The Impact of Working Capital Management on Firm Profitability: Empirical Evidence from Borsa Istanbul

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Abstract

An efficient working capital management is expected to enhance the value creation for the firms' owners. This study aims to provide empirical evidence for the relationship between working capital management and profitability of a sample of 110 manufacturing firms listed on Borsa Istanbul during the period of 2005-2014. Accordingly, the impact of working capital management on the firm's profitability is tested by using panel data methodology. Cash converison cycle which is used as a comprehensive measure for working capital management is found to have a significant and negative impact on firms' profitability suggesting that a firm may increase its profitability through minimizing its cash conversion period. In addition, the major findings of the study with respect to the individual components of working capital management reveal that while average collection period and days of inventory outstanding have a significant negative relationship with profitability, average payment period has a significant positive relation. The evidence implies that firms may improve their profitability through efficient working capital management regarding the accounts receivable, inventory and accounts payable policies.

Key Words: Working capital management, cash conversion cycle, profitability, panel data

JEL Classification Codes: G30, G31, G32

Introduction

The issue of working capital management (WCM) is related with maintaining adequate levels of working capital components, namely current assets and current liabilities. According to Evaluation Report of Sector Balance Sheets prepared by the Central Bank of the Republic of Turkey; the proportions of current assets and accounts payable in total assets for a sample of 9,110 Turkish firms, were 53.95% and 14.21% respectively in 2013. For the manufacturing firms which constitute 38.5% of the total firms, the ratios become 60.09% and 16.54% respectively. These figures indicate that the short term investment of manufacturing firms in the form of current assets and current liabilities represent a major share of total invesment on their balance sheets. As Deloof (2003) states it is not suprising that the way in which working capital is managed is an important determinant of firms' corporate performance making it an integral and important factor in financial management.

The ability of companies to maintain their operations depends on the level of investment in working capital. Firms generally decide on this level by achieving a balance between profitability and liquidity. While excessive investment in working capital may reduce profitability of firms, its shortage may result in a risk of inability to pay its obligations when they are due. According to Arunkumar and Radharamanan (2011) profitability and liquidity are two important aspects of WCM that maintaining a satisfactory level of those componenets is one of the most influential factors having impact on the firm's survival and growth. Smith (1980) and Padachi (2006) also emphasize the importance of maintaining a trade off between these two factors to create value for shareholders. They further stress that when an asset-liability mismatch occurs, it may increase either the firm's profitability at the risk of insolvency or the concentration on liquidity at the expense of profitability.

An efficient WCM is expected to contribute positively to the overall corporate strategy of maximizing the value of the owners' investment in the firm. With an efficient WCM a firm may be able to eliminate the risk of inability to meet its short term obligations when they are due and avoid excessive investment in current assets (Eljelly, 2004). It is also possible for firms to increase total funds available for further investments through minimizing the amount of funds tied up in current assets (Fillbeck and Kruger, 2005). The early work of Smith (1973) has also emphasized the importance of efficient WCM by attributing numerous business failures to inability of financial managers to plan and control properly their firms' current assets and current liabilities.

Even though the majority of the related studies are conducted in emerging countries, the major motivation of the study is limited evidence with respect to Turkey. In this context, the aim of the study is to establish a statisticallly

significant relationship between profitability and WCM for a sample of 110 manufacturing firms listed on Borsa Istanbul during an observation period of 10 years. The remainder of the paper is organized in the following manner; the next section provides recent empirical literature associated with the relationship between WCM and corporate performance. Hypothesis generation and information regarding the study's methodology and models to be estimated is provided in the subsequent sections. Then, the results of the empirical analysis are presented. Finally, fifth section discusses the concluding remarks of the study.

1. Literature Review

Even though WCM is one of the most basic topics in corporate finance it is also one of the areas in which research is too limited. The overwhelming majority of existing research has been generally conducted in emerging markets rather than developed ones. According to Etiennot et. al (2012) this is because efficient financial markets, which are pervasive in developed economies, more easily correct deviations from optimal working capital policies when compared to less effecent ones which are more common among emerging economies. Therefore managing working capital becomes more critical for the firms' performance and survival in less efficient financial markets.

