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Efficient Working Capital Management and the Cost of Debt

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Abstract

Studies show that efficient working capital management (WCM) improves bond ratings and reduces the chance of bankruptcy. In the line with these studies, our study tests the relationship between efficient WCM and the cost of debt for micro, small- and medium-sized enterprises (MSMEs) in India. We employed a survey research design (a non-experimental research design) to collect data. The perceptions and judgments of the owners of MSME retail sales and manufacturing firms in India form the basis of our analysis and findings that efficient WCM helps firms reduce their cost of debt. Our findings further show that high levels of inventory turnover and cash management efficiency increase the firm's ability to reduce the cost of debt by 12.30% and 4.60%, respectively. This study contributes to the literature on the relationship between efficient WCM and the cost of debt. Indian retail sales and manufacturing firms should consider improving their inventory turnover and cash management efficiency to reduce the cost of debt.

Key words: Working capital management; inventory turnover; accounts receivable turnover; accounts payable turnover; cash conversion cycle; cash management efficiency; cost of debt

JEL classification: G30; G32

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1. Introduction

Micro and small businesses incur a higher cost of debt, and among the crucial reasons for this is financial constraints (Joeveer, 2013). Nadiri's (1969) findings on the interplay of working capital management (WCM) and efficient WCM has been considered value-enhancing (see Aktas, Croci, and Petmezas, 2015). Efficient WCM plays a significant role in reducing the cost of debt. Efficient WCM, in the context of this study, refers to inventory turnover, accounts receivable turnover, accounts payable turnover, cash conversion cycle (CCC), and cash management (Gill, Amiraslany, Obradovich, and Mathur, 2019; Baker, Kumar, Colombage, and Singh, 2017). Inefficient WCM increases the probability of business failure (Pass and Pike, 1984) and consequently, the probability of bankruptcy; thus, poor WCM increases the cost of external debt financing. Earlier studies show that capital market imperfections, stemming from informational asymmetries and agency costs, is among the critical factors contributing to the increased cost of debt (Jensen, and Meckling, 1976; Myers and Majluf, 1984). The amount of debt and the cost of debt financing are influenced by access to and cost of external debt financing (Baños-Caballero, García-Teruel, and Martínez-Solano, 2014). Datta, Iskandar-Datta, and Raman (2005) find that short-term debt maturity can significantly reduce agency costs, which in turn can reduce the cost of the firm's debt. Maturity matching between short-term debt and accounts receivables can also help the firm pay short-term debt on the due date and thus reduce the cost of debt. Also, lower inventory and accounts receivable turnover increase the CCC period (Miller, 2017) and can cause late payment of debt, and thus increase the cost of debt.

Since very few studies concentrate on the relationship between efficient WCM and the cost of debt, this study tackles this issue. We test the relationship between the components of WCM (i.e., inventory turnover, accounts receivable turnover, accounts payable turnover, CCC, and cash management efficiency) and cost of debt by posing the research question, "Does efficient WCM reduce the cost of debt for unlisted firms in India"?

Gill *et al*. (2019) used data from publicly traded US firms to examine the relationship between efficient WCM and bond ratings, along with efficient WCM and debt refinancing risk. Since a paucity of studies focus on the relationship between efficient WCM and cost of debt related to unlisted micro, small, and medium enterprises (MSMEs)[1], we use these firms to test the associations of inventory turnover, accounts receivable turnover, accounts payable turnover, cash conversion cycle, and cash management efficiency with the cost of debt. Our findings show that higher inventory turnover and cash management efficiency decrease the cost of debt. Thus, the empirical results of this study suggest that efficient WCM helps to reduce the cost of debt for unlisted MSMEs in India.

As described earlier, micro and small enterprises are financially constrained (Joeveer, 2013). Micro and small enterprises are perceived as high-risk firms by lenders; therefore, the Indian capital market (e.g., banks and other lenders) is more receptive to larger firms. Thus, micro, small, and in some cases medium-sized enterprises depend on private lenders who charge 20–30% interest rates in India (Ghosal and Ray, 2015). Among the crucial reasons for paying a higher cost of debt is that, in India, micro and small firms often lack business records and financial statements (Gill, Mand, Obradovich, and Mathur, 2015). Because of this, the current study relies on survey research. Using the questionnaire provided in Appendix A, the variables used in this study can be tested in other countries to assess whether the same relationships exist. Thus, this study contributes to the academic literature as well as to practitioners and scholars in the broader global capital market. Note that this study relies on individuals' perceptions and judgments, and the majority of surveys come from micro and small business firms.

