

## Effects of Working Capital Management on Profitability: Evidence from Ethiopian Corporate Sector

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**Abstract:** The purpose of this study was to examine effects of working capital management on firm profitability. It used return on total assets as a measure of profitability and the cash conversion cycle and its components to measure working capital management efficiency. Income statement and balance sheet of 353 manufacturing and merchandising companies in Ethiopia were employed. Panel data regression results showed that there is negative significant effect of cash conversion cycle on profitability. Besides, inventory period and accounts receivable period have negative and significant effect on profitability. And accounts payable period has positive and significant effect. Furthermore, leverage, firm growth rate and firm size also significantly influence profitability. However, these relationships don't significantly differ between manufacturing and merchandising companies. Therefore, firms can enhance profitability by reducing the length of the cash conversion cycle, inventory period, accounts receivable period and by negotiating longer credit period from creditors.

**Keywords** – 1.cash conversion cycle, 2.profitability, 3.working capital, 4.working capital management

### 1. INTRODUCTION

Firms invest in two types of assets – fixed or long term assets and current or short term assets. The later is commonly termed as working capital. According to [1] working capital refers to the amount of funds a company needs to finance day-to-day operations. Many writers identify two concepts of working capital – gross working capital and net working capital.

According to [2] and [3] working capital management is the administration of all components of working capital namely – cash, marketable securities, receivables, and payables. It is the regulation, adjustment and control of the amount invested in current assets of a firm and the related current liabilities [4]. Regarding the importance of working capital management, [5] stated that efficient working capital management to be a crucial part of a firm's overall management.

And its main objective is to find an optimum balance among its components. Maintaining an optimal level of working capital maximizes firm value [6]. A company's working capital affects its liquidity as well as profitability. Hence, it should be properly managed [7]. [5] further argued that it is possible to minimize risk and improve firm performance. To do this, financial managers should better understand the role of working capital and its driving factors. Then an optimal working capital can result. They defined optimal working capital as a level that balances between risk (risk of going illiquid) and efficiency (profitability). However, to arrive at this level it requires monitoring, closely and regularly, the components of working capital.

Similarly, [8] argued that working capital management to be an activity that involves planning and controlling a firm's current assets and current liabilities in such a way that it (1) avoids the risk of

inability to repay maturing obligations and (2) eliminates unnecessary investment in current assets. This is clearly the same as saying eliminating both liquidity risk and risk of loss of profitability. Although it seems that the concepts of working capital management are simple (theoretically), this is not the case in practice. Identifying the drivers of wc and determining an optimal level has become a challenge for many financial managers [9].

Firms are normally assumed to continue in operation indefinitely. For an ongoing firm both covering short term obligations and operating costs are vital. Hence, a firm should generate adequate cash flows that help to pay its current obligations and at the same time pay for its operational expenses. This is the goal of working capital management [4]. Furthermore, [10] explained the main goal of working capital management to be ensuring adequate cash flow which enables for sustainable continuation of the ordinary business operations. This implies, according to them, a dual purpose of working capital management. The first purpose tries to strike a balance between minimizing liquidity risk on one side and improving performance on the other. Regarding the second purpose, they advised financial managers not to invest excessively in working capital for it results in an opportunity cost.

Furthermore, [11] stated that a firm with higher net working capital might be forced to borrow if it has maturing obligations as far as its current assets are in the form of inventory and receivables. A firm's inventories, receivables and payables affect its cash position. Excess levels of inventory, for example, can exhaust cash needed for other purposes. On the other hand, shortage of inventory may interrupt production leading to more than proportionately higher cost than the benefit of holding excess inventory. However, as stated by [12] if a firm manages its working capital efficiently, it reduces dependence on externally generated funds. Doing this has two advantages (1) it enables the firm to release funds that can be used say, for investment spending and (2) it improves financial flexibility of the firm. Besides, it can reduce its financing cost because less external funds are needed.

According to [13] firms in different industries have different working capital practices which significantly changes overtime. On the other hand [14] found that wc policies to differ industry wise but are stable over time. Besides, [15] found significant industry influence over working capital management. Furthermore, [16] stated aggressiveness or conservativeness in wc policy to be affected by firm size.