Most of the previous literature provides evidence for a negative relation between the measures of WCM and profitability (Shin and Soenen, 1998; Raheman and Nasr, 2007; Arunkumar and Radharamanan, 2011 and Ukaegbu, 2014). Shin and Soenen (1998) demonstrate evidence with respect to a negative relation between the firm's net trade cycle as a comprehensive measure of WCM and its profitability by using a large sample of listed US firms for the 1975-1994 period. As an extension, the study of Gill et. al (2010) also reveals the same statistically significant relationship regarding the variables of interest for a sample of 88 American firms listed on New York Stock Exchange for the period 2005-2007. Deloof (2003) also reveals the presence of negative relation between cash conversion cycle (CCC), which is the utilized proxy for WCM, and corporate profitability for a sample of large Belgian non-financial firms. The results as of the date between 1992 and 1996 suggest that managers can create value for their shareholders by reducing the time periods of accounts receivable and inventory to a reasonable level. Similar results were also revealed in the study of Padachi (2006) for Mauritian small manufacturing firms during 1998 to 2003 that high investment in inventory and receivables is found to be associated with lower profitability.

Another study conducted in Karachi Stock Exchange supports the negative relation between measures of WCM and profitability of Pakistani firms for the period 1999-2004 (Raheman and Nasr, 2007). It is suggested that managers can add value to the shareholders' wealth by reducing the CCC to

a moderate minimum level. On the other hand, positive and significant relation between CCC and profitability has been detected by Malik and Bukhari (2014) during the 2007 and 2011 period for the Pakistani case. Furthermore, relationship between the average payment period and profitability is found to be negative which demonstrates that less profitable firms pay their bills later as compared to more profitable ones.

Lazaridis and Tryfonidis (2006) provide evidence for the impact of WCM on the corporate profitability of the companies listed in Athens Stock Exchange during the period between 2001 and 2004. They found that CCC is negatively associated with the firms' gross operating profit. They further stress that maintaining each component of working capital at a reasonable level will help managers in value creation. The findings pertaining to Japon and Taiwan are also supportive of the negative relationship between variables of interest. However, this relationship is found to be sensitive to industry factors (Wang, 2002). Additionally, evidence indicates that a firm's operating performance is enhanced through aggressive liquidity management, where more short term financing is used to finance current assets, which provides higher firm value for both countries regardless of the differences in structural characteristics or firms' financial systems.

Ukaegbu (2014) investigates the relationship between WCM and profitability for the period 2005-2009 using manufacturing firms in Egypt, Kenya, Nigeria and South Africa which represent three different groups based on their industrial performance classification that has been provided by United Nations Conference on Trade and Development. The selected countries for the analysis are classified as forerunners (Egypt), achievers (South Africa), and falling behind (Kenya and Nigeria) based on the African countries' industrial performance indicators. The results indicate that while firm profitability is negatively related with receivable collection period, it is positively related with inventory turover. However, the association between accounts payable period and profitability is found to be negative except for Egypt. In addition, an inverse relationship between CCC and firm profitability was a clear evidence for the study in selected African countries despite different industrial typologies.

With regard to the impact of WCM on corporate profitability, studies have been performed in Turkey as well. The study of Coskun and Kök (2011) provides evidence for a sample of 74 manufacturing firms listed on Borsa Istanbul during the period 1991-2005. They found that while corporate profitability is negatively related to CCC, accounts receivable and inventory periods; it is positively related to accounts payable period. Consistent results are found in the study of Vural et. al (2012) for the selected firms in Borsa Istanbul for the period 2002-2009. However, the results of the study conducted by Çakır (2013) for a sample of 52 manufacturing firms listed on Borsa Istanbul for the period 2000-2010, are not confirmative with the general expectation of negative relationship between WCM and profitability.

While the findings prove the fact that higher CCC is associated with higher profitability for the selected manufacturing firms; two sub sectors namely chemical and nonmetalic mineral products are found to exibit significantly negative correlation, when the anlalysis is performed by taking into account the industry differences.

2. Hypothesis Generation

As a comprehensive measure of WCM, this study also uses the CCC which has been one of the most widely used proxies in prior research (Wang, 2002; Deloof, 2003; Lazaridis and Tryfonidis, 2006; Çakır, 2013 and Ukaegbu, 2014). Gitman (1974) is one of the pioneers who introduced the concept of CCC as a crucial element of ongoing liquidity management. Richards and Laughlin (1980) defines the CCC as the net time interval between cash expenditures on productive resources and the time for recovery of cash receipts from sales. In other words, it is the time period required to convert a dollar of cash outlay back to a dollar of cash inflow resulting from the regular operations of the firm. A similar expression was proposed by Deloof (2003) as the time lag between the expenditures on the raw material purchases and cash receipts from the sale of finished goods.