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[1]Lahiri (2012) classified the Indian business industry into three categories i) Micro Enterprises: investments in plant and equipment does not exceed 10 lakh (one million rupees) in the service industry, and 25 lakh (2.5 million rupees) in the manufacturing industry, ii) Small Enterprises: investments in plant and equipment more than 10 lakh (one million rupees) but does not exceed two crores (20 million) rupees in the service industry and more than 25 lakh (2.5 million rupees) but does not exceed five crores (50 million) rupees in the manufacturing industry, and iii) Medium Enterprises: investments in plant and equipment more than two crores (20 million) rupees but does not exceed five core (50 million) rupees in the service industry and more than five crore (50 million rupees) but does not exceed 10 crores (100 million) rupees in the manufacturing industry (p. 4).

This paper unfolds as follows. The literature review (section 2) comes next, followed by our methodology (section 3), analysis (section 4), and discussion, conclusion, study limitations, and recommendations for future research (section 5).

2. Survey of Literature

2.1 Efficient Working Capital Management and the Cost of Debt

While one view of WCM focuses on maintaining a higher level of working capital and receiving a higher discount by making payments early (Deloof, 2003), the other view is that maintaining a high level of working capital generally means borrowing additional funds, which increase not only cost of debt but also the chance of bankruptcy (Kieschnick, Laplante, and Moussawi, 2012). Further, delinquent payments of accounts payable not only increases the cost of borrowing but also creates an agency problem between lenders (principal) and borrowers (agent). Jensen and Meckling (1976) developed the agency theory which posits the benefits of reducing conflict between agent and principal. Previous studies generally agree that a shorter CCC improves firm performance (Skomorowsky, 1988; Gentry *et al*., 1990), which in turn reduces the cost of debt. Efficient WCM (i.e., higher inventory turnover and higher accounts receivable turnover) reduces capital tied up in the firm; for example, in inventory and accounts receivables (Rafuse, 1996) by improving the CCC. High accounts payable turnover (i.e., paying accounts payable before the due date without any significant discount) does not help firms reduce the cost of borrowing.

The cost of debt begins to increase once a firm crosses the line of its optimal use of debt financing (Baxter, 1967); once this occurs, retiring some portion of the debt is necessary. Chong (2017) finds that concerted financial planning has a significant positive impact on debt repayment practices. A firm can retire debt by increasing free cash flow from operations by increasing inventory and accounts receivable turnovers, shortening the cash conversion cycle, and improving cash management efficiency. The concept of the CCC was introduced by Gitman (1974) and supports the liquidity position of the firm's market operations by helping firms measure the interval between

cash outflow and inflow. The firm's ongoing liquidity position is an important indicator of the risk related to repayment of debt and can help reduce the cost of debt.

Three important strategies can reduce the CCC period: inventory turnover, accounts receivable turnover, and accounts payable turnover (Ross, Westerfield, Jordan, and Roberts, 2016). High inventory turnover without losing sales reduces the CCC period (Gitman and Zutter, 2012) and investment in inventory financing (Ross, Westerfield, Jordan, and Roberts, 2016). A higher level of accounts receivable turnover improves cash flow by reducing the CCC. Lowering accounts payable turnover helps the firm shorten the CCC by delaying payments to suppliers until the due day unless the firm receives major discounts for advance payment (Grosse-Ruyken, Wagner, and Jönke, 2011). In addition, idle cash sitting in the company accounts does not earn any interest (Gill *et al*., 2019); investing idle cash, even in money market securities such as short-term redeemable investments, improves the firm's cash inflow. Thus, high inventory turnover, high accounts receivable turnover, lower accounts payable turnover (i.e., paying accounts payables on the due date), shorter cash conversion cycle, and cash management efficiency improve the firm's free cash flow, from which debt and equity are paid. Mills, Bible, and Mason (2002) argue that free cash flow represents the cash available after meeting all current payment commitments (e.g., cash dividend and debt interest payments). In other words, free cash flow is available for common shareholders after working capital additions and operating expense payments are made. This free cash can be used to pay off debt early to reduce the overall debt amount and, consequently, to reduce the cost of borrowing and the chance of bankruptcy.