To investigate the effect of working capital management on profitability researchers linked the cash conversion cycle to profitability indicators such as return on assets (ROA) and return on equity (ROE). According to [17] aggressive investment in working capital reduces profit. Similarly, [18], [19], [20], [21], [22] and [23] found negative relationship between profitability and the CCC. However, [24] found positive effect of the CCC on profitability. In relation to the specific components, [21] found negative relationship between IP, ARP and APP with profitability. Besides, ARP [18] & [24] and IP [18] found to have negative effect on profitability.

## **2. STATEMENT OF THE PROBLEM**

As stated earlier working capital management is an important component of the overall management of a company [6]. It refers to the management of current assets and current liabilities. There are different reasons that make it an important topic of study. First, it takes substantial time of financial managers [25], [9], [2], [26] and [27]. Second, working capital management has a direct link with sales growth [27] and it also affects liquidity and profitability, and subsequently firm net worth [28]. Thirdly, inventories and receivables are expected to be collected within the normal operating cycle [27] and current assets continuously change from one form of assets to another [26]. Fourth, relatively, investment in working capital represents higher proportional of total assets [29], [25], [2], and [27].

Many researchers claimed that working capital management has special significance for manufacturing and merchandising companies. According to [25] and [27] for a typical manufacturing company investment in current assets represent more than half of the total assets of a firm. And [29] indicated that it even goes to three fourth of total assets. Especially for a merchandising company it may extend to about 83% of total assets [29].

As stated by [30] working capital management is crucial for the overall financial health of a firm. Besides, [31] stated that working capital is the life blood of business on which its success or failure depends. This idea is strengthened by [30] who claimed that considerable number of firm failures may be due to inability to manage working capital properly.

Therefore, success of manufacturing and merchandising companies depend, to large extent, on the ability of their financial managers to effectively manage receivables, inventory, and payables [13]. Excessive investment in current assets results in inadequate return and inadequate level of current assets may create shortages which hinders the smooth flow of operations [25]. With respect to current liabilities, firms have the obligation to repay them as they come due. Firms need some level of liquidity which requires generating enough cash flow from operations [32].

Working capital management is more important for developing economies. As explained by [33], a basic characteristic of developing countries is inefficient resource utilization. Both permanent assets and working capital contribute to the development of total capital formation. Working capital plays a vital role by enabling the utilization of the production capacity created by fixed assets.

Ethiopian is a developing country characterized by an agrarian economy. In the last couple of years, its economy has been growing fast i.e. double digit GDP growth. And currently, it is working to industrialize its economy. In the year 2014/15 the economy grew at 10.2%. During the same year the growth rate of the industry and the services sectors were 21.6% and 10.2 % respectively. Besides, the manufacturing sector showed a growth rate of 15.8% which represents about 31.8 of the industry sector.

Furthermore, the wholesale and retail trade sub-sector of the services sector grew by 9.9% which constitutes 35.2% of the growth of the services sector. This indicates that the industry and the services sectors are important components of the economy. Manufacturing (within the industry sector) and merchandising (within the service sector) play considerable role to the overall growth of the economy.

From this it is clear that research on working capital management with special emphasis on manufacturing and merchandising companies is important. Although, there are a lot of studies that addressed effects of working capital management on profitability, in developed countries, the area in developing countries is less researched. Especially in Ethiopia only a few studies looked into this relationship. Besides, the studies suffer from limited scope – focusing on manufacturing companies only. Therefore, this study tried to bridge the knowledge gap by including both manufacturing and merchandising companies and using larger sample size. Therefore, the purpose of this study was to examine the effects of working capital management efficiency on profitability of Ethiopian corporate sector.

### **3. REVIEW OF PREVIOUS STUDIES**

[32] tried to relate working capital management and firm profitability in the USA context. The study employed net trade cycle as a measure of working capital management and return on assets (ROA) for profitability. The findings showed a negative relationship between the length of net trade cycle and return on assets. Furthermore, the results revealed that there are industry differences in working capital management practice as indicated by a significant value for the industry variable for about 50% of the industries.

In their study on aggressiveness of working capital management and its effect on profitability [19] used cash conversion cycle as a measure of working capital management. In this case shorter cycle means aggressive policy and the vice versa. The findings showed that negative relationship between the CCC and profitability. More aggressive firms are more profitable.

Using a sample of 58,985 [34] studied the effect of efficiency in managing working capital of firm value. The study covered a period from 1975 to 1994. Using correlation and regression analyses, they found a significant effect of working capital management on both liquidity and profitability. They found a strong negative relationship between lengths of a firm's net trading cycle and its profitability. Similarly, shorter net trade cycles were found to be associated with higher firm value.

