and chalk	10	7.58
5	chemicals	11	8.33
6	Computer and related industries	1	0.76
7	Electrical machinery and devices	6	4.55
8	Ore excavation	2	1.52
9	Beverage and food except sugar	7	5.3
10	Industrial contractor	1	0.76
11	Machinery and equipment	8	6.06
12	Metal products manufacture	5	3.79
13	Medical, optical instruments	1	0.76
14	Excavation of other mines	1	0.76
15	Other non-metal minerals	8	6.06
16	Paper products	2	1.52
17	Petroleum products, coke and fuel	2	1.52
18	pharmaceuticals	16	12.12
19	Publication, printing	1	0.76
20	Elastic and plastic	2	1.52
21	Sugar and sugar lump	1	0.76
22	fabric	1	0.76
23	Tile and ceramics	8	6.06
24	Transportation, communication and inventory	3	2.27
25	Wooden products	1	0.76
	sum	132	100

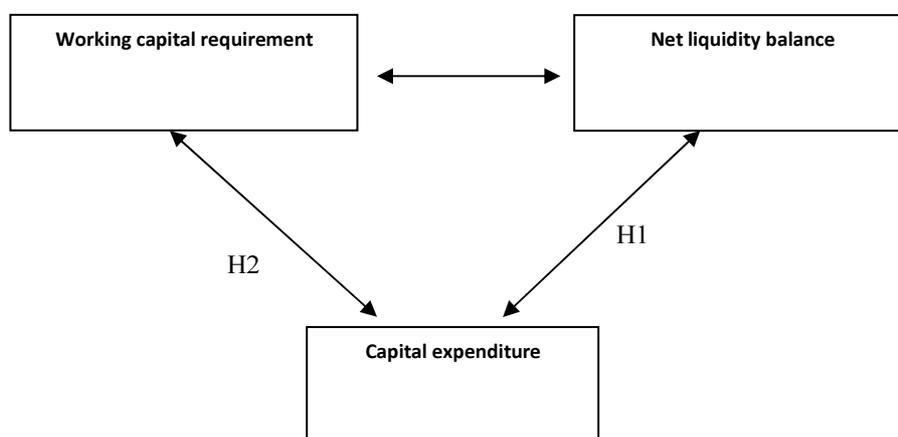
Research hypotheses

The present research has two main hypotheses:

- a) net liquidity balance has a positive relationship with capital expenditures.
- b) working capital requirement has a negative relationship with capital expenditures.

Research conceptual model

Capital Expenditures is a dependent variable in this study and the impact of net liquidity balance and working capital requirement were independent variable.



Research variables

In the present research, capital expenditures are identified and also other variables which affect working capital management will also be recognized. Most identified variables of the research have been extracted from literature on working capital management. The present research considers all of the following variables including independent, dependent and control variables for investigation of hypotheses test.

Independent variables:

Capital expenditures are one of the independent variables and include companies' expenditures spent on acquisition and increase of physical assets like property, building, machinery, vehicles and equipment. Capital expenditures are added to assets account and it depreciates economic lifelong of companies contrary to total profit. Capital expenditures are created by a company when it purchases new fixed assets or adds value to present assets for increasing economic lifelong of the company. Capital expenditures include buying assets value, the cost of transporting purchased product, insurance, legal costs and all costs needed for making assets prepared for use. Since capital expenditures are very costly and non-returnable, managers must be very careful about them.

Operational expenditures are the costs of current operation, product or system. Contrary to capital expenditures, a company is continuously confronted with operational expenditures. Operational expenditures include salary, wage, production costs like rent, rates, electricity and so on. Financial expenditures are costs spent on liabilities. Interests paid on bonds, bank loans and other long-term liabilities are considered as financial expenditures (Apothami, 2008).

Dependent variable:

Net liquidity balance = (cash and cash equivalent + short-term investment)-(short-term liability + commercial payable documents + one-year long-term liabilities). These are elements of financial decisions of a company without considering operation cycle. Therefore, they are called net liquidity balance.

Working capital requirement = (accounts receivables + inventory)-(payable accounts + unpaid realized costs+ other costs). These are concerned with operation cycle and are called working capital requirement (Apothami, 2008).

Control variables: in addition to this, the following variables also impact on working capital management: operating cash flow, sales growth, market to book value ratio and leverage measured by dividing total long-term liabilities by equity. The impacts of the above variables may be different in terms of companies, business strategy, economic environment and financial environment (Apothami, 2008).

