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Impact of Working Capital on the Profitability of UK Pharmaceuticals and Biotechnology FTSE All Share Index Firms

Mubashir Hassan Qurashi¹

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Abstract

The study is conducted to investigate the impact of a working capital on profitability for the Pharmaceuticals and Biotechnology firms listed on FTSE all share index. Panel data is collected (data is collected from 2009 to 2015 for 10 Pharmaceuticals and Biotechnology firms), Pearson's correlation and fixed effect regression is used for the data analysis. Profitability is the dependent variable, which is measured through return on capital employed (ROCE). Five models have been generated based on different components of working capital (stock conversion period, debtor collection period, and creditor payment period and cash conversion cycle) in a stand-alone and collective manner to explore the impact of working capital components on the firm profitability. Four control variables (liquidity, leverage, firm size and growth) have also included in the models. The results have shown that stock conversion period has a positive while debtor collection period has a negative relationship with profitability. Insignificant results have observed for creditor payment period and cash conversion cycle therefore no relationship can be determined between these two variables with profitability. Similar results have been observed when all the working capital components were collected together to explore their impact on firm's profitability. Leverage and firm size have shown a positive relationship with profitability while insignificant results have observed for the liquidity and growth.

Keywords: ROCE, Stock conversion period, Debtor collection period, Creditor payment period, Cash conversion cycle

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1. Introduction

Working capital is the difference between the current assets and current liabilities of a company (Qurashi & Zahoor, 2017). Investment in working capital (stock, debtors and cash) is vital for the survival of the company in a short run. Working capital investment has a direct impact on the liquidity and profitability of the company. Corporate managers, who adopt an aggressive approach of working capital can generate a higher profit margin but the liquidity of their companies always remains low. The managers who practice the conservative approach of working capital are sacrificing an opportunity to generate high profit margin but the liquidity of their firms are quite high (Watson & Head, 2010). The empirical results are evident of negative relationship between the different components of working capital and profitability of the firm (Almazari, 2013; Kumaraswamy, 2016; Murthy, 2015).

Working capital is one of the vital areas for the success of any business. It is a well-established fact that a lot of UK companies have collapsed because of poor working capital and credit management (Wilner, 2000). According to Frankfurt Business Media 2012, there are about 1000 companies globally that lose about \$2 billion per year due to poor working capital management (Hoang, 2015). The empirical results have suggested that most of the firms are relying heavily on the working capital due to higher cost of external funds. Wilson (2008) has also stated that unsecured trade credit is almost 80 percent of the UK's business to business transactions while Pike and Neale (2009) have stated that debtor's amount to 19 percent of the assets of the large UK companies. Wilson (2008) has also stated that trade credit and stock of UK businesses is more than double the size of total bank credit.

Based on the above factors, this study is conducted to explore the relationship between different working capital components and the profitability of the Pharmaceutical and Biotechnology firms that are listed on FTSE all share index firms. Pharmaceutical and Biotechnology industry consists upon twelve

firms but the data for ten firms is available i.e. from 2009 to 2015. Due to this reason the sample of current study is ten firms. The study is based on panel data while descriptive statistics, correlation and regression is used for the analysis. Profit is the dependent variable that is measured through return on capital employed (ROCE). Four vital components of working capital are selected as independent variables such as stock conversion period (SCP), debtor collection period (DCP), creditor payment period (CPP) and cash conversion cycle (CCC). Four separate models are generated by using four components of working capital to explore impact of these working capital components on profitability in a stand-alone environment. Fifth model is generated by combining four components of working capital together for exploring the collective impact of four components of working capital on firm's profitability. Four control variables (liquidity, leverage, firm size and growth) are also included in the five models for controlling their impact.

Rest of the paper is divided into four sections. Section two will provide the literature review on the working capital, liquidity and profitability of the firm. Section three will provide the details on research design adopted for the study. Section four will present the results of the analysis and discussion on the findings. Section five will provide the conclusion.

2. Literature Review

From the above discussion it is clear that working capital is one of the vital factors for the success of a company as it is linked with the risk and return, growth and value of the company.

