

THE IMPACT OF FIXED ASSETS EXPENDITURES ON WORKING CAPITAL MANAGEMENT: AN APPLICATION ON MANUFACTURING ENTERPRISES IN ISTANBUL STOCK EXCHANGE

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ABSTRACT

Working capital management which is one of the most important issues of business financing, corresponds to the business' investments which are made on economic values that can be converted into cash normally in one year while the fixed capital (capital expenditures) corresponds to the long-term investments. The aim of this paper is to investigate the investments made on fixed capital in terms of working capital management and to explore the effects of these investments on working capital management. According to the results of the regression analysis, the consequence that the fixed assets expenditure has a prominent effect on working capital management is proved.

Keywords: *Working Capital, Panel Regression, Net Liquid Balance, Capital Expenditures*

DURAN VARLIK HARCAMALARININ İŞLETME SERMAYESİ YÖNETİMİ ÜZERİNE ETKİLERİ: ISTANBUL MENKUL KIYMETLER BORSASINDA İŞLEM GÖREN İMALAT İŞLETMELERİ ÜZERİNE BİR UYGULAMA

ÖZET

İşletme finansının en önemli konularından biri olan işletme sermayesi yönetimi, işletmenin normal olarak bir yıl içerisinde nakde çevrilebilir ekonomik değerlere yaptığı yatırımı; sabit varlık yatırımları (sermaye harcamaları) ise, uzun vadeli yatırımları ifade etmektedir. Bu

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çalışmanın amacı, sabit varlıklara yapılan yatırımları işletme sermayesi yönetimi açısından incelemek ve bu yatırımların işletme sermayesi yönetimi üzerindeki etkisini araştırmaktır. Yapılan regresyon analizi sonuçlarına göre, sabit varlık yatırımlarının işletme sermayesi yönetimi üzerinde önemli bir etkisi olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: İşletme Sermayesi Yönetimi, Panel Regresyon, Net Likit Dengesi, Sermaye Harcamaları

1 INTRODUCTION

Financial management; is divided in three main fields that involves capital budgeting, capital structure and working capital management. However, it is seen when the literature reviewed that the capital budgeting and capital structure issues are studied heavily while the working capital management have not been considered much. In other words, in finance literature studies concerning long-term financial decisions conducted intensely so that the studies concerning short-term financial decision-making is limited. Yet, working capital is the measurement of business' ability to pay its short-term debts and ability to meet the sudden requirements. Therefore, working capital and its management has a great importance for businesses. Working capital management involves the degree of investment which will be made on current assets that constitutes an important part of total asset investment and the decisions about financing of these investments. An effective working capital management involves, an appropriate balancing between risk and profitability, bankruptcy risks that can occur during the process that company is fulfilling the short-term obligations, a good planning and controlling of temporary and non-temporary investments in order to prevent over-investing on components of temporary investments.

The evaluation of the investment that will be made on fixed assets, in other words capital expenditures plans have importance in terms of business' future profitability. Decisions of investment on fixed assets or capital budgeting is the analysis process of business' long-term investment projects. As it is mentioned above, the working capital is managing the short-term financial investments or debt while the fixed capital decisions are planning long-term. In this paper, it is argued that fixed assets investments and working capital management are two big financial planning which interact each other and the relation between them is tried to be determined.

While, investing only on current assets is right in terms of continuity of operating activities, it will be an obstacle for business' expanding possibilities through missing the investment opportunities. Also, investing only on fixed assets will jeopardize the continuity of operating activities of

business through creating cash problem. Due to this, capital expenditures has an prominent impact on working capital.

The aim of this paper, is investigating the fixed capital investments in terms of working capital management and exploring the impact of these investments on working capital management, in two dimensions.

In study, with the help of already mentioned two dimensions, two different econometrics models. The paper is inspired from the study conducted by Appuhami, in 2008, in Tayland based on Shulman and Cox' NLB (Net Liquidity Balance) and WCR (Working Capital Requirement) models and will be applied on businesses in Turkey. In addition to that, both national and international level studies and the econometric analyses done in the literature will be briefly mentioned in the study.