In summary, the limited amount of literature on the relationship between efficient WCM and the cost of debt shows that efficient WCM helps firms reduce the cost of debt. Hence, the following hypotheses:

First hypothesis: *The cost of debt is negatively associated with an increased level of inventory turnover.*

Second hypothesis: *The cost of debt is negatively associated with an increased level of accounts receivable turnover.*

Third hypothesis: *The cost of debt is positively associated with an increased level of accounts payable turnover.*

Fourth hypothesis: *The cost of debt is positively associated with an increased cash conversion cycle period.*

Fifth hypothesis: *The cost of debt is negatively associated with increased cash management efficiency.*

3. Methodology

Utilizing a non-experimental research design to collect data, we surveyed the owners of micro, small, and medium enterprises (MSMEs) from five Indian states: Punjab, Himachal Pradesh, Maharashtra, Rajasthan, and the Uttar Pradesh.

We borrowed measures related to the CCC and firm size from Gill and Biger (2013). Measures pertaining to inventory turnover, accounts receivable turnover, and accounts payable turnover were adopted from Gill, Amiraslany, Obradovich, and Mathur (2019), and the definitions and calculations of these variables were modified to apply to this study. We adopted measures pertaining to the firm performance from Zehir, Acar, and Tanriverdi (2006). On the survey questionnaire, for “cash management efficiency”, we instructed all the subjects to use a five-point Likert scale ranging from “Decreased a lot” to “Increased a lot” and for the “overall assessment of firm performance”, their choices ranged from "Gone down a lot" to "Gone up a lot".

Since no known studies have tested the relationship between efficient WCM and the cost of debt related to MSMEs, we selected MSMEs across the five Indian states to conduct this study. A large number of transactions in India are done on a cash basis (Sen, 2016). Cash transactions may be one of the reasons why micro and small enterprises in India lack business records and financial statements (Gill, Mand, Obradovich, and Mathur, 2015). To compensate for this, we relied on survey research. Besides, micro and small enterprises lack external financing and pay a higher than average cost of debt (Joeveer, 2013); therefore, these firms tend to rely on internally generated funds and require special attention to improve cash inflow. The higher cost

of debt has a negative impact on the growth and prosperity of smaller firms. This study shows that efficient WCM helps to improve the firm's free cash inflow.

We faced challenges in accessing all members of the focal population (Huck, 2008); therefore, a convenience sampling method was used to select the research participants. To reduce heteroscedasticity (i.e., to stabilize variance), we calculated the natural logarithm (ln) for interest rate, inventory turnover, accounts receivable turnover, accounts payable turnover, cash conversion cycle, assets, sales, firm age, owner age, and owner experience. To increase cooperation and the response rate from research participants, we promised all subjects confidentiality and instructed them not to print their names on the surveys.

After creating an exhaustive list of names of business owners and their telephone numbers for survey distributions and telephone interviews, we interviewed and distributed surveys to research participants who agreed to participate. Although we contacted and included more than 1000 research participants in our sample, we successfully collected only 217 surveys (74% male respondents and 26% female respondents), of which nine were non-usable. Thus, we were obtained a response rate of roughly 22%, and all other subjects were assumed to be similar to those who participated in this study.

Table 1 shows all the variables, variable measurements, and calculations of variables used in this study. Since higher inventory and accounts receivable turnover, and cash management efficiency (components of efficient WCM and independent variables) are expected to enhance cash inflow, we expected negative associations between these variables and the cost of debt. For example, higher levels of inventory and accounts receivable turnover can increase cash inflow. An increase in cash inflow helps firms to receive cash discounts on accounts payables because they can pay early (Deloof, 2003), building internal financing sources, improving firm performance, building assets, paying loans faster, reducing the amount of borrowing and chances of bankruptcy, and thus the lower risk for capital suppliers. Idle cash does not earn anything (Gill *et al*., 2019); therefore, investing idle cash even in money market securities such as short-term redeemable investments can improve cash inflow; thus,

we expected a negative association between efficient cash management and cost of debt. Micro and small enterprises are financially constrained (Joeveer, 2013) and do not have a high level of resources compared to larger firms to enhance accounts receivable collection. Thus, we reasoned, these firms may not be able to pay their accounts payables on time. Paying accounts payables late causes penalties and interest costs from suppliers; consequently, we expected a positive association between accounts payable and cost of debt. Because the longer CCC period negatively impacts cash inflow and delays accounts payables and loan payments, we expected a positive association between CCC and the cost of debt.