A positive relation between WCM and firm performance might be expected since investment in inventories and receivables may lead to higher sales. According to Blinder and Maccini (1991) firms with larger inventories will be less subject to interruptions in the production process and loss of business due to stock outs. Granting trade credit may have a similar stimulating impact on sales as customers may possibly assess the quality of products and services they received prior to payment (Long et. al, 1993). Same is true for firms when they delay the payments to the suppliers. Hence, the greater the investment in working capital is, the longer the CCC and therfore, the higher the firm's profitability might be due to increasing sales. However, a large body of empirical studies (Shin and Soenen, 1998; Deloof, 2003; Padachi, 2006; Lazaridis and Tryfonidis, 2006; and Coşkun and Kök, 2014) supports the traditional view regarding the relationship between WCM and firm performance. They report that lower the investment in working capital is, the shorter the CCC and therefore, the higher the firm's profitability will be as a result. Deloof (2003) explains this relationship as the fact that when the cost of higher investment in working capital exceeds the benefits of holding more inventory and granting more trade credits to customers; the relationship between working capital and profitability might turn to negative. Therefore, firms may be able to increase their profitability by reducing the amount of funds tied up in working capital which will lead to shorter CCC. Since CCC has three components, namely the average collection period, days of inventory outstanding and average payment period; firms could also achieve a shorter CCC thruogh managing those three components independently. Consistent with the previous studies (Shin and Soenen, 1998; Deloof, 2003

and Lazaridis and Tryfonidis, 2006), a general hypothesis stating a negative relationship between the CCC and firm performance is proposed.

3. Research Design

3.1. Dataset

The dataset used in this study which encompasses the ten year period from 2005 to 2014, is extracted from the databases of Blomberg, Borsa Istanbul and Public Disclosure Platform. From all publicly listed manufacturing companies on Borsa Istanbul during the sample period, ones lack consecutive data were excluded to construct a balanced panel data model and resulting in a final sample of 110 firms and 1,100 observations. The final dataset belongs to a total of 7 sub-industries in manufacturing sector, namely Food, Beverage and Tobacco; Textile, Wearing Apparel and Leather; Paper and Paper Products, Printing and Publishing; Chemicals, Petroleum, Rubber and Plastic Products; Non-Metallic Mineral Products; Fabricated Metal Products, Machinery and Equipment; and Basic Metal Industries.

3.2. Proxies Utilized

As a proxy for the firm performance the operating profit margin (**OPM**) is used as the depenedent variable of the analysis as in the studies of Jose et. al (1996) and Wang (2002) which is calculated as earnings before interest and taxes divided by total assets. Jose et. al (1996) and Karadaglı (2012) stress the importance of using this variable to adress operational efficiency. Lazaridis and Tryfonidis (2006) further explain the reason for using this variable to associate operating success or failure with an operating ratio and relate this variable with other operating variables as CCC and its components.

As mentioned earlier in the hypothesis generation part, the independent variable of the analysis is selected to be **CCC** which is a comprehensive measure for WCM. While some components of CCC are directly extracted from Blomberg database some were calculated by using the data extracted from financial statements of the seleceted firms. Finally, CCC defined as:

CCC = Days in Accounts Receivable + Days of Inventory Outstanding – Days in Accounts Payable

The components of CCC are calculated as followings:

Days in Accounts Receivable = [(Current Year Accounts Receivable + Prior Year Accounts Receivable)/2] / (Sales/365)

Days of Inventory Outstanding = 365 / (Cost of Goods Sold / Average Inventory)

Days in Accounts Payable = [(Current Year Accounts Payable + Prior Year Accounts Payable)/2] / (Cost of Goods Sold/365)

