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Working Capital Management and Banks' Performance: Evidence from India

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Abstract

The purpose of this study is to examine how Indian commercial banks' performance can be improved by determinants of working capital management. This study uses both static models Generalised Moments Method (GMM) and pooled, fixed, and random-effects. The study is based on balanced panel data for 98 Indian banks from 2008 to 2018. Performance is defined by two indicators, namely, return on assets (ROA) and return on equity (ROE). While, working capital cycle, profit after tax, assets size, financial leverage, quick ratio, current ratio, return on capital employed, return on total assets, net profit margin, and monetary policy rate are used as independent variables. The results showed that net profit margin, profit after tax, monetary policy, and working capital cycle are the most important working capital factors that influence Indian commercial banks' performance measured by (ROA). Moreover, among the working capital, the results showed that current ratio, assets size, net profit margin ratio, and return on capital employees have significant positive effects on (ROE). The article's novelty and importance come from its recommendation that policymakers in emerging markets should motivate and enable managers and stakeholders to pay more attention to working capital by raising consumer awareness and increasing knowledge disclosure.

Keywords: Banking Industry, Working Capital Factors, Banks' Performance, India

JEL Classification Code: G21, G32, F65, L25

1. Introduction

The success of a country's economy primarily depends largely on its banking sector performance. There is a strong consensus that a stable banking system is necessary for sustainable economic growth and that banks thus play a crucial and important role in economic development (Menicucci & Paolucci 2016). India has seen substantial liberalisation since the 1990s seeking to increase production and competitiveness and improve banks' performance (Ghosh, 2016). The Indian banking sector has expanded rapidly following liberalisation in 1991 and led to the growth of other large companies (Singh et al., 2016). India has a strong financial system characterised by diverse business bodies as South Asia's largest country (Ghosh, 2016).

The latest financial crisis and the 2008 recession centered more on investments made by companies in short-term assets and the capital used for maturities of less than one year, which constitute the main portion of the balance sheet products of an organisation. This has influenced the value of the short-term management of work capital in firms worldwide and has attracted the care of investigators. Where "one group of practitioners and researchers claimed that successful working capital management is necessary for companies during prosperous economic times" (Lo, 2005) and can be handled strategically to boost productivity and profitability, others stressed that it was relatively critical for

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companies to develop work capital management to withstand the economic effects of the turbulence.

The goal of this research is to explore how the performance of 98 Indian banks can be improved by managing working capital from 2008 to 2018. The study also explores the relation between the determinants of working capital and the performance of banks. Performance is characterised as return on assets and return on equity by two proxies. Although working capital, tax benefit, asset size, financial leverage, rapid ratio, current ratio, capital gain employees, total income returns, net profit margin, and monetary policy rate are used as factors of working capital management.

The paper is organised in the following manner. Section 2 presents the introduction to this article. Section three presents review of literature of study. Section four reveals Approach and Processes. Section 5 includes data analysis and results. The last section shows conclusions of the article.

2. Review of Literature

Many empirical analyses investigated the association between working capital determinants and commercial bank performance in different countries such as Smith (1980) argued in a pioneering study that "working capital management is essential because it affects the profitability and risk of the company". Accordingly, "Singhania and Mehta (2017), Bhatia and Srivastava (2016), and Baños-Caballero and et al. (2012)" have spent substantial time and effort describing the association between working capital management and market efficiency in different contexts.

Working capital management has many roles to play in the success of banks and other businesses. Umoren and Udo (2015) held that the control of working capital is a compromise between the liquidity and profitability goals of the company and the risk as quoted. Working capital management discusses the discrepancies in current asset management, current liabilities, and the interrelationships between them. Umoren and Udo (2015) described WCM as all administration decisions and actions that typically impact the size and efficiency of working capital. Yeboah and Yeboah (2014) examined profitability of Ghanaian banks with regression models for a period from (2005 to 2010) and empirically proved that the cash conversion period is inversely related to the financial performance of banks. Umoren and Udo (2015) revealed a positive relationship between bank output and bank size has been described as significant; rentability and cash conversion have a substantially negative relationship (Yeboah & Yeboah, 2014). Afza and Nazir (2008) indicated an inverse link between the degree of aggression and profitability of these policies. Mandiefe (2016) examined the impact of work capital management on the productivity of Afriland First Bank Cameroon. He found that the management of working capital affected Cameroon's Afriland First Bank evidence that bank age, size, and cash conversion are main factors explaining Pakistani banks' cash amount. Mazreku, Morina and Zeqaj (2020) studied working capital and its effect on commercial bank profitability in Kosovo. He found that the size of the bank and the current ratio had a positive impact on business banks' success in Kosovo, while the debt ratio had a negative effect.