As explained in the previous paragraph, higher inventory and accounts receivables turnover help firms build internal financing sources, improve performance, and build assets which, in turn, reduce the chances of bankruptcy and thus, help reduce the cost of debt. Considering this, we expected a negative association of internal financing sources, firm performance, and assets with a cost of debt. Higher sales can improve the firm's profitability, but at the same time, it increases the level of debt to finance inventory and accounts receivables. Thus, firms end up paying a higher cost of debt to finance inventory and accounts receivables, so, we expected a positive association between sales and cost of debt.

The firm's ability to i) increase inventory turnover, accounts receivable turnover, and accounts payable turnover, ii) reduce cash conversion cycle period, and iii) improve cash management efficiency may rely on its sales, age and location; and owner age, owner education, owner experience, gender, and the industry in which it operates. As described earlier, a high level of inventory and accounts receivable turnover reduces the cost of debt. Hence, we predicted a negative association of firm age and location; owner age, education, experience, and gender; and industry with the cost of debt. Although increased sales can improve the firm's profitability, it increases the level of debt to finance inventory and accounts receivables; therefore, we predicted a positive association between sales and the cost of debt.

Table 1. Variables and Their Measurements[*, **, ***]

Variables		Measurement
Cost of Debt	*I*	The actual interest rate paid by micro, small- and medium-sized enterprises (MSMEs)
Inventory Turnover	*INV_TURN*	Business owners were asked about the average inventory holding period (in days). Inventory turnover calculated as: 365 Days ÷ Inventory holding period
Accounts Receivable Turnover	*AR_TURN*	Business owners were asked about the average accounts receivable period (in days). Accounts receivable turnover calculated as: 365 Days ÷ Accounts receivable period
Accounts Payable Turnover	*AP_TURN*	Business owners were asked to estimate their average accounts payable period (in days). We calculated accounts payable turnover as: 365 Days ÷ Accounts payable period
Cash Conversion Cycle	*CCC*	Calculated as: (Inventory holding period + Accounts receivable period) – Accounts payable period
Cash Management Efficiency	*CME*	Calculated as the extent to which business owner perceived 1) an acceleration in cash collection, 2) improved management of idle cash, 3) reduction in time to settle cash shortfalls, 4) improved control of cash disbursements, and 5) improved control of cash budget over the past 10 years. Survey responses are categorized on a five-point Likert scale with 1 as "Decreased a lot" and 5 as "Increased a lot"
Internal Financing Sources	*IFS*	Measured as a dummy variable: a value of 1 = "have adequate internal financing sources," and 0 = "do not have adequate internal financing sources"
Firm Performance	*ΔFP*	Measured as the extent to which business owners perceived changes in 1) net profit margin (*ΔNPM*), 2) cash flow from operations (*ΔCFO*), and 3) return on investment (*ΔROI*) over the previous 10 years. Survey responses are categorized on a five-point Likert scale with 5 as "Gone down a lot" and 1 as "Gone up a lot".
Sales	*SALES*	Measured as actual sales of MSMEs
Assets	*ASSETS*	Measured as actual assets of MSMEs
Firm Age	*F_AGE*	Measured as the actual age of MSMEs
Firm Location	*F_LOC*	Measured as a dummy variable of 1 if a participant lives in an urban area and 0 if he/she lives in a rural area
Owner Age	*O_AGE*	Measured as the actual age of the MSME owners. Natural logarithm of the actual age of the owners was calculated
Owner Education	*O_EDU*	Measured as a categorical variable with: 1 = High school or less; 2 = College diploma; 3 = Bachelor's degree; 4 = Master's degree; and 5 = Ph.D. degree.
Owner Experience	*O_EXP*	Measured as the number of years that MSME owner has been involved in the firm.
Gender	*GENDER*	Measured as a dummy variable with 0 = Female and 1 = Male.
Industry	*IND*	Measured as a categorical variable with 0 = Retail/Wholesale and 1 = Production Firm.

Notes: [*]To minimize endogeneity issues, the most important variables that reduce the cost of debt were used. [**]To reduce heteroscedasticity (i.e., stabilize variance), the natural logarithm (ln) was calculated for interest rate, inventory turnover, accounts receivable and accounts payable turnover, cash conversion cycle, assets, sales, firm age, owner age, and owner experience. [***]Research participants did not provide actual average net income and actual average cash holdings for their firms; therefore, we measured firm performance and cash management efficiency variables using a five-point Likert scale.

