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Impact of earnings management on working capital management efficiency

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ABSTRACT

This study investigates the impact of earnings management (EM) on the efficiency of Working Capital Management (WCM) and its components. The study uses M-Score, based on the Beneish Model, as a proxy for EM and applies generalized method of moments and panel quantile regression methods to a sample of 461 Indian-listed firms. We find that EM may inversely influence the WCM efficiency of Indian firms. Managers who engage in EM tend to operate on longer cash conversion cycle and manage inventory sub-optimally. These findings have been further confirmed by using an alternative EM proxy based on the Modified Jones Model.

1. Introduction

Working capital management (WCM) is closely linked with companies' fundamental business activities, namely, procurement or production, revenue generation, collection of receivables, and payment management (Wang, 2019). Since operating cash inflows and outflows are mostly the consequences of working capital (WC) decisions, the cash conversion cycle (CCC) is often used to evaluate the efficiency of WCM (Prasad et al., 2018). The CCC reveals the number of days firms have blocked funds in WC (Tarkom, 2022). More sustainable companies operate on shorter CCC (Barros et al., 2022). Many studies (Deloof, 2003; Sawarni et al., 2020; Lin and Wang, 2021; Akgun and Karataş, 2021) report that reducing the CCC can increase profitability and improve valuation. Hence, managers are expected to strive for shortening the CCC to improve the company's financial performance.

However, there may be instances when managers are not as motivated as expected or may lack the urgency to put in the necessary effort to efficiently manage the resources of their organizations. For example, such a situation may arise if managers are involved in earnings management (EM) to create a desired perception of their firm instead of presenting its actual condition to the stakeholders (Orazalin and Akhmetzhanov, 2019). Such managers may mask their inefficiency by reporting higher earnings through EM.

Healy and Wahlen (1999) describe EM as a phenomenon in which managers use their discretion in reporting and structuring transactions for misleading stakeholders about firms' real condition and adjust accounting numbers suitable to their agenda. In addition to the accrual-based EM, there may be real EM which involves deviation from the normal operational practices with an intent to mislead stakeholders into believing that reported financial numbers have been achieved in the normal course of business (Roychowdhury, 2006). Managers' actions such as overproducing to report a lower cost of goods sold, offering price discounts to generate a temporary increase in sales, or reducing expenditures to report higher profit margins are examples of real EM (Roychowdhury, 2006).

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EM deteriorates earnings quality (Jaggi and Tsui, 2007), causing an increase in information asymmetry. According to agency theory (Jensen and Meckling,1976), managers may take advantage of information asymmetry for their own benefit, resulting in decisions that may not be efficient from the firms' perspectives. Bzeouich et al. (2019) have documented that EM is linked to managers' opportunistic behavior and asymmetric information issues, leading to over or under-investment. Such sub-optimal resource allocation decisions may lead to investment inefficiency (McNichols and Stubben, 2008). Since EM allows managers to conceal their lack of efficiency, they may not bother to avoid inefficiency in inventory management caused by either excessive or inadequate investment; they may be indifferent to achieving efficient receivables management; or they may not be highly motivated to hard bargain and negotiate business terms with customers or suppliers in favor of their firms.

Further, since EM provides latitude to managers to hide their poor financial performance, they may report the accomplishment of the goals set for them without achieving them and relieve themselves from exerting needed effort to attain the "set-goal" by modifying it to "do-their-best," which requires actions only to accomplish whatever can easily be achieved. The goal-setting theory (Locke and Latham, 1990) postulates that when people strive to simply "do-their-best" in place of achieving the "set-goal", their performance deteriorates. Thus, EM tendency may induce a certain degree of complacency in managers. A complacent manager may become indifferent to WC optimization, leading to excessive capital blockage. Hence, it may be argued that EM may inversely impact working capital management efficiency (WCME).

To examine the effect of EM on investment efficiency or resource allocation decisions, researchers have conducted many studies (McNichols and Stubben, 2008; Biddle et al., 2009; Chen et al., 2011; Shahzad et al., 2019; Liu et al., 2021). However, these studies focus on long-term investments, and research is scarce from the perspective of short-term resource allocation decisions involved in WCM. Further, EM studies have mostly been done in the context of developed economies (Orazalin and Akhmetzhanov, 2019). Equity markets in emerging economies, such as India, differ in many aspects from developed countries. For example, emerging markets have more challenges such as higher information asymmetry, lower accounting transparency, weaker corporate governance, and a concentrated ownership structure that allows for opportunistic EM (Wasan and Mulchandani, 2020). The trustworthiness of the financial reports disclosed by firms in these markets has often been questioned by reputed auditing firms (Li et al., 2014). The context of emerging economies and the importance of WCM in successful financial management (Enqvist et al., 2014) motivate us to investigate the impact of EM on WCME to answer the following research questions:

RQ1: How does EM influence the WCME of Indian firms?
RQ2: How does EM influence the efficiency of different WCM components, namely, inventory, receivables, and payables management?