2.1. Components of Working Capital

Working capital is divided into two broader categories including current assets and current liabilities. Current liabilities have shorter maturity dates and examples are creditors and short term loans. Managers ensure that the firms have enough funds to meet the payment dates of current liabilities. However, current assets are used for the payment of current liabilities and examples of current

assets are cash, debtors and stock (Pike & Neale, 2009). Management of current assets is vital for the success of any company because the firm is bearing the cost of funds that are blocked in the current assets but the company is not able to generate any return from these funds (Watson & Head, 2010). Furthermore, if a big chunk of funds reserve for the current assets without knowing the requirement of current assets then the firm is losing an opportunity for generating higher return (Qurashi & Zahoor, 2017). Kumaraswamy (2016) has stated that for effective management of working capital, it is divided into various components such as stock conversion period (SCP), debtor collection period (DCP), creditor payment period (CPP) and cash conversion cycle (CCC).

2.2. Stock Conversion Period (SCP)

Stock conversion period is defined as the time required to convert the stock into cash (Watson & Head, 2010). Stock can be found in three forms such as raw material, work in process and finished goods and firms are making huge investment in stock to run their operating activities efficiently. Firm has to bear high costs (warehousing, insurance, opportunity cost and risk of obsolescence and pilferage) if they maintain higher inventory levels which in turn reduces profitability. For this reason managers prefer to reduce the level of stock for enhancing the firm profitability (Pike & Neale, 2009). Conflicting empirical results have been found in the existing literature. Abuzayed (2012), Makori and Jagongo (2013), Kumaraswamy (2016) have found a positive relationship between SCP and profitability while Garcia-Teruel and Martinez-Solano (2007) and Raheman, Afza, Qayyum, and Bodla (2010) have found a negative relationship between SCP and profitability.

2.3. Debtor Collection Period (DCP)

Debtor collection period is explained as the time required collecting the money from the debtors (Watson & Head, 2010). Firms sell on credit to increase the profit but credit sales require additional investment in debtor, processing and collection of payments from debtors. Tight credit policy reduces the sales and

probability that debtors will default whereas relaxed credit policy increases sales and probability of default. Due to the above factors associated with debtors, effective management of debtors is required so the profit margin of the company can be increased (Pike & Neale, 2009). Conflicting empirical results were also found in the existing literature regarding DCP and profitability. Mathuva (2010), Majeed, Makki, Saleem, and Aziz (2012), Kumaraswamy (2016) have found a negative relationship between DCP and profitability while Sharma and Kumar (2011), Abuzayed (2012), Murthy (2015) have found a positive relationship between DCP and profitability.

2.4. Creditor Collection Period (CCP)

Creditor collection period is the time taken by the creditors to pay for the credit purchases (Watson & Head, 2010). Normally the creditors are using different payment strategies to linger on the payment for reducing the cost of trade credit. The efficient creditor management allows the firm to enhance its liquidity and reduces burden on the future cash flows that increases the profit margin (Berk, DeMarzo, & Hardford, 2014). The empirical results have shown the insignificant relationship between CCP and the profitability of the firm (Almazari, 2013; Kumaraswamy, 2016).

2.5. Cash Conversion Cycle (CCC)

Cash conversion cycle is defined as the time from the purchase of raw material to the recovery of payment from credit customers. CCC is dependent on the management of SCP, DCP and APP because these are the components of CCC. The efficient firms are buying raw material on extended credit time and reducing their own investment on the purchase of stock for reducing their CCC. Reduction in CCC assists the firm to increase the firm's profitability (Watson & Head, 2010). The empirical results have shown the negative relationship between the CCC and firm's profitability (Anser & Malik, 2013; Kumaraswamy, 2016; Pais & Gama, 2015; Upadhyay, Sen, & Smith, 2015).

3. Methodology

The aim of the study is to investigate the impact of working capital on the profitability of the UK Pharmaceutical and Biotechnology firms listed on FTSE all share index firms. Pharmaceutical and Biotechnology industry of FTSE all share index consists upon twelve firms but the data for only ten firms is available from 2009 to 2015. For this reason the panel data for the ten Pharmaceutical and Biotechnology firms is collected for the analysis.

Descriptive statistic, correlation and multiple regression tools were utilized for the data analysis of this study. Profitability is the dependent variable and it is measured through return on capital employed (ROCE). Working capital is the independent variable and it is measured through its different vital components such as stock conversion period (SCP), debtor collection period (DCP), creditor payment period (CPP), cash conversion cycle (CCC). Furthermore, various control variables are also included in the analysis for controlling their effect such as liquidity, leverage, firm size and growth. Five following multiple regression models were constructed based on various working capital components to explore their impact on the profitability of the firm.