Many scientists, otherwise, find a negative correlation between managing working capital and performing businesses, which would have a detrimental impact on the profitability of businesses by growing the share of existing assets in total assets. Javid and Zita (2014) reported a negative relationship between both the management of working capital and profitability through the same four labor capital management measures as the Asaduzzaman and Chowdhury (2014). Similarly, Padachi (2006) researching Mauritian SMEs from 1998 to 2003, showed that CCC is adversely linked to corporate performance (ROA) and that a high level of investment is correlated with low profitability in inventories and accounts receivables. Raheman and Nasr (2007) concluded in Pakistan, García-Teruel and Solano (2006) in Spain, and Kaddumi and Ramadan (2012) in Jordan, shortening the CCCs can create more value.

Also, studies that examined the association between "working capital management and business success in South-East Asia have been carried out". Zariyawati et al. (2009) found that that the time of cash conversion cycle contributes to improved profitability. Napompech (2012) came to a similar conclusion when studying companies on the Thai stock market; profitability can be increased by reducing the CCC. Al-Homaidi et al. (2020a) tested the link between firm specific and external features in Indian companies. Al-Homaidi et al. (2020c) examined the relationship between profitability and voluntary disclosure in Yemen. Ali and Faisal (2020) investigated the correlation between structure of capital and firms' performance in Saudi Arabia. Dao and Nguyen (2020) studied the relationship between "bank capital adequacy ratio and bank performance" in Vietnam.

Accordingly, the current research aims to assess how the performance of 98 Indian commercial banks can be improved by managing working capital during the period from 2008 to 2018.

This review tested the link between the determinants of working capital management and firms' performance. Performance is defined by two indicators, namely, return on assets and return on equity. Although working capital, tax benefit, asset size, financial leverage, rapid ratio, current ratio, capital gain employees, total income returns, net profit margin and monetary policy rate are used as factors of working capital management. The present paper has four practical implications. First, it seeks to fill the present gap in the banks' performance and working capital literature by providing new empirical evidence from in India. Second, it offers new empirical evidence as a methodological contribution using various

statistical tools. Third, this study is important for academicians, regulators, policymakers, regulatory bodies, users, managers, investors, analysts, and professionals. Finally, the study is also very important for banks' performance, working capital determinants, literature review, and developing countries.

3. Research Methodology

3.1. Data Collection and Sampling

The present review aims to investigate working capital management factors of financial institutions in India. More precisely, it looks empirically at the link between working capital factors and commercial banks' performance. Banks' performance is defined by two proxies', namely, return on assets and return on equity, while, working capital cycle (WCC), profit after tax (PAT), assets size (ASSETSSIZE), financial leverage (FLEVERAGE), quick ratio (QURATIO), current ratio (CURRRATIO), "return on capital employed (ROCE), return on total assets (ROTA), net profit margin (NPM), and monetary policy rate (MPR)" are used as working capital management determinants.

This research concentrates only on the financial banks in India. The sample size of this study is 98 commercial banks in India. The data of this study are collected from ProwessQI database with 1078 observations over a period of 11 years from 2008 to 2018. The ProwessQI database is the most regular and authenticated database for information about the banking framework and other firms listed in India.

3.2. Model Specification

The reviews from the banks' performance literature indicated that the proper functional linear method of analysis is the one method (Menicucci & Paolucci, 2016). Many prior reviews such as AL-Omar and AL-Mutairi (2008), Alper and Anbar (2011), Salike and Ao (2017), and Tiberiu, (2015) have used linear regression models (pooled, fixed and random effect). While, Athanasoglou et al. (2008), Al-Homaidi et al. (2018), Bougatef (2017), Chowdhury and Rasid (2017), Al-Homaidi et al. (2019), Dietrich and Wanzenried (2014), Ahangar and Shah (2017), Masood and Ashraf (2012), Rashid and Jabeen (2016), Saona (2016), Tiberiu (2015), and Al-Homaidi et al. (2020b) have used both "Generalized Moments Method (GMM) and linear regression" models.

