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“WORKING CAPITAL MANAGEMENT AND THE IMPACT OF FLUCTUATING EXCHANGE RATES”

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ABSTRACT

WORKING CAPITAL MANAGEMENT AND THE IMPACT OF FLUCTUATING EXCHANGE RATES

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Working capital refers to the short term accounts of a company and the management of both the working capital as a whole and its single components are of vital importance through their impacts on the corporate liquidity, risk and profitability which will then directly affect firm value. Thus, not surprisingly there is a vast array of research investigating the profitability effects of working capital issues. Fluctuating exchange rates provides another highly important factor which maintains direct and indirect effects on firm profitability and value. However, although the long

term effects of exchange rate changes have been researched considerably since the last few decades, the short term effects are underexplored. In an attempt to fulfill this gap, this research thesis is mainly aimed at investigating the impact of foreign exchange rate fluctuations on the major components of working capital, on the working capital management efficiency as well as on the main operational activities of companies. Besides, the profitability effects of working capital management as well as the impact of fluctuating exchange rates on stock prices, and hence on the value of firms will also be analyzed. For this purpose, panel analysis with pooled annual data is used for a sample of 166 firms listed in Borsa İstanbul and the research is undertaken for the period of 2002-2010. The findings indicate that an increase in cash conversion cycle and a depreciation of Turkish Lira significantly enhances firm profitability and value. Besides, a depreciation of Turkish Lira is also found to significantly improve sales, increase accounts receivables and accounts payables with no significant impact on terms of purchase and sales, and shorten days in inventory. Overall the findings signal significant effects of exchange rate changes on working capital.

Keywords: Working Capital, Working Capital Magement, Cash Conversion Cycle, Foreign Exchange Rate, Profitibility

ÖZET

ÇALIŞMA SERMAYESİ YÖNETİMİ VE DALGALI DÖVİZ KURU ETKİLERİ

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İşletme sermayesi, bir şirketin kısa vadeli hesaplarını ifade etmekte olup, hem bir bütün olarak işletme sermayesinin hem de her bir unsurunun yönetimi, firma likiditesi, riskliliği ve kârlılığına etkilerinden ötürü hayati önem taşımaktadır. Nitekim işletme sermayesinin kârlılık üzerindeki etkilerini araştıran birçok araştırma bulunmaktadır. Firma kârlılığı ve değeri üzerinde doğrudan ve dolaylı etkilere yol açan bir diğer önemli konu da dalgalanan döviz kurlarıdır. Ancak döviz kurlarındaki değişimlerin uzun vadeli etkileri son birkaç on yıldır yoğun olarak araştırılmış olmakla birlikte, kısa vadeli etkilerine odaklanan pek bir araştırma bulunmamaktadır. Dolayısıyla, bu araştırma tezinin temel amacı, döviz kurlarında yaşanan dalgalanmaların işletme sermayesinin ana bileşenleri, işletme sermayesi yönetiminin

etkinliği ve şirketlerin temel operasyonel faaliyetleri üzerindeki etkilerini araştırmak suretiyle bu açığın kapatılmasına katkı sağlamaktır. Ayrıca işletme sermayesi yönetiminin kârlılığa etkilerinin yanı sıra, dalgalanan döviz kurlarının hisse senedi fiyatlarına ve dolayısıyla da firma değerine etkileri de araştırılmaktadır. Bu amaçla, Borsa İstanbul'da listelenen 166 firma yıllık veri havuzu kullanılarak panel analiz yöntemi ile 2002-2010 dönemi için incelenmektedir. Araştırmanın bulguları, nakit dönüşüm döngüsünün uzamasının ve Türk Lirasının değer kaybetmesinin firmanın kârlılığını ve değerini artırdığını göstermektedir. Ayrıca Türk Lirasının değer kaybetmesinin, satışları yükselttiği, ticari alacaklarla ticari borçları artırırken alım satım şartlarını etkilemediği ve stokların dönüşüm süresini kısalttığı bulunmuştur. Bu bulgular, döviz kuru değişimlerinin işletme sermayesi üzerinde önemli etkileri olduğuna işaret etmektedir.

Anahtar Kelimeler: İşletme Sermayesi, İşletme Sermayesi Yönetimi, Nakit Dönüşüm Çevrimi, Döviz Kuru, Kârlılık

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ABBREVIATIONS

AVERAGE ACC. REC.	Average Account Receivables
AVERAGE ACC. PAY.	Average Account Payables
BIST	Borsa İstanbul
CCC	Cash Conversion Cycle
COGS	Cost of Goods Sold
E(NCFt)	Expected Cash Flows
FL	Financial Leverage
K	Discount Rate
R	Return
S	Percentage Change
T	Time
V	Corporate Value

INTRODUCTION

The corporate finance literature has traditionally focused on the study of long term financial decisions, particularly investments, capital structure, dividends or company valuation decisions. However, working capital is an important component of total assets (Nazir, Afza, 2009a) and the management of working capital is indeed an important component of corporate financial management as it may have both negative or positive impact on the firm's profitability, which in turn, has negative or positive impact on the shareholder's wealth (Gill et al., 2010) and thus on the value of the firm.

Working capital management involves the administration, within policy guidelines, of current assets and current liabilities (Bringham, 1995) where a current asset is a claim on cash and refers to such short term assets as the cash itself and cash equivalents, accounts receivables, inventories and prepaid expenses which are expected to be received within one year while a current liability is an obligation which is due within one year and thus will either require the use of a current asset or a creation of another current liability and it covers such items as the short term bank loans and payables, wages, taxes, interest due and dividends payable. Thus current assets together with current liabilities directly promote information about the liquidity position of a company.

In working capital management content, there exists a highly interrelated relationship among liquidity, risk and profitability. A firm can improve its profitability by investing its funds in revenue generating activities instead of liquid assets such as cash and cash equivalents, accounts receivables and inventories etc., which actually constitute the current assets. However, holding insufficient levels of liquid assets will also increase the risk associated with the possibility of failing to meet short term obligations, facing stock outs and encountering interruptions in production process. On the other hand, high level of current assets may reduce the risk of liquidity associated with the opportunity cost of funds that may have been

invested in long-term assets (Afza, Nazir, 2007). That is, holding too much liquidity will work to reduce the risk at the cost of decreased profitability. In fact, this trade-off between profitability and risk is the key to working capital management (Dash, Hanuman, 2009). Therefore working capital management is aimed at maintaining a balance between liquidity and profitability while conducting the day-to-day operations of a business (Falope, Ajilore, 2009) and keeping an optimal balance between each of the working capital components (Nazir, Afza, 2009b). An optimal level of working capital would be the one in which a balance is formed between risk and efficiency, and requires continuous monitoring to maintain proper level in various components of working capital (Afza, Nazir 2007).

Since an inefficient working capital management leads to blocking funds in idle assets and reduces the liquidity and profitability of a company (Reddy, Kameswari, 2004), efficient working capital management is essential for achieving both. If profit is ignored, the firm cannot survive for a longer period while if liquidity is neglected, it may face the problem of insolvency. Correspondingly, in working life as well as in financial studies working capital is generally used to understand a companies' operational efficiency and financial health.

Among the components of working capital, accounts receivable and inventory from current assets and accounts payable from current liabilities are of special importance as they compose the main portion of short term accounts, represent the areas of a business where managers have the most direct impact and are highly relevant to operational efficiency. Consequently, business success is argued to heavily depend on the ability of financial managers to effectively manage the working capital components of receivables, inventory, and payables (Filbeck, Krueger, 2005). And through combining these three important measures, cash conversion cycle which refers to the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with the sale of the product (Besley, Brigham 2005), is at the core of working capital management and is a highly comprehensive measure of working capital management efficiency and operational efficiency.

Since cash conversion cycle shortens with a decrease in average collection period and/or in days in inventory as well as an increase in average payback period, a shortening cash conversion cycle is traditionally argued to increase firm profitability.

However, it may also harm a firm's operations and reduce profitability in such situations as; a firm could face inventory shortages while taking actions to reduce the days in inventory; a firm could lose its good credit customers when reducing the average collection period; and a firm could harm its own credibility while lengthening the payable deferral period (Nobanee, 2010). On the other hand, a high cash conversion cycle would indicate a liquidity problem (Lyroudi, McCarty, 1992). So, it is actually possible to talk about two conflicting approaches specifically the aggressive working capital policy and the conservative working capital policy. The aggressive working capital policy supports that a firm may improve its profitability by reducing the proportion of current assets in total assets while conservative working capital policy argues more investment in working capital might also increase profitability (Raheman et., al 2010), and as argued by Afza and Nazir (2007), the impact of working capital policies on profitability is highly important.

Another important factor that directly affects firm profitability through its effects on a firm's real cash flows is the foreign exchange rate changes. In today's global World no matter whether it is a purely domestic firm or a multinational company, no business can avoid from the effects of changes in foreign exchange rates which mainly affects the home currency values of a firm's operating cash flows via two separate effects, specifically the competitive effect and conversion effect.

It is customary to think of only firms that actively trade internationally as having any type of currency exposure. But, actually all firms, that operate in economies, are affected by international financial events such as exchange rate changes. Even the firms that appear to be uninvolved in international trade are strongly affected by exchange rate movements, because such changes affect the competitiveness of imports and consequently the domestic market share. It is clear that the long-term cash flows of purely domestic firms can vary considerably in response to exchange rate movements. The strengthening of home currency can lead to a serious erosion of the market share, as it will cause the imports to become relatively cheaper. On the other hand, a weakening of the home currency can create a price advantage and correspondingly improve the market share. The foreign exchange exposure of a firm engaged directly in international trade is more complicated. Exporters are vulnerable in both foreign and domestic markets. Fluctuations in exchange rates will affect not only their domestic market shares, but

also their foreign sales. Importers face loss of domestic market share because of price increases of imports and the possibility of increases in the cost of inputs. In addition, commitments denominated in foreign currency such as accounts payable and accounts receivable, are affected by exchange rate fluctuations. The foreign exchange exposure of a multinational corporation is highly complicated, since it is involved in international trade and investment in many countries and at many levels.