Model 1

$$ROCE_{it} = \beta_0 + \beta_1(SCP_{it}) + \beta_2(LIQ_{it}) + \beta_3(LEV_{it}) + \beta_4(FMSZ_{it}) + \beta_5(GRO_{it}) + \varepsilon$$

Model 2

$$ROCE_{it} = \beta_0 + \beta_1(DCP_{it}) + \beta_2(LIQ_{it}) + \beta_3(LEV_{it}) + \beta_4(FMSZ_{it}) + \beta_5(GRO_{it}) + \varepsilon$$

Model 3

$$ROCE_{it} = \beta_0 + \beta_1(CCP_{it}) + \beta_2(LIQ_{it}) + \beta_3(LEV_{it}) + \beta_4(FMSZ_{it}) + \beta_5(GRO_{it}) + \varepsilon$$

Model 4

$$ROCE_{it} = \beta_0 + \beta_1(CCC_{it}) + \beta_2(LIQ_{it}) + \beta_3(LEV_{it}) + \beta_4(FMSZ_{it}) + \beta_5(GRO_{it}) + \varepsilon$$

Model 5

$$ROCE_{it} = \beta_0 + \beta_1(SCP_{it}) + \beta_2(DCP_{it}) + \beta_3(CPP_{it}) + \beta_4(CCC_{it}) + \beta_5(LIQ_{it}) + \beta_6(LEV_{it}) + \beta_7(FMSZ_{it}) + \beta_8(GRO_{it}) + \varepsilon$$

From Model 1 - 4 only one working capital component is there in the regression equation with four control variables. This process is adopted to explore the impact of each working capital component on the profitability of the firm. All four working capital ratios are combined in the Model 5 to explore the collective impact of working capital ratios on the profitability. But higher level of multicollinearity has been found between credit payment period (CCP) with other variables. For this reason Model 6 is constructed by eliminating CPP from Model 5 to explore the collective impact of remaining working capital ratios on the firm's profitability. Model 6 is provided below

Model 6

$$ROCE_{it} = \beta_0 + \beta_1(SCP_{it}) + \beta_2(DCP_{it}) + \beta_3(CCC_{it}) + \beta_4(LIQ_{it}) + \beta_5(LEV_{it}) + \beta_6(FMSZ_{it}) + \beta_7(GRO_{it}) + \varepsilon$$

Where, *i* shows number of cross-sections and *t* shows time period.

3.1. Measurement of the Variables and Associated Hypotheses

This section provides the information regarding the measurement of different variables that are used for the current analysis.

3.1.1. Return on Capital Employed (ROCE)

Return on cash employed is used to measure the profitability of the firm. ROCE is a vital profitability ratio that provides information about the return generated by the firm on the total investment (long term equity and debt) of the firm (Pike & Neale, 2009). For this study ROCE is calculated by dividing net profit before tax on total debt plus total equity as it is calculated by Saleem and Rehman (2011) in their study. There are different weaknesses of using

ROCE. Firstly, ROCE is based on accounting numbers that are exposed to manipulation. Secondly, book values are used for the calculation of ROCE that are not providing recent information about the performance of the company. Even though ROCE has the above weaknesses but it is considered as the most comprehensive measure of profitability (Watson & Head, 2010).

3.1.2. Stock Conversion Period (SCP)

Stock conversion period is an important working capital ratio that provides information that how much time is required by the company for converting its stock into cash (Pike and Neale, 2009). Lower SCP is appreciated by the stakeholders because less funds are needed for the stock management, which ultimately decreases the cost of capital and increases the profitability (Watson & Head, 2010). SCP is calculated by dividing stock on the cost of goods sold multiplied by 365 as calculated by various researcher in their studies (Eljelly, 2004; Hoang, 2015; Kumaraswamy, 2016; Raheman & Nasr, 2007; Vural, Sokmen, & Cetenak, 2012; Zygmunt, 2013). The following hypothesis is generated for exploring the relationship between SCP and profitability.

H₁: No relationship exists between stock conversion period and firm's profitability.

3.1.3. Debtor Collection Period (DCP)

Debtor collection period is also a vital working capital ratio that provides information regarding the management of debtor by the company (Watson and Head, 2010). Lower DCP is highlighting that the managers are effectively implementing the debtor management that is assisting them to reduce the cost of capital and increasing the profit margin of the company (Pike & Neale, 2009). DCP is calculated by dividing debtors on the revenue and then multiplied it with 365 as calculated by various researchers in their studies (Eljelly, 2004; Hoang, 2015; Kumaraswamy, 2016; Raheman & Nasr, 2007; Vural et al., 2012; Zygmunt, 2013).The following hypothesis is generated between the two variables.