4. Analysis

4.1 Regression Models

Our regression model includes inventory turnover (*INV_TURN*), accounts receivable turnover (*AR_TURN*), accounts payable turnover (*AP_TURN*), cash conversion cycle (*CCC*), and cash management efficiency (*CME*) as the main explanatory variables since we expected these variables to be major determinants of the firm's cost of debt (*I*). Control variables that impact the cost of debt are shown in Table 1 To obtain concise coefficients for a cash conversion cycle and other independent variables, we developed the following two linear regression models:

$$I_i = \alpha_0 + \alpha_1 INV\_TURN_i + \alpha_2 AR\_TURN_i + \alpha_3 AP\_TURN_i + \alpha_4 CME_i + \sum \beta_i Controls_i + \varepsilon_i \quad (1)$$

$$I_i = \gamma_0 + \gamma_1 CCC_i + \sum \beta_i Controls_i + \varphi_i \quad (2)$$

In the regression models, i is used for the micro/small/medium enterprise. ε_i and φ_i are normally distributed disturbance terms. In Equation (1), α_1, α_2, α_3, and α_4 measure the magnitude at which inventory, accounts receivable, and accounts payable turnover, along with cash management efficiency reduce the cost of debt. In Equation (2), γ_1 represents the magnitude at which the cash conversion cycle reduces the cost of debt.

4.2. Descriptive Data and Bivariate Correlation Analysis

Table 2 presents descriptive statistics. Factor analysis ensures the validity of our scale items by extracting two factors (denoted as Component 1 and Component 2) and loading all the scale items on expected factors with the varimax rotation, which explains 53.90% of the variance in the original scores. We use the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy to calculate the test score (Kaiser, 1974). The sampling adequacy test score for this study is 0.81, which reflects factor analysis validity.

Table 2. Descriptive Statistics

	Mean	*SD*	*Minimum*	*Median*	*Maximum*	*Factor Analysis* *Component 1*	*Component 2*
I	2.52	0.30	2.08	2.44	3.40		
INV_TURN	2.73	0.66	1.68	2.57	5.21		
AR_TURN	3.15	0.94	1.81	2.90	5.90		
AP_TURN	2.79	0.52	1.99	2.68	5.21		
CCC	2.90	0.84	0.00	3.04	4.22		
CME	0.00	1.00	-3.64	-0.027	1.47		
CME1 Acceleration of cash collection	3.98	0.82	1	4	5	0.863	
CME2 Improvement in cash management of idle cash	4.02	0.75	1	4	5	0.866	
CME3 Improvement in the arrangement of cash shortfall quickly	3.99	0.78	1	4	5	0.801	
CME4 Improvement in the control of cash disbursements	4.05	0.77	1	4	5	0.830	
CME5 Improvement in the control of cash budget	4.05	0.81	1	4	5	0.817	
IFS	0.78	0.41	0	1	1		
ASSETS	15.55	1.05	12.89	15.33	19.83		
SALES	15.54	1.08	12.61	15.48	20.67		
F_AGE	2.62	0.78	0.00	2.71	4.09		
ΔFP	0.00	1.00	-3.86	0.12	1.44		
FP1 Change in net profit margin	3.83	0.88	1	4	5		0.903
FP2 Change in operating cash flow	3.98	0.81	1	4	5		0.916
FP3 Change in return on investment	3.92	0.77	1	4	5		0.897
F_LOC	0.71	0.46	0	1	1		
O_AGE	3.68	0.23	3.04	3.67	4.16		
O_EDU	2.71	1.06	1	3	4		
O_EXP	2.30	0.71	0.00	2.30	3.69		
GENDER	0.74	0.44	0	1	1		
IND	0.47	0.50	0	0	1		

Notes:

[a]Variables include cost of debt (*I),* inventory turnover (*INV_TURN*), accounts receivable turnover (*AR_TURN*), accounts payable turnover (*AP_TURN*), cash conversion cycle (*CCC*), cash management efficiency (*CME*), internal financing sources (*IFS*), assets (*ASSETS*), sales (*SALES*), firm age (*F_AGE*), firm performance (*ΔFP*), firm location (*F_LOC*), owner age (*O_AGE*), owner education (*O_EDU*), owner experience (*O_EXP*), gender (*GENDER*), and industry (*IND*). SD = Standard Deviation

[b]Factor Analysis: Extraction Method: Principal Component Analysis; Rotation Method: Varimax with Kaiser Normalization; Rotation converged in three iterations; Varimax Rotation = 53.90%

[c]Cronbach Alpha: *CME* = 0.904. Five factors of the *CME (CME1, CME2, CME3, CME4,* and *CME5*) index explain approximately 72.31% of the variation. The correlation values of the five measures range from 0.577 to 0.731. The eigenvalues of the five principal components are 3.616, 0.435, 0.377, 0.316, and 0.256, and the corresponding variances are 72.315%, 8.699, 7.544%, 6.314%, and 5.128, respectively.