As the preceding arguments clarify, the working capital of a firm is also under the foreign exchange exposure and thus should carefully be concerned within its management. Besides, as cash conversion cycle can simply be calculated by subtracting the average payback period from the sum of average collection period and days in inventory where all these measures are potentially affected from currency movements, it can be argued that there is potentially a strong relation among the working capital management, cash conversion cycle and foreign exchange rate fluctuations. However, although the firm profitability effects of cash conversion cycle and fluctuating foreign exchange rates are well documented streams of researches in the literature, the impact of foreign exchange rate changes on short term accounts and thus on the working capital management efficiency of firms are underexplored. Hence, in an attempt to fulfill this gap, this research thesis seeks multiple purposes. First of all, the main aim of this research thesis is to investigate the impact of foreign exchange rate fluctuations on the components of working capital, operational activities and working capital management efficiency. Additionally, the firm profitability effects of working capital management efficiency will be examined. Besides, the impact of fluctuating exchange rates on stock prices, and hence on the value of firms will also be analyzed.

The rest of the thesis is organized as follows: Chapter 1 discusses the importance of working capital and the firm profitability effects of working capital management efficiency. Chapter 2 focuses on the foreign exchange rate risk and explores the impact of foreign exchange fluctuations on stock prices. Chapter 3 is reserved to demonstrate a bridge between the first two chapters. The data, methodology and results are provided in Chapter 4, and finally Chapter 5 concludes.

CHAPTER ONE

1. WORKING CAPITAL AND WORKING CAPITAL MANAGEMENT EFFICIENCY

1.1 Working Capital

The concept of working capital refers to a firm's investment in short-term assets such as cash, marketable securities, inventory, accounts receivable etc., or simply to the current assets and the difference between the current assets and the current liabilities is called net working capital. However, since working capital policy is used to cover a firm's basic policy decisions regarding both the target levels for each category of current assets and how current assets will be financed, working capital management involves the administration, within policy guidelines, of current assets and current liabilities (Bringham, 1995) and as Sayılgan (2003) points the amount of the needed working capital, the distribution of the items that constitute working capital as well as the financial resources and the terms of funding to cover the current assets are among the major concerns of working capital management. So, as also argued by Aksoy and Yalçıner (2005), from a wider perspective working capital includes the management of short-term liabilities as well. Thus, it can be concluded to deal with the current assets and the current liabilities and hence the below listed elements can be argued to constitute the working capital;

1. Cash
2. Marketable Securities } Cash Equivalents
3. Banks
4. Accounts Receivable
5. Inventories
6. Prepaid Expenses

7. Accounts Payable
8. Short-term Bank Loans and Current Portion of Loans Payable
9. Current Income Tax Payable
10. Short-term Provisions
11. Unearned Revenue

1.1.1 Determinants of Working Capital Requirements

There are various factors such as nature of the business/industry, scale of operations, seasonality, production cycle, business cycle, cash conversion cycle, terms of purchase and sales, operational efficiency, growth prospects, competition, tax issues, inflation and cost of capital that affect the working capital requirements of firms. The working capital need of a firm will increase or decrease based on these factors among which the most important ones are discussed below.

1.1.1.1 Production Cycle and Nature of the Business/ Industry

The management of working capital and hence its requirements differs from industry to industry and one of the basic factors that determine the working capital requirements of a firm is the nature of the business/industry. The period needed to convert raw materials and semi-finished products into the finished goods is referred as the production cycle and as it increases, due to higher levels of inventories, working capital requirements will also increase and vice versa. For example, as it will take a lot of time to convert raw materials, intermediary and semi-finished goods into finished goods, manufacturing firms will generally need to invest in the inventories for a longer time while trading firms will generally need to hold less inventory as the goods are usually sold within a short time following its purchase. Further, as in services industry there is either no or very low inventory, one of the main components of working capital is either already avoided or negligibly low. Besides, the companies that produce non-durable products can keep lower inventory levels than durable goods producers. It should also be kept in mind that holding inventory is not free and contain many cost items inhabited in the ordering and carrying costs.

The competitiveness of the industry is another determinant of working capital requirement as it directly impacts the inventory levels, credit terms, service quality etc. In general it can be argued that as the competition gets tougher, to ensure customer satisfaction, firms will need to carry higher levels of inventory to meet timely delivery of goods, provide better services and may need to soften its credit terms offered to its customers, all of which will work to increase the working capital needs of a firm.

1.1.1.2 The Scale of Operations, Growth Prospects and Inflation

Scale of operations and working capital has a direct linkage and it is generally accepted that big corporations need more working capital while less will be sufficient for smaller ones. Increases in sales are highly associated with proportional increases in the components of working capital and thus with increases in scale of operations. In accordance, growth will also lead to higher working capital requirements as it fosters the scale of operations. A noteworthy point is that due to such factors as full employment of factors of production and economies of scale, the relationship between working capital requirement and scale of operations need not to be linear. Another point worthy to mention is that as inflation means a rise in the general price level it will translate into higher working capital requirements since more capital will be needed to maintain the prevailing scale of operations. Besides, as maintaining the daily operations of the corporation become harder in inflation periods, firms may prefer to keep more liquidity causing working capital requirements to increase.

1.1.1.3. Business Cycle

In a booming economy, as the demand for goods and hence the sales increase, more working capital will be needed since increasing sales will translate into more inventory, accounts receivable and payable and the reverse will occur during recessions.

1.1.1.4 Seasonal Factors

Seasonal factors such as the seasonality of the demand or the availability of the inputs will impact the working capital needs of the firms as well. For example, firms with stable demand and production during the whole year will also have continuous supply and sales, and accordingly will need less working capital compared to firms that face with seasonal factors since they will probably need to carry high inventory levels. In case that the raw materials or the product itself are abundant in some seasons which can easily be seen in such sectors as food and beverage, firms generally need to carry higher inventory levels in order to utilize from lower prices and to gather a chance of economies of scale by buying and/or selling in huge amounts. However, when the purchase amounts are smaller and the purchasing time is frequent, the working capital requirement is lower as well than the case of bigger purchase amounts and longer ordering period. On the other hand, it should not be dismissed that the purchase expenses are lower and inventory expenses are higher for the longer ordering period and huge purchase amounts.

1.1.1.5 Terms of Purchase and Sales

Firms that sell on credit will proportionally need higher working capital as they need to finance the accounts receivables. Likewise, firms that can purchase on credit can reduce their working capital requirements. However, it should be noticed that as Karadağlı (2013) clarifies if there exists an early payment discount option, delaying of accounts payables may turn out to be costly for the firm and if the firm fails to make the payment latest at the due date, the firm's credit reputation and profitability can be deteriorate. It should also be noted that for firms selling on credit the terms of the credit and the performance of the accounts receivables management is crucially important.

1.1.1.6 Operational Efficiency and Cash Conversion Cycle

Operational efficiency basically deals with a firm's main operational activities arising from its core business and how efficiently they are managed such as procuring and financing the inputs and managing accounts payables effectively,

producing the goods and services and managing the inventories effectively as well as selling the finished goods quickly and collecting the receivables effectively. So the efficiency ratios of accounts receivable turnover[1], inventory turnover[2] and accounts payable turnover[3] are important tools to manage and to control the operational efficiency. However, as receivables, inventories and payables constitute the most important components of a firm's net working capital, these ratios are also vital for working capital management efficiency. In general, a decrease in average collection period and/or inventory days in and/or a decrease in average payback period is accepted as an improvement in the working capital management efficiency of a firm. Besides, as also argued by Filbeck and Krueger (2005), business success heavily depends on how effectively a firm manages its receivables, inventory and payables. And through combining these three important measures, cash conversion cycle (CCC)[4] which refers to the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with the sale of the product (Besley, Brigham, 2005), is at the core of working capital management and is a highly comprehensive measure of working capital management and operational efficiency. An increase in cash conversion cycle indicates that the funds will be blocked in working capital for a longer time period and hence the firms with higher cash conversion cycles will, in general, hold higher working capital requirements while a decrease in cash conversion cycle refers to enhanced operational efficiency and thus requires less working capital in general[5].

[1] Accounts receivable turnover ratio measures how many times a firm "turns" (collects) its accounts receivables into cash on average during a period, usually a year, and can be calculated by dividing the sales to average accounts receivables. It can also be calculated in day terms, that is, how many days it takes for the firm on average to collect its accounts receivables which is then called as average collection period and can simply be calculated by dividing 365 to accounts receivable turnover ratio.

[2] Inventory turnover ratio shows how many times a firm "turns" (sells) its inventory in monetary terms to sales on average during a period, usually a year, and can be calculated by dividing the cost of goods sold to average inventory. It can also be represented in day terms, that is, how many days it takes for the firm on average to sell its inventory which is then referred as days in inventory and can simply be calculated by dividing 365 to inventory turnover ratio.

[3] Accounts payable turnover ratio indicates how many times a firm "turns" (pays) its accounts payables on average during a period, usually a year, and can be calculated by dividing the cost of goods sold to average accounts payables. It can also be calculated in day terms, that is, how many days it takes for the firm on average to pay off its accounts payables which is then called as average payback period and can simply be calculated by dividing 365 to accounts payable turnover ratio.

[4] CCC = Average Collection Period + Days in Inventory – Average Payback Period

[5] A detailed discussion on working capital management efficiency and cash conversion cycle is reserved for Section 1.2.

1.1.2 The Importance of Working Capital Management

Firms need to hold working capital due to the cash flow disharmony between earnings and expenditures, the due dates for these inflows and outflows and the failure to fully know that amounts and since working capital consists of funds which are linked up to the production factors through the production of the product till receiving the earnings from its sale, as Padachi et al. (2008) argued, working capital can be regarded as the lifeblood of a firm.

If the corporation does not consider the working capital management seriously, they will probably face severe difficulties both in the short term and in the long term. Sometimes these difficulties may cause vital damages and the corporation can even go bankruptcy as there is a cost of working with insufficient working capital such as;

- Not working in full-employment level
- Deductions in production
- Increase in the cost of production
- Being not able to meet the demand at the desired time and with the desired quality level
- Inability to pay for obligations.

It would also be worthy to remind that the investments firms make in short-term assets, and the resources used with maturities of under one year, represent the main share of items on a firm's balance sheet (Garcia-Teruel, Martinez-Solano, 2007) and unlike the case for plant and machinery, it is not possible for a firm to reduce its current assets via renting or leasing (Afza, Nazir, 2007).

It is clear that keeping enough working capital amounts is really important for the corporate performance and avoids possible risky situations. Correspondingly, in working life as well as in financial studies working capital is generally used to understand a companies' operational efficiency and financial health.