The study controls for various risk factors that have a potential to influence the association between firm performance and WCM. Based on the previous

research carried out the variables of firm size, leverage, current ratio and firm growth were assumed to have impact on firm performance, and considered to be control variables. The ratio of total debt to total assets is used as an indicator of leverage which is denoted by **LEV**. Shin and Soenen (1998), Nazir and Afza (2009), Caballero et. al (2014), and Malik and Bukhari (2014) have also included this control variable in their analysis. Firm size (**SIZE**) which is also used as a control variable in numerous related analysis (Padachi, 2006; Nazir and Afza, 2009; Caballero et. al, 2012; Ukaegbu, 2014) is measured as the natural logarithm of total assets. Following Shin and Soenen (1998), Deloof (2003), Nazir and Afza (2009), Caballero et. al (2012) and Khanqah et. al (2012), our proxy for firm growth (**S_GROWTH**) is measured as variation in annual sales value with reference to previous year's sales [$(sales_1 - sales_0)/ sales_0$]. Lastly, current ratio (current assets/current liabilites), denoted by **CR**, is employed as in the studies of Raheman and Nasr (2007) and Enqvist et. al (2014) .

Table 1 presents the summary of dependent, explanatory and control variables used in the analysis.

Table 1: Summary of the Variables used in the Analysis

Variable	Measurement
Operating profit margin (**OPM**)	Earnings before interest and taxes divided by total assets
Cash Conversion Cycle (**CCC**)	Days in Accounts Receivables + Days of Inventory Outstanding – Days in Accounts Payable
Days in Accounts Receivable (**AR_Days**)	[(Current Year Accounts Receivable + Prior Year Accounts Receivable)/2] / (Sales/365)
Days of Inventory Outstanding (**Inv_Days**)	365 / (Cost of Goods Sold / Average Inventory)
Days in Accounts Payable (**AP_Days**)	[(Current Year Accounts Payable + Prior Year Accounts Payable)/2] / (Cost of Goods Sold/365)
Leverage (**LEV**)	Total debt divided by total assets
Size (**SIZE**)	The natural logarithm of total assets
Liquidity (**CR**)	Current assets divided by current liabilities
Firm Growth (**S_GROWTH**)	Variation in annual sales value with reference to previous year's sales [$(sales_1 - sales_0)/ sales_0$].

3.3. The Methodology

Panel data which refers to the pooling of observations on a cross section of units over several time periods (Baltagi, 2001), has both a cross sectional and a time series dimension (Wooldridge, 2003). Due to the features of the sample data set which contains repeated observations for the same firms collected over several time periods, panel data has been employed as the methodology of the study.

Panel data analysis is conducted to evaluate the influence of WCM on the firms' profitability by the equation below:

$$OPM_{it} = \beta_0 + \beta_1 CCC_{it} + \beta_2 LEV_{it} + \beta_3 SIZE_{it} + \beta_4 CR_{it} + \beta_5 S\_GROWTH_{it} + \epsilon_{it} \tag{1}$$

where i denotes the cross sectional dimension and t denotes the time series dimension, ε_{it} stands for the error term.

OPM_{it} = Operating profit margin

CCC_{it} = Cash conversion cycle for firm i in year t

LEV_{it} = Total debt divided by total assets for firm i in year t

$SIZE_{it}$ = The natural logarithm of total assets for firm i in year t

CR_{it} = Current assets divided by current liabilities for firm i in year t

S_GROWTH_{it} = Variation in annual sales value with reference to previous year's sales

To examine the effects of the individual components of WCM on corporate profitability, I re-estimate Model 1 through substituting CCC by days in accounts receiavable, days of inventory outstanding and days in accounts payable. The functional form of the new regression equation is as following:

$$OPM_{it} = \beta_0 + \beta_1 AR\_Days_{it} + \beta_2 Inv\_Days_{it} + \beta_3 AP\_Days_{it} + \beta_4 LEV_{it} + \beta_5 SIZE_{it} + \beta_6 CR + \beta_7 S\_GROWTH + \epsilon_{it} \tag{2}$$

Differently from the first equation; AR_Days, Inv_Days and AP_Days denote the days in accounts receivable, days of inventory outstanding and days in accounts payable for firm i in year t, respectively.

For both of the models in the study, certain tests, the Breusch-Pagan and Wooldridge test for autocorrelation, are conducted to test for heteroskedasticity and serial correlation, respectively. Based on the results of the tests, the models are found to suffer from heteroskedasticity and

autocorrelation. Wooldridge (2003) and Verbeek (2004) suggest to use Feasible Generalized Least Square (FGLS) estimation when there is evidence for heteroscedasticity and serial correlation.