This study has several novelties. First, this is among the earliest studies that examine how WCME is influenced by EM. Second, in addition to investigating the impact on the aggregate WCM, it explores the effect of EM on different WCM elements. The analysis of the individual components offers novel insights, indicating that managers who engage in EM may manage inventory inefficiently. Third, in addition to the generalized method of moments (GMM), we have used the method of moment-based quantile regression, which allows us to examine the impact of EM, not only on the conditional mean, but also on entire conditional distribution of CCC and its components. This approach provides a more nuanced understanding of the impact of EM on WCME. Overall, this study adds valuable insights to the literature on WCM.

2. Research methods and econometric analysis

2.1. Sample and variables

Our sample comprises a balanced panel of 461 non-financial publicly traded companies in India over a period from 2014 to 15 to 2020–21. The center for Monitoring Indian Economy database has been used for data extraction. We have used CCC to measure WCME. The inventory days (IVD), accounts receivable days (RCD), and accounts payable days (PYD) represent the efficiency of the management of inventory, receivables, and payables, respectively. We have calculated variables as below:

$$CCC = IVD + RCD - PYD$$

$$IVD = Inventory \times 365 \div Cost\ of\ goods\ sold$$

$$RCD = Accounts\ receivable \times 365 \div Sales$$

$$PYD = Accounts\ payable \times 365 \div Cost\ of\ goods\ sold$$

In previous studies (Herawati, 2015; Repousis, 2016; Hołda, 2020), the Beneish model (Beneish,1999) has been successfully applied to detect EM. Beneish et al. (2013) have verified the model and documented that it correctly recognizes about 71% of the infamous cases of accounting fraud before their disclosure to the public. Following these studies, we have used the Beneish model to calculate M-Score to proxy EM. The Beneish model uses the following equation:

$$M - Score = -4.84 + 0.920 \times DSRI + 0.528 \times GMI + 0.404 \times AQI + 0.892 \times SGI + 0.115 \times DEPI - 0.172 \times SGAI - 0.327 \times LEVI + 4.679 \times TATA$$

Definition of the variables is presented in Appendix-A. A higher M-Score indicates a higher likelihood that a company has manipulated its earnings. Days sales in receivables index (DSRI) measures the extent to which receivables and revenues are in or out of balance in two consecutive years. Gross margin index (GMI) compares the prospects of a firm with respect to the previous year. Asset quality index (AQI) is ratio of asset quality in current year to that in previous year. It represents the portion of the asset that has low certainty of benefit in future. Sales growth index (SGI) is the ratio of sales in the present period to that in the previous period. The depreciation index (DEPI) compares the depreciation rate in a year with respect to the previous year. The sales, general, and administrative expenses index (SGAI) is used to identify any disproportionate change in this expense item. It compares ratio of SGA expenses to sales between two consecutive years. Leverage Index (LEVI) represents the debt covenants incentives for EM. It is calculated as ratio of the leverage in the current year to that in the previous year. Leverage represents the debt-to-asset ratio. Total accrual to total assets (TATA) denotes the relationship between accounting profits and cash profits.

Previous studies (Kieschnick et al., 2006; Banos-Caballero et al., 2010; Hill et al., 2010, 2013; Moussa, 2019) identify profitability, operating cashflow, growth, leverage, size, and age of companies as major determinants of WC. We have controlled the effect of these determinants in the regression analysis. Accrual-based EM detecting models (Jones, 1991; Dechow et al., 1995; Kothari et al., 2005) use working capital accruals (WCA) as a predictor representing working capital manipulation. Hence, following Jones (1991), we have used WCA as a variable to control the effect of working capital manipulation in our regression models. To control the influence of macroeconomic factors, we have used industry and time dummies. The definition of all the control variables is presented in Table 1.