Working capital is known as life giving force for any economic unit and its management is considered among the most important functions of corporate

management (Raheman et al., 2010). Through dealing with the working capital, short-term financing and the relationship between a firm's current assets and current liabilities (Karaduman et al., 2010), a major purpose of working capital management is to keep sufficient liquidity to sustain operations and to meet obligations (Eljelly, 2004). Management of working capital is an important component of corporate financial management because it directly affects the profitability of the firm (Gill et al., 2010).

1.1.2.1 Liquidity and Working Capital Management

Liquidity refers to the degree of assets convertibility into the money (Aksoy, Yalçıner, 2005) indicating that the higher an asset's ability to be converted into cash without losing value easily and rapidly, the more liquid that asset is. Liquidity is at the core of a firm's operations as it not only enables firms to continue their daily operations without interruptions, but also is compulsory to meet the expenses and the debts.

1.1.2.2 Liquidity, Risk and Profitability

Eljelly (2004) argues that profitability decreases due to excess liquidity. A firm can earn more if it invests its funds to revenue generating activities instead of liquid assets such as cash and cash equivalents, accounts receivables and inventories. On the other hand, holding insufficient levels of liquid assets will also increase the risk. For example, maintaining high inventory levels will reduce the costs of possible interruptions in the production process and loss of doing business due to scarcity of products (Mathuva, 2010) where as excessive investment in inventories will unnecessarily tie up the cash that could otherwise be invested in revenue generating activities. In sum, liquidity and profitability are in an inverse proportional relation while risk and profitability are in a direct proportional relation. So, while riskiness level decrease, profitability become lower as well. Holding too much liquidity will work to reduce the risk at the cost of decreased profitability and investing less in working capital will increase the profits as well as the associated risk. This trade-off between profitability and risk is the key to working capital management (Dash, Hanuman, 2009) which aims at maintaining a balance between liquidity and profitability while conducting the day-to-day operations of a business (Falope,

Ajilore, 2009). Thus, the working capital management policies are highly associated with the firm's liquidity, riskiness and profitability as well as operating efficiency.

1.1.3 Working Capital Management Policies

Theoretically, based on its investment and financing strategies, a firm can follow an aggressive working capital management policy or a conservative working capital management policy which affect the profitability, liquidity, risk, and thus the value of the firm differently (Javid, Zita, 2014). An aggressive working capital policy may be adopted by holding a low portion of total assets in the current form and/or, from financing decision side, a high portion of liabilities in the form of short term obligations (Nazir, Afza, 2009b). Otherwise, the firm is said to follow a conservative working capital policy.

It is argued that the greater the investment in current assets, the lower the risk in terms of meeting short term obligations, whilst gaining lower profitability due to the inability of investing in the profitable long-term investments (Nazir, Afza, 2009b) while low levels of current assets lead to a lower level of liquidity and stock outs causing difficulties in maintaining operations smoothly (Horne, Wachowicz, 2004). Correspondingly, aggressive working capital policies are mostly associated with higher risk and higher return while conservative working capital policies are associated with lower risk and lower return (Gardner et al., 1986 and Weinraub, Visscher, 1998). However, although the aggressive working capital management policy supports that reducing the investments in working capital will improve firm profitability by reducing the proportion of current assets in total assets; conservative working capital management policy argues more investment in working capital might also increase profitability (Raheman et al., 2010). Anyway, given the highly interrelated relationship between liquidity, risk and profitability, efficient management of working capital is vital in the overall corporate strategy in creating shareholder value (Nazir, Afza 2009a).

1.1.3.1 Working Capital Management Efficiency

Through its effects on profitability, risk and hence the value of the firm, the importance of efficient management of working capital is undeniably important in certifying each component of the working capital is at the best efficiency level to

successfully operate and is highly enviable for a firm's growth and sustainability (Tsagem et al., 2014) and consequently is a fundamental part of the overall corporate strategy (Padachi, 2006).

Efficiency of working capital management not only enhances the performance of firms through allowing them to redistribute underutilized resources to higher valued use (Aktaş et al., 2015) but also involves the planning and controlling of the current assets and the short term liabilities in a such a way that enables to meet short term obligations while preventing overinvestment in these assets (Eljelly, 2004).

Among current assets and liabilities, although short term bank loans are critical as it represents a claim to current assets that is payable within twelve months, accounts receivable and inventory from current assets and accounts payable from current liabilities are of special importance as they represent the areas of the business where managers have the most direct impact, compose the main portion of short term accounts and are highly relevant to operational efficiency. Hence business success is argued to heavily depend on the ability of financial managers to effectively manage the working capital components of receivables, inventory, and payables (Filbeck, Krueger, 2005).

Additionally cash is another main component of working capital. So the effective management of cash also constitutes one of the most important components of the working capital management. Cash management aims at offering the optimum money amount without letting cash deficits or surpluses (Berk, 2003) and at evaluating cash flow cycle in the best way, taking information in each step, interference and optimize the cash flow cycle (Erdoğan, 1989). Thus, cash management is based on the overall cash conversion cycle (Yücel, Kurt, 1997). Besides, through combining the vital components of a firm's liquidity and short term operating efficiency, cash conversion cycle is also at the core of working capital management (Karadağlı, 2012), can be efficiently used as a measurement of liquidity as a dynamic tool instead of liquidity ratios such as current[6] and quick[7] ratios (Richards, Laughlin, 1980) and is widely accepted as a significant measure of

[6] Current Ratio = Current Assets / Current Liabilities

[7] Quick Ratio = (Cash and Equivalents + Marketable Securities + Accounts Receivable) / Current Liabilities

= (Current Assets – Inventories) / Current Liabilities

working capital management efficiency (Lyroudi, McCarty,1992 and Gentry et al., 1990, Karadağlı 2012, etc.) as well.

1.1.3.2 Working Capital Management Efficiency and Cash Conversion Cycle

Following the aforementioned arguments, it is no doubt that efficient working capital management is vital for the success of a business as it is highly associated with a firm's operating efficiency, liquidity, riskiness and profitability. Thus efficient working capital management is expected to contribute positively to a firm's value (Nazır, Afza, 2009b).

Cash conversion cycle (CCC) shows the time period between expenditure for the purchase of the inventories and the collection of claims arising from sale of finished goods and can easily be calculated by subtracting the accounts payable period from the summation of the inventory turnover period and the receivables collection period:

CCC = Average Collection Period + Days in Inventory – Average Payback Period (1.1)

Average collection period indicates how many days on average it takes for a firm to collect its accounts receivables and can be calculated as:

Average Collection Period = 365 / Accounts Receivable Turnover (1.2)

where accounts receivable turnover ratio measures how many times a firm, on average, "turns" its accounts receivables into cash within a year, and can be calculated as:

Accounts Receivable Turnover = Sales / Average Accounts Receivable (1.3)

As can be easily followed from the equations (1.2) and (1.3) there is an inverse relationship between the accounts receivable turnover ratio and the average collection period calculated in days. An increase in the accounts receivable turnover ratio means that a firm turns its accounts receivable into cash faster and since now it takes a shorter time, on average, to collect the receivables, the average collection period in days decreases and vice versa. Therefore both ratios are regarded as a good indicator of the receivables management and operational efficiency.

Days in Inventory shows how many days on average it takes for a firm to sell its inventory and can be calculated as:

$$\text{Days in Inventory} = 365 / \text{Inventory Turnover Ratio} \tag{1.4}$$

where inventory turnover ratio measures how many times a firm, on average, "turns" its inventory to sales within a year, and can be calculated as:

$$\text{Inventory Turnover} = \text{Cost of Goods Sold} / \text{Average Inventory} \tag{1.5}$$

A comparative examination of the inventory turnover ratio and days in inventory signifies an inverse relationship. An increase in inventory turnover ratio indicates that a firm turns its inventory into sales faster and since now it takes a shorter time, on average, to sell the inventory, days in inventory decreases and vice versa. Therefore both ratios are considered to be good indicators of inventory management and operational efficiency.

Average payback period presents how many days, on average, it takes for a firm to pay off its accounts payables and can be calculated as:

$$\text{Average Payback Period} = 365 / \text{Accounts Payable Turnover Ratio} \tag{1.6}$$

where accounts payable turnover ratio measures how many times a firm, on average, "turns" its accounts payables through paying them within a year and can be calculated as:

Accounts Payable Turnover = Cost of Goods Sold / Average Accounts Payable (1.7)

Accounts payable turnover ratio and average payback period calculated in days are inversely related as well. An increase in the accounts payable turnover ratio indicates that a firm pays off its accounts payable faster and since it takes a shorter time, on average, to redeem its payables, the average payback period in days decreases and vice versa. Therefore both ratios are regarded as a good indicator of cash management and operational efficiency.

Following the above explanations it is possible to rewrite the Equation (1.1) as:

CCC = Average Acc. Rec. x 365 / Sales + Average Inventory x 365 / Cost of Goods Sold – Average Acc. Pay. x 365 / Cost of Goods Sold (1.8)

A visual presentation of cash conversion cycle is provided in Figure 1.

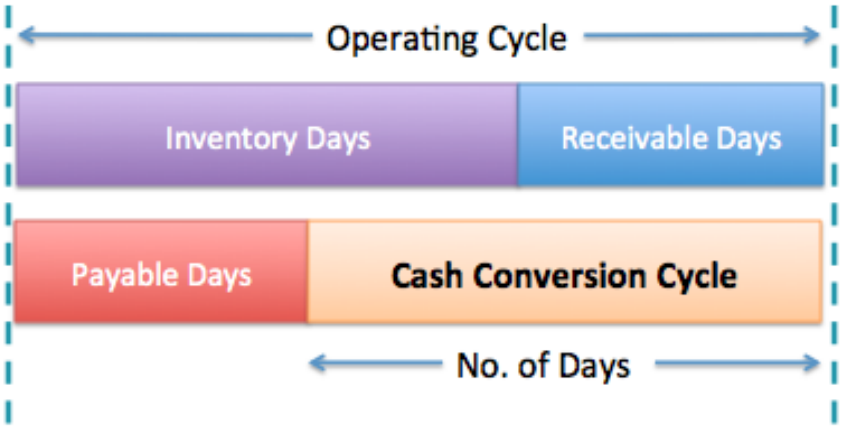

Figure 1 Visual Explanation of Cash Conversion Cycle

Source: http://financetrain.com/cash-conversion-cycle-ccc/

Efficiency of working capital management is based on the principle of speeding up collections as quickly as possible and slowing down disbursements as slowly as possible (Nobanee, AlHajjar, 2009b) which can be achieved via;

- Finalizing production and selling goods as quickly as possible which will reflect in a higher inventory turnover ratio, a shorter days in inventory and hence a shorter cash conversion cycle,
- Speeding up the collections which will result in a shorter average collection period and thus a shorter cash conversion cycle,
- Postponing the payments which will cause a longer average payback period and a shorter cash conversion cycle.