A twelve-year sample size for 98 commercial banks is applied to investigate the relationship between working capital indicators and banks' profitability in India. Following Alper and Anbar (2011), Masood and Ashraf (2012), and Chowdhury and Rasid (2017) the conceptual structure for the panel data is specified according to the following regression model.

$$\gamma_{nt} = \alpha + \beta x_{nt} + \varepsilon_{nt} \quad (1)$$

Where the dependent factor (Performance) is used and denoted by α, denoted by the Parameter vector to be calculated, and observation vector to be "which is $1 \times k$, $t = 1,\ldots, T$; $n = 1,\ldots, N$". The equations hypothesis that the success of banks in India focuses on factors of working capital which areas continue to follow:

$$\begin{aligned}\text{Bank's Performance}_{it} = {} & \alpha_i + \beta_1 \text{ASSETSSIZE}_{it} \\ & + \beta_2 \text{CURRRATIO}_{it} \\ & + \beta_3 \text{FLEVERAGE}_{it} + \beta_4 \text{NPM}_{it} \\ & + \beta_5 \text{WCC}_{it} + \beta_6 \text{QURATIO}_{it} \\ & + \beta_7 \text{ROCE}_{it} + \beta_8 \text{ROTA}_{it} + \beta_9 \text{MPR}_{it} \\ & + \beta_{10} \text{PAT}_{it} + \varepsilon_{it}\end{aligned} \quad (2)$$

$$\begin{aligned}\text{ROA}_{it} = {} & \alpha_i + \beta_1 \text{ASSETSSIZE}_{it} \\ & + \beta_2 \text{CURRRATIO}_{it} + \beta_3 \text{FLEVERAGE}_{it} \\ & + \beta_4 \text{NPM}_{it} + \beta_5 \text{WCC}_{it} \\ & + \beta_6 \text{QURATIO}_{it} + \beta_7 \text{ROCE}_{it} \\ & + \beta_8 \text{ROTA}_{it} + \beta_9 \text{MPR}_{it} \\ & + \beta_{10} \text{PAT}_{it} + \varepsilon_{it}\end{aligned} \quad (3)$$

$$\begin{aligned}\text{ROE}_{it} = {} & \alpha_i + \beta_1 \text{ASSETSSIZE}_{it} \\ & + \beta_2 \text{CURRRATIO}_{it} + \beta_3 \text{FLEVERAGE}_{it} \\ & + \beta_4 \text{NPM}_{it} + \beta_5 \text{WCC}_{it} \\ & + \beta_6 \text{QURATIO}_{it} + \beta_7 \text{ROCE}_{it} \\ & + \beta_8 \text{ROTA}_{it} + \beta_9 \text{MPR}_{it} \\ & + \beta_{10} \text{PAT}_{it} + \varepsilon_{it}\end{aligned} \quad (4)$$

Where i correspond to an individual company; t related to year; β_1: β_{10} is the coefficients of determinant proxies and π is the concept of error, and all other parameters are as described in Table 1. To compare the findings and provide a more accurate analysis, two approximate regression models have been used. Furthermore, to compare both "fixed and random" effect regression, Hausman test is applied to decide to either pick measures of the "fixed-effect or random effect" models. This article revealed that fixed effects estimator is the acceptable option. Interpretations of all dependent variables are given in Table 1 and Figure 1.

3.3. Measurements of Variables

In order to carefully estimate the influence of working capital determinants on Indian commercial banks' performance. We used two proxies of Indian banks' performance (RAE and ROA). While, working capital cycle (WCC), profit after tax (PAT), assets size (ASSETSSIZE), financial leverage (FLEVERAGE), quick ratio (QURATIO), current ratio (CURRRATIO), "return on capital employed (ROCE), return on total assets (ROTA), net profit margin (NPM)", and monetary policy rate (MPR) are used as working capital management factors (Table 1).