In Belgian firms context [6] examined the relationship between working capital management and profitability. Using correlation and regression analyses, he found a significant negative relationship between gross operating income and the number of accounts receivable period, inventories period and accounts payable period. Therefore, working capital management efficiency of a firm has a significant effect on profitability. And less profitable firms wait longer time to pay their creditors.

[8] studied the link between liquidity and profitability of Joint stock companies in Saudi Arabia. Using correlation and regression analyses, he showed that the cash conversion cycle is a better measure of firm liquidity that affects profitability. The relationship between liquidity and profitability is negative. Besides, firm size has significant effect on profitability. Further, the results varied among industries regarding the significance of measures of liquidity.

[21] analyzed the impact of working capital management on the liquidity and profitability of Pakistani firms. They used sample of 94 firms listed on Karachi Stock Exchange. Secondary data was collected from financial statements covering six years period (from 1999 to 2004). The data was analyzed using correlation and regression analysis. In their findings they showed the existence of significant and negative relationship for average collection period, inventory period, accounts payable period, and cash conversion cycle with net operating profit.

In Malaysian context [23] examined the relationship between working capital management and performance. Cash Conversion Cycle was used as measure of working capital management. The study used panel data of 1628 firm-year combination covering the period from 1996 – 2006. It included six economic sectors listed in Bursa Malaysia. The coefficient results of Pooled OLS regression analysis provided a strong negative significant relationship between cash conversion cycle and firm profitability.

[35] studied the effect of working capital management on the profitability using a sample of 30 companies listed in LSE in UK. It covered a period from 2006 – 2008. The findings show negative relationship between cash conversion cycle and profitability. The study also found significant negative relationship between liquidity and the profitability and debt and profitability. Firm size was found to have a positive effect on profitability.

Using a sample of 88 American firms, [24] tried to investigate the link between working capital management and profitability of firm. They used data collected from companies listed on the NYSE for a period of 3 years (2005 – 2007). The accounts receivables period, accounts payables period, inventory period, and cash conversion cycle were the proxy variables for working capital management. Other variables included in the study were firm size, financial debt ratio, fixed financial assets ratio. And profit was measured by gross operating profit. The regression results indicated accounts receivable and leverage have negative and significant relationship with gross operating profit. And cash conversion cycle was found to have significant positive relationship with profitability. However, no other significant relationship was observed.

[18] studied working capital management for firms in Vietnam. In their trial to relate working capital management and profitability they used data from Vietnam Stock Exchange for covering 3

years from 2006 to 2008. The variables used to measure wcm were CCC and its components. Using pooled regression analysis they found strong negative relationships among the variables which indicate that profitability decreases with increase in the ccc. Besides, profit increases with reduction in the accounts receivable period and inventory period.

A study by [36] conducted to relate working capital management with profitability in Indian context employed a sample of 263 non-financial firms listed on the Bombay Stock Exchange. The study covered a period from 2002 to 2008. The cash conversion cycle and its components viz. accounts receivable period, accounts, inventory period and payable period were used to measure working capital management. Using OLS multiple regression analysis they study found a non significant positive relationship between wcm and firm profitability. While the findings show positive relationship between accounts receivable period and ROA, the sign for accounts payable period was negative.

[37] saw the relationship between working capital management and corporate performance in the medicine and cement industries in Iran. They used a sample of 50 companies from Tehran Stock Exchange for the period between 2006 and 2009. Cash conversion cycle, accounts receivable period, inventory period, accounts payable period and net trade cycle were used to measure working capital management. And corporate performance was measured using net operating profit (NOP). The results of regression analysis showed a significant negative relationship between average collection period, inventory period, accounts payable period, net trade Cycle and Net Operating Profitability. However, they could not find any significant relationship between cash conversion cycle and net operating profit.

[22] studied the relationship between the cash conversion cycle (CCC) with firm size and profitability for Turkish merchandising and manufacturing companies. He used data collected from corporations listed on the Istanbul Stock Exchange for the year 2007. Using regression analysis, the author found a significant negative correlation between the CCC firm size and profitability. He also explored that retail/wholesale industry has shorter CCC than manufacturing industries.