2.2. Econometric methods

The calculation of, both, the explanatory variable (M-Score) and dependent variables (CCC and RCD) uses book values of accounts receivable, leading to endogeneity issues in econometric models. One approach to address this issue is to use lagged values of the dependent variable as explanatory variables (Abdallah et al., 2015; Ullah et al., 2018). However, this transformation to a dynamic panel renders the conventional regression methods inefficient (Ullah et al., 2018). The GMM model (Arellano and Bond, 1991; Blundell and Bond, 1998) is a solution for dealing with dynamic panel data and controls for endogeneity by transforming the data and including lagged values of the dependent variable as explanatory variables.

Following Ullah et al. (2018), we have applied the two-step system GMM approach by considering two lags of the dependent variable as appropriate to address its persistence. We have confirmed that models meet the assumptions for applying system GMM (Roodman, 2009). We have computed Hansen test statistics for verifying the joint validity of the instruments used in GMM estimation and test statistics proposed by Arellano and Bond (1991) for first-order (AR(1)) and second-order autocorrelation (AR(2)). The following equations present the two-step system GMM models:

$$\text{Model1}: \ \mathrm{CCC}_{i,t} = \alpha + \beta_1 CCC_{i,t-1} + \beta_2 CCC_{i,t-2} + \beta_3 MScore_{i,t-1} + \beta_4 OPCF_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SGR_{i,t} + \beta_7 LEV_{i,t} + \beta_8 WCA_{i,t} + \beta_9 LNS_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} IND_j + \beta_{12}\delta_t + \varepsilon_{i,t}$$

$$\text{Model2}: \ \mathrm{IVD}_{i,t} = \alpha + \beta_1 IVD_{i,t-1} + \beta_2 IVD_{i,t-2} + \beta_3 MScore_{i,t-1} + \beta_4 OPCF_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SGR_{i,t} + \beta_7 LEV_{i,t} + \beta_8 WCA_{i,t} + \beta_9 LNS_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} IND_j + \beta_{12}\delta_t + \varepsilon_{i,t}$$

$$\text{Model3}: \ \mathrm{RCD}_{i,t} = \alpha + \beta_1 RCD_{i,t-1} + \beta_2 RCD_{i,t-2} + \beta_3 MScore_{i,t-1} + \beta_4 OPCF_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SGR_{i,t} + \beta_7 LEV_{i,t} + \beta_8 WCA_{i,t} + \beta_9 LNS_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} IND_j + \beta_{12}\delta_t + \varepsilon_{i,t}$$

Table 1
Definition of control variables.

Variables	Definition
Profitability (ROA)	Ratio of earnings before interest and tax to total assets (Lyngstadaas, 2020)
Operating cashflow (OPCF)	Ratio of net operating cashflow to total assets (Moussa, 2019)
Leverage (LEV)	Ratio of debt to total assets.
Growth (SGR)	Year-on-year sales growth
Size (LNS)	Natural logarithm of sales (Deloof, 2003)
Age (AGE)	Natural logarithm of the years since inception (Moussa, 2019)
Working capital accruals (WCA)	Ratio of change in current assets other than cash and cash equivalents and short-term investment with respect to the previous year minus change in current liabilities other than current maturity of long-term debt with respect to the previous year to total assets in the previous year (Jones, 1991)

$$\text{Model4}: PYD_{i,t} = \alpha + \beta_1 PYD_{i,t-1} + \beta_2 PYD_{i,t-2} + \beta_3 MScore_{i,t-1} + \beta_4 OPCF_{i,t} + \beta_5 ROA_{i,t} + \beta_6 SGR_{i,t} + \beta_7 LEV_{i,t} + \beta_8 WCA_{i,t} + \beta_9 LNS_{i,t} + \beta_{10} AGE_{i,t} + \beta_{11} IND_j + \beta_{12}\delta_t + \varepsilon_{i,t}$$

Where, $CCC_{i,t}$, $IVD_{i,t}$, $RCD_{i,t}$, and $PYD_{i,t}$, represent CCC, IVD, RCD, and PYD, respectively, of i^{th} firm in time t. $CCC_{i,t-1}$, $IVD_{i,t-1}$, $RCD_{i,t-1}$, and $PYD_{i,t-1}$ are first and $CCC_{i,t-2}$, $IVD_{i,t-2}$, $RCD_{i,t-2}$, and $PYD_{i,t-2}$ second lag of CCC, IVD, RCD, and PYD, respectively. $M\text{-}Score_{i,t-1}$ represents EM by i^{th} firm in time t-1. $OPCF_{i,t}$, $ROA_{i,t}$, $SGR_{i,t}$, $LEV_{i,t}$, $LNS_{i,t}$, $AGE_{i,t}$, and $WCA_{i,t}$ represent operating cashflow, profitability, growth, leverage, size, age, and working capital accruals, respectively, of i^{th} firm in time t. IND_j represents industry dummy. δ_t depicts time dummy variable. $\varepsilon_{i,t}$ signifies the random disturbance.