Table 1: Definitions of the Factors

Variables	Identifier	Definitions, Measurements and Previous Studies	Source of Data
Independent Variables			
Working capital cycle	WCC	"The cash operation cycle (also referred to as the working capital cycle or cash conversion cycle) is the time interval between paying vendors and collecting cash from sales". Empirical evidence as Jayarathne (2014) and Kasozi (2017).	Prowess QI Database
Current ratio	CURRRATIO	"The current ratio is a liquidity ratio that indicates a business's willingness to meet both short- and long-term commitments. It is calculated by dividing the current asset value by the current liability value". Empirical evidence as Ghasemi & Razak (2016), Godswill et al. (2018) and Megaladevi (2018).	
Profit after tax	PAT	"Profit after tax is described as the profit received by a bank after all financial deductions, which may include taxes, have been produced. It is a metric used to assess an organization's financial health and vitality". Empirical evidence as Al-Homaidi et al. (2020) and Godswill et al. (2018).	
Assets size	LOGSIZE	"The asset size of a fund is defined as the overall market value of the securities in the fund. That is also known as funds under administration". Empirical evidence as Al-Homaidi et al. (2020), Jayarathne (2014) and Kasozi (2017).	
Financial leverage	FLEVERAGE	"Financial leverage ratios are any of many financial ratios that indicate how much money is raised by debt (loans) or indicate a company's willingness to fulfil its financial obligations". Empirical evidence as Al-Homaidi et al. (2020f) and Kasozi (2017).	
Quick ratio	QURATIO	"The quick ratio is a measure of a company's short-term liquidity, indicating its ability to fulfil short-term commitments with only the most liquid assets". Empirical evidence as Megaladevi (2018).	
Return on Capital Employed	ROCE	"Return on Capital Employed (ROCE) is a financial ratio that indicates how profitable a business is and how efficiently capital is applied". Empirical evidence as Affairs and Sub (2016) and Ghasemi & Razak (2016).	
Return on total assets	ROTA	"Return on total assets (ROTA) is a ratio that indicates how profitable a business is in terms of profits before interest and taxes (EBIT) versus total net assets". Empirical evidence as Banerjee and Majumdar (2018).	
Net profit margin	NPM	"This is described as the difference in value between revenue-generating assets and the expense of servicing interest-bearing liabilities. It is sometimes used in the bank's financial statement and balance sheet". Empirical evidence as Pratheepkanth (2011) and Megaladevi (2018).	
Monetary policy rate	MPR	"Typically, the Central Bank of India (SBI) specifies this rate for the deposit money bank. This is the pace at which SBI lent money to deposit money banks and other customers". Empirical evidence as Godswill et al. (2018).	
Dependent Variables			
Return on assets	ROA	"The return on assets ratio is a measure of a business's performance in comparison to its total assets. It is measured as net profits divided by the gross value of the firm's assets". Empirical evidence as Padachi (2006), Jayarathne (2014) Kasozi (2017) and Godswill et al. (2018).	Prowess QI Database
Return on equity	ROE	"Return on equity is also a measure of sustainability since it indicates how much net gain is returning to shareholders as equity. Divide net profits by shareholder equity to arrive at this figure". Empirical evidence as Hoque et al. (2015) and Al-Homaidi et al. (2018) and Godswill et al. (2018).	

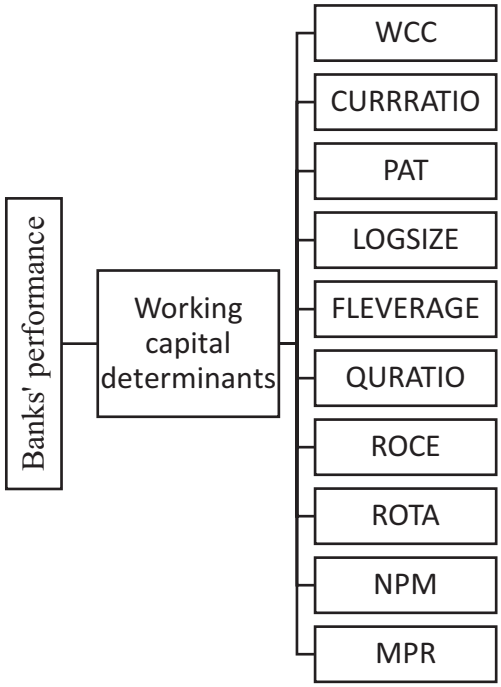

Figure 1: Banks' Performance and Working Capital Determinants

4. Results

4.1. Descriptive Analysis

Table 2 offers descriptive analysis of all factors used in this review. For the entire sample, averages, standard deviations, median, maximum, minimum, and number of observations are presented. ROA's mean valuation is valued at 1.158, which means banks have gained decent asset earnings. ROE's mean value is calculated as 5.166, which shows that banks have good financial health. During the period, banks made good profits. Table 2 also demonstrates variance of average and standard deviation of all measurable factors.

For banking-specific factors, mean value CURRRATIO is 5.203, PAT is 6756 and WCC is 73548 which are abnormally high, FLEVERAGE is 1.037, NPM, QURATIO, ROCE, ROTA and MPR are 2.518, 5.200, 2.421, 0.529 and 4.845 with a standard deviation of 99.57%, 8.514%, 55.535%, 6.66% and 2.246%.

4.2. Pearson Correlation and Multicollinearity Problem

Table 3 indicates the outcomes of link variables and multicollinearity diagnostics. The studies indicate a correlation between dependent and independent indicators. Positive/negative association occurs between both firm-specific factors and performance (ROA and ROE). Where FLEVERAGE, WCC and ASSETSIZE have negative ROA correlation, they have positive ROE correlation. However, MPR has a negative ROA and ROE correlation. Similarly, NPM, ROCE, ROTA, and PAT relate positively to ROA and ROE. CURRATIO and QURATIO both show a negative association with ROE but positive with ROA.

Both independent factors have a poor correlation, which indicates that multicollinearity problems are missing in this study. Research on "Variance Inflation Factor" (VIF) is carried out to check for correct data on multicollinearity problems. As shown in Table 3, for all variables, the VIF values do not exceed 6.33 suggesting no multicollinearity between independent factors.