During the application phase, especially in order not to face to spurious regression problem, through conducting unit root tests the stationary of the data will be analyzed and furthermore during the fixed or random effects model selection phase the Hausman test will be applied and in accordance with model selection, panel data regression analysis will be done and the model results will be interpreted.

The hypothesizes established in the investigation will be tested on the data calculated via utilizing the financial tables covering 2007-2011 period of 141 businesses that have at least five years background, from 177 businesses that are registered in industrial index operand in Istanbul Stock Exchange. In the study, in addition to the investigated capital expenditures which is considered to have effect on NLB (Net Liquid Balance) and WCR (Working Capital Requirement), five different control variables (operating expenditures, finance expenditures, debt rate, cash flows and sale growth rate) which are also thought to have effect are added to the model.

2 LITERATURE SURVEY ON WORKING CAPITAL

In the literature review about the topic, it is located that usually the effect of working capital management on profitability is examined and the working capital management is investigated as three separate management which are cash management, receivable management and storage management. There are few studies mentioned below in the literature, considering which factors are effective on working capital management and operational capital necessity in businesses.

In the study done by Smith K. V. in USA (1973); eight different approaches that can be used in working capital management are defined, in order to develop an applicable model, the necessity of dual financial goals is

argued. These are profitability and liquid. Future plans determined either only profitability or only liquid can cause failure. Therefore, a model in which both profitability and liquid is planned, will be more effective and truer in financial managers' short-term decisions.

Consequences of investigations by Gentry et al. (1979), it is stated that theories considering the management of financial resources is insufficient and working capital decision models cannot be developed due to the fact that the literature of working capital is so limited and short-term resource management is not truly understood by scholars.

Largay and Stickney (1980), explore the working capital management of W.T Grant international company chain and determined that this company's bankrupt is inevitable since they have deficit in budget in eight of last ten years.

In the study done by Nunn (1981), the reason why different product lines need different operational capital is emphasized. Nunn, in the study where he uses quadrennial average data value, emphasizes temporary operational capital instead of continuous operational capital, determines factors related to product, sale, competition position and sector through using factor analysis.

Hawawini et al. have researched in 1986, the effects of the industry field that company activity takes place on working capital management. In the study, the analyses based on datas of 1181 American companies covering the years between 1960-1979, show that the field of industry and growth in sales affect the working capital management applications and this effect is continuous.

Fazzari and Petersen (1993); examine the integration of working capital investments during the 1975 and 1982 which are recession years for USA. The findings of examination show that the working capital is three times more flexible than the fixed assets during the recession years.

Kim et al. (1998); argue that it will be more appropriate to invest liquid assets when the foreign financial resources are expensive. According to this model, even the highest investment on liquidity will be less than the investment on expensive foreign resources. Hence, in time, the possibilities of growing bigger and cash flow fluctuations in future will increase the opportunities of short-term investments and cash balance of a company.

According to the study of Shin and Soenen (1998), working capital management is related to the management of the period between sailing the product which is completed with purchasing the raw material and making the collections. Therefore, it is remarked that the working capital is related to various elements in company's operational activity management (receivable

management, inventory management, commercial credit management). According to the findings of the investigation, decreasing the investments on current assets to a particular degree provides company's increase in profitability. In other words, through providing the most suitable level of current asset, company can increase profitability.

In the study done by Weinraub and Visscher (1998), an investigation among American firms between the years 1984-1993 on go better type and conservative operational capital with quarter data. According to the findings of the study, in the sectors significantly different working capital management policies are pursued. Also in the study, it is argued that the firms with low current ratio will tend to have low liquidity.

Opler et al. (1999); by utilizing the financial tables of American firms between 1974-1994 try to find out the decisiveness of stock certificates and cashes. They find out that keeping cash in the frequency distribution and horizontal section analyses is constant income-expense model. In this study, it is found that especially powerful firms and the firms whose cash flow is risky prefer keeping cash instead of assets that can provide cash inflow. Opler et al. divide firms into two as the ones have high investment opportunity and the ones do not have. They investigated the effect of increasing extra cash on working capital. It is found that in order to invest, they use most of their cash.