Conventional regression or GMM models explain the influence of explanatory variables only on the conditional mean of the dependent variables. However, quantile regression model estimates the influence on various quantiles of dependent variables. Machado & Silva (2019) have documented the application of the Method of Moments Quantile Regression (MMQR) for panel data with individual effects and endogenous explanatory variables. We have applied MMQR to recognize the impact of EM on entire conditional distribution of CCC, IVD, RCD, and PYD.

3. Main findings and discussion

3.1. Summary statistics

Table 2 presents summary statistics for all the variables used in the analysis. The mean of the M-Score is −2.507, with a standard deviation of 0.880. The average length of CCC is 88.07 days, with a standard deviation of 100.23 days. The mean of IVD, RCD, and PYD, is 95.98, 76.56, and 84.47 days, with a standard deviation of 84.44, 69.37, and 58.01 days, respectively.

3.2. Result of GMM models

Table 3 presents the result of system GMM. The F-statistic for all the models has significant value. The Hansen test statistic for all the models has insignificant p-value, showing that the instruments are correctly specified and meet the assumption of being strictly exogenous. All models estimate AR(1) as significant and AR(2) as not significant, showing that the error terms of two different time periods are uncorrelated. Model-1 estimates the coefficient of $M\text{-}Score_{t-1}$ as 3.15 (p-value= 0.005). The coefficient's positive value shows that marginal increment in $M\text{-}Score_{t-1}$ increases the CCC. In other words, managers with high EM tendency manage their WC less efficiently. This result is consistent with the findings of previous studies (McNichols and Stubben, 2008; Biddle et al., 2009; Shahzad et al., 2019) that examine the relationship between EM and investment efficiency.

Model-2 estimates the coefficient of $M\text{-}Score_{t-1}$ as 2.661 (P-value= 0.010). The result shows that $M\text{-}Score_{t-1}$ positively impacts IVD. EM tendency leads to inefficient inventory management, and managers with higher EM tendency operate on longer inventory days. Model-3 and Model-4 estimate the coefficient of $M\text{-}Score_{t-1}$ as statistically insignificant when regressed on RCD and PYD, respectively, meaning that this study does not provide enough evidence to conclude about the impact of EM on RCD and PYD.

3.3. Result of MMQR models

Table 4 presents the coefficient of $M\text{-}Score_{t-1}$ for all the quantiles of CCC, IVD, RCD, and PYD. For all quantiles of CCC and IVD, the coefficients are statistically significant and positive, suggesting that EM inversely influences all portions of CCC and IVD distribution. The coefficients are statistically not significant for all RCD quantiles and most of the PYD quantiles. MMQR results are consistent with GMM results and support the finding that EM inversely influences WCME and inventory management.

Table 2
Summary Statistics.

Variables	Firm-years	Mean	Std. Deviation	Minimum	Maximum
M-Score	3227	−2.507	0.880	−9.407	6.875
CCC	3227	88.07	100.23	−238.00	902.99
IVD	3227	95.98	84.44	0.06	930.25
RCD	3227	76.56	69.37	0.17	926.17
PYD	3227	84.47	58.01	0.64	847.16
OPCF	3227	0.079	0.078	−0.331	0.669
ROA	3227	0.086	0.084	−0.709	0.740
SGR	3227	0.055	0.242	−0.863	2.941
LEV	3227	0.296	0.221	0.0002	2.858
LNS	3227	9.648	1.822	3.030	15.700
AGE	3227	3.574	0.539	1.386	5.063
WCA	3227	0.010	0.089	−0.695	1.492

This table presents the summary statistics of 3227 firm-years of a cross section of 461 companies for a period from 2014 to 15 to 2020–21.

Table 3
Result of GMM Models.