In the context of Finnish firms [38] analyzed the impact of working capital management on profitability for a sample of 1136 firms listed in Nasdaq OMX Helsinki stock exchange from 1990 to 2008. They used the CCC and its components to measure working capital management efficiency. ROA and GOI were the proxies for profitability. The regression analysis results showed a statistically significant negative relationship between CCC and the two profitability measures. Similarly, they found a negative and significant relationship between account payable deferral period and the GOI, and between inventory period and the two profitability measures. However, there was no significant relationship for accounts receivable period and profitability. Regarding the interactive variables, during poor economic conditions, the influence of CCC on profitability is statistically significant and there is also significant negative influence in the relationship between inventory and GOI as well as between ARP and ROA. However, no significant influence is found for APP.

[39] studies how working capital management affects the performance of firms in Addis Ababa. The study used a sample of 11 metal manufacturing private limited companies in the city for the period 2008 – 2012 and was analyzed using correlation and regression analysis. The study indicated that longer accounts receivable and inventory holding periods are associated with lower profitability. Besides he found a significant negative relationship between cash conversion cycle and profitability measures. However, no significant relationship was found between cash conversion cycle, account receivable period, inventory conversion period and account payable period with return on investment. On the other hand, his findings showed a highly significant negative relationship between account receivable period, inventory conversion period and account payable period with return on asset.

Hypotheses: to examine effects of working capital management on profitability four working capital management measures were linked profitability measure. To this end the following null hypotheses were developed based on the existing theoretical and empirical literature.

- H1. Cash conversion cycle has a negative effect on profitability.
- H2. Inventory period has a negative effect on profitability.
- H3. Accounts receivable period affects profitability negatively.
- H4. Accounts payable period affects profitability positively.

#### **4. METHODOLOGY**

Data: For this study secondary data from financial statements (both income statement and balance sheet) of 353 companies was used. The data was collected from Ethiopian Revenue and Customs Authority prepared for tax purpose. The credibility of the statements is enhanced as they are required by the tax law to be independently audited.

Purposive sampling method was used to select companies. Sampling criteria was set such that

1. The companies be either Share Company or private limited
2. The companies be either manufacturing or merchandising companies
3. The companies should have reported tax returns for 10 consecutive years from 2005 to 2014
4. There are no missing values on the statements of the company.

Based on these criteria a total of 353 share and private limited companies involved in manufacturing and merchandising activities were included.

Variables:

ROA – is defined as the operating profit generated for each amount invested in total assets. It indicates ability of the firm to generate profit from operations per unit of investment in assets. It was calculated as:

$$ROA = \frac{\text{Net Operating Profit}}{\text{Total Assets}}$$

Cash Conversion Cycle (CCC) – is a measure of the overall working capital management efficiency of a firm. The following formula was used to calculate it:

$$CCC = IP + ARP - APP$$

The cash conversion cycle has three components viz. the inventory period, the accounts receivable period and the accounts payable period. Each of the components of the CCC were defined and computed as follows:

Inventory Period (IP) – is defined as the length of time (in days) that a firm takes to convert raw materials to finish goods and then to accounts receivable. It is the length of time between purchases of inventories up to sale. It is computed as shown below

$$IP = \frac{\text{Inventories} \times 365}{\text{Cost of Goods sold}}$$

Accounts Receivable Period (ARP) – refers to the number of days that accounts receivable remains uncollected. It is the number of days that a firm, on average, should wait to collect cash from its accounts receivables. The formula to calculate this figure was

$$ARR = \frac{\text{Accounts Receivable} \times 365}{\text{Sales}}$$

Accounts payable Period (APP) – is defined as the length of time, in days, elapsed before a firm pays its liability on purchases. It is computed as

$$APP = \frac{\text{Accounts Payable} \times 365}{\text{Cost of sales}}$$

**Current Ratio (CR)** – the current ratio measures the liquidity of a firm. It was calculated by dividing current assets to current liabilities i.e.

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

**Firm Growth (Grw)** – it is the rate of growth of a company measured by change in its annual sales. It is computed as:

$$Grw = \frac{\text{Sales}_t - \text{Sales}_{t-1}}{\text{Sales}_{t-1}}$$

**Access to finance (LnSal)** – it is measured by natural logarithm of sales.

**Leverage (Lev)** – leverage is a measure the extent to which a firm is indebted. It was calculated as follows:

$$Lev = \frac{\text{Total Debt}}{\text{Total Assets}}$$

**Growth in Gross Domestic Product (GGDP)** – is proxy for economic condition and is measured as the rate at which gross domestic product grows. It is calculated as

$$GGDP = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}$$

**Manufacturing (Man)** – is a categorical (dummy) variable that represents manufacturing companies. It is a dummy variable used to differentiate from its merchandising counterpart. It takes the value of 1 were as the merchandising are assigned the value of zero.