The conventional argument is that a shorter cash conversion cycle will enhance profitability through improved efficiency of working capital management while a longer cash conversion cycle will deteriorate profitability as the funds, ceteris paribus, will be blocked in working capital for a longer time (Gentry et al. 1990, Nobanee 2010). However, as Nobanee and AlHajjar (2009b) argue shortening the cash conversion cycle can also harm a firm's profitability since;

- reducing the inventory collection period may increase the shortage cost,
- reducing the receivable collection period may cause the firm to lose its good credit customers and
- lengthening the payable period could damage the firm's credit reputation

A shorter cash conversion cycle is associated with high opportunity cost while a longer cash conversion cycle is associated with high carrying cost (Nobanee 2010). For example, trade credits may create an incentive for customers to acquire merchandise at times of low demand (Emery, 1984), may attract new customers (Lazaridis, Tryfonidis, 2006), can work as an effective price cut (Peterson, Rajan, 1997) and may help to get large orders (Cheng, Pike 2003). On the other hand, reducing the average collection period may also cause loosing good credit customers (Nobanee, AlHajjar 2009a) while difficulties in collecting payments from customers will cause delays in receiving the cash that could otherwise be used in paying debts and/or financing investments, and thus may deteriorate a firm's cash management

(Karadağlı 2013) and profitability. Further, reducing the average collection period may also cause loosing good credit customers (Nobanee, AlHajjar 2009a). Or, lagging payables will provide more available cash to be used for financing revenue generating activities and thus improve profitability but may also damage credit reputation and harm profitability in the long run (Nobanee, AlHajjar 2009b). Besides, if there is an early payment discount option case, it may turn out to be costly for the firm (Karadağlı 2012). Alternatively, maintaining sufficiently high levels of inventory will reduce costs of possible interruptions in the production process and prevent loss of doing business due to scarcity of products (Mathuva, 2010). But overinvesting in inventories will unnecessarily block the funds in working capital that could otherwise be invested in revenue generating activities or cutting prices too much to sell and move out inventory may result in a loss for the company (Karadağlı 2013). In fact, corporate profitability might decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers (Gill et. al 2010).

1.2 Empirical Evidence

There are lots of studies that examined the relation between working capital and company performance. For example, Belt and Brain (1985) examined the cash conversion cycle and its components for a sample of firms composed from different sectors such as manufacturing, mining and trade corporations in between the period of 1950 to 1983 and found that the cash conversion cycle of wholesaling and retailing firms are shorter than manufacturing while the shortest cash conversion cycle is obtained for mining firms. Further they also reported that while the cash conversion cycle decreases persistently for nondurable goods where there is an unstable but still decreasing CCC trend for durable goods in the examined period of time.

Lyroudi, Mc Carty (1992) investigated the liquidity of small companies operating in 66 different industries for the period 1984-1988. For the sample selection, they considered the most frequently encountered small business with a capital of less than

1.000.000 dollars and focused on the relationship between cash conversion cycle and current and quick ratios. Their results indicate that for wholesale industry the relation between cash conversion cycle and current ratio as well as quick ratio is positive while for the services industry the relation between cash conversion cycle and current ratio is negative while cash conversion cycle and quick ratio is positively correlated.

Shin and Soenen (1998) used Net Trade Cycle to search for the relation between working capital management and corporate profitability for the period of 1992-1996 and concluded that management team can decrease the number of days in accounts receivables and inventories to increase the value of a company for the shareholders while Coşkun and Kok (2011) focused on cash conversion cycle as in many studies by using a sample of 74 manufacturing companies that are listed in Borsa Istanbul for the period 1991-2005 and found a negative relation between cash conversion cycle and average receivables period and inventory turnover period, and a positive relation between accounts payable period and profitability. In another study, Yücel and Kurt (1997) researched the linkage between cash conversion cycle return on asset and return on equity and found a negative relation with CCC for a sample of 167 companies listed in Borsa İstanbul for the period of 1995-2000.

Lazaridis, Tryfonidis (2006) reported a negative relation between CCC and profitability in the study of 131 listed companies in Athens Stock Exchange in between 2001-2004 for large scale firms, Garcia-Teruel, Martinrz-Solano (2007) by carrying their study for small and medium enterprises in Spanish Market, found the same with Lazaridiz and Tryfonidis' study. Oz and Gungor 's study (2007) for 68 firm which are traded in Borsa İstanbul during the period of 1992 to 2005 found a negative relation between the components of CCC and corporate profitability.

Karadağlı (2013) analyzed the impact of working capital management on the profitability of 169 Turkish firms for 2001-2010 period by using panel analysis and reported a negative relation between cash conversion cycle and company performance in terms of both accounting and market measures of company performances and found that a shortening in average collection and payment periods cause an increase in company performance in terms of operating income and stock

market returns while a decrease in inventory turnover in days causes an increase in company performance in terms of stock market returns.

CHAPTER TWO

2. FOREIGN EXCHANGE RISK

2.1 Foreign Exchange Risk and Exposure

The sudden changes in foreign exchange rates create compulsory effects on companies' financial standings and in practice it is commonly observed that fluctuations in the value of money translate into profits and losses through their effects on such aspects as the value of its assets and liabilities where the most direct impact will be on the foreign ones, the short term oriented cash flows arising from contractual receipts and payments denominated in a foreign currency, the long term oriented cash flows and the competitive position of the company. For example, if the value of the home currency increases the products of the domestic firms will become more expensive which will not only harm the competitiveness of the domestic exporters in foreign markets but also will weaken the competitiveness of all the domestic firms, including even the purely domestic ones, in the domestic market as well. The opposite argument will hold if instead the home currency depreciates. Besides, domestic firms may also be affected by the soaring inflation rates caused by unstable values of home and host currencies and competitors who can catch up the opportunity from foreign exchange value changes while doing business, can decrease the cost of production while the domestic companies can barely keep this cost stable. Changes in exchange rates may affect not only the operating cash flows of a firm by altering its competitive position but also the home currency values of the firm's assets and liabilities (Eun et al. 2012) such as foreign currency denominated cash, bank deposits and receivables as well as loans and payables. Additionally, the domestic currency values of land and equipment as well as the land and property may also change with exchange rates. Further, in case that a company has foreign branches or subsidiaries, the domestic currency values of intercompany fund

transfers will also change. Likewise, foreign direct investments also inherit foreign exchange exposure. It would also be worthy to remind that not only the commodity markets are exposed to foreign exchange risk but financial markets face with foreign exchange exposure as well. Commodity markets will be affected by those fluctuations in raw materials price and energy prices while financial markets will be affected by those fluctuations in currency rates, inflation and interest rates etc. Actually there is a risk of being short[8] or long[9] on a currency for any particular period of time arising from the possibility that the amount paid in one currency to buy another will change in unfavorable direction (Mengütürk, 1994). Correspondingly, companies can position themselves as;

- Cash inflow > cash outflow => long position
- Cash inflow < cash outflow => short position
- Cash inflow = cash outflow => square position

Since a long position in any foreign currency corresponds to a positive net exchange position in that currency, it creates vulnerability to depreciations in that foreign currency while a short position in any particular foreign currency is vulnerable to appreciations in that foreign currency as it corresponds to a negative net exchange position in that currency.

All the above arguments signify that exchange rate changes can systematically affect the value of the firm and therefore important for managers of a firm to pay careful attention to foreign exchange exposure and to design and implement appropriate hedging strategies in order to stabilize the firm's cash flows and enhance the value of the firm (Eun et al. 2012).

Coupled with the accelerated globalization of international trade, finance and investment activities, the associated foreign exchange risk and the related exposure as well as their importance are accelerated as well. Thus the impacts of exchange rate fluctuations are at the center of international financial management for a long time. However, contrary to their importance and accompanying popularity, the concepts of foreign exchange risk and foreign exchange exposure are still highly confused in terms of their natures and measurements and often mistakenly used interchangeably. In fact, as also argued by Levi (1996), they are conceptually completely different:

[8] refers to selling that foreign currency
[9] refers to buying that foreign currency

Foreign exchange risk is related to the variability of domestic currency values of assets, liabilities or operating incomes due to unanticipated changes in exchange rates whereas foreign exchange exposure refers to the sensitivity of changes in real domestic currency value of assets, liabilities or operating incomes to unanticipated changes in exchange rates, i.e. refers to what is at risk.

The term "exposure" used in the context of foreign exchange means that a firm has assets, liabilities, profits or expected future cash flow streams such that the home currency value of assets, liabilities and profits and the present value in home currency terms of expected future cash flows changes as exchange rates changes where the risk arises because currency movements may alter home currency values (Buckley, 2004). And depending on the nature and the scope of the risk associated with the foreign exchange movements, it is possible to classify the foreign exchange exposure under three types.

2.1.1 Types of Foreign Exchange Risk

There are three types of currency risks that are transaction risk, accounting risk and economic risk. Although all the risk types arise from the exchange rate changes, the transaction exposure is concerned with how exchange rate changes will affect the value of future cash flows denominated in foreign currency relating to transactions already entered into, usually arises from contractual transactions and has a short term focus whereas economic exposure is concerned with the effects of unexpected foreign exchange fluctuations on the future cash flows of a company, has a long term focus and has substantial effects on the market value of the firm. On the other hand, the accounting (or the translation) exposure refers to the potential that the firm's consolidated financial statements can be affected by changes in exchange rates where the consolidation involves translation of subsidiaries' financial statements from local currencies to the home currency (Eun et al. 2012). Hence, unlike accounting risk both the transaction and the economic exposures arise from cash flows and consequently are argued to represent real exposures. Economic exposure represents the broadest measure of foreign exchange exposure with a focus on long term cash flows and transaction exposure through focusing on short term cash flows, is sometimes referred as short term economic exposure.