Narasimhan and Murty's (2001); in their study conducted in India, through focusing on important issues like increasing the activity of working capital and decreasing working capital in terms of many fields of industry, stated the necessity of increasing the efficiency of the capital.

In the study conducted in Turkey by Yücel and Kurt (2002), the relation between cash cycle period which is a means in working capital management, and profitability, liquidity and debt structure is examined. In this study where 167 firms' whose participant receipts are operand in İstanbul Stock Exchange (ISE) data between the years 1995-2000 are used, cash cycle periods, profitability, liquidity and debt structure is examined comparatively in terms of periods, sectors and the scales of the firms. According to the findings, the cash cycle period has positive correlation with liquidity rate and negative correlation with return on assets and profit capital. High leverage ratio is affecting firm's liquidity and profitability negatively and there is no relationship between cash cycle period and leverage ratio. The findings of the study presents that there is no periodical differences in cash cycle periods however in comparison to sectors and scale of firm there is a meaningful difference.

Chiou et al. (2006); investigate the components of working capital and use the NLB and WCR as criteria's for companies' working capital. As a

result, they find out that the leverage ratio and the cash flow provided from financial activities have impact on working capital management.

In the study by Kieschnick et al. (2006), the data of USA companies between 1990-2004 are examined. According to the findings of the study, the sectorial applications, the size of the firm, possible increase in future sales, the rate of existing managers in board of management from outside, the manager salaries and the rate of holding share of CEO in the company is determining the activity level of the working capital management of the company meaningfully. Also, it is another consequence of the study that working capital management has a prominent effect on firm value.

In a study done by Lazaridis and Tryfonidis (2006), 131 firms registered in Athens Stock Exchange in 2001-2004 periods are researched in terms of the relation between profitability and working capital management. The findings of the study pointed that there is a statistically meaningful relationship between cash cycle loop and gross margin. According to the conclusion of the study, there is a negative relationship between profitability and cash cycle loop which is used to measure the activity of working capital management. Also, it is determined that the decrease in gross operating profitability occurs together with the rise in the number of days of trade receivables.

Rehman (2006), has researched the effect of working capital management on firm profitability through 94 firms operand in Islamabad Stock Exchange between the years 1999-2004. In the research, different variables affecting working capital management are used. These are, average collection period, inventory turnover period, average period of payment and cash cycle loop. According to the result of the research, there is a strong negative relationship between working capital ratios and firm profitability.

Oz and Gungor (2007); in this study based on data of 68 firms which are operand in İstanbul Stock Exchange (ISE) between 1992-2005 period, the effect of accounts receivables turnover rate, inventory turnover rate, net trade cycles and pursued working capital management on firm profitability is tried to be examined. It is found through usage of panel data analysis that the receivables, payable, inventories and net trade cycle, which represents working capital management are negatively correlated with firm profitability and the sales growth and financial fixed assets have a positive and meaningful impact on profitability.

Appuhami (2008) explained the study done by Shulman and Cox (1985) as following and used the model determined by Shulman and Cox: They have reached the conclusion that determining the necessity of working capital is more reliable than ratios to determine the firm's liquidity level. According to them, classic ratios are not sufficiently consider the firm's

success and the classic net working capital cannot provide a true measurement of liquidity. Therefore, net operational capital is divided into two as NLB (Net Liquidity Balance) and WCR (Working Capital Requirement). By doing this, they argued that net working capital will be analyzed more clearly. Net working capital is defined with the concepts “net liquidity balance” and “working capital requirement” in order to guess company’s financial crises. When determining net liquidity balance, cash, financial investments and short-term debts are focused. NLB can show a company’s debt payment power through focusing on short-term financial assets and debts. When determining working capital requirement, receivables, inventories and debts are considered. In his research, Appuhami used data gained from the financial tables of 416 firms which are operand in Thailand Stock Exchange between 2000-2005 and NLB and WCR models of Shulman and Cox (1985) and he did panel data analysis. In this paper, the prior aim is to research the effect of capital expenditures on working capital management. However, all variables that are thought to have impact on working capital management are examined. These are operational expenditures, financial expenditures, cash flow, leverage rate, rate of sales and market value. In the conclusion of the study, it is determined that the rise in capital expenditures decrease the working capital that is to say there is an important negative relationship between them.