[d]Cronbach Alpha: *ΔFP* = 0.910. Three factors of the *ΔFP (ΔFP1, ΔFP2,* and *ΔFP3*) index explain approximately 84.92% of the variation. The correlation values of the three measures range from 0.745 to 0.801. The eigenvalues of the three principal components are 2.547 0.258, and 0.194, and the corresponding variances are 84.916%, 8.609% and 6.475%, respectively.

Using a bivariate correlation coefficient analysis, Table 3 shows that the cost of debt is negatively and significantly correlated with *CME, IFS, ASSETS, SALES, ΔFP,* and *F_LOC,* suggesting that cash management efficiency, internal financing sources, assets, sales, positive change in firm performance, and firm location reduce the cost of debt.

Table 3. Correlation Coefficient

	I	*INV_TURN*	*AR_TURN*	*AP_TURN*	*CCC*	*CME*	*IFS*	*ASSETS*	*SALES*	*F_AGE*	*ΔFP*	*F_LOC*	*O_AGE*	*O_EDU*	*O_EXP*	*GENDER*	*IND*
I	1																
INV_TURN	-0.103	1															
AR_TURN	-0.022	0.275**	1														
AP_TURN	0.092	0.525**	0.680**	1													
CCC	0.110	-0.701**	-0.602**	-0.344**	1												
CME	-0.275**	0.018	0.195**	0.036	-0.118	1											
IFS	-0.582**	-0.069	-0.019	-0.107	0.011	0.228**	1										
ASSETS	-0.282**	-0.331**	-0.300**	-0.395**	0.236**	0.172*	0.269**	1									
SALES	-0.206**	-0.167*	-0.186**	-0.281**	0.056	0.239**	0.215**	0.818**	1								
F_AGE	-0.071	-0.123	-0.194**	-0.339**	0.047	0.097	-0.014	0.279**	0.197**	1							
ΔFP	-0.155*	-0.018	0.023	0.040	0.022	0.364**	0.252**	0.236**	0.237**	0.084	1						
F_LOC	-0.172*	-0.002	0.143*	0.049	-0.156*	0.249**	0.200**	0.187**	0.355**	-0.158*	0.143*	1					
O_AGE	-0.019	-0.100	0.140*	0.046	0.031	0.023	0.020	0.001	-0.010	0.263**	0.093	-0.103	1				
O_EDU	-0.126	-0.043	-0.209**	-0.180**	0.047	0.013	0.110	0.253**	0.342**	-0.094	0.043	0.322**	-0.217**	1			
O_EXP	0.045	-0.224**	-0.131	-0.167*	0.179**	0.034	-0.025	0.176*	0.091	0.462**	0.035	-0.065	0.539**	0.029	1		
GENDER	-0.066	0.032	-0.040	0.061	0.066	0.070	0.062	0.089	0.095	0.072	-0.028	0.028	-0.131	-0.089	-0.098	1	
IND	0.039	-0.195**	-0.268**	-0.231**	0.266**	0.067	-0.042	0.365**	0.218**	0.171*	0.000	-0.175*	-0.036	-0.097	0.036	0.163*	1

Notes: ** = 5% and *** = 1%

4.2. Empirical Analysis and Results

We provide the results of Equations (1) and (2) in Table 4. We posited that the cost of debt is negatively associated with the increased levels of inventory turnover, accounts receivable turnover, and cash management efficiency, and positively associated with the increased level of accounts payable turnover and increased cash conversion cycle period. The findings show that *INV_TURN, CME, IFS,* and *ASSETS* reduce the cost of debt, and *AP_TURN, CCC,* and *SALES* increase the cost of debt.