H₂: No relationship exists between debtor collection period and firm's profitability.

3.1.4. Cash Conversion Cycle (CCC)

Cash conversion cycle highlights the number of days spent by the company from buying the raw material for recovering the cash from all its customers (Watson & Head, 2010). Completion of the above mentioned process in less time is in the best interest of the company because it increases the profit margin (Pike & Neale, 2009). CCC is calculated by deducting creditor payment period from the aggregate of debtor collection period and stock conversion period as calculated by various researcher in their studies (Eljelly, 2004; Hoang, 2015; Kumaraswamy, 2016; Raheman & Nasr, 2007; Vural et al., 2012; Zygmunt, 2013). The following hypothesis is generated between the CCC and profitability.

H₃: No relationship exists between cash conversion cycle and firm's profitability.

3.1.5. Liquidity (LIQ)

Liquidity is measured through current ratio (CR), which is the most common ratio for calculating the liquidity of the firm (Watson & Head, 2010). The empirical results have shown the negative relation between liquidity and the profitability of the firm because investment in current assets is not generating any return for the companies (Pike & Neale, 2009). CR is calculated by dividing current assets on the current liabilities and this ratio is used by various researchers in their studies (Ahmed, 2016; Kumaraswamy, 2016; Raheman & Nasr, 2007; Zygmunt, 2013). The following hypothesis is generated to explore the relationship between the two variables.

H₄: No relationship exists between liquidity and the firm's profitability.

3.1.6. Leverage (LEV)

Leverage has a significant impact on the firm's profitability due to the tax shield benefit that reduces the cost of capital and increases the profit margin (Dhaliwal, Heitzman, & Li, 2005). But the existence of leverage in the financing structure of the firm put lot of pressure on management to perform efficiently (Akintoye, 2008). Different researchers have also pointed out that only those firms attain the benefit of leverage that can generate optimal capital structure (where tax shield benefit is higher than the associated leverage costs) for the firms (Titman & Wessles, 1988; Upneja & Dalbor, 2001). Different researchers who have conducted their studies in the area of working capital and profitability and used leverage as the control variable have found negative relationship between leverage and profitability (Christopher & Kamalavalli, 2009; Mathuva, 2010; Samiloglu & Demirgunes, 2008). Even conflicting results have been found but this study will test the following hypothesis between leverage and profitability.

H₅: No relationship exists between leverage and firm's profitability.

3.1.7. Firm Size (FMAE)

Firm size has an impact on profitability. Normally large firms can attain economies of scale that assist the firm to reduce the cost per unit that can increase the profit margin of the firm but smaller firms are not in a position to attain these benefits (Hardwick, 1997). Large companies have bargaining power that also assists these companies to reduce the production cost and increases the profitability. The large firms can also generate credit at the cost that is also an advantage to these firms (Yang & Chen, 2009). Another benefit is that large firms can hire the best human resource for achieve the corporate objectives effectively (Inmyxai & Takahashiin, 2010). The smaller firms cannot attain the above benefits and struggling to complete with the large firms (Majumdar, 1997). Therefore, it can be stated that the size of the

firm has an impact on firm's profitability and the following hypothesis is generated for the two variables.

H₆: No relationship exists between firm size and firm's profitability.

3.1.8. Growth (GRO)

Deloof (2003) has stated that growth has the positive impact on the profitability of the firm. Normally the stock market returns are higher for the growing firms because the growing firms have the potential to increase the firm's profitability that ultimately leads to the maximization of shareholder wealth (Shin & Soenen, 1998). Based on the positive results of various research studies, this study will test the following hypothesis between growth and profitability.

H₇: No relationship exists between growth and firm's profitability.

4. Analysis and Discussion

Different statistical tools were used for the data analysis such as descriptive statistics, correlation and multiple regressions. The results of descriptive statistics are provided in the Table 1.