Therefore, the FGLS will be used to estimate regression equations in the panel data analysis.

4. Emprirical Analysis

Table 2 presents the descriptive statistics revealing the mean, median, standard deviation, minimum and maximum values for all the regression variables used in the analysis for a total of 1,100 firm year observation. On average the OPM which is used as a performance measure for the selected manufacturing firms listed on Borsa Istanbul over the period from 2005 to 2014 is 5.4% with a standard deviation of 8.6%. While firms grant an average credit period of 76.1 days for their customers, they pay their supppliers or creditors in 62.9 days, and it takes on average 82.1 days for inventory to be sold. Overall, the average CCC which is used as a proxy for WCM is ranged at 95.2 days. The average value of 0.457 for levarege means that on average 45.7% of the total assets of the sample firms are financed with debt. The average firm size of 5.695 which is measured by logarithm of total assets reflects an average of 957.91 million Turkish Liras in monetary terms with a minimum asset value of 6.29 and maximum of 22.37 billion Turkish Liras. Finally, the average current ratio is 2.22 and mean sales growth is only 10.9 % while median values are 1.64 and 9% respectively.

Table 2: Descriptive Statistics

Variables	# of observations	Mean	Median	dard Devia	Min	Max
OPM	1100	0.054	0.055	0.086	-0.349	0.384
CCC	1100	95.253	90.080	75.741	-249.760	524.820
AR_Days	1100	76.103	66.350	50.515	0.020	536.830
Inv_Days	1100	82.108	71.660	51.277	2.220	401.100
AP_Days	1100	62.957	53.240	45.041	0	777.180
LEV	1100	0.457	0.429	0.239	0.026	1.366
SIZE	1100	5.695	5.599	1.443	1.838	10.015
CR	1100	2.225	1.642	1.893	0.100	18.999
S_Growth	1100	0.109	0.090	0.235	-0.769	1.343

Table 3 presents the Pearson correlation statistics among variables used in the analysis to check the existence of multicollinearity which arises when there is a strong relationship between two or more independent variables. According to Gujarati (2003) it threatens the regression analysis when the pair wise correlation is higher than 0.80 between two variables. With reference to this base level it can be stated that for most of the cross corelation terms which are fairly small than that level, there is no need for concern about multicollinearity problem among variables.

The results show that profitability of the selected sample firms are negatively associated with the days in accounts receivable, days of inventory outstanding, days in accounts payable and CCC which are utilized measures for WCM. The negative and significant correlations of collection period and days of inventory outstanding with OPM indicates that as average collection or inventory holding periods increase it will have a negative impact on the profitability of the firms. On the other hand the inverse relation between average payment period and OPM is consistent with the view that less profitable firms wait longer to pay their account payables (Deloof, 2003). The negative and significant relation may also be an indicator showing that speeding up the payments to suppliers will cause higher profitability. Deloof (2003) stands this reasoning to the possibility of substantial discounts due to the early payment. The combined impact of those three individual components are jointly reflected in CCC, also shows a significant and negative association with the firm profitability. Finally, while it is observed that leverage positively affects selected firms' profitability; all other control variables have a negative and significant impact on the firms' operating profit margin.

Table 3: Pearson Correlation Coefficients among Variables

	OPM	CCC	AR_Days	Inv_Days	AP_Days	LEV	SIZE	CR	S_Growth
OPM	1								
CCC	-0.1639**	1							
AR_Days	-0.2130**	0.6179**	1						
Inv_Days	-0.1608**	0.6254**	0.1344**	1					
AP_Days	-0.1463**	-0.2767**	0.2356**	0.2376**	1				
LEV	-0.2977**	-0.2232 **	-0,0287	0,011	0.3556**	1			
SIZE	0.2907**	-0.1890**	-0.1303**	-0.1994**	-0,0554	-0,0366	1		
CR	0.2252**	0.3354**	0.1566**	0.0986**	-0.2762**	-0.6389**	-0.0980**	1	
S_Growth	0.3172**	-0.2715**	-0.2466**	-0.1982**	-0,0457	0,0409	0.0860 **	-0,0848	1
***, ** Denote Significance at the 0.05 and 0.01 level respectively**									

Table 4 reports the results obtained from FGLS regression corrected for heteroskedasticity and serial correlation that invetigates the association between profitability and WCM. The proxies utilized as a measure of WCM, namely; CCC and its three components- days in accounts receivable, days of inventory outstanding, and days in accounts payable- are seperately regressed and results for two regression models are presented in the same table for easiness of comparison. While the first column of Table 4 presents the regression results of the impact of CCC on selected firms' profitablity; the second column presents the coefficient estimates for individual components of WCM which were replaced instead of CCC in the regression equation.