#### Model Specification

To test the above hypotheses the following multivariate panel data models were developed.

$$ROA_{ij} = \alpha + \beta_1 CCC_{ij} + \beta_2 CR_{ij} + \beta_3 GGDP_{ij} + \beta_4 \ln Sal_{ij} + \beta_5 Lev_{ij} + \beta_6 GRW_{ij} + \beta_7 Man_{ij} + e_{ij}$$

Where:

ROA – return on assets

CCC – cash conversion cycle

IP – inventory period

ARP – accounts receivable period

APP – accounts payable period

CR – current ratio

GGDP – rate of growth of GDP

LnSal – natural logarithm of sales

Man – dummy for manufacturing sector (1 for manufacturing and 0 for merchandising)

$\beta_{1-7}$  – coefficients to be estimated

$\alpha$  – constant

e – error term

i – time dimension – it runs from 1 to 10

j – cross section of companies – it runs from 1 to 353

To seen effects of the specific components of working capital management, CCC was replaced by IP, ARP and APP separately.

## 5. RESULTS AND DISCUSSION

### 5.1 Descriptive Analyses

Table 1 depicts descriptive statistics of variables used in the study. The mean, minimum, maximum and standard deviations are displayed.

Return on assets has mean value of 9.7%. Its minimum and maximum values are -70% and 190% respectively. Its standard deviation is approximately 0.72.

From the same table, the mean of CCC, IP, ARP and APP are 55.3, 356.4, 122.8 and 423.9 days respectively. The minimum value -382.1 days is reported for ccc and zero for inventory period while accounts receivable period has 315.2 as its minimum. The maximum values run from 1056 to 6440 days approximately. From these four variables accounts payable period has the highest standard deviation (565 days) and accounts receivable period has the lowest (96.9 days).

Table I: Descriptive statistics

<b>Variable</b>	<b>mean</b>	<b>min</b>	<b>max</b>	<b>Standard deviation</b>
roa	.097	-.7	1.9	.7166875
ccc	55.290	-381.2	6440.7	344.084
ip	356.432	0	1056.4	221.044
arp	122.792	315.7	3802.1	96.8827
app	423.934	0	2031.2	565.994
lev	.58139	0	1	.2682644
grw	1.109	-.9	630.18	13.85502
lnsal	16.687	7.5	23	2.229007
cr	3.591	.1	860.1	19.07113
ggdp	.1032	.087	.117	.0085429
man	.2552	0	1	.4360582

Source: STATA Output

In the same table leverage has mean value of 58% with 0 and 100% as its minimum and maximum respectively. Its standard deviation is 26.8%. Means values of the remaining variables viz. firm growth, firm size, current ratio, gdp growth rate and manufacturing are 1.11, 16.59, 3.69, 0.10 and .26 respectively. The lowest and highest values for this category are 0 for manufacturing and 860 for current ratio respectively. While the standard deviation ranges from 0.009 for ggdp to 13.86 for firm growth rate.

### 5.2 Correlation Analyses

Table 2 shows the correlation matrix for dependent variable (return on assets), independent and control variables. Column 2 reveals positive correlation between return on assets and current ratio, firm growth firm size, inventory period and accounts payable period. That means return on assets increases with increase in those variables. On the other hand negative correlation is found for leverage, GDP growth rate, cash conversion cycle, accounts receivable period and manufacturing. And it indicates return on asset is inversely related with those variables. Similarly, in column 3 of the same table leverage, growth, firm size and GDP growth rate as well as accounts payable period have negative correlation with current ratio. The remaining variables are positively correlated with current ratio. In the same token, leverage is positively correlated with firm size, inventory period and accounts payable period while its correlation with the remaining variables negative.

The correlation for firm growth rate is negative with all other variables (column 5). The correlation between firm size and gdp growth rate, ccc, ip, arp and app is negative but it is positive with manufacturing.



In column 7, same table, GDP growth rate is positively correlated with cash conversion cycle, inventory period, accounts receivable period, accounts payable period and manufacturing.