Erdinc (2008), in his study where he examined the working capital management in hospitalities, says “The structure that operational capital has as changing from sector to sector, from business to business and even from year to year and the fixed assets investments’ large place in hospitality businesses increases the importance given to operational capital”. The purpose of the study is examining the activity of working capital through determining the perspective towards operational capital in hospitality businesses. The sample of the study is constituted from randomly chosen 41 hotels among hotels practicing under the name of five star resort hotel in the city of Antalya. At the result of the done frequency distribution, it is stated that since both when the operational period is idle, it leads to decrease of profitability and when there is a deficiency in operational capital, it leads businesses lack to pay their debts, there is a necessity to balance the risk and profitability appropriately.

In the study done by Ozturk and Demirgunes (2008), the financial data of 111 production firm practicing in the metal stuff, machine and staff production sector and operand in İstanbul Stock Exchange (ISE) in 2002-2006, is examined in the framework of integrated regression model in order to determine the working capital requirement. The variables that affects working capital requirement in the study is handed considering variables like activity cash flows, financial leverage, return on assets, the size of firm and

variables in style of growth. According to the findings of the study, the leverage rate, return on assets and growth is affecting the working capital requirement in a statistically meaningful way. In spite of this, it is reached as a conclusion that activity cash flow and the size of the firm have not a meaningful effect on working capital requirement.

In the study done by Nazir and Afza (2009), data of non-financial firms which are listed in Karachi (Pakistani) Stock Exchange between the years 2004-2007 are analyzed. The size of the sample involves firms practicing in 132 non-financial field from 14 different sectors. In the study, operating cycle, leverage effect, return on assets and Tobin's q rate are determined as factors that affect working capital requirement.

Valipour et al. (2010) tried to test six different hypothesis gained by utilizing financial tables of 92 firms operand in Tehran Stock Exchange between 2000-2009. The study is done in two groups. In the first group, the effect of capital expenditures, financial expenditures and operating activity cash flow on NLB is examined. In the second group, the effect capital expenditures, financial expenditures and activity cash flow on WCR is examined. The companies are also handed separately as having high or low growth opportunity. As a result of the study, it is accepted in both of the company groups that capital expenditures have impact on working capital.

Buyuksalvarci and Abdioglu (2010); in their study practiced in manufacturing industry sector businesses operand in İstanbul Stock Exchange (ISE), tried to determine what the variables that affects working capital requirement before and during the crisis period are. In the study, data of 154 businesses practicing in pre-crisis period 2005-2007 and in crisis period 2008-2009 are used. In order to guess the created economic model the Least Squares (LS) method is used. At the result of the study, it is proved that the leverage rate and fixed assets rate affect working capital requirement before and during the crisis period negatively, the return on assets rate does not affect working capital requirement in pre-crisis period while it affects in the second year of crisis period negatively, the stock turnover rate affects working capital requirement in crisis period negatively while it has no effect in pre-crisis period, receivables turnover rate has no effect on working capital requirement in crisis period while it has an increasing effect in pre-crisis period.

In the study done by Coskun and Kok (2011) the effect of firms' operational capital policies on profitability is researched. In the study, the panel data set based on annual data of 74 firms which operand in İstanbul Stock Exchange (ISE) in 1991-2005 is used. As a criteria of operational capital, cash cycle period, debt collection period, debt payment period and inventory turnover period, which are corrected according to sector and as a

criteria of profitability, the return on assets is used. According to the results of the study, it is determined that there is a negative relation between cash cycle period, debt collection period and inventory turnover period and profitability and there is a positive relationship between debt payment period and profitability.