2.1.1.1 Transaction Risk

As Mengütürk (1994) argues foreign exchange transactions involve cash flows and to fully describe the cash flows associated with a foreign exchange transaction it is necessary to know the direction, the currencies, the amounts and the timing of cash flows.

In foreign exchange transactions, the contract date and the delivery date are often different. The date that a foreign exchange transaction is contracted is known as the contract date while the realization of the delivery is known as the maturity date or the value date. In international transactions, there is usually a 2 days' difference from contract date to maturity date which is needed for payments to be done in between countries. The time term creates two different concepts; the spot and the forward rates. If the transaction of payment is done in between 2 days, it is called as a spot transaction while if this time period takes longer, it is called as a forward transaction.

Transaction risk is basically associated with indented foreign currency payments. While the international transactions are done, usually unless the national currencies of the both parties are the same, the currency denomination can be the currency of the either parties or the currency of a third country, often via a major currency such as U.S. dollar and euro. Thus, with the exception of holding the same currency, at least one of the countries will be exposed to foreign exchange risk from that transaction.

Typically transaction risk arises as a result of such activities;

1) A repayment in terms of a foreign currency
2) Payments made by the subsidiaries of foreign firms
3) Sales or purchases of goods or services which are priced with a foreign currency.

Since companies are affected from the respective values of international currencies, their cash flows both as a benefit or a cost will be impressed by exchange rate movements. The main risk for transactions arises from the changes in the exchange rate values from the present date and the settlement date. Because of the fact that all of the cash inflows and outflows carry a transactions risk, the risk management is underlined from a transaction (Kula, 2003) where the risk arises as a result of making the transactions on credit instead of on cash. In today's highly globalized world as forward transactions are almost the norm, managing the

transaction exposure becomes even more vital. In transaction exposure management there is a wide array of options that a firm may prefer to use. One of these options is the strategy of doing nothing (Giddy, Dufey, 1992) or in other words going naked. Although under this strategy the firm hedges no risk, it can be a suitable option if the cost of exchange risk is smaller than the transaction cost (Seyidoğlu, 1997). Especially if it is possible to estimate the direction and the amount of changes in the exchange rates, taking risk could sometimes be a better choice and thus hedging decisions should be made by the management team. On the other hand, if the firm decides to hedge the foreign exchange risk it is exposed to, there are various alternative instruments corresponding to internal and external corporate methods which offer many techniques such as arranging and fitting the due dates and the currency types of the payables and the receivables (Jacque, 1996) or using derivative instruments where a detailed discussion on the hedging techniques is provided in Section 2.2.

2.1.1.2 Accounting Risk

Like purely domestic firms, all companies including the multinationals should keep their accounting records with one currency type, specifically the local currency. The reason of this is to create a systematic view and do not face any translation fault. However, exchange rate changes will alter the local currency values of many assets and liabilities as well as receipts and expenses denominated in foreign currencies and the potential effects of exchange rate changes on the financial statements of firms are known as the accounting or the translation risk.

When a firm has foreign subsidiaries, the assets and liabilities as well as revenues, costs and profits of these subsidiaries are generally first recorded in the currency of the country in which they are recorded whereas for preparing the consolidated financial statements the parent firm has to translate these financial values recorded in foreign currencies to its own currency while changes in the exchange rates result in changes in translated values (Eun et al. 2012). Accounting risk occurs because of the necessity of preparing the accounting records with local currency and arises from the value changes of assets and liabilities due to changes in the foreign exchange rates. Hence, it is caused by the translation of the current assets,

fixed assets and liabilities which are specified and worked as foreign currency to the local currency for the purpose of doing accounting records.

There are two opposing views towards accounting risk. The first one argues that accounting risk is a kind of paper based risk and do not have a real direct effect on the company while the second view supports that although accounting risk is a paper based risk, it shows the financial status of the company so it directly affects its value and thus should not be neglected.

2.1.1.3 Economic Risk

Economic risk initiates the risk which is caused by the sudden and unexpected fluctuations of currency value effects on companies' future cash flows and hence on its corporate value. In a sense, it can be regarded as the overall effect of exchange rate changes on the firm profitability and value.

The economic and transaction risk differentiates from each other due to the fact that the transaction risk is attached with known and short term contractual payments but economic risk is attached with unknown and long term cash flows. Thus as being the broadest definition of exchange rate exposure, management of economic risk can be argued to be more important because it contains the short term transaction risk and the accounting risk as well. Since the currency changes not only create uncertainties but also impact the operational cash flows and the main aim of the financial manager is to increase the shareholders wealth or in other words the value of the company, the management team of companies should be careful and take steps for building a long term strategy perspective.

2.2 Risk Management & Hedging

Companies can manage corporate value, cash flow and profitability by using different methods and strategies to hedge from sudden and unexpected exchange rate fluctuations (Abuaf, Schoess, 1988).

Firms usually start the process of doing international business by engaging in international trade with one, few or more countries. So that, settling them to the flouting foreign exchange starts to be a success and alteration factor. Then the next

steps are to search funds internationally, open branches and/or subsidiaries. To gain competitive advantage, the risk management should consist of floating exchange rate and all of the other risk factors (Ahn, Falloon, 1991). It should not be disregarded that if unexpected currency fluctuations are realized in industrialized countries, it will affect the whole world.

Companies are taking some position by looking at their cash inflows and outflows. All companies remember that taking the true position offers an opportunity to be in safe. However, if a company could not arrange its position in accordance with cash inflows and outflows, losing money can become an inevitable result.

If companies can decrease the effects of exchange rate fluctuations on their cash flows and control continuously, they have a big chance to protect the image, the profit margin and the value of their company. Thus, companies, by hedging themselves from the negative effects of exchange rate fluctuations, can gain competitive advantage, protect company's future corporate value and provide consistency about their decisions (Jacque, 1981).

There are actually two reasons why foreign exchange risk management play an important role for companies; the first one is achieving the stability of cash flows (Jacque,1981) and the second one is protecting the corporate value. The two factors are linked with each other because the corporate value is defined as a function of expected future cash flows' and formulated as;

$$V=E(NCFt)/(1+k)t \tag{1.9}$$

where V denotes corporate value, E(NCFt) denotes expected cash flow, k denotes the discount rate which is used to regress cash flows into the present and t symbolizes the time.

From the above equation it can be clearly followed that to increase the corporate value, a firm should increase the value of cash flows and/or decrease the rate of discount (Buckley, 2004).

Hedging is a method of protecting themselves in case a loss occurs when doing foreign exchange transactions. Hedging could be done in spot and forward markets. As an illustration for a better understanding of hedging, if a Turkish investor expects that American dollar will appreciate, than this investor will purchase

American dollars and puts it into Turkish banks. Thus, Turkish investor benefits from translation difference while earning an interest yield. Then, investor has an opportunity to use his/her money when the need arises.

In formulating their hedging decisions, companies should not ignore such factors as the size and the cost of hedging as well as the choice of the instruments and the respective effectiveness of them. There are various options a firm can utilize in hedging the foreign exchange risk which can be classified as the intercorporate and the external hedging methods.

2.2.1 Intercorporate Hedging Methods

Doing foreign trade with national currency is related to doing the international trade activities' by the use of domestic currency. It is the easiest attempt to save company from the exchange risk. However, this option is not easily available for most of the emerging and underdeveloped country firms since their national currencies have tiny trading volumes and accordingly far away from being a major currency. Besides, this will only help that firm to eliminate its foreign exchange exposure but now its counterparty will carry the whole risk. Thus, in general, those transactions create an unfair utility imbalance among the sides. Although the currency choice seems to be an unfair utility, it is used as a hedging method. When an amount of receivable and thus payable arise, the two sides of the contract can deal with the foreign exchange currency choice by looking at the due dates, the amounts of the receivable and payable amounts as well as the foreign exchange rates. If two contractors agree with this deal, the currency choice would be realized. Another alternative can be the use of mixed currency invoicing method where half of the amount is billed in one party's domestic currency and the other half is billed in the other party's.

The use of an exchange rate insurance which aims at protecting the companies from the losses that will occur in response to exchange rate fluctuations is another available option. However, this insurance is not provided in every country.

Going Naked is another option for hedging in which the trader does not own any or enough underlying security to hedge himself/herself from the unfavorable price movements of the underlying security. Because of not owing the underlying

security, the trader has to pay out the liability at which price the other party quotes. So parties in general put a hedging method in their trade contracts to avoid unknown or such kind of unlimited cost of losses.

In the matching and offsetting method, the firm regardless of its size, matches its accounts payables and receivables in the same currency type and thus balances its foreign exchange inflows and outflows. The reason of balancing cash flows with the same currency is to protect the company toward foreign exchange risk. However, of course there are some difficulties of this method. The conditions of currency types and amounts as well as the settlement dates limit the effective use of this technique. For implementation of this hedging method, the finance department, the international trade department and also the sales and marketing department should keep in touch.

Acquiring an offsetting asset method is a kind of deactivating the obligations by holding an offsetting asset. For this deactivating process the acquired currency have to be in the equivalent size. There are also some strategic troubles of using this method, such as, losing opportunity when the home currency appreciates. Besides, implementing this method requires extra effort in terms of both time and money.

Multilateral netting method is generally used for decreasing the transaction costs in multinational companies' ongoing working platforms. As multinational companies have many branches and subsidiaries, the transaction amounts can create huge costs after balancing account receivables and payables. By the use of multilateral netting the company transfers the net amount of money to the clearing center and then the clearing center redistributes these funds collected in various currencies from all the units back in their local or preferred currency. Thus, the use of this method not only saves company from unnecessary proceeding but also prevents huge transaction costs.

As most of the companies, especially the multinationals work with different countries, they generally deal with different currencies. So arranging the due dates of receivables and payables constitute another important concern which can be adjusted with the use of leading and lagging of the cash flows. For example, if a company has a huge amount of payable which will put it into trouble, it can ask from the other group company to speed up the receivables.

Another possible option is to form a portfolio which includes several foreign currency types. So when there is a foreign exchange fluctuation, there could not be a

certain loss or a gain. This implementation is a kind of hedging method for companies to protect themselves from unexpected fluctuations via linking all single currencies with the other currencies so that the devaluation of a single currency does not have any negative effect on the portfolio, unless each and every currency face with devaluation.