As shown in Table 4, column (1) of *I*, the coefficients of *INV_TURN* and *CME* are negative and significant at the 1 and 5 percent levels, respectively, suggesting that increased levels of inventory turnover and cash management efficiency reduce the cost of debt. Similarly, in column (1) of *I*, the coefficient of *AP_TURN* is positive and significant at the 10 percent level, indicating that increased levels of *AP_TURN* increase the cost of debt. Likewise, in Table 4, column (2) of *I*, the coefficient of *CCC* is positive and significant at the 5 percent level, suggesting that a longer cash conversion cycle increases the cost of debt. These findings suggest that efficient working capital management helps to reduce the cost of debt for MSMEs in India. Thus, the first hypothesis, third hypothesis, fourth hypothesis, and fifth hypothesis were supported.

In summary, the increased levels of inventory turnover and *CME*, and the shorter *CCC* reduce the cost of debt, and the higher level of accounts payable increases the cost of debt. As a robustness check, we use a bootstrapping procedure (with 1,000

replications for each regression) to mitigate potential sample bias because we have a relatively small sample size. Our bootstrapping results are quite similar to the original results calculated by OLS (see Table 4).

Table 4. Regression Results

Dependent variable = I						
Variables	*Auxiliary estimations*					
INV_TURN	-0.123**		-0.098**			
	(0.031)		(0.027)			
AR_TURN	-0.030			-0.025		
	(0.026)			(0.020)		
AP_TURN	0.101†				0.020	
	(0.008)				(0.038)	
CCC		0.055*				
		(0.022)				
CME	-0.046*					-0.053**
	(0.019)					(0.019)
IFS	-0.355**	-0.377**	-0.380**	-0.380**	-0.382**	-0.363**
	(0.043)	(0.044)	(0.043)	(0.044)	(0.045)	(0.044)
ASSETS	-0.117**	-0.097**	-0.110**	-0.084**	-0.081*	-0.088**
	(0.032)	(0.032)	(0.032)	(0.032)	(0.032)	(0.031)
SALES	0.073*	0.057†	0.060*	0.045	0.057	0.054†
	(0.029)	(0.030)	(0.029)	(0.030)	(0.030)	(0.029)
F_AGE	-0.016	-0.033	-0.038	-0.045†	-0.046†	-0.037
	(0.026)	(0.026)	(0.025)	(0.026)	(0.027)	(0.026)
ΔFP	0.019	0.006	0.011	0.009	0.009	0.023
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.018)
F_LOC	-0.019	-0.023	-0.041	-0.027	-0.035	-0.014
	(0.042)	(0.043)	(0.042)	(0.044)	(0.043)	(0.043)
O_AGE	-0.127	-0.103	-0.116	-0.087	-0.103	-0.117
	(0.091)	(0.092)	(0.091)	(0.095)	(0.094)	(0.092)
O_EDU	-0.020	-0.021	-0.017	-0.022	-0.019	-0.022
	(0.018)	(0.018)	(0.018)	(0.019)	(0.019)	(0.018)
O_EXP	0.045	0.051	0.049	0.060†	0.064†	0.067*
	(0.031)	(0.032)	(0.031)	(0.032)	(0.032)	(0.031)
GENDER	-0.024	-0.027	-0.013	-0.020	-0.017	-0.016
	(0.039)	(0.040)	(0.039)	(0.040)	(0.040)	(0.039)
IND	0.047	0.034	0.039	0.042	0.048	0.060
	(0.038)	(0.039)	(0.038)	(0.039)	(0.039)	(0.038)
Constant	4.116**	3.717**	4.348**	3.871**	3876**	3.760**
	(0.457)	(0.432)	(0.453)	(0.442)	(0.472)	(0.430)
N	208	208	208	208	208	208
R^2	0.453	0.402	0.421	0.388	0.384	0.407

Notes: † = 10%, * = 5%, and ** = 1%; the dependent variable is cost of debt (*I)*. The independent and control variables include inventory turnover (*INV_TURN*), accounts receivable turnover (*AR_TURN*), accounts payable turnover (*AP_TURN*), cash conversion cycle (*CCC*), cash management efficiency (*CME*), internal financing sources (*IFS*), assets (*ASSETS*), sales (*SALES*), firm age (*F_AGE*), firm performance (*ΔFP*), firm location (*F_LOC*), owner age (*O_AGE*), owner education (*O_EDU*), owner experience (*O_EXP*), gender (*GENDER*), and industry (*IND*).