3 METHODOLOGY

3.1 The Aim of This Paper

The aim of this paper is to investigate the investments made on fixed capital in terms of working capital management and to explore the effects of these investments on working capital management.

This paper which is based on Appuhami's (2008) research using Shulman and Cox' model on businesses in Thailand applied to the businesses quoted in Istanbul Stock Exchange in Turkey. The variables of the study is determined and calculated as following based on the mentioned model.

3.2 The Variables of This Paper

Dependent Variables; Net Liquidity Balance (NLB) and Working Capital Requirement (WCR). When NLB and WCR dependent variables are calculating, the annual balance sheet of the businesses belongs to at issued year is utilized:

$$NLB = \frac{(Cash\ and\ securities) + (financial\ investment) - (short_term\ financial\ debts) - (short_term\ commercial\ debts)}{Total\ Assets}$$

$$WCR = \frac{(Commercial\ receivables) + (inventories) - (short_term\ commercial\ debts) - (short\ term\ other\ debts)}{Total\ Assets}$$

Independent Variable; is Capital Expenditures (CE). Since in our research, the effect of capital expenditures on working capital management is examined, CE is chosen as a single independent variable. While the capital expenditure is calculating, the cash flow table and the annual balance sheet of the businesses at issued year is utilized and it is as following:

$$CE = \frac{tangible\ and\ intangible\ fixed\ assets}{Total\ Assets}$$

Control Variables; are Operating Expenditures (OE), Financial Expenditures (FE), Debt Ratio (DR), Cash Received From Operating Activity (CROA) and Growth Rate of Sales (GRS). While calculating the control variables, the annual balance sheet, income table and cash flow table is used and it is as following:

$$OE = \frac{All\ Operational\ Expenditures}{Sales}$$

$$FE = \frac{\text{Financial Expenditures}}{\text{Sales}}$$

$$DR = \frac{\text{Short term debts+long term debts}}{\text{Shareholder's equity}}$$

$$CROA = \frac{\text{Cash Flow received from business main activity}}{\text{Active Sum}}$$

$$GRS = \frac{\text{current year sales}-\text{Previous years sales}}{\text{previous years sales}}$$

In order to provide all variables compatible to be described as rates, from at issued variables the NLB, WCR, CE, CROA is divided to active sum, and AE, FE is divided to sales.

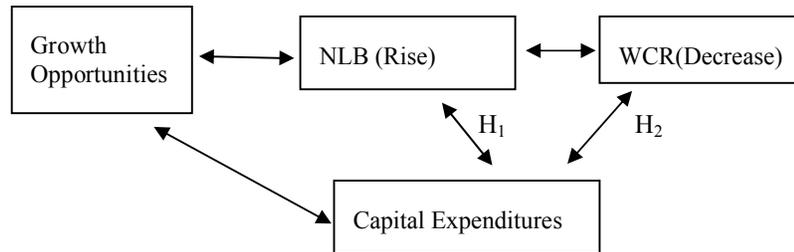
3.3 The Hypotheses of the Study

In the study businesses' in order to research the effect of capital expenditures on net liquid balance and working capital, following hypotheses are established:

H₁: There is a positive relationship between Capital Expenditures (CE) and Net Liquid Balance (NLB)

H₂: There is a negative relationship between Capital Expenditures (CE) and Working Capital Requirement (WCR).

Figure 1: Considering the Capital Expenditures in terms of Growth Opportunities



Resource: (Appuhami, 2008,s.17).

