

Firm Performance vis-à-vis Working capital Management: An empirical study of Indian Real Estate Sector.

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Abstract

Working Capital Management (WCM) is one of the vital components of financial management where the focus lies on the short-term aspect of financial decision making. The present study is focused on understanding the effect of working capital management on financial performance of Indian Real Estate listed firms and exploring the various factors that influence it. The study is based on secondary data collected from 'Capitaline Plus' database. The data consists of an unbalanced panel including 1,498 firm-year observations for 123 real estate listed firms with a minimum observation of 3 years and a maximum observation of 18 years. A random-effects regression model is used by taking performance-based measures such as Return on Assets (ROA) and Market to Book Ratio (MBR) as dependent variables along with Cash Conversion Cycle (CCC) and its components as the explanatory variables. Size, Leverage, Growth, Operating Efficiency, and GDP growth are considered as control variables. The findings highlight that there is no direct linkage of CCC with financial performance neither with ROA nor with MBR. The individual components such as Inventory Conversion Period (ICP), Accounts Receivables Period (ARP), and Accounts Payable Period (APP) have a negative relationship with financial performance. The control variables also show a mixed result on the financial performance.

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Keywords: Working Capital, Cash Conversion Cycle, Financial Performance, India, Random Effects

Introduction

In the world of Finance, the term working capital is presumably known to everyone. The widespread notion is that it is 'the capital required for day-to-day expenses. The concept is simple however, the management of working capital is challenging as there are so many dynamic elements within it. These are funds oriented toward the firms' short-term requirements which also has a reflection on the liquidity position. A firm with adequate working capital will be deemed the most efficient and better performing in terms of operating sustainability. The present business conditions have become ultra-dynamic with variations happening within a second. In this scenario, the profitability of the firm depends on various favorable inputs, especially raw materials, labor, overheads, etc. A firm cannot always depend on external financial sources where cost is another aspect. Upon this, it is highly imperative that a firm manages the working capital for internally funding the short-term requirement. Hence, the working capital management policy (WCM) becomes an important element for profitability.

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It is well documented that the real estate sector is regarded as one of the essential sectors for the development of a country. There are numerous dimensions that the real estate sector captures such as employment, utilization of natural resources, and increasing the income level of the people. When compared with others the working capital requirement of the real estate sector is quite high as there is a substantial demand for funds in the short-term. This ranges from land acquisition deals, purchase of raw materials, labor payments, lease payments, legal issues, permits, infrastructure inputs, and so forth. The sector is further classified into housing, retail, hospitality, and commercial segments. The real estate sector in the developing economy has a huge demand in the form of residential space and office space. The level of demand is of course different from urban to semi-urban areas. The construction aspect is one of the major sectors of real estate (Chitnis, 2018).

The real estate sector has high relevance to the WCM in order to consider liquidity, solvency, efficiency, and profitability. These would boost the performance of the enterprise (Brigham, Gapenski and Ehrhardt, 1999). An inadequate WCM policy pushes the firms towards financial stress and gradually they become extinct (Kortman, Wicks and Ojeda, 2017). The consequences of WCM policy are such that, a rigid policy affects the liquidity position, further affecting the profitability whereas a liberal WCM policy might give good short-term results but in the long term increases the chances of increasing debt as well. The real estate sector in India holds the second fiddle in generating employment right after the agricultural sector. With India's rise in the ranking of the Global Real Estate Transparency Index 2019, where she stood at 34, the real estate sector paved way for better growth. The COVID 19 outbreak became a roadblock in this avenue in 2020, nevertheless, the sector has many expectations. It is anticipated to grow by 1 trillion USD by 2030 and will further contribute to GDP by at least 13 percent. The rapid urbanization across the country has also made the Real Estate sector lucrative for investment opportunities. The real estate sector is the third-largest sector regarding FDI inflow. Various government initiative such as the 'Housing for All' initiative is anticipated to bring a further 1.3 trillion USD investment as FDI (Real Estate, 2021).

Objectives of the Study

The objectives of the present study are based on the missing aspect of WCM studies in the Real Estate sector of India. There are numerous studies in the area of WCM and firm performance that present diverse findings. It is an established fact that working capital is important, however, the extent of it is yet to be identified in contrast to other financial management decisions. Hence in order to address this, the study tries to investigate working capital management on the firms' financial performance. The following sub-objectives are also considered:

- i. To investigate the impact of the inventory conversion period (ICP) on firms' financial performance.
- ii. To investigate the impact of the accounts receivable period (ARP) on firms' financial performance.
- iii. To investigate the impact of the accounts payable period (APP) on firms' financial performance.
- iv. To investigate the impact of the cash conversion cycle (CCC) on firms' financial performance.