The correlation between the independent variables cash conversion cycle with the other independent variables inventory period, accounts receivable period is very strong. Cash conversion cycle is positively correlated with inventory period (39.6%), accounts receivable period (8%). Its correlation with accounts payable period and manufacturing is negative i.e. 79% and 1.1% respectively. The strong correlation is what is normally expected. As cash conversion cycle drives its value from the other three variables. Further, the 79% correlation coefficient with accounts payable period did not disturb the regression results as those variables were regressed independently.

Columns 8 to 11, show positive correlation of inventory period with accounts receivable period and accounts payable period but negative with manufacturing. Similarly, accounts receivable period is positively correlated with both accounts payable period and manufacturing. And lastly, there is positive correlation between accounts payable period and manufacturing.

Table II: Correlation Matrix

	<i>roa</i>	<i>cr</i>	<i>lev</i>	<i>grw</i>	<i>lnsal</i>	<i>ggdp</i>	<i>ccc</i>	<i>ip</i>	<i>arp</i>	<i>app</i>	<i>man</i>
<i>roa</i>	1.000										
<i>cr</i>	0.001	1.000									
<i>lev</i>	-0.018	-0.090	1.000								
<i>grw</i>	0.138	-0.003	-0.040	1.000							
<i>lnsa</i>	0.009	-0.031	0.030	-0.012	1.000						
<i>ggd</i>	-0.042	-0.045	-0.008	-0.025	-0.137	1.000					
<i>ccc</i>	-0.001	0.022	-0.046	-0.001	-0.013	0.005	1.000				
<i>ip</i>	0.007	0.019	0.005	-0.009	-0.130	0.004	0.396	1.000			
<i>arp</i>	-0.014	0.004	-0.076	-0.011	-0.179	0.018	0.080	0.041	1.000		
<i>app</i>	0.003	-0.010	0.037	-0.006	-0.103	0.001	-0.788	0.226	0.132	1.000	
<i>man</i>	-0.024	0.014	-0.115	-0.003	0.104	0.001	-0.011	-0.014	0.016	0.006	1.000

Source: STATA Output

### 5.3 Regression Analyses

Table 3 depicts the regression results of four models. In the first model CCC was regressed on ROA along with control variables. Models 2 to 4 show when IP, ARP and APP replace the CCC and regressed on same dependent variable.

In column 2 of the table, cash conversion cycle has significant (at 5%) negative effect on return on assets. That means return on assets decrease with increase in the cash conversion cycle. The marginal effect is, although small, indicates that when cash conversion cycle increases by 1%, return on assets decreases by 0.19%. Hence, the null hypothesis that cash conversion cycle has a negative effect on profit could not be rejected.

This result is in congruence with the literature that when firms minimize their working capital gap, their profitability increases. A firm with minimum working capital gap minimizes the costs of financing that, otherwise, would have been incurred. Besides, shorter cash conversion cycle means faster conversion of inventories receivables, and delay payments to creditors. Those tendencies improve firm operating performance and hence, increase profit.

This results is similar to the findings of [18], [19], [20], [39], [21], [22] and [23] found negative relationship between profitability and the CCC. But it contradicts to the findings of [24] who found positive effect of the CCC on profitability.

Column 3 shows when inventory period is used to measure working capital management. As depicted in the table there is negative and significant association between the length of inventory

time and profitability at 5% level. An increase in inventory period by 1% reduces profitability by 0.8%. With this the null hypothesis that inventory period has negative effect on profitability could not be rejected.

Inventory period is reduced means fast turnover of inventories. That means inventories are converted to final goods and/or to sales fast. This fast conversion of inventories means that less funds are tied up. Besides, holding costs are reduced. This improves the profitability of a company. Previous studies by [18], [38], [39] and [21] also found negative effects of inventory period on profitability.

In column 4, accounts receivable period was regressed on return on assets. The coefficient and the related probability value show that it has negative and significant effect on profitability at 5% level. It tells that increasing accounts receivable period by 1% reduces profitability by 0.01%. Therefore, the null hypothesis that accounts receivable period has negative impact on profitability is not rejected.

The reason is that when a firm collects its receivables as fast as possible it avoids costs associated with receivable holding including bad debt expenses and opportunity costs. This support earlier empirical results by [18], [38], [24], [39], and [21] where negative relationship between accounts receivable period and profitability was found.