3.4 The Regression Model

In this part of the paper, in order to test the hypotheses above, including the other control variables that are thought to have impact on net liquid balance and working capital requirement, in addition to the capital expenditures, following regression equations are established:

$$NLB_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 OE_{it} + \beta_3 FE_{it} + \beta_4 DR_{it} + \beta_5 CROA_{it} + \beta_6 GRS_{it} + \varepsilon_{it}$$

$$WCR_{it} = \beta_0 + \beta_1 CE_{it} + \beta_2 OE_{it} + \beta_3 FE_{it} + \beta_4 DR_{it} + \beta_5 CROA_{it} + \beta_6 GRS_{it} + \varepsilon_{it}$$

NLB : Net Liquidity Balance } Independent Variables
 WCR : Working Capital Requirement }
 CE : Capital Expenditures → Dependent Variable
 OE : Activity Expenditures }
 FE : Financial Expenditures } Control Variables
 DR : Debt Rate }
 CROA : Cash Received from Operating Activity }
 GRS : Growth Rate of Sales }
 β_0 : Constant coefficient
 ε_{it} : Error Term

i : 1,2,3,.....,141 → Operating number(plan view sets)

t : 2007, 2008, 2009, 2010, 2011 → Years issued in analysis (time sets)

Fisher type Augmented Dickey- Fuller and Fisher type Phillips-Perron unit root tests are applied to the sets. Mentioned tests are based on integrating the p values received from unit root tests applied to each transection unit. Hence, the advantage of Fisher type tests are that for each group unit root test can be applied. So, whether some groups have unit root or not can be tested. Thanks to this advantage, in our study, in testing tests' stagnation mentioned tests are applied and following hypotheses are tested:

Tablo 1: Unit Root Test Results

Variables	Fisher Augmented dickey-fuller test	Fisher Phillips-Perron test	Fisher Augmented Dickey-Fuller test	Fisher Phillips-Perron test
	None	Trend	None	Trend
NLB	311.854	318.896	385.042	451.763
	(0.1069)	(0.0645)	(0.0000)*	(0.0000)*
LN NLB	887.356	902.695		
	(0.0000)*	(0.0000)*		
WCR	373.656	406.715	524.208	611.923
	(0.0002)*	(0.0000)*	(0.0000)*	(0.0000)*
CE	587.799	614.318	495.437	592.535
	(0.0000)*	(0.0000)*	(0.0000)*	(0.0000)*
OE	506.656	503.022	378.299	386.449
	(0.0000)*	(0.0000)*	(0.0001)*	(0.0000)*
FE	289.024	275.685	549.466	624.000
	(0.3740)	(0.5948)	(0.0000)*	(0.0000)*
LN FE	1198.32	1216.51		
	(0.0000)*	(0.0000)*		
DR	273.309	298.964	391.943	472.688
	(0.6337)	(0.2332)	(0.0000)*	(0.0000)*
LN DR	848.020	871.978		
	(0.0000)*	(0.0000)*		
CROA	707.984	760.020	471.981	560.774
	(0.0000)*	(0.0000)*	(0.0000)*	(0.0000)*
GRS	566.011	574.480	329.476	373.053
	(0.0000)*	(0.0000)*	(0.0271)**	(0.0002)*

p values are presented in parenthesis. LN variables remark the logarithmic sets' 1st difference.

* 1% significance level ** 5% significance level *** 10% significance level

As it is seen in the Table 1, it is determined that WCR, CE, OE, CROA and GRS variables are stationary in Fisher-ADF and Fisher-PP test, without constant and trend model, at %1 significance level. In other words, the sets constituted from issued variables at their own levels [I(0)] do not carry unit root.

On the other hand, it is determined that NLB, FE and DR variables are not stationary in Fisher-ADF and Fisher-PP tests, without constant and

trend model, at set level. Mentioned variables put in same tests, after their 1st differences are taken, are rescuing from the unit root and becoming stationary. Each three variable at first stag [I(1)], at %1 significance level is becoming stationary and in order to use in panel data analysis the variables that do not carry unit root is shown as LN.

In the study, in the panel data regression guesses done according to the stagnation of the sets, for both of the models (NLB and WCR) from either fixed or random effect models which will be valid is determined via Hausman test.