Review of Literature

There are plentiful studies in the area of firm performance and working capital management. The studies give a dispersed view where both positive and negative relationships are pointed out by researchers. The empirical studies are presented in this section to establish a background for the study. There are two distinct approaches in the area of working capital research viz. the static approach and the operating cycle approach (Richards and Laughlin, 1980). Similarly, Smith and Begemann (1997) indicated certain sub-dimensions to WCM such as position, activity, and leverage measurement. The position measurement converges to the static approach which refers to the consideration of Current Assets (CA) and Current Liabilities (CL). The CA relates to Gross Working Capital and CA-CL to Net Working Capital. The activity measurement converges to the operating cycle approach where accounts receivables, accounts payables, inventory holding period, purchases, and sales are the elements that identify WCM (Richards and Laughlin, 1980). The cash conversion cycle (CCC), is also identified through activity measurement where the idea is extended to the weighted cash conversion cycle (Gentry et al., 1990), net trade cycle (Shin and Soenen, 1998), and modified cash conversion cycle (Talonpoika et al., 2014). Lastly, the leverage measurement refers to the finance aspect of WCM, as a short to long-term financing ratio (Smith and Begemann, 1997).

As mentioned earlier both negative and positive relationships have been highlighted between WCM and various indicators of firm performance apart from certain studies which show no relationship. A study conducted by Soenen (1993) in the United States indicates a negative relationship between WCM and ROI (Return on Investment). Another large sample study on 2718 US firms indicated no relationship between CCC (WC) and profitability (Jose et al., 1996). This was negated later by Shin and Soenen (1998) who confirmed a negative relationship across a sample of 58,985 US firms from 1975–94. In Saudi Arabia, Eljelly (2004), reported that firms having a high current ratio and longer CCC have a negative relationship with firm performance. Padachi (2006) reported the same in the Mauritian firms where higher inventory and receivables lower the profitability, indicating a negative relationship. Two Pakistani studies conducted by Raheman and Nasr (2007) and Afza and Nazir (2007) for Karachi Stock Exchange (KSE) listed companies also indicated a negative relationship with regard to CCC and shareholder value. There are numerous studies that show a negative association in different geographical locations such as Ramachandran and Janakiraman (2009) in India, Dong and Su (2010) in Vietnam, Vahid et al. (2012) in Iran, Thakur (2017) in Bangladesh, Wuryani (2015) in Indonesia and Jakpar et al. (2017) in Malaysia. On the other hand, there are few studies that indicate a positive relationship. For instance, a Greek study found a positive relationship between CCC on a firm's profitability (Lyroudi and Lazaridis, 2000). Numerous studies across Europe have confirmed this such as Lazaridis and Tryfonidis (2006) in Greece, García-Teruel and Martínez-Solano (2007) in Spain, Baveld (2012) in Netherland, Enqvist et al. (2014) in Finland and Yazdanfar and Ohman (2014) in Sweden.

To summarize the findings of the literature, three types of relationships could be identified between WCM and firm performance, negative, positive, and concave. When a shorter CCC increases firm performance, it indicates a negative relationship (Wang, 2002; Enqvist et al., 2014; Yazdanfar and Öhman, 2014). On the other hand, when a longer CCC amplifies firm performance, it indicates a positive relationship (Gill, Biger and Mathur, 2010; Sharma and Kumar, 2011). The concave relationship, however, talks about an optimum working capital for an ideal firm's performance (Baños-Caballero et. al., 2014; Afrifa, 2016).

There are various measurements of WCM and firm performance which have been used. The firm performance indicators are largely standardized and captured through either accounting or market-based measures. The most common among these is the Return on Assets (ROA) (Enqvist et al., 2014, Prasad et al., 2019), Net Operating Profit (NOP) (Vahid et al., 2012), and Return on

Investment (ROI) (Soenen, 1993). Tobin's Q has been used as a market-based measure (Wu, 2011; Bhatia and Srivastava, 2016, Altaf and Shah, 2017). The market-based measure helps to articulate the anticipated value of businesses (Fernandez, 2007; Jennergren, 2008). Baños-Caballero et al. (2014) argue that Tobin's Q indicates a firm's underlying valuation risk and helps to value the future growth and performance of firms.

Research Methodology

Population and Sample

The preliminary sample consisted of all Indian listed firms in the Real Estate industry available in the '*Capitaline Plus*' database for the period from 2002-2019. The study excludes firms for which data is not available for three consecutive financial years during the study period. Further, firms with negative total assets and net sales, and firms with missing data of required variables are excluded from the study. The final dataset is an unbalanced panel including 1498 firm-year observations for 123 firms with a minimum observation of three years and a maximum observation of 18 years.