Analytical model of the research

In the present research, we used regression analysis in order to test the hypotheses. We used mixed regression analysis. Mixed regression which is called constant coefficient model is one of the two intersections and slopes are constant and where an intersecting level of data and time series statistics are mixed in a unit column. We assume that there is no significant cross section or temporary factors (Azar, Momeni, 2006).

The general form of our model is as follows:

$$\text{Equation 1: } WCR_{it} = B_0 + \sum_{i=1}^n B_{all} X_i + \varepsilon_{it}$$

$$\text{Equation 2: } NLB_{it} = B_0 + \sum_{i=1}^n B_{all} X_i + \varepsilon_{it}$$

WORKING CAPITALR_{it}: working capital requirement for company i at time t, i=1, 2, 3, ..., 132

NLB_{it}: net liquidity balance for company i at time t, i=1, 2, 3, ..., 123

B₀: intersection point of equation

B_i: impact factor of variable X_{it}

X_{it}: different independent variables for working capital management of company i at time t

t= a five-year period from 2004 to 2008

ε=error coefficient

when general model of least squares is converted into the determined model:

equation 3:

$$NLB_{i,t} = \beta_0 + \beta_1 OPEX_{i,t} + \beta_2 FIFEX_{i,t} + \beta_3 CAPEX_{i,t} + \beta_4 M/B_{i,t} + \beta_5 Gth_{i,t} + \beta_6 D/E_{i,t} + \beta_7 OCASH_{i,t} + \varepsilon$$

equation 4:

$$\text{WORKING CAPITAL}_{i,t} = \beta_0 + \beta_1 \text{OPEX}_{i,t} + \beta_2 \text{FIFEX}_{i,t} + \beta_3 \text{CAPEX}_{i,t} + \beta_4 \text{M/B}_{i,t} + \beta_5 \text{Gth}_{i,t} + \beta_6 \text{D/E}_{i,t} + \beta_7 \text{OCASH}_{i,t} + \varepsilon$$

Where:

- NLB: net liquidity balance
- WCR: working capital requirement
- B= regression coefficient
- OPEX: operational expenditures
- FIFEX: financial expenditures
- CAPEX: capital expenditure
- M/B: market to book value ratio
- D/E: ratio of total liabilities to total assets
- Gth: sales growth
- OCASH: operational cash flow
- ε: error coefficient

Descriptive statistics of research variables

In descriptive statistics, minimum, maximum, mean and standard deviation indices were studied. Kolmogrov-Smearnov test was used to investigate normality of the variables. Because data distribution was not normal, data were normalized via taking logarithm. Descriptive statistics of research variables are summarized in table 2.

Table 2. descriptivestatistics of companies under study

SD	mean	maximum	minimum	number	variables
0.17	0.65	1.44	0.18	660	D/E
74.43	-2.68	9.47	-1911.8	660	Gth
7.78	2.98	115.85	-82.42	660	M/B
655,838.77	143,060.90	9821295	-2413332	660	OCASH
142,316.35	-330.2	696485	-1155938	660	CAPEX
159,360.13	-45,542.30	0	-1889138	660	FIFEX
131,119.39	-44,444.20	-354	-1913963	660	OPEX
1,420,189.50	527,948.10	13044864	-123960	660	WCR
1,435,375.80	-512,325.70	90441	-14413475	660	NLB

In this table, the main central index is mean, which indicates the balance point and is an appropriate index for centrality of data. For example, NLB and WCR means were equal to 512325.70 and 527948.10, respectively. Furthermore, for CAPEX, OPEX and FIFEX, these numbers were equal to 1423126.35, 131119.39 and 159360.13, respectively.

Research hypotheses test

Regression relationship between net liquidity balance and the dependent variables: capital expenditure, financial expenditure and operational expenditure and other variables has been shown in equation 3.

Table 3. Results of the first hypothesis test

significance	T statistic	coefficients		B	
		Std. Error			
0	200.7835	0.059176	11.88157		Constant
0.0054	-2.79652	0.00000097	-0.00000271		FIFEX
0.0433	2.0256	0.000000417	0.000000844		CAPEX
0.0001	4.052418	0.0000000625	0.000000253		OCASH

Coefficients (NLB)
Dependent variable: NLB

According to table 3, capital expenditure has a weak significant relationship with net liquidity balance and its regression coefficient is equal to 0.000000844 in 0.0433 significance level. This means that net liquidity balance increases by 0.000000844 for one unit capital expenditure. In addition to capital expenditure, financial expenditure and operational cash flow also had significant relationships with coefficients equal to -0.00000271 and 0.000000253 respectively. These variables also do not have the possibility of taking zero value for common factor. However, operational expenditures, financial leverage, sales growth and corporate performance (market to book value ratio) do not have any significant relationship with net liquidity balance.