4.3. Unit Root Analysis

Econometrics as a prerequisite and starting point sample model experiments, unit root test is used to ensure data stationarity (Table 4). For checking the stationarity of variables, "Levin, Lin, and Chu (2002), Im, Pesaran, and Shin (2003), Fisher Chi-square-ADF and Fisher Chi-square-PP proposed by both Maddala and Wu (1999) and Choi (2001)" tests are used. As seen in Table 4, in all related experiments, all parameters used in models are stationary at first difference. It means rejecting a unit root's null hypothesis. Many empirical studies have used unit root test to ensure data stationarity (Al-Homaidi et al., 2019; Al-Homaidi et al., 2020b; Almaqtari et al., 2019; Combey & Togbenou, 2017; Djalilov & Piesse, 2016; Tiberiu, 2015).

4.4. Model Estimation Results

Table 5 shows that ROA is used as dependent and bank determinants. The results of all three models are identical. Studies show that NPM, ROTA, WCC, MPR, and PAT have a significant influence on productivity calculated by ROA. Nevertheless, ASSETSIZE reveals substantial effects in the pooled sample scenarios, and in the case of the fixed effect model, ROCE has a significant effect. This is in line with some earlier research (Salim and Yadav, 2012), which concluded that larger banks have a higher productivity performance. In contrast, Francis (2013) recorded a negative impact on the competitiveness of banks and that the bank size recognized by Athanasoglou et al. (2008) had no significant effect on bank performance.

Table 6 shows that ROE is used as a dependent and bank-specific variable. Similar findings are seen in all three versions. Results show that ASSETSIZE, NPM, QURATIO, and ROCA have a significant effect on ROE measured productivity. Nonetheless, WCC and MPR display important

Table 2: Descriptive Test

Variables	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	1078	1.16	1.07	96.00	–49.96	3.69
ROE	1078	5.17	9.95	64.05	–1678.26	74.05
ASSETSSIZE	1078	11.97	12.43	17.11	3.78	2.43
CURRRATIO	1078	5.20	3.56	167.64	0.10	8.52
FLEVERAGE	1078	1.04	0.84	8.19	0.00	1.03
NPM	1078	2.52	9.41	57.49	–2439.01	99.57
WCC	1078	73548	15061	2211548	–82908	177708
QURATIO	1078	5.20	3.56	167.64	0.06	8.51
ROCE	1078	2.42	5.43	27.21	–1678.26	55.54
ROTA	1078	0.53	0.90	12.93	–159.19	6.67
MPR	1078	4.85	5.77	7.78	1.06	2.25
PAT	1078	6756	2004	145496	–60892	17040

Note: ROA: Return on assets (%); ROE: Return on equity (%); CURRRATIO: Current ratio (%); PAT: Profit after tax (%); LOGSIZE: Assets size; FLEV: FLEVERAGE ratio (%); QURATIO: Quick ratio (%); ROCE: Return on Capital Employed (%); ROTA: Return on total assets (%); NPM: Net profit margin (%); MPR: Monetary policy rate (%); WCC: Working capital cycle (%).

Table 3: Pearson Correlation

Variables	ROA	ROE	ASSSIZ	CRA	LEV	NPM	WCC	QRATI	ROCE	ROTA	MPR	PAT
ROA	1.000											
ROE	0.020	1.000										
ASSETSSIZE	–0.070	0.130	1.000									
CURRRATIO	0.030	–0.020	–0.320	1.000								
FLEVERAGE	–0.010	0.020	0.290	–0.240	1.000							
NPM	0.060	0.570	0.150	–0.050	0.040	1.000						
WCC	–0.050	0.010	0.500	–0.040	0.120	0.010	1.000					
QURATIO	0.030	–0.020	–0.320	0.110	–0.240	–0.050	–0.040	1.000				
ROCE	0.030	0.510	0.110	0.020	0.010	0.710	0.010	0.020	1.000			
ROTA	0.120	0.640	0.100	0.030	0.040	0.660	0.000	0.030	0.710	1.000		
MPR	–0.040	–0.010	0.040	0.020	–0.040	0.050	0.070	0.020	0.030	0.020	1.000	
PAT	0.030	0.070	0.440	–0.110	0.120	0.050	0.510	–0.110	0.040	0.050	–0.080	1.000
Multicollinearity Diagnostics												
Variance Inflation Factors (VIF)			2.360	1.820	1.030	1.960	1.120	2.070	1.280	1.900	1.030	1.580

results in a fixed model. Some previous research (Menicucci & Paolucci, 2016) has contributed to higher productivity for banks with greater reserves. By contrast, Francis (2013) indicated that the size of the bank had a negative influence on bank efficiency and (Athanasoglou et al., 2008) said it did not affect bank profitability significantly. Table 6 demonstrate that all models have a *P*-value to compare and view the outcomes of the two models used.