Table 4:Findings as to the Relationship between OPM and WCM

Panel Data FGLS Regression		
Dependent Variable: OPM		
Estimated Coefficients (z-value)		
Variables	**(1)**	**(2)**
CCC	-0.00013	-
	(-5.32)***	-
AR_Days	-	-0.00016
	-	(-4.11)***
Inv_Days	-	-0.00010
	-	(-2.65)***
AP_Days	-	0.00008
	-	(1.91)*
LEV	-0.11229	-0.11020
	(-11.12)***	(-10.23)***
SİZE	0.01668	0.01695
	(12.06)***	(11.68)***
CR	0.00463	0.00421
	(4.57)***	(4.00)***
S_Growth	0.07369	0.07269
	(14.03)***	(13.51)***
Constant	-0.00174	0.00078
	(-0.17)	(0.07)
Number of Observations	1.100	1.100
Number of Groups	110	110
Wald chi2	805.60	745.71
Prob >chi2	0.000	0.000
Legend *p<0.10; **p<0.05; ***p<0.01		

The results reveal strong evidence that CCC is negatively related to the profitability of the selected sample firms, thereby, providing support for the prediction argued earlier in the hypothesis development part. The negative and significant coefficient for CCC implies that a firm with a relatively shorter CCC is more profitable. In line with the findings of Deloof (2003), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007), Karadaglı (2012), and Vural et. al (2012) empirical results imply that a firm may increase its profitability through minimizing its cash conversion period. The results of the second regression equation where individul components of WCM replaced for CCC reveal that there is a significant negative relationship between days in accounts receivable and firms' operating profitability. This negative relationship which is consistent with the results of previous studies (Deloof, 2003; Padachi, 2006; Raheman and Nasr, 2007; Falope and Ajilora, 2009; Gill et. al, 2010; Coskun and Kok, 2011; Khanqah et. al, 2012 and Vural et. al, 2012) indicates that shorter the average

collection period for sample firms higher will be the operating profitability for them. Through reducing credit period granted to customers, it may be possible for Turkish manufacturing firms to improve their profitability.

Regarding the days of inventory outstanding, results are in line with the prior evidence of negative and statistically significant association with the corporate profitability (Deloof, 2003; Falope and Alijore, 2009; Raheman et. al, 2010; Enqvist et. al, 2014). This finding translates into a lower profitability for firms when the holding peiod for their inventory gets longer. In other words, shorter the number of days it takes for a firm to sell its inventories, higher will be its profitability.

Findings with respect to the relationship between days in accounts payable and corporate profitability offer mix results. While some studies (Vural et. al, 2012; Akoto et. al, 2013) do not find a consistent relationship, some reports positive (Falope and Ajilore, 2009; Raheman et. al, 2010; Coskun and Kok, 2011) and majority reveals a negative association (Deloof, 2003; Raheman and Nasr, 2007; Khanqah et. al, 2012; Enqvist et. al, 2014; Malik and Bukhari, 2014). Deloof (2003) explains negative corelation as the fact that less profitable firms wait longer to pay their bills. According to Jose et. al (1996), increasing days in payables will cause losses of early payment discounts and flexibility of firm for future debt. On the other hand, Coskun and Kok (2011) support the idea of positive impact of trade credit as a less costly financing source on the profitability of firms. They state that through adapting a more conservative strategy, it may be possible for firms to increase their profitability by extending the period for paying their bills. Evidence provided by Falope and Ajilore (2009) also associates a positive relationship where the longer a firm delays its payments the higher the reserves for working capital, which can be used to generate profit, will be. At 10% significance level, this study also supports a positive relationship between average payment period and operating profitability for the sample firms. Longer the period for the selected Turkish manufacturing firms to pay their bills, more profitable they are.