Table 1 : Descriptive Statistics for Pharmaceutical and Biotechnology Firms

Variable	N	Range	Min.	Max.	Mean	S.D
ROCE	60	3.82	-1.97	1.85	0.12	0.49
SCP	60	417.14	0.00	417.14	161.25	94.49
DCP	60	239.03	11.74	250.77	93.12	41.60
CCC	60	9918	-9744	173.18	-678	1558
LIQ	60	6.05	0.46	6.51	1.99	1.13
LEV	60	347.78	0.07	347.85	9.52	51.07
FMSE	60	3.80	6.73	10.53	8.94	1.15
GRO	60	12.21	-0.90	11.31	0.24	1.49

Table 1 presents the results of descriptive statistics for the Pharmaceutical and Biotechnology firms that are constituents of FTSE all share index. Descriptive statistics is used to provide a brief summary of the data collected for the analysis. The main

descriptive analysis tools used for the study are the number of observations, range, minimum, maximum, mean and standard deviation.

Table 2: Correlation for Pharmaceutical and Biotechnology Firms

	ROCE	SCP	DCP	CCC	LIQ	LEV	FMSE	GRO
ROCE	1							
SCP	0.224	1						
DCP	-0.245	0.169	1					
CCC	0.202	-0.251	-0.232	1				
LIQ	-0.136	0.116	0.252	-0.536	1			
LEV	0.465	-0.041	0.210	-0.019	0.295	1		
FMSE	0.329	0.024	-0.483	0.390	-0.511	-0.336	1	
GRO	-0.005	-0.021	-0.266	0.077	-0.017	-0.053	0.104	1

Table 2 presents the results of correlation for the Pharmaceutical and Biotechnology firms that are constituents of FTSE all share index. Pearson correlation is calculated to explore how different variables are moving together. As discussed before that in the presence of creditor payment period, higher level of multicollinearity has found. For this reason creditor payment period has eliminated. Higher level of correlation has not been found in the absence of creditor payment period.

Five multiple regression models have been generated for exploring the impact of various components of working capital in stand-alone environment and collectively on the profitability of the firm. The results of these multiple regression models are provided below.

Table 3 : Results of Multiple Regressions for Model 1

	Coefficients		Significance level
SCP	0.228		0.019
LIQ	0.065		0.633
LEV	0.652		0.000
FMSE	0.591		0.000
GRO	-0.026		0.777
R ²	0.54	Adjusted R ²	0.497
F.Statistics	12.670	Sig (F)	0.000

Only one working capital component (stock conversion period) and four control variables are added in the Model 1 to explore the impact of stock conversion period on the profitability. The F statistics highlights that the model is highly significant. R square shows that independent variables are explaining 54 percent impact on profitability. The results have shown that stock conversion period has a significant positive impact on the profitability so the hypothesis is rejected and it is stated that a positive relationship exists between stock conversion period and profitability. The results are similar (Abuzayed, 2012; Kumaraswamy, 2016; Makori & Jagongo, 2013) and against (García-Teruel & Martínez-Solano, 2007; Raheman et al., 2010) the different empirical studies. The main reason for this positive relationship is that the selected firms are increasing their stock level for meeting the increased sales demand in order to enhance the firm's profitability.

Table 4 : Results of Multiple Regression for Model 2

	Coefficients		Significance level
DCP		-0.160	0.016
LIQ		0.102	0.463
LEV		0.649	0.000
FMSE		0.549	0.001
GRO		-0.069	0.490
R ²	0.508	Adjusted R ²	0.462
F-Statistics	11.144	Sig (F)	0.000

Debtor collection period is added in the Model 2 with other control variables. The model is highly significant which can be seen from the results of F statistics. R square is highlighting that the independent variables have approximately 51 percent impact on profitability. Significant negative results were observed between debtor collection period and profitability so the hypothesis has been rejected and it is stated that negative relationship exists between the two variables. The negative relationship was expected because the firms are normally putting their best efforts for collecting the cash from their customers as soon as possible. Furthermore, it shows that the selected companies are effectively managing the debtor to increase profitability. The result of the

current study is in line with Mathuva (2010), Majeed et al. (2012), Pais and Gama (2015), Kumaraswamy (2016) while different from Sharma and Kumar (2011), Abuzayed (2012) and Murthy (2015).

Table 5 : Results of Multiple Regression for Model 3

	Coefficients		Significance level
CCP		-0.038	0.748
LIQ		0.150	0.333
LEV		0.633	0.000
FMSE		0.637	0.000
GRO		-0.039	0.696
R Square	0.491	Adjusted R Square	0.444
F-Statistics	10.410	Sig (F)	0.000

Creditor collection period along with four control variables is used in Model 3. The model is highly significant as F statistics is 0.000. Independent variables have approximately 49 percent impact on profitability. Highly insignificant results for creditor collection period and profitability are observed so the hypothesis between the two variables is accepted and it can be stated that no relationship exists between creditor collection period and profitability.