Table 2: Hausman Test Results

	Model NLB	Model WCR
Hausman Test	15.286	0.000
P- Value	0.0181**	0.999

According to the Hausman test results presented in Table 2; for NLB model at %5 significance level, the hypothesis which is “There are Random Effects” is rejected. In the sample of the study, since there is no statistical significance for WCR model, hypothesis cannot be rejected. Because of this, it is appropriate to choose fixed effects model for NLB and Random effects model for WCR model.

After determining the model with the help of Hausman Test, at the stage of establishing regression models for both of the models, following panel data analysis results are reached.

Table 3: NLB Model (Fixed Effects Model) Results

Model NLB	R ²		Adjusted R ²	Durbin- Watson	F	Significance (p)
	0.7083		0.6033	2.6761	6.7468	0.0000
Standardized Coefficient						
LN NLB	β	Std. Error	t	Significance		
Constant	-0.0200	0.0050	-4.0165	0.0001*		
CE	-0.3267	0.0634	-5.1573	0.0000*		
AE	0.0198	0.0081	2.4537	0.0146**		
LN FE	-0.0271	0.0111	-2.4475	0.0148**		
LN DR	-0.0066	0.0016	-4.1536	0.0000*		
CROA	0.3063	0.0264	11.5873	0.0000*		
GRS	-0.0071	0.0051	-1.3925	0.1645		
* 1% significance level ** 5% significance level *** 10% significance level						

NLB model's regression equation according to Table 3:

$$\begin{aligned}
 NLB = & -0.0200 + (-0.3267)CE + (0.0198)AE + (-0.0271)LNFE + (-0.0066)LNDR + \\
 & (0.0000)* \quad (0.0146)** \quad (0.0148)** \quad (0.0000)* \\
 & (0.3063)CROA + (-0.0071)GRS + \varepsilon \\
 & (0.0000)* \quad (0.1645)
 \end{aligned}$$

When the results in table 3 is considered, the variance analysis result that enables to test the significance of the model as a whole, as $F=6.7468$ and $p=0.0000$ significance values shows that the model is significant as whole at all levels. Furthermore, the Durbin-Watson value as 2.6761 shows that there is no autocorrelation in sets.

When we examine the table, it seen that the independent variable of the model, capital expenditures (CE) is affecting net liquidity balance (NLB) negatively. According to this result, the hypothesis of H_1 is rejected. The probable reason of this is caused by the business' desire in Turkey to make the fixed assets investments through cash and cash equivalents.

When the other control variables that are thought to have effect on NLB in the model are considered; it is seen that operational expenditures (OE) and the cash received from operating activity (CROA) affect NLB positively and the debt rate (DR) and financial expenditures (FE) affect NLB negatively. In the case of growth rate of sales (GRS) any effect on NLB, that is statistically significant has not been proven.

Table 4: WCR Model (Random Effects Model) Results

Model WCR	R ²		Adjusted R ²	Durbin- Watson	F	Significance (p)
	0.2425		0.2344	1.8692	29.7266	0.0000
Standardized Coefficients						
WCR	β	Std. Error	t	Significance		
Constant	0.2511	0.0169	14.8203	0.0000*		
CE	-0.6099	0.0839	-7.2689	0.0000*		
AE	-0.0171	0.0101	-1.6931	0.0910***		
LN FE	0.0372	0.0166	2.2379	0.0256**		
LN DR	-0.0037	0.0013	-2.8514	0.0045*		
CROA	-0.2785	0.0331	-8.4039	0.0000*		
GRS	0.0040	0.0057	0.7084	0.4790		

* %1 significance level ** %5 significance level *** %10 significance level

The regression equation of WCR model according to the Table 4:

$$\begin{aligned}
 WCR = & 0.2511 + (-0.6099)CE + (-0.0171)OE + (0.0372)LNFE + (-0.0037)LNDR + \\
 & (0.0000)* \quad (0.0910)*** \quad (0.0256)** \quad (0.0045)* \\
 & (-0.2785)GROA + (0.0040)GRS + \varepsilon \\
 & (0.0000)* \quad (0.4790)*
 \end{aligned}$$

When the results in Table 4 are considered, the variance analysis result that enables to test significance of the model as a whole, as $F = 29.7266$ and the significance level of $p = 0.000$ shows that the model is significant as a whole at all levels. Also, the value of Durbin –Watson as 1.8692 helps us to come to the conclusion that there is no autocorrelation in the sets.