All versions are appropriate and relevant for less than 1%. Hausman, therefore, focused on the right approximation model of "fixed and random" variables. The *P*-value shows that the model with "fixed effect is better than the model

Table 4: Unit Root Test

Variables	Test for Unit Root in (Levels)				Results
	Levin, Lin & Chu *t**	Im, Pesaran and Shin W-stat	ADF-Fisher χ^2	PP-Fisher χ^2	
LNROA	0.00***	0.40	0.01***	0.00***	Reject Null Hypothesis
ROE	0.00***	0.00***	0.05**	0.00***	
ASSETSSIZE	0.00***	0.00***	0.00***	0.00***	
CURRRATIO	0.00***	0.00***	0.00***	0.00***	
FLEVERAGE	0.00***	0.05**	0.09*	0.00***	
NPM	0.00***	0.55	0.01***	0.00***	
WCC	0.96	0.09*	0.00***	0.00***	
QURATIO	0.00***	0.00***	0.01***	0.00***	
ROCE	0.00***	0.00***	0.00***	0.00***	
ROTA	0.08*	0.26	0.00***	0.00***	
MPR	0.00***	0.00***	0.00***	0.00***	
PAT	0.00***	0.00***	0.00***	0.00***	

Note: ROA: Return on assets (%); ROE: Return on equity (%); CURRRATIO: Current ratio (%); PAT: Profit after tax (%); LOGSIZE: Assets size; FLEV: FLEVERAGE ratio (%); QURATIO: Quick ratio (%); ROCE: Return on Capital Employed (%); ROTA: Return on total assets (%); NPM: Net profit margin (%); MPR: Monetary policy rate (%); WCC: Working capital cycle (%).
*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01; Significant at the 0.05 level.

Table 5: Model Estimation (ROA)

ROA	Pooled				Fixed				Random			
Variables	Coeff.	Std. Error	*t*-Statistic	Prob.	Coeff.	Std. Error	*t*-Statistic	Prob.	Coeff.	Std. Error	*t*-Statistic	Prob.
C	–0.62	0.20	–3.11	0.00***	–0.57	0.28	–2.05	0.04**	–0.42	0.21	–1.99	0.04**
ASSETSSIZE	–0.04	0.01	–3.31	0.00***	–0.01	0.02	–0.60	0.55	–0.04	0.01	–2.98	0.00***
CURRRATIO	0.00	0.00	–0.87	0.39	0.00	0.01	0.61	0.54	0.00	0.00	–0.53	0.60
FLEVERAGE	–0.04	0.04	–1.15	0.25	0.01	0.03	0.16	0.87	–0.02	0.03	–0.46	0.65
NPM	1.16	0.07	17.71	0.00***	0.81	0.07	11.51	0.00***	0.98	0.06	15.41	0.00***
WCC	–0.16	0.05	–3.43	0.00***	–0.08	0.05	–1.73	0.08*	–0.14	0.04	–3.26	0.00***
QURATIO	0.01	0.00	1.58	0.12	0.00	0.01	0.06	0.95	0.01	0.01	1.44	0.15
ROCE	0.00	0.00	–2.31	0.02**	0.00	0.00	–1.25	0.21	0.00	0.00	–2.12	0.03**
ROTA	0.03	0.01	2.98	0.00***	0.02	0.01	1.80	0.07*	0.02	0.01	2.83	0.00***
MPR	–0.02	0.01	–2.07	0.04**	–0.04	0.01	–4.07	0.00***	–0.03	0.01	–3.16	0.00***
PAT	0.00	0.00	3.46	0.00***	0.00	0.00	3.51	0.00***	0.00	0.00	3.63	0.00***
R^2	0.37				0.58					0.29		
Adjusted R^2	0.36				0.52					0.28		
No obs.	1078				1078					1078		
F-statistic	53.44				10.26					37.14		
Prob.	0.00				0.00					0.00		
Hausman Test	0.00											

Note: ***, **, *Denote significant at 1%, 5% and 10% levels.