First test final model was proved as follows:

$$LNNLB = 11.8815671206 - 0.00000271 * FIFEX + 0.000000844 * CAPEX + 0.000000253 * OCASH + ((CX=F$$

Regression relationships of working capital requirement and dependent variables have been shown in equation 4.

Table 4. Results of the second hypothesis test

Significance level	T statistic	coefficnets		
		Std.Error	B	
0	315.1736	0.038302	12.07176	Constant
0	-4.647828	0.0000000278	-0.00000129	OPEX
0.0006	-3.466777	0.0000329	-0.000114	GTH

Coefficients (WCR)
Dependent variable: WCR

According to table 4, results of the second hypothesis test show that there is no significant relationship between working capital requirement and capital expenditure. This means that capital expenditure does not have any role in determining working capital requirement of Tehran Stock Exchange companies and the second hypothesis is rejected.

Final model of the second test is proved as follows:

$$LN WCR = 12.0717598002 - 0.00000129 * OPEX - 0.000114 * GTH + (CX=F)$$

Conclusions

Results showed that although there is a positive relationship between capital expenditure and net liquidity balance, adjusted determination coefficient shows that this relationship is very weak. This can be as a result of the impact of other variables which are not controlled in our study (intervening variables). these variables are dependent on special conditions of companies (operational environment) and economic conditions of the society (out-of-company environment). Further, there was no linear and significant relationship between working capital requirement and capital expenditure.

This research verified the previous studies results concerning the positive relationship between working capital management and profitability. This is because previous studies verified the positive relationship between net liquidity balance as an index of working capital management and capital expenditure and capital expenditures also included long-term liabilities in order to acquire future benefits and profitability. Therefore, it can be said that the positive relationship between working capital management and capital expenditure is another convincing reason for verification of studies conducted on relationship between working capital management and profitability and corporate value.

Many companies believe that liquidity shortage must be dissolved by creating liability and borrowing money. This, however, causes borrowing and financing costs. According to Sholman and Cox, working capital management includes two elements: net liquidity balance and working capital requirement, the first one remaining idle in the company. Considering the results of the research and verification of the hypothesis (a), we can say that there is a positive and significant relationship between net liquidity balance and capital expenditure. Therefore, liquidity balance can be used for financing capital projects because it remains usually idle in company. Therefore, companies can execute their capital projects without incurring finance costs.

Considering the fact that capital expenditures are used for acquiring future benefits, companies can make use of net liquidity balance without spending excess costs for financing these projects and increase their profitability.

In order to maintain monetary value, net liquidity balance can be minimized because idle balance in a company can cause opportunity cost-a cost which is paid for lost opportunities-. Therefore, use of net liquidity balance can both reduce opportunity cost and increase corporate profitability. Corporate managers are advised to pay more attention to management of current assets and liabilities and application of capital expenditure.

REFERENCES

- Appuhami, R. (2008), The Impact of Firms' Capital Expenditure on Working Capital Management: An Empirical Study across Industries in Thailand International Management Review, Vol. 4 No. 1 , 8-21.
- Azar, Adel, Momeni, Mansour. (2006). Statistics and its applications to management, second volume, ninth printing, SAMT publications.
- Eljelly, A. (2004). *Liquidity-profitability tradeoff: an empirical investigation in an emerging market.* International Journal of Commerce & Management, 14(2), 48–61.

- Horrigan, J. O. (1965). Some empirical base of financial ratios analysis. *The Accounting Review*, July, 558-568.
- Joshi, P. V. 1995. *Working Capital Management under Inflation*, 1 Ed. Anmol Publishers, pp. 20-93.
- Khaki, Gholam Reza, (2008), *research methodology with an approach to writing thesis*, fourth edition, Baztab publications.
- Nevisi, Farshid-Nazari, Reza-Hoseini, Ahmad-Alipour, Aziz (2001), *industrial accounting*; 14th printing; Tehran: center for specialized accounting and auditing press.
- Osisoma, B. C. (1997). Sources and management of working capital. *Journal of Management Sciences*, Awka: Vol 2. January..
- Rao, R. K. S. (1989). *Fundamentals of Financial Management*. (3rd Ed). Macmillan publishers.
- Smith, K. V. (1973). State of the art of working capital management. *Financial Management*, Autumn, 50-55.
- Soenen, L.A.(1993). *Cash conversion cycle and corporate profitability*. *Journal of Cash Management*,13 (4), 53-58.
- Vanhorne, J.C. (1977). *Financial management and policy*. Englewood Cliffs: Prentice Hall International.