5. Discussion, Conclusion, Implications/Limitations, and Recommendations for Future Research

This study tested the associations of inventory turnover, accounts receivable turnover, accounts payable turnover, *CCC*, and *CME* with the cost of debt for a sample of MSMEs in India. The findings suggest that increased levels of inventory turnover and *CME* and decreased level of *CCC* reduce the cost of debt, while an increased level of accounts payable turnover increases the cost of debt. Thus, the results suggest that efficient WCM helps to reduce the cost of debt. Our finding of a non-significant relationship between accounts receivable turnover and cost of debt could be due to the fact that a large number of micro and small business transactions in India are done on a cash basis (Sen, 2016).

While *IFS* and assets reduce the cost of debt, sales increase the cost of debt. This may be because lenders consider higher *IFS* more efficient in mitigating financing risk by reducing the chances of bankruptcy compared to sales. Although both increased levels of inventory turnover and *CME* reduce the cost of debt, an increased level of inventory turnover has a more significant impact on the cost of debt. For example, while higher inventory turnover increases the chances of reducing the cost of debt by 12.30%, *CME* increases the chances of reducing the cost of debt by 4.60%. Thus, higher inventory turnover is more favorable for Indian MSMEs compared with *CME*. Therefore, Indian MSMEs would benefit by focusing more effort on improving inventory turnover. This recommendation, however, does not mean that firms should not pay attention to other areas of WCM such as accounts receivable turnover and cash conversion efficiency; that is, reduction in the CCC period (in days) may help reduce the cost of debt. The various impacts of WCM on the cost of debt, however, do not differ between retail/wholesale and manufacturing firms.

Since higher levels of inventory turnover and *CME* reduce the cost of debt, Indian MSMEs should consider improving inventory turnover and *CME*. Inventory turnover has a more significant impact on the cost of debt; therefore, Indian firms should consider improving inventory turnover. Since a longer CCC period has a

positive impact on the cost of debt, Indian firms should consider reducing it to reduce the cost of debt. Table 3 shows that *CME* and firm performance improve *IFS*; therefore, Indian MSMEs should put more effort into improving *CME* and firm performance. In summary, Indian MSMEs should consider increasing inventory turnover and *CME* to reduce the cost of debt.

As for study limitations, it is important to note that this study relied on the perceptions and judgments of the research participants who owned MSMEs in India. Although results show that efficient WCM helps to reduce the cost of debt, there is no causal relationship between the components of WCM and the cost of debt. Research participants did not provide information on the firm's actual cash holdings and net income; therefore, we relied on their perceptions and judgments related to their firm's cash management efficiency and firm performance.

Another limitation of this study is that the response rate was relatively low. This study relied on data from the Indian states of Punjab, Himachal Pradesh, Maharashtra, Rajasthan, and the Uttar Pradesh; therefore, future research could collect and analyze data from not only other Indian states but also from other countries worldwide to assess if the results differ. Future studies can also use the variables and survey questionnaire (see Appendix A) used in this study together with other variables such as cash holdings.

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Appendix A

1) Please describe your firm: Production Retail/Wholesale

2) Please describe your company location: Urban Rural Area

3) Please indicate your gender: Male Female

4) Please indicate your age: Owner age: _____ Years

5) Please indicate the highest level of your education: High school or less Two-year college diploma Bachelor's degree

Master's degree PhD degree or more

6) Please indicate the number of years you have been involved in this business: _____ Years

7) Please indicate the age of your firm: Firm Age: _____ Years

8) Please describe your sales: INR_____

9) Please describe your total assets: INR_____

10) Please describe average: i) Inventory Holding Period_____(days), ii) Accounts Receivable Collection Period_____(days), iii) Accounts Payable Period_____(days)

11) What is the average interest rate do you pay on your loans? Interest rate_____ %

12) Do you have adequate internal (personal and family) financing sources to invest in your firm? Yes No

13) Cash Management Efficiency

On average, over the last 10 years how do you describe the…?	Decreased a lot	Slightly decreased	Stayed same	Slightly increased	Increased a lot
1)…Acceleration of cash collection in your firm?					
2)…Improvement in cash management of idle cash in your firm?					
3)…Improvement in the arrangement of cash shortfall quickly for your firm?					
4)…Improvement in the control of cash disbursements in your firm?					
5)…Improvement in the control of the cash budget in your firm?					

14) Firm Performance

On average, over the last 10 years in what direction and to what degree do you perceive the ….?	Gone down a lot	Gone down a little	Stayed approximately the same	Gone up a little	Gone up a lot
1)…Net profit margin of your firm changed?					
2)…Cash flow from operations changed?					
3)…Return on investment of your firm changed?					