Table 6: Model Estimation (ROE)

Variable	Coeff.	Std. Error	*t*-statistic	Prob.	Coeff.	Std. Error	*t*-statistic	Prob.	Coeff.	Std. Error	*t*-Statistic	Prob.
C	–0.99	0.15	–6.43	0.00***	–0.54	0.17	–3.22	0.00***	–0.83	0.15	–5.60	0.00***
ASSETSSIZE	0.13	0.01	12.56	0.00***	0.06	0.01	4.55	0.00***	0.09	0.01	8.61	0.00***
CURRRATIO	0.01	0.00	4.46	0.00***	0.01	0.00	3.80	0.00***	0.01	0.00	5.11	0.00***
FLEVERAGE	0.00	0.03	0.15	0.88	–0.03	0.02	–1.51	0.13	–0.02	0.02	–1.19	0.23
NPM	1.27	0.06	20.77	0.00***	1.94	0.05	36.15	0.00***	1.75	0.05	34.88	0.00***
WCC	0.12	0.04	3.54	0.00***	0.00	0.03	–0.01	0.99	0.05	0.03	1.93	0.05**
QURATIO	–0.01	0.00	–3.59	0.00***	–0.01	0.00	–3.57	0.00***	–0.01	0.00	–4.59	0.00***
ROCE	0.09	0.00	21.80	0.00***	0.05	0.01	8.48	0.00***	0.07	0.00	15.63	0.00***
ROTA	–0.01	0.02	–0.49	0.62	0.02	0.02	0.72	0.46	–0.04	0.02	–1.79	0.07*
MPR	–0.03	0.01	–3.54	0.00***	–0.01	0.01	–1.54	0.12	–0.01	0.01	–2.49	0.01***
PAT	0.00	0.00	–2.23	0.02	0.00	0.00	–1.15	0.25	0.00	0.00	–1.16	0.25
R^2	0.71					0.89				0.79		
Adjusted R^2	0.71					0.87				0.79		
No obs.	1078.00					1078.00				1078.00		
F-statistic	210.09					56.11				321.28		
Prob.	0.00					0.00				0.00		
Hausman test	0.00											

Note: ***, **, *Denote significant at 1%, 5% and 10% levels.

with random effect" since the *P*-value in Hausman reaches 0.05 ($P = 0.00 < 0.01$). Therefore, the Hausman test reveals that a model with a fixed effect is more suitable than a model with a random effect.

4.5. GMM Estimation

Generalised Moments Method (GMM) methods are used to validate the effects of the above models. A two-stage framework of GMM models manages correlation problems between the lagged dependent factor and error word. Chowdhury and Rashid (2017) reported that "only by addressing the association issue between the delayed factor and the error term and the indignity of other explanatory factors, GMM can resolve the problems of fixed outcomes". In addition, the GMM program attempts to resolve poor instrument problems of that instrument. Table 7 display GMM statistics for the determinants of banks' profitability. The Sargan test reveals no over-identification limits, and the Arellano-Bond study denies any auto-correlation hypothesis. The statistic value of the lagged dependent variable suggests a propensity to continue over time in medium-sized bank earnings. The value is 0.48, which implies a competitive market.

No first-order autocorrelation is rejected. Rejecting the non-first-order autocorrelation/null hypothesis does not result in an incorrect GMM estimator method. However, the second-order *p*-value of the Arellano and Bond test does not reject the null hypothesis, suggesting any second-order correlation. These results confirm using multiple variables to use a dynamic panel data model; using lags of these variables removes second-order autocorrelation. Moreover, Sargan's test checks over-identification (Roodman, 2009). The results of GMM estimation indicated that assets size (ASSETSIZE) and Working capital cycle (WCC) relate significantly and negatively to return on assets (ROA). Return on equity (ROE), assets size (ASSETSIZE), and return on total assets (ROTA) relate significantly and negatively.

4.6. Robustness Regression

Table 8 summarises the various outcomes achieved by the various methods (fixed-effects regression and system GMM estimates). According to the results, there has been a negatively significant difference between MPR and ROA. In the case of ROE, QURATION has a negative and significant influence on ROE. In the case of GMM results, ASSETSIZE and WCC have a negative and significant impact on ROA.