Diversification method is actually the key especially for economic risk. A company wishing to hedge economic risk can diversify its sales, expenditures and production. Diversification of sales will result in the use of different currencies and hence is an implicit way of forming a currency portfolio described above. Diversification of expenditures can be argued to be the ideal way of doing business in international arena as it improves the capability of changing the road of your activities from one country to the other by looking at the exchange rates and the other costs. While sourcing from different countries, flexibility of doing business in more than one country could help firms to diversify their expenditures. Besides, for manufacturing companies, diversification of production is another option.

2.2.2 External Hedging Methods

In the external hedging methods, companies have to benefit from outside rather than using its own capability. For this purpose the most widely used alternatives are the forwards, futures and options.

Currency forwards and currency futures are similar in the sense that they both represent contracts designed to buy or to sell a specified amount of a specified currency at a predetermined price at a predetermined future date. However, while forwards are custom-based contracts that are traded in over-the-counter markets, futures are standardized in terms of amounts and delivery dates, and are traded in organized markets. Although firms usually prefer futures due to lower costs and easiness, sometimes because of their standardization can choose to go with forward contracts to get rid of strict limitations. On the other hand, though currency options are also contracts that are designed for the purchase or the sale of a specified amount of a specified currency at a predetermined price at a predetermined future date just like the futures and the forwards, as indicated by the term “option” which means chance of choice, options give the buyer the right but not the obligation to complete

the transaction while the seller of the option is obliged to obey the decision of the buyer. However, as the buyer of the option pays a premium in advance to buy this right to choose, options are the most costly alternative. But unlike forwards and futures, options keep the opportunity to make a profit if the exchange rate changes in the opposite direction.

2.3 Empirical Evidence on Foreign Exchange Risk of Firms

Foreign exchange exposure of firms is an extensively researched topic in the literature. Although some studies suggest weak or no exposure such Griffin and Stulz (2001), some other studies such as Glaum et al. (2000) and Dominguez and Tesar (2006) demonstrate significant exposure. Besides, many other studies provide empirical support for the fact that exchange rate risk is priced at stock markets (Korajczyk, Vaillet, 1992; Ferson, Harvey, 1994; Dumas, Solnik, 1995; Choi et al., 1998; De Santise, Gerard, 1998; Doukas, et al., 1999).

For example Jorion (1990), based on a sample of 287 U.S. firms, found that 5.2% of the firms are affected from foreign exchange fluctuations negatively and their exposure increases as their overseas sales increase. A decade later Solano (2000) reported similar findings as well and showed that changes in the exchange rates affect 20% of selected group of firms. As an additional finding, Solano (2000) also indicated that the level of exposure decreases when the firm size gets bigger. Besides, Allayannis and Ihyring (2001) examined the effect of fluctuating exchange rates on 82 American industrial corporations and found a significant impact. Additionally, Amihud (1993) investigated 32 American exporter firms during the period 1979-1988 and found that foreign exchange fluctuations have deferred effects manifested itself within the first and the third period of the year. In another study, by examining 153 American firms for 1989-1997 period, Chow et al. (1997) reported that the effects of currency movements on earnings per share show itself for longer than six months. Moreover, for a sample of 171 Japanese firms, He and Ng (1998) searched for the deferred exposure of foreign exchange rate changes examined in terms of export rates, firm size, market value and dividend payout ratio of firms and indicated that 26% of the firms are open to economic effects of currency fluctuations while the openness show a positive correlation with export rates.

The foreign exchange exposure of Turkish firms is also investigated considerably where most of them report significant exposure. For example, Muradoğlu and Metin (1996) found that stock returns are expected to increase as exchange rates increase and Kasman (2003) showed a long-run stable relationship between stock indices and the U.S. dollar. In another study, Kandır (2008) found that exchange rates affect all of the portfolio returns. Further, the findings of Karadağlı (2015) indicate that a depreciation of Turkish Lira against euro and U.S. dollar significantly deteriorates firm value in the current month with a significant positive impact for the next month where the overall impact is concluded to be value enhancing.

CHAPTER THREE

3. FOREIGN EXCHANGE EXPOSURE and WORKING CAPITAL MANAGEMENT

This chapter is devoted to build a bridge between the first and the second chapters through explaining how fluctuating exchange rates can affect the working capital of a firm. As discussed in chapter one, working capital refers to the short term accounts of a firm and as Karadağlı (2013) argues, the efficiency of working capital management is one of the major concerns in evaluating the overall health of a company as it is strongly associated with a firm's liquidity, operating efficiency, riskiness, profitability and value. On the other hand, as explained in Chapter 2, fluctuating exchange rates through implicitly or explicitly affecting the cash flows of a firm, have a direct impact on firm profitability and thus value. As reviewed in the first two chapters, both arguments are widely researched in the literature and found considerable empirical support. However, although working capital refers to the short term accounts of a company, the past empirical research on foreign exchange exposure of firms concentrate on long term effects. As Mengütürk (1994) argues, if the long term profitability and the survival of a firm are the issues, then the question of economic exposure must be addressed whereas transaction exposure via focusing on how currency changes will affect the value of future cash flows denominated in foreign currency relating to transactions already entered into, addresses the impact of exchange rate fluctuations on short term cash flows. But the short term effects of fluctuating exchange rates which are mainly reflected in a firm's working capital are surprisingly underexplored in the literature. Yet, since working capital is an essential concept for the healthy ongoing process of a company and in creating a profitable establishment and since current assets and current liabilities are the keys to measure the financial strength of a company, understanding how they are affected by currency

fluctuations will help companies to create a clear vision. In accordance, in an attempt to fulfill this gap, this research thesis is aimed to investigate the impact of fluctuating exchange rates on working capital of firms.

3.1 Possible Impacts of Currency Changes on Working Capital of Firms

The first instruments which will be affected by the fluctuations in the foreign exchange rates can be argued to be the cash and the semi-liquid assets as well as the short term debt. So being under the exposure of foreign exchange rate changes is an inevitable result for the components of working capital. The possible impacts of currency changes on the main components of working capital are discussed in this section.

3.1.1 Cash and Cash Equivalents

Cash on hand or in bank accounts are the most liquid instruments among the current asset accounts, and cash equivalents refer to the investments which can readily be converted into cash without a loss in the value. So, cash equivalents constitute highly liquid assets that can easily be sold in the market such as bonds and stocks. Since a depreciation of the home country's currency indicates a value loss of the domestic currency while an appreciation will cause an increase in the value of the domestic currency, fluctuating exchange rates directly impact the value of cash and cash equivalents.

3.1.2 Inventories

Inventory accounts are semi-liquid assets that keep the records of the raw materials, semi-finished and finished goods. Thus they represent the portion of assets which are either ready or soon will become ready for sale. Since the turnover of inventory forms one of the primary sources of revenue generation and subsequent earnings for the company's shareholders, inventories can be regarded as

one of the most important assets of a business. The prices of raw materials and work-in-process products directly affect the production costs and hence the sales price of finished goods. Remembering that in the course of purchasing the inputs and selling the final goods, they are all be priced in the current day's values on the market, the market prices of all those items are under the effect of foreign exchange rate changes.

3.1.3 Account Receivables and Payables

Accounts receivables and accounts payables are related with the sale and the purchase of products on credit respectively. One party's account payable is the other party's receivable. The creditor and the debtor will usually have a contractual agreement for the sales' value or vice versa buying value of that good or service. In case that these accounts are denominated in a foreign currency, the domestic currency values of these contractual payments will change with the currency movements. Thus if the creditor and the debtor do not use a value fixation method on their contract or unless they hedge the exchange rate risk, they will be affected from the foreign exchange rate changes and will have to face the exchange rate difference.

Besides, through affecting the competitive position of the company, exchange rate changes will have a direct impact on the future market shares and sales and hence on the accounts receivables and payables as well as inventories.

3.1.4 Short Term Bank Loans

Foreign exchange fluctuations will mainly impact those companies that obtained credits in a foreign currency. So, as the exchange rate changes, the domestic currency values of the loans and hence the installments will change as well. Besides it would be worthy to note that, through their impact on inflation, fluctuating exchange rates will also affect the real values of all the credits opened in domestic currency or in foreign currencies.

3.1.5 Wage Bills

Wage bills play a part in routine charges. Maintenances contract, health and safety expenses, salary payments etc. are the examples of wage bills. If those expenses are to be made in a foreign currency, they will be under the impact of foreign exchange rate changes.

3.1.6 Taxes

Fluctuations in foreign exchange rates may have an indirect effect on taxes which can be better explained with an illustration. Assume that a Turkish exporter sells its products in U.S. dollars in international markets. If the Turkish Lira (TL) depreciates against the U.S. dollar, its sales revenue will increase in TL terms which will in turn translate into higher profits ceteris paribus and thus increased taxes payable.

An examination of the above explanations may lead to the conclusion that the most effected components among all current assets and liabilities from the foreign exchange rate fluctuations are the account receivables, the inventories and the account payables which is also consistent with the argument that the success of a business heavily depends on the ability of financial managers to effectively manage the working capital components of receivables, inventory, and payables (Filbeck, Krueger, 2005). Thus, through combining these three important measures, cash conversion cycle is also under the exposure of foreign exchange risk.

3.2 Possible Impacts of Currency Movements on Cash Conversion Cycle

Cash conversion cycle refers to the length of time from the payment for the purchase of raw materials to manufacture a product until the collection of account receivable associated with the sale of the product (Besley, Brigham 2005) and combines the accounts receivable turnover, inventory turnover and accounts payable turnover of a company. Mathematically, as presented in the equations 1.1 and 1.8:

CCC = Average Accounts Receivable*365/Sales + Average Inventory*365/GOGS – Average Accounts Payable*365/ COGS

and thus:

CCC = Average Collection Period + Days in Inventory – Average Payback Period

However, as the preceding arguments clarify all these measures are potentially affected from currency movements. The natural result is that, cash conversion cycle can also be potentially affected from the exchange rate changes and accordingly there is potentially a strong interrelation among the working capital management, cash conversion cycle and foreign exchange fluctuations.

For example, a depreciation of home currency will not only enhance the competitive position of the home country's firms both in the local market and in the international arena thus fostering the sales which will in turn translate into higher accounts receivables, inventories and accounts payables ceteris paribus but will also result in higher revenues obtained from international sales in terms of home currency where the first effect is known as the competitive effect and the latter one is referred as the conversion effect. On the other hand, if home currency appreciates, the products of the domestic firms will become more expensive which will not only harm the competitiveness of the domestic exporters in foreign markets but also will weaken the competitiveness of all the domestic firms, including even the purely domestic ones, in the domestic market as well. Likewise, the costs and thus the competitiveness of importers will directly be influenced form the exchange rate changes as well. Besides, firms may also alter their inventory levels in accordance with the exchange rate movements in order to capture a cost advantage.