Table III: Regression Results

<b>Roa</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
Constant	-.9156575 (0.009)	-.9515395 (0.007)	-.9784711 (0.006)	-.9320533 (.008)
Cr	.0003385 (0.602)	.0003302 (0.661)	.0003351 (.605)	.0003401 (.600)
Lev	.1424693 (0.018)**	.1425159 (0.018)**	.1442146 (0.016)**	.1399762 (.020)**
LnSal	.0599357 (0.000)***	.0615836 (0.000)***	.0629852 (0.000)***	.0607321 (0.000)***
Grw	.0063808 (0.000)***	.0063787 (0.000)***	.0063837 (0.000)***	.0063805 (0.000)***
Ggdp	-1.044339 (0.466)	-.9906614 (0.490)	-.9613026 (0.503)	-1.016374 (.478)
Man	.1144325 (0.875)	.1208565 (0.868)	.1172965 (0.871)	.1183404 (.870)
CCC	-.0018876 (0.029)**			
IP		-.0085021 (0.037)**		
ARP			-.000133 (0.025)**	
APP				.0039660 (.018)**
F(7,3170) Prob > F	13.56 (0.0000)	13.67 (0.0000)	13.70 (0.0000)	13.62 (0.0000)
***significant at 1% ** significant at 5%				

Source: STATA Output

Column 5 shows a positive significant association between return on assets and accounts payable period at 5% level of significance. An increase in accounts payable period by 1%, results in

increase in return on assets of 0.4%. From this it can be inferred that delaying payments to creditors increases firm profitability. The reason is that when firms are able to negotiate longer credit periods from their suppliers they avoid the costs associated with additional borrowing and/or equity financing. As trade credit has no any explicit cost, lowering cost of finance increases profitability. Therefore, the research hypothesis that accounts payable period has positive effect on profitability is not rejected. This result contradicts with the results found by [38] and [21] who found negative effect.

As far as the control variables is concerned, consistent results were observed. Leverage, firm size, and firm growth rate have positive significant effects on return on assets at 5%, 1%, and 1% respectively. But there are negligible differences in the marginal effects of the variables in the four regression models.

The results for leverage show the use of more debt in the capital structure of a firm has positive effect on profitability. More specifically, when a firm increases its debt level by 1%, profitability increases by approximately 14%. Debt is cheap source of capital due to its lower risk (relatively) and tax deductibility of interest. Therefore, the use of more debt means reducing financing cost. Hence, profitability increases. But this relationship holds to extent that bankruptcy costs don't arise.

Firm size has significant positive effect on profitability at 1% level of significance. Profitability is largely influenced by this variable. As indicated by its marginal effect, a 1% increase in firm size leads to increase of profitability by about 60%. This result is consistent with the finance theories that larger firms use their size to create good relationship with suppliers and customers so that they can negotiate favorable terms such as longer credit period from suppliers. In addition to this larger firms have easy access, relatively, to the capital market. This helps them to reduce holdings of current assets and have lower working capital gap. Similarly, firm growth rate has positive and significant influence on profitability, at 1% significance level. An increase in growth rate of 1% increases profit by about 6%. Growing firms need adequate cash flows for their expansion investment as a result they improve their efficiency in managing cash flows. In other words they tend to improve inventory and receivables turnover and delay payments to creditors to the extent possible. This tendency of firms further improves their profitability. However, current ratio, GDP growth rate and manufacturing don't display any significant relationship with profitability. That means return on assets is affected neither by level of liquidity and nor by changes in economic condition. Furthermore, there is not significant p-value for manufacturing which indicates that there is no significant difference between manufacturing and merchandising regarding these relationships. The marginal effect is very small showing that accounts receivable period has less influence to predict the change in profitability. The result is as dictated by the finance literature which says efficient receivables collection improves profitability.

## 6. CONCLUSION

The study examined the effects of working capital management efficiency on profitability using panel data regression on a sample of 353 manufacturing and merchandising companies in Ethiopian. The regression results revealed that profitability of Ethiopian corporate sector is influenced by the efficiency of working capital management. That is shortening the cash conversion cycle, inventory period and accounts receivable period, and lengthening accounts payable period enhance profitability. In addition to working capital management measures the extent of use of debt, firm growth rate and access to finance influence profitability. This relationship doesn't differ between manufacturing and merchandising companies however. Ethiopian corporate sector can enhance their profitability by improving management of their working capital. Further researcher can also be undertaken in order to replicate the results. Further studies should also try to include other business types.

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