When we examine the table; the independent variable of the model, the capital expenditures (CE) has affected the working capital requirement negatively. The result of analysis proves that the hypothesis which is like “there is a negative relationship between CE and WCR” cannot be rejected.

When the other control variables that are thought to have effect on WCR are examined, the operational expenditures (OE), the debt rate (DR) and the cash flow received from operating activities have affected the WCR negatively while the financial expenditures affects WCR positively. It cannot be proved if there is statistically significant effect of growth rate in sales (GRS) on WCR.

4 CONCLUSION

Working capital management is an issue which worths to pay attention in terms of using the opportunities of growth, risk and profitability for a business. An inefficient working capital management, can decrease the profitability and can lead unnecessary investment or insufficient working capital. Also, issued reasons can result for business to be under risky situations so that experiencing difficulties. Therefore, determination of ideal level of working capital is a very important topic for financial manager. In order to determine the ideal level of working capital, the determinant that affects working capital must be known. The reason and aim of this paper is to determine the determinants of working capital with reference to the importance of working capital management for a business as it is mentioned above and contributing to the literature of finance. Prior aim of this paper is to find out if there is a relationship between fixed assets investment (capital expenditures) and working capital management. But at the same time, different determinant are also added to the model and tried to examine if they have an impact on working capital management.

This paper which is based on Appuhami's research on businesses in Thailand using model of Shulman and Cox in 2008, is applied to the firms in ISE. According to the issued model; classic ratios are not sufficiently consider the success of the business and classic net working capital is not providing right measurement of liquidity. Because of this, it is argued that if the net working capital is divided in to two as NLB (Net Liquidity Balance) and WCR (Working Capital Requirement), an appropriate approach to net working capital can be reached.

This paper is an application of mentioned approach on businesses in ISE. In the study, as determinant of dependent variables NLB (Net Liquidity Balance) and WCR (working Capital Requirement); CE (Capital Expenditures), OE (Operational Expenditures), FE (Financial Expenditures), DR (Debt Rate), CROA (Cash Received from Operating Activity) and GRS (Growth Rate of Sales) is used. As a result of study, it is proved that the capital expenditures have a negative relationship on NLB and WCR. This result is overlapping with the findings of Appuhami's study in Thailand in WCR model. However, while in the issued study, the effect of capital expenditures on NLB is found to be positive, in this study in Turkey a negative relationship is found. Similarly, in a study done by Valipour and others in Tahrán, the consequence that there is negative relationship between capital expenditures and NLB is reached. This helps us to come to the conclusion that in under-developed or emerging countries the working capital management policies are still established with the classic methods that are mentioned above.

In our country, firms generally tend to finance capital expenditures with cash or cash-likes or short term foreign resources. Because of this, the net liquidity balance, NLB variable of the firms investing in a prudential way is resulted negatively. In other words, in firms in our country, rise in capital expenditures leads to decrease in net liquidity balance and working capital requirement. In this paper, based on approach found by Shulman and Cox (1985), the NLB and WCR is used as representing working capital management. According to the findings of the study, capital expenditures have an important impact on working capital management.

It is also proved that other control variables (operational expenditures, financial expenditures, debt rate, cash received from operating activity and growth rate of sales) added to the regression model of this study have effect on working capital management.

This model, can be used as a main criteria in considering the working capital management in businesses that are growing with long-terms investments and the findings of the study can set light to businesses' working capital management policies.

In future studies inspired from this paper, sectors can be handed separately and applied in developed and emerging countries so that comparisons between countries or sectors can be done. Also, the differences between the businesses that uses prudential growth opportunities and the ones that do not have investment plans can be determined in terms of working capital management.

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