Variables

The study considers the theory of association between firm performance and working capital management as represented in the seminal work of Shin and Soenen (1998). The working capital elements have been considered both jointly as well as individually. Firm performance is measured using accounting and market-based indicators alongside a few control variables.

Dependent variables

Return on Assets (ROA) and Market to Book Ratio are used for measuring firm performance and are considered as dependent variables. The ROA describes the accounting measure for firm performance expressed as the ratio between earnings after interests, taxes to total assets (Garcia-Teruel and Martinez-Solano, 2007; Talat and Sajid, 2008; Uyar, 2009). As forwarded by Padachi (2006), ROA relates the profitability to the firm's asset. Market to Book Ratio (MBR) is the market-based measurement that shows the equity performance of the firm in the capital market. Higher MBR indicates better performance of the firm.

Working Capital Measures

WCM is commonly measured through CCC (Cash Conversion Cycle). It measures the conversion period among the various stages of the operating cycle approach which includes the purchase of raw materials followed by the collection of receivables through sales and payment to creditors and suppliers (Gill et al., 2010). The CCC corresponds to financial statement figures as reported. Components of CCC include inventory conversion period, accounts payable period, and accounts receivable period. CCC is a good proxy for measuring WCM (Deloof, 2003; Gill et al., 2010; Lyngstadaas and Berg, 2016). The computation of CCC is as follows:

$$\text{CCC} = \text{Accounts Receivable Period} + \text{Inventory Conversion Period} - \text{Accounts Payable Period}$$

Individual components of CCC are also used, where accounts receivable period (ARP) indicates accounts receivable days, inventory conversion period (ICP) indicates inventory days and accounts payable period (APP) indicates accounts payable days.

Control Variables

Certain control variables like Size (SIZE), Leverage (LEV), Growth (GROW), Operating Expenses Ratio (OER) and Gross Domestic Product (GDP) are considered in order to avoid any endogeneity problems and biases caused by omitted correlated variable. Size is shown through Total Assets which provides a comparable measurement (Lyngstadaas and Berg, 2016). Leverage (LEV) shows the firm's capital structure i.e., debt to total assets. It is considered to have an influence on firm performance (Jakpar et al., 2017). Growth (GROW) is indicated by growth in net sales showing the YOY (year on year) percentage growth. Operating Expenses Ratio (OER) shows the cost-efficiency. OER is derived from operating expenses on net sales. Economic progress is measured through Gross Domestic Product (GDP).

Empirical Model

The use of random effect (RE) regression model has been identified with some of the common determinants of firm performance (Enqvist et al., 2014, Prasad et al., 2018). Specifically, the study uses the following regression model:

$$DV_{it} = \alpha + \beta (\text{INDV}_{it}) + \lambda (\text{CV}_{it}) + \omega_{it}$$

Where, $i = 1, 2, 3, \dots, 1171$ signifies, number of firms and $t = 1, 2, 3, \dots, 18$ signifies the period covered. DV represents the dependent variable, i.e., either ROA or MBR. INDV represents the independent variables which is either CCC or different components of CCC i.e., ARP or ICP or APP, and β represents the coefficient for INDV. CV is the set of conventional firm performance determinants namely SIZE, LEV, GROW, OER and GDP which are used as control variables, and λ captures the coefficients of these variables (Table 1). α is the constant of the model. v_t account for the unseen time-specific fixed effects which are captured by using time dummies. The composite error term ω_{it} has two elements, namely, the cross-section error component (ε_i) and the combined cross-section and time-series error component (μ_{it}). As per the assumption ω_{it} is not correlated to any explanatory variables in the model. *The Hausman test* is used to identify the appropriateness of fixed effect (FE) and random effect (RE) models. The standard errors are heteroskedasticity adjusted by using the procedure as suggested by White (1980). Based on the DV and INDV, the following sub-models are developed:

$$ROA_{it} = \alpha + \beta (\text{ICP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M1)}$$

$$MBR_{it} = \alpha + \beta (\text{ICP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M2)}$$

$$ROA_{it} = \alpha + \beta (\text{ARP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M3)}$$

$$MBR_{it} = \alpha + \beta (\text{ARP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M4)}$$

$$ROA_{it} = \alpha + \beta (\text{APP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M5)}$$

$$MBR_{it} = \alpha + \beta (\text{APP}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M6)}$$

$$ROA_{it} = \alpha + \beta (\text{CCC}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M7)}$