Dependent / Independent Variable	Coefficients with P-Value Model 1 CCC	Model 2 IVD	Model 3 RCD	Model 4 PYD
CCC_{t-1}	0.733*** (0.000)			
CCC_{t-2}	0.115*** (0.004)			
IVD_{t-1}		0.647*** (0.000)		
IVD_{t-2}		0.219*** (0.000)		
RCD_{t-1}			0.812*** (0.000)	
RCD_{t-2}			0.098** (0.045)	
PYD_{t-1}				0.744*** (0.000)
PYD_{t-2}				0.158*** (0.000)
M-$Score_{t-1}$	3.15*** (0.005)	2.661*** (0.010)	−0.982 (0.358)	−1.03 (0.328)
OPCF	−231.01*** (0.000)	−122.96*** (0.000)	−110.53*** (0.000)	−6.032 (0.676)
ROA	42.205 (0.179)	45.269* (0.057)	−22.252 (0.250)	−18.294 (0.366)
SGR	−53.415*** (0.000)	−37.11*** (0.000)	−43.487*** (0.000)	−28.775*** (0.000)
LEV	−19.213* (0.075)	−3.557 (0.587)	−22.647** (0.016)	−14.809 (0.146)
LNS	−5.522* (0.055)	−3.247 (0.109)	−2.23 (0.330)	−2.283 (0.282)
AGE	−3.082 (0.252)	1.378 (0.475)	−2.787** (0.087)	2.078 (0.347)
WCA	42.654*** (0.005)	26.679*** (0.009)	−1.916 (0.802)	−22.068 (0.161)
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
P-value AR(1)	0.001	0.008	0.003	0.000
P-value AR(2)	0.665	0.790	0.578	0. 313
Hansen test statistics (P Value)	157.43 (0.690)	175.07 (0.319)	165.84 (0. 511)	178.73 (0. 253)
F-statistic (P-value)	303.39*** (0.000)	927.38*** (0.000)	639.55*** (0.000)	731.71*** (0.000)

Note: This table presents the result of GMM. P-value is shown in parenthesis.
*** . Statistical significance at the 0.01 level.
** . 0.05 level.
* . 0.10 level.

Table 4
Main result of method of moments quantile regression.

Quantile	Coefficients of M-$Score_{t-1}$ CCC	IVD	RCD	PYD
0.1	5.926*** (0.002)	3.204*** (0.015)	0..489 (0. 687)	−1.020 (0.436)
0.2	5.793*** (0.001)	3.275*** (0.005)	0.180 (0. 865)	−1.371 (0.215)
0.3	5.695*** (0.000)	3.325*** (0.002)	−0.053 (0.957)	−1.629 (0.103)
0.4	5.600*** (0.000)	3.375*** (0.001)	−0.252 (0.799)	−1.879 (0.144)
0.5	5.493*** (0.000)	3.433*** (0.001)	−0.509 (0.629)	−2.174 (0.120)
0.6	5.384*** (0.000)	3.500*** (0.001)	−0.794 (0.505)	−2.478**(0.015)
0.7	5.270*** (0.001)	3.564*** (0.006)	−1.091 (0.434)	−2.789 (0.117)
0.8	5.158*** (0.001)	3.627*** (0.014)	−1.470 (0. 382)	−3.166** (0.024)
0.9	5.009*** (0.006)	3.717*** (0.035)	−1.945 (0. 355)	−3.666** (0.039)

Note: This table presents coefficient of M-$Score_{t-1}$ when regressed on dependent variables (CCC, IVD, RCD, and PYD) in the presence of control variables by applying MMQR. P-value is shown in parenthesis.
*** . Statistical significance at the 0.01 level.
** . 0.05 level.
*. 0.10 level.

3.4. Robustness check

To check the robustness, we have used another EM proxy computed by the Modified Jones Model (Dechow et al., 1995). In this model, total accruals have been bifurcated into discretionary (DACC) and non-discretionary accruals, and the former has been used to measure the degree of EM. The result of our analysis with DACC as EM proxy is presented in Appendix-B. Consistent with our earlier findings, it confirms that EM inversely influences WCME. It also confirms that EM adversely impacts the efficiency of inventory management.

4. Conclusion

This study finds that with a marginal rise in EM tendency, the CCC and IVD increase. Since EM exacerbates information asymmetry problems, managers who engage in EM find a scope to hide their opportunistic behavior and inefficiency. They may tend to operate on longer CCC as they may remain indifferent to the level of WC investment. They operate on longer IVD because they may prefer higher investment in inventory in place of ensuring supply chain efficiency, resource optimization, or operational discipline in related processes. Consequently, firms with high EM tendency keep funds blocked for a longer duration than their peer firms for the same level of business activities. Overall, it may be concluded that EM tendency may adversely affect the efficiency of WCM and inventory management.