As deeply discussed in Chapter 1, cash conversion cycle is a widely-accepted measure of working capital management efficiency and has strong relation with a company's liquidity, risk and profitability. Thus, cash conversion cycle is also a highly comprehensive measure of operational efficiency. Hence, getting financial information by looking at cash conversion cycle will help an investor to get information about important financial checkmarks.

A shorter cash conversion cycle generally correlates with higher profitability and increasing working capital management efficiency. Thus, an increasing cash conversion cycle should be carefully analyzed and monitored. However, although exchange rate changes potentially affect the cash conversion cycle and thus the working capital management efficiency of firms, this relationship has not been investigated in the literature. But given the importance of both topics that are covered in the first two chapters of this thesis and the strong interrelation in between them, the lack of empirical evidence regarding the impact of foreign exchange rate fluctuations on working capital management builds up a vital concern.

Following the aforementioned arguments, in an attempt to fulfill this gap, this research thesis mainly aims to investigate the impact of foreign exchange rate movements on the components of working capital, the operational activities and the working capital management efficiency as measured by the cash conversion cycle.

CHAPTER 4

4. DATA, METHODOLOGY AND RESULTS

4.1. Data and Methodology

This research thesis seeks multiple purposes. It not only searches for the profitability effects of cash conversion cycle and thus is aimed at providing insights on whether conservative or aggressive working capital policy is more appropriate for Turkish firms in general, but also examines the impact of fluctuating exchange rates on firm value and hence is aimed to shed light on the economic exposure of Turkish firms. However, as short term assets are also under the exposure of currency movements, the main purpose of this research thesis is to provide empirical evidence on the sensitivity of components of working capital as well as main operational activities to currency fluctuations. For this purpose, panel analysis with pooled annual data is used for a sample of 166 firms listed in Borsa İstanbul and the research is undertaken for the period of 2002-2010.

In conducting the analyses, first the impact of cash conversion cycle on firm profitability is investigated. Firm profitability is measured by stock returns of firms. Cash conversion cycle which is also widely used as a measure of working capital management efficiency is calculated by subtracting the average payback period from the summation of average collection period and days in inventory. Besides, financial leverage, firm size and return on stock market index are used as control variables along with a dummy variable to account for the industry in which the firm operates.

Financial debt ratio is used as a proxy for financial leverage and is calculated by dividing the total financial debt (short term borrowing plus long term borrowing) to total assets, natural logarithm of total assets is used to control for the firm size and the return on stock market index (BIST 100) is used to control for the market movements. The market and stock returns are calculated by using the closing price data. All the relevant data is sourced from Bloomberg. Finally, two-digit industry

codes are assigned to firms based on Borsa İstanbul industry classification to control for the sectoral differences which leads to the following model:

$$R_{i,t} = \beta_0 + \beta_1 CCC_{i,t} + \beta_2 Rm_{i,t} + \beta_3 Size_{i,t} + \beta_4 FL_{i,t} + \beta_5 D_{ind} + \varepsilon \quad \text{(Model 1)}$$

where;

$R_{i,t}$: i^{th} stock's return for period t,

$R_{m,t}$: the market return for period t,

$CCC_{i,t}$: Cash conversion cycle of i^{th} firm for period t,

$FL_{i,t}$: Financial leverage of i^{th} firm for period t.

Next, the impact of currency changes on firm value is examined with the use of the model below:

$$R_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Rm_{i,t} + \beta_3 Size_{i,t} + \beta_4 FL_{i,t} + \beta_5 D_{ind} + \varepsilon \quad \text{(Model 2)}$$

where $S_{i,t}$ denotes the percentage change in the exchange rate variable for period t.

Since U.S. dollar and euro constitute the two main currencies that are used in any kind of international transactions in Turkey, for the exchange rate variable, the basket currency stated in foreign currency terms which is composed by the arithmetic average of euro and U.S. dollar, is used and the percentage change in the currency basket is calculated by using the closing price data sourced from Bloomberg.

Finally, in order to search for the impact of fluctuating exchange rates on the operational activities as well as on the working capital of firms, below models are used:

$$Sales_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 3)}$$

$$\text{Cost of Goods Sold}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 4)}$$

$$\text{Operating Income}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 5)}$$

$$CCC_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 6)}$$

$$\text{Account Receivables}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 7)}$$

$$\text{Inventories}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 8)}$$

$$\text{Account Payables}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 9)}$$

$$\text{Av. Collection Per.}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 10)}$$

$$\text{Days in Inventory}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 11)}$$

$$\text{Av. Payback Per.}_{i,t} = \beta_0 + \beta_1 S_{i,t} + \beta_2 Size_{i,t} + \beta_3 FL_{i,t} + \beta_4 D_{ind} + \varepsilon \quad \text{(Model 12)}$$

However, to determine whether fixed or random effect would be appropriate in conducting the panel data estimation of the above models, Hausman Test is applied beforehand.

4.2. Results

4.2.1 Hausman Test Result

The Hausman Test results which are provided in Table I indicate that for all models except Model 1, 5, 8,11,12 random effect is appropriate while those Models fixed effect is found to be appropriate.

Table I Results of the Hausman Test

	Prob>chi2	Model Specification
Model 1	0.0402	Fixed Effect
Model 2	0.3752	Random Effect
Model 3	0.2113	Random Effect
Model 4	0.1751	Random Effect
Model 5	0.0000	Fixed Effect
Model 6	0.6926	Random Effect
Model 7	0.2701	Random Effect
Model 8	0.0161	Fixed Effect
Model 9	0.1839	Random Effect
Model 10	0.4940	Random Effect
Model 11	0.0964	Fixed Effect
Model 12	0.0002	Fixed Effect

4.2.2. Results of Panel Analysis

The findings obtained from Model 1 and Model 2 is summarized in Table II.

Table II Impacts of Cash Conversion Cycle and Currency Movements on Stock Returns

	Model 1 Return on Stock	Model 2 Return on Stock
Cash Conversion Cycle	0.0035695*** (0.000)	
Basket Currency		4.538948*** (0.000)
Return on Stock Index	6.62393*** (0.000)	6.912057*** (0.000)
Size	-0.6013991* (0.053)	-0.1328112 (0.122)
Financial Leverage	-0.3222707 (0.484)	-0.481787* (0.064)
Industry Dummy		0.0034522 (0.810)

- Probabilities are in parentheses.
- *,**,*** represent significance levels of 10%, 5% and 1% respectively.

The findings of Model 1 indicate that cash conversion cycle has statistically significant effect on stock returns at 1% significance level where an increase in cash conversion cycle is found to enhance firm profitability and value. Thus, the results of Model 1 can be interpreted as providing support for conservative working capital policy.

The results obtained from Model 2 show that an increase in the value of the basket currency affects the stock returns positively with a significance level of 1%. Thus, the findings of Model 2 pinpoint that a depreciation of Turkish Lira enhances profitability and firm value, probably due to increased competitiveness of Turkish firms.

Next, the impact of fluctuating exchange rates on sales, cost of goods sold, operating income and cash conversion cycle are examined and the findings are provided in Table III.

Table III Impact of Fluctuating Exchange Rates on Operations

	Model 3 Sales	Model 4 Cost of Goods Sold	Model 5 Operating Income	Model 6 Cash Conversion Cycle
Basket Currency	0.1505615* (0.105)	0.1297203 (0.16)	-0.1828426 (0.423)	-3.784349 (0.918)
Size	0.2519103*** (0.000)	0.2694512*** (0.000)	0.4611345*** (0.000)	-5.252672 (0.380)
Financial Leverage	0.0475783 (0.300)	0.0441373 (0.333)	0.2175784 (0.35)	-62.00249*** (0.000)
Industry Dummy	-0.0178193 (0.214)	-0.0166521 (0.253)	n/a	-0..7771427 (0.477)

- Probabilities are in parentheses.
- *,**,*** represent significance levels of 10%, 5% and 1% respectively.

The results obtained from Model 3 indicate that an increase in the value of the basket currency increases the sales of firms with marginal significance. Thus, consistent with the findings of Model 2, a depreciation of Turkish Lira fosters sales pinpointing to enhanced competitiveness. But as the results of Model 4 and Model 5 reveal, the findings lack to provide a statistically significant impact of fluctuating exchange rates on cost of goods sold and operating income. However, although statistically not significant, the results point that as Turkish lira depreciates cost of goods sold increases and operational income decreases which can potentially arise due to increased costs and expenses. If the results of the above models are

comparatively examined, a depreciation of Turkish Lira is found to increase sales more than the cost of goods so the negative impact on operating income is probably due to increased expenses.

Likewise, as the results of Model 6 are considered, no statistically significant impact of currency movements on cash conversion cycle could be reported. However, though statistically not significant, an increase in the value of the basket currency seems to shorten the cash conversion cycle. Remembering the findings obtained from Model 1 where an increase in cash conversion cycle is found to enhance firm profitability at 1% significance level, the combined interpretation could be that a depreciation of Turkish Lira shortens the cash conversion cycle which in turn deteriorates profitability. This interpretation may provide another partial explanation to worsening operating income. Therefore, though the impact of fluctuating exchange rates on cash conversion cycle is statistically not significant, it seems promising to examine the components of the cash conversion cycle which also constitute the most important components of working capital that the managers have the most direct impact. In accordance as the final step, the impact of currency movements on the main components of working capital which also constitute all the components of the cash conversion cycle are investigated by the use of Models 7-9.

The results obtained for the impact of currency fluctuations on accounts receivables, inventories and account payables are presented in Table IV.

Table IV Impact of Currency Movements on Working Capital

	Model 7 Accounts Receivable	Model 8 Inventories	Model 9 Accounts Payable
Basket Currency	0.3272349** (0.052)	0.0407323 (0.729)	0.2782427** (0.036)
Size	0.267333*** (0.000)	0.3762959*** (0.000)	0.3017374*** (0.000)
Financial Leverage	0.1680458** (0.039)	0.0293863 (0.616)	0.176008*** (0.007)
Industry Dummy	-0.0088932 (0.561)	n/a	-0.0232754* (0.107)

- Probabilities are in parentheses.
- *,**,*** represent significance levels of 10%, 5% and 1% respectively.