Turning to the control variables, leverage is found to have a significant negative impact on the profitability of firms as in the studies of Shin and Soenen (1998), and Gill et. al (2010). This finding is also consistent with the study of Myers and Majluf (1984) in which an inverse relationship between leverage and profitability was suggested. They state that firms have a preference for internal finance rather than external finance due to the fact that the former is assumed to be affected less by asymmetric information than the latter. Therefore, as firms have more profit they will be able to use retained earnings over external finance which will lead to negative relation between profitability and leverage. Furthermore, Harris and Raviv (1991) who have summarized the available studies related with capital structure decisions of firms also conclude that in most of those studies leverage decreases with profitability.

In line with the findings of related empirical studies (Deloof, 2003; Lazaridis and Tryfonidis, 2006; Raheman and Nasr, 2007 and Raheman et. al, 2010) a positive significant relationship between size and profitability has been found suggesting that larger firms turn out to generate more profit when compared to firms in smaller size. Regarding the other control variables, sales growth is also found to be significantly associated with the profitability of selected Turkish manufacturing firms. Deloof (2003), Nazir and Afza (2009), and Khanqah et. al (2012) also concluded that sales growth is stongly correlated with the profitability of firms in a positive way. These findings support the argument of Shin and Soenen (1998), according to whom sales growth is proposed as an essential component for corporate profitability. Moreover, the results also provide evidence for a significant positive relationship between firms' profitability and current ratio, which is a theoretical indicator for the firm liquidity. It indicates that the higher the liqudity level of firms measured by current ratio is, the greater the operating profit will be regarding Turkish firms.

Conclusion

It is indisputable that working capital management is an integral part of firms' financial management. However, empirical evidence indicates that it is given less attention compared to long term investment of firms. The continuity of day to day operations of a business depends on how efficiently and effectively it manages its short term assets and liabilities. Moreover, the efficient management of individual components of workining capital is one of the factors that has influence on a firm's profitability. Through maintaining an optimal balance for the level of investment in each of those working capital components, a firm may enhance the process of value creation for its owners. While insufficient investment in working capital may lead to liquidity problems, delay in production and loss of sales, excessive investment in working capital may cause loss of investment opportunities, which has relatively greater return. In this context, the aim of the study is to shed light on the effect of working capital management on the profitability of a sample of 110 manufacturing firms listed on Borsa Istanbul during an observation period of ten years from 2005 to 2014, inclusive. With the panel data methodology, Feasible Generalized Least Square regression technique is used to estimate the relationship between profitability and working capital management.

The results provide evidence for a significant negative relationship with operating profitability and both of the days in accounts receivable and days of inventory outstanding. These findings reveal that through reducing average collection period and inventory holding periods firms may improve their profitability. On the other hand, it is found that days in accounts payable is positively associated with the firm's profitability, which suggests that the longer the period for the selected Turkish manufacturing firms to

pay their bills is, the more profitable they are. The combined impact of average collection period, days of inventory outstanding and average payment period are jointly reflected in cash conversion cycle which is used as a comprehensive measure for working capital management. The emprical analysis documents strong evidence that cash conversion cycle is also negatively related with the operating profitability of the selected firms. This implies that firms with relatively shorter cash conversion cycle are more profitable. Therefore, through minimizing cash conversion cycle firms will be able to increase their profitability.

Findings with respect to the relationship between profitability and control variables of the study indicate that all the control variables significantly affect the profitability of the sample firms. The relationship between leverage and profitability is found to be negative, which provides evidence for the sample firms that the amount of debt firms use decreases with increasing profitability. On the other hand all the other control variables, namely; size, sales growth and current ratio are found to have positive impact on the profitability of the selected firms. These findings support the ideas that larger firms turn out to generate more profit when compared to smaller firms and significant correlation between sales growth and profitability makes it an influential factor for corporate profitability. Moreover, the positive association with the current ratio indicates that higher the liqudty level of firms measured by current ratio, the greater will be the profitability of the sample firms.

The findings of this study reveal essential implications for the managers of Turkish manufacturing firms regarding their working capital management behaviour. The results indicate that all the proxies used to reflect working capital management are significantly related to the profitability of the sample firms. A manager can enhance the profitability of his/her company through speeding up the receivable collections, reducing the number of days for holding inventory and delaying payments for the firm's account payables. By implementing appropriate policies regarding the accounts receivable, inventory and accounts payable, a firm can efficiently manage its working capital and enhance its profitability. Given the results, both cash conversion cycle and its individual components may be used to provide insight into the choice of optimal levels for those of the working capital elements.

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