CRediT authorship contribution statement

Kumar Sanjay Sawarni: Conceptualization, Data curation, Investigation, Methodology, Software, Writing – original draft, Writing – review & editing. **Sivasankaran Narayanasamy:** Writing – review & editing, Supervision, Validation. **Purna Chandra Padhan:** Data curation, Methodology, Software.

Declaration of Competing Interest

None.

Data availability

Data will be made available on request.

Appendix A. Definition of variables used in Beneish model

Beneish Model uses eight financial ratios to compute a statistic known as M-Score value to identify whether a company has manipulated its earnings. Based on Beneish (1999) and Beneish et al. (2013), the definition of these eight variables has been presented in this appendix.

Variable	Definition
Days sales in receivables index (DSRI):	$(Receivables_t / Sales_t) / (Receivables_{t-1} / Sales_{t-1})$
Gross margin index (GMI):	$Gross\ Margin_t / Gross\ Margin_{t-1}$, Where, Gross margin is (Sales - Cost of goods sold)/ sales.
Asset quality index (AQI):	$\{1-(PPE_t+CA_t)/Total\ Assets_t\} / \{1-(PPE_{t-1}+CA_{t-1}) /Total\ Assets_{t-1}\}$ Where, PPE denotes net property, plant and equipment. CA represents current assets.
Sales growth index (SGI):	$Sales_t/ Sales_{t-1}$
Depreciation index (DEPI):	$\{Depreciation_{t-1} / (Depreciation_{t-1} + PPE_{t-1})\}/ \{Depreciation_t / (Depreciation_t + PPE_t)\}$ Where, PPE is net property, plant, and equipment.
Sales, general, and administrative expenses index (SGAI):	$(SGA_t / Sales_t) / (SGA_{t-1} / Sales_{t-1})$ Where, SGA is Sales, general, and administrative costs.
Leverage Index (LEVI):	$(Debt_t/Total\ Assets_t) / (Debt_{t-1} / Total\ Assets_{t-1})$
Total accrual to total assets index (TATA):	(Net $income_t$ from continuing operation - Cash $flow_t$ from operating activities) / Total $Assets_t$

Appendix B. Result of robustness check based on modified jones model

Dependent / Independent Variable	Coefficients with P-Value Model 1 CCC	Model 2 IVD	Model 3 RCD	Model 4 PYD
CCC_{t-1}	0.725*** (0.000)			
CCC_{t-2}	0.132*** (0.003)			
IVD_{t-1}		0.637*** (0.000)		
IVD_{t-2}		0.242*** (0.000)		
RCD_{t-1}			0.811*** (0.000)	
RCD_{t-2}			0.117** (0.018)	
PYD_{t-1}				0.741*** (0.000)
PYD_{t-2}				0.148*** (0.000)
$DACC_{t-1}$	31.81** (0.032)	30.702** (0.016)	3.22 (0.744)	−11.637 (0.398)
OPCF	−226.48*** (0.000)	−121.97*** (0.000)	−124.32*** (0.000)	−6.802 (0.624)
ROA	41.306 (0.165)	47.735** (0.043)	−22.661 (0.167)	−15.367 (0.451)
SGR	−54.419*** (0.000)	−37.232*** (0.000)	−43.415*** (0.000)	−28.615*** (0.000)
LEV	−17.544* (0.087)	−1.611 (0.808)	−22.115** (0.01)	−15.162 (0.18)
LNS	−5.714** (0.027)	−3.684** (0.049)	−1.81 (0.305)	−2.567 (0.192)
AGE	−3.661 (0.179)	1.962 (0.328)	−3.083** (0.04)	1.762 (0.411)
WCA	48.643*** (0.001)	27.048*** (0.006)	−1.061 (0.902)	−23.057 (0.161)

(continued on next page)

(*continued*)

Dependent / Independent Variable	Coefficients with P-Value			
	Model 1	Model 2	Model 3	Model 4
	CCC	IVD	RCD	PYD
Industry Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
P-value AR(1)	0.001	0.008	0.002	0.000
P-value AR(2)	0.756	0. 718	0.539	0. 362
Hansen test statistics (P Value)	169.81(0.425)	177.05 (0.282)	161.97 (0. 595)	177.91 (0. 267)
F-statistic (P-value)	294.86*** (0.000)	859.79*** (0.000)	561.99*** (0.000)	607.33*** (0.000)

Note: This table presents the result of GMM. P-value is shown in parenthesis. ***. Statistical significance at the 0.01 level. **. 0.05 level. *. 0.10 level.

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