The result of this study is consistent with the other empirical studies where other researchers also found the insignificant results between creditor collection period and profitability (Almazari, 2013; Kumaraswamy, 2016).

Table 6 : Results of Multiple Regression for Model 4

	Coefficients		Significance level
CCC		0.054	0.649
LIQ		0.159	0.305
LEV		0.630	0.000
FMSE		0.636	0.000
GRO		-0.040	0.688
R ²	0.492	Adjusted R ²	0.445
F-Statistics	10.451	Sig (F)	0.000

Cash conversion cycle is added in the Model 4 with other four control variables. The model is highly significant which can

be seen from the F statistics. R square is highlighting that the independent variables have approximately 49 percent impact on profitability. Insignificant results were observed between cash conversion cycle and profitability so the hypothesis is accepted and it is stated that no relationship exists between cash conversion cycle and profitability. The current results are not in line with the results of other empirical studies Anser and Malik (2013), Pais and Gama (2015), Upadhyay et al. (2015) and Kumaraswamy (2016).

Table 7 : Results of Multiple Regression for Model 6

		Coefficients	Significance level
SCP		0.296	0.003
DCP		-0.232	0.040
CCC		0.102	0.362
LIQ		0.063	0.665
LEV		0.653	0.000
FMSE		0.442	0.004
GRO		-0.079	0.399
R ²	0.584	Adjusted R R ²	0.529
F-Statistics	10.449	Sig (F)	0.000

The Model 6 is different from other four Models because three components of working capital are added in this model with four control variables. Significant positive results for stock conversion period and profitability have been observed that are helpful to state that positive relationship exists between stock conversion period and profitability. Significant negative results have been observed between debtor collection period and profitability so it is stated that negative relationship exists between the two variables. Insignificant results have been observed for cash conversion cycle so no relationship between cash conversion cycle and profitability can be determined.

As discussed that four control variables (liquidity, leverage, firm size and growth) have also added in all the Models. Similar results for the control variables have been observed for all five models. Significant positive results have been observed for leverage so the hypothesis is rejected and it is stated that leverage has a positive relationship with profitability.

It was already expected that leverage and profitability are moving in the same direction due to the tax shield benefit. Significant positive results have also been observed for firm size so the hypothesis is also rejected and it is stated that firm size has a positive relationship with profitability. Positive relation was also expected between the two variables because the large firms have different advantages on their smaller counterparts such as economies of scale, higher bargaining power, spend more on research and development and can hire highly professional human resources. Insignificant results for liquidity and growth have been observed so the hypotheses regarding these two variables are accepted and it is stated that no relationship exists between liquidity and growth with profitability.

5. Conclusions

The study was conducted to explore the impact of working capital on profitability for Pharmaceutical and Biotechnology firms that are the constituents of FTSE all share index. Secondary and quantitative data is collected from the annual reports of the firms. Twelve firms come under Pharmaceutical and Biotechnology industry but the data for only ten firms were available from 2009 – 2015. In this way panel data is used for the study with the fixed effect model. Different statistical tools were used for the data analysis such as descriptive statistics, correlation and regression. Five different models were generated by using various working capital components for exploring their impact on profitability in a stand-alone and collectively manner.

The results of F-statistics have shown that all the models were statistically significant. The R square is in the range of 58 percent to 49 percent which shows the working capital components have a reasonable impact on the profitability. The results have shown that stock conversion period has a positive relationship with profitability. The possible explanation of this positive relationship is that the selected firms are increasing the stock level because their revenues are growing year after year. The results have shown that debtor collection period has a negative relationship with profitability as expected. The main reason for this negative

relationship is that the managers are effectively managing their debtors to increase the profitability of the firm. Insignificant results have been observed for creditor payment period and cash conversion cycle so no relationship can be determined for these two working capital components with profitability. Similar results have been found when different working capital components were collected together in Model 6.

Four control variables were also included in the analysis. The results have shown that leverage and firm size have a significant positive relationship with profitability so the hypotheses for leverage and firm size are rejected and it is stated that leverage and firm size have a positive relationship with profitability. Insignificant results for liquidity and growth have been observed so the hypotheses regarding these two variables are accepted and it is stated that no relationship exists between liquidity and growth with profitability.

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