The results obtained from Models 7 and 9 indicate that an increase in the value of the basket currency leads to an increase in accounts receivables and accounts payables of firms with 5% significance level while the findings of Model 8 lack to provide any statistically significant effect on inventories. However, a deeper look signifies that the industry dummy is not significant for accounts receivable, marginally significant for accounts payable and not applicable for inventories due to model specification. But considering that accounts payable reflects inventory purchases as well at least partially, it is highly probable to observe significant effects of the industry in which the firm operates on inventories. This probability pinpoints to differing effects for different sectors for accounts payables and for inventories. So, if the impact of fluctuating exchange rates on accounts payables, inventories and hence cash conversion cycle would be examined separately for different sectors, the significance of the results can change considerably. On the other hand, with an attempt to catch additional insights, finally Models 7-9 are replicated for “turn” days

content, specifically for average collection period, days in inventory and average payback period through Models 10-12 and the results are summarized in Table V.

Table V Impact of Currency Movements on Working Capital in Terms of "Turn" Days

	Model 10 Average Collection Period	Model 11 Days in Inventory	Model 12 Average Payback Period
Basket Currency	16.0487 (0.551)	-23.68918* (0.064)	-3.936934 (0.822)
Size	-3.61239 (0.290)	8.310193* (0.058)	13.05386** (0.030)
Financial Leverage	-5.69544 (0.544)	-3.414531 (0.593)	37.48771*** (0.000)
Industry Dummy	-0.4688172 (0.428)	n/a	n/a

- Probabilities are in parentheses.
- *,**,*** represent significance levels of 10%, 5% and 1% respectively.

As the results provided in Table V clarify an increase in the value of basket currency significantly shortens the days in inventory indicating that a depreciation of Turkish Lira fastens the work-in and selling processes probably due to increased sales which is found to increase significantly as Turkish lira depreciates. But no statistically significant impact could be reported for average collection and average payback periods pinpointing that the terms of purchase and sales are unaffected from currency movements.

In sum, an overall examination of the results can be concluded to signify that both an increase in cash conversion cycle and a depreciation of Turkish Lira

significantly enhances firm profitability and value. Besides, a depreciation of Turkish Lira is also found to significantly improve sales, increase accounts receivables and accounts payables with no significant impact on terms of purchase and sales, and shorten days in inventory. These results not only signals significant effects of exchange rate changes on working capital but also raises the possibility of facing differing effects for different sectors.

CHAPTER 5

5. CONCLUSION

Working capital refers to a firm's investments in short-term assets or i.e. to the current assets while the difference between the current assets and the current liabilities is called net working capital. However, since working capital policy is used to cover a firm's basic policy decisions regarding both the target levels for each category of current assets and how current assets will be financed, working capital management involves the administration, within policy guidelines, of current assets and current liabilities (Brigham 1995). So from a wider perspective, Aksoy and Yalçıner (2005) argue working capital includes the management of short-term liabilities as well.

Firms need to hold working capital due to the cash flow disharmony between earnings and expenditures with no certain knowledge on the exact dates and amounts for those inflows and outflows and since working capital consists of funds which are linked up to the production factors through the production of the product till receiving the earnings from its sale, as Raheman et al. (2010) argue, working capital is the lifeblood of any economic unit and its management is considered among the most important functions of corporate management as it directly affects the profitability of the firm (Gill, et al., 2010).

A firm can earn more by investing its funds to revenue generating activities instead of liquid assets such as cash and cash equivalents, accounts receivables and inventories. However holding insufficient levels of liquid assets will increase the risk. On the other hand, a firm may hold excessive investments in current assets to ensure liquidity which will then deteriorate profitability. In short, holding too much liquidity will work to reduce the risk at the cost of decreased profitability and investing less in working capital will increase the profits as well as the associated risk. In fact, this trade-off between profitability and risk is the key to working capital

management (Dash, Hanuman, 2009) which aims at maintaining a balance between liquidity and profitability while conducting the day-to-day operations of a business (Falope, Ajilore, 2009). Through its effects on profitability, risk and hence the value of the firm, the importance of efficient management of working capital is undeniably important in certifying each component of the working capital is at the best efficiency level to successfully operate and is highly enviable for a firm's growth and sustainability (Tsagem et al., 2014). Efficient working capital management not only enhances the performance of firms through allowing them to redistribute underutilized resources to higher valued use (Aktaş et al., 2015) but also involves the planning and controlling of the current assets and the short term liabilities in a such a way that enables to meet short term obligations while preventing overinvestment in these assets (Eljelly, 2004). Thus, the working capital management policies are highly associated with the firm's liquidity, riskiness and profitability as well as operational efficiency.

Based on its investment and financing strategies, a firm can follow an aggressive working capital management policy or a conservative working capital management policy which affect the profitability, liquidity, risk, and thus the value of the firm differently (Javid, Zita, 2014). An aggressive working capital policy may be adopted by holding a low portion of total assets in the current form and/or, from financing decision side, a high portion of liabilities in the form of short term obligations (Nazir, Afza 2009b). Otherwise, the firm is said to follow a conservative working capital policy. The aggressive working capital management policy supports that reducing the investments in working capital will improve firm profitability by reducing the proportion of current assets in total assets while conservative working capital management policy argues more investment in working capital might also increase profitability (Raheman et al., 2010).

In sum, efficient working capital management is undeniably vital for the success of a business as it is highly associated with a firm's operating efficiency, liquidity, riskiness and profitability. And, through showing the time period between expenditure for the purchase of the inventories and the collection of claims arising from sale of finished goods, the cash conversion cycle which can be easily calculated by subtracting the average payback period from the summation of the days in

inventory and the average collection period, is at the core of working capital management and is widely used as an effective measure of working capital management efficiency. The conventional argument is that a shorter cash conversion cycle will enhance profitability through improved efficiency of working capital management while a longer cash conversion cycle will deteriorate profitability as the funds, ceteris paribus, will be blocked in working capital for a longer time (Gentry et al. 1990, Nobanee 2010). However, as Nobanee and AlHajjar (2009b) argue shortening the cash conversion cycle can also harm a firm's profitability since reducing the days in inventory may increase the shortage cost, reducing the average collection period may cause the firm to lose its good credit customers and lengthening the average payback period could damage the firm's credit reputation. Actually, a shorter cash conversion cycle is associated with high opportunity cost while a longer cash conversion cycle is associated with high carrying cost (Nobanee 2010). Thus corporate profitability might decrease with the cash conversion cycle, if the costs of higher investment in working capital rise faster than the benefits of holding more inventories and/or granting more trade credit to customers (Gill et al., 2010). Following the aforementioned arguments, the first aim of this research thesis is to investigate the profitability effects of working capital management measured in terms of cash conversion cycle and to provide an insight on whether aggressive or conservative working capital policy is more appropriate for Turkish firms.

Another important factor that directly affects firm profitability through their effects on a firm's real cash flows is the foreign exchange rate changes. Movements in exchange rates may affect not only the operating cash flows of a firm by altering its competitive position but also the home currency values of the firm's assets and liabilities (Eun et al. 2012) where the first one is usually referred as the competitive effect and the latter is generally known as the conversion effect. Anyway, the sudden changes in foreign exchange rates create compulsory effects on companies' financial standings and in practice it is commonly observed that fluctuations in the value of money translate into profits and losses through their effects on such aspects as the value of its assets and liabilities where the most direct impact will be on the foreign ones, the short term oriented cash flows arising from contractual receipts and payments denominated in a foreign currency, the long term oriented cash flows and the competitive position of the company. Hence exchange rate changes can

systematically affect the value of the firm and is therefore important for managers of a firm to pay careful attention to foreign exchange exposure. Therefore another aim of this thesis is to examine the foreign exchange exposure of Turkish firms.

As Mengütürk (1994) argues, if the long term profitability and the survival of a firm are the issues, the question of economic exposure must be addressed whereas transaction exposure via focusing on how currency changes will affect the value of future cash flows denominated in foreign currency relating to transactions already entered into, addresses the impact of exchange rate fluctuations on short term cash flows. However, although there is a vast array of research that focus on the economic exposure, the short term effects of fluctuating exchange rates which are mainly reflected in a firm's working capital are underexplored in the literature. So the main aim of this research thesis is to search for the short term impacts of currency movements through concentrating on the components of working capital, the working capital management efficiency and the operational activities.

The findings indicate that an increase in cash conversion cycle significantly enhances profitability and thus provide support for conservative working capital policy. Besides, probably due to increased competitiveness, a depreciation of Turkish Lira is found to improve sales, profitability and firm value significantly. However, the findings lack to provide statistically significant impact of fluctuating exchange rates on cost of goods sold, operating income and cash conversion cycle. But, though statistically not significant, the results point that a depreciation of Turkish lira leads to an increase in cost of goods sold, a decrease in operating income and a shortening in cash conversion cycle. Since a depreciation of Turkish Lira seems to impact sales more than cost of goods, the negative impact on operating income is probably due to increased expenses. Another partial explanation can be that a depreciation of Turkish Lira shortens the cash conversion cycle which in turn deteriorates profitability through decreased operating income. So, though the impact of fluctuating exchange rates on cash conversion cycle is not statistically significant, it seems promising to examine the components of cash conversion cycle which are also among the most important components of working capital. The obtained results indicate that a depreciation of Turkish Lira significantly leads to an increase in the accounts receivables and accounts payables with no statistically significant effect on inventories. However, a depreciation of Turkish Lira is found to significantly shorten

the days in inventory pinpointing that a depreciation of Turkish Lira fastens the work-in and selling processes probably due to increased sales with no statistically significant impact on average collection and average payback periods indicating that the terms of purchase and sales are unaffected from currency movements. On the other hand, it is also found that the industry dummy is not significant for accounts receivable, marginally significant for accounts payable and not applicable to inventories due to model specification raising the possibility of facing with differing effects for different sectors.

Overall, the results not only signals significant effects of exchange rate changes on working capital but also raises the possibility of facing differing effects for different sectors. Thus, it would be interesting for future research in this field to focus on separate industries in searching for the impact of fluctuating exchange rates on working capital related topics which may not only enable to catch some possibly canceled out effects but also help to understand in which ways different sectors are affected differently.

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