Table 7: GMM Estimation

Variables	ROA				ROE			
	Coeff.	Std. Error	*T*-statistic	Prob.	Coeff.	Std. Error	*T*-statistic	Prob.
Lag	–0.71	0.13	–5.64	0.00***	0.53	0.66	0.81	0.42
ASSETSSIZE	–0.16	726278.00	2.23	0.02**	–3.77	2.24	–1.69	0.09*
CURRRATIO	0.02	0.01	2.63	0.01***	0.10	0.19	0.52	0.60
FLEVERAGE	0.26	0.26	–1.03	0.31	–0.25	1.21	–0.20	0.84
NPM	0.00	0.01	1.89	0.06*	0.52	0.13	3.98	0.00***
WCC	–0.27	0.16	–1.66	0.09*	9.53	5.67	1.68	0.09*
QURATIO	–0.87	0.76	–1.15	0.25	14.09	5.60	2.52	0.01***
ROCE	1.02	0.34	2.99	0.00***	13.65	5.59	2.44	0.01***
ROTA	–0.45	0.42	–1.05	0.29	–14.93	8.29	–1.80	0.07*
MPR	–0.01	0.04	–0.18	0.86	–1.18	0.87	–1.36	0.18
PAT	1.85	4.60	3.06	0.00***	0.00	0.00	1.43	0.16
Constant	2.51	1.08	2.33	0.02**	50.81	33.39	1.52	0.13
Number of Observations	1078				1078			
Number of firms	98				98			
Number of instruments	645				645			
Hansen test (*P*-value)	93.74 (1.00)				$\chi^2(633) = 90.94$ Prob > $\chi^2 = 1.00$			
Sargan test (*P*-value)	1506.45 (0.00)				$\chi^2(633) = 707.64$ Prob > $\chi^2 = 0.02$			
AB test AR (1) (*P*-value)	$z = -1.20$ Pr > $z = 0.23$				$z = -1.41$ Pr > $z = 0.15$			
AB test AR (2) (*P*-value)	$z = 1.00$ Pr > $z = 0.31$				$z = 1.01$ Pr > $z = 0.31$			

Note: ***, **, *Denote significant at 1%, 5% and 10% levels.

Table 8: Robustness Regression

Variables	Pooled				GMM			
	ROA		ROE		ROA		ROE	
	Coefficient	Prob.	Coefficient	Prob.	Coeff.	Prob.	Coeff.	Prob.
C	–0.57	0.04**	–0.54	0.00***	2.51	0.02**	–3.77	0.09*
ASSETSSIZE	–0.01	0.55	0.06	0.00***	–0.16	0.02**	0.10	0.60
CURRRATIO	0.00	0.54	0.01	0.00***	0.02	0.01***	–0.25	0.84
FLEVERAGE	0.01	0.87	–0.03	0.13	0.26	0.31	0.52	0.00***
NPM	0.81	0.00***	1.94	0.00***	0.00	0.06*	9.53	0.09*
WCC	–0.08	0.08*	0.00	1.00	–0.27	0.09*	14.09	0.01***
QURATIO	0.00	0.95	–0.01	0.00***	–0.87	0.26	13.65	0.01***
ROCE	0.00	0.21	0.05	0.00***	1.02	0.00***	–14.93	0.07*
ROTA	0.02	0.07*	0.02	0.47	–0.45	0.30	–1.18	0.18
MPR	–0.04	0.00***	–0.01	0.12	–0.01	0.86	0.00	0.16
PAT	0.00	0.00***	0.00	0.25	0.00	0.00***	50.81	0.13
No obs.		1078		1078		1078		1078
Prob.		0.00		0.00		0.00		0.00

Note: ***, **, *Denote significant at 1%, 5% and 10% levels.

ROCE has a negative and significant effect on ROE variable. According to the observations, an acceptable design of regression assumption was used. Furthermore, the findings show that the data were free of outliers and prominent findings.

Likewise, Godswill et al. (2018) reported that management of working capital has a substantial effect on the performance of selected financial institutions and that asset return is a better financial performance measure. The results are not supported by Hoque et al. (2015) who suggested that ROA and ROE have a negative correlation with "current ratio and net interest income". The findings are comparable with Umoren and Udo (2015) who reported that the performance (ROA) and the cash conversion period are significantly negative.

5. Conclusion

The current paper explores the relationship between the indicators of working capital management and banks' performance in India. The research is based on balanced sample size for 98 Indian banks for the period from 2008 to 2018. Indian commercial banks' performance is characterized by two proxies: ROA and ROE, whereas working capital cycle, profit after tax, size of assets, financial leverage, rapid ratio, current ratio, return on capital employed ratio, return on total assets ratio, net profit margin, and monetary policy rate are used as variables for working capital management.

The findings suggested that the net profit margin, profit after tax, monetary policy and working capital cycle are the most significant determinants of working capital that affect Indian banks' output as calculated by ROA. In addition, the outcomes of the working capital revealed that the current ratio, the size of the assets, the net profit margin ratio, and the return on capital employed had a substantial positive effect on ROE.

The present paper has many practical implications. First, it tries to fill the present gap in the banks' performance and working capital literature by providing new empirical studies in India. Second, it offers new empirical evidence as a methodological contribution using various statistical tools. Third, this study is very important for academicians, regulators, policymakers, regulatory bodies, users, managers, investors, analysts, and professionals. Finally, the article is also very important for banks' performance, working capital determinants, literature review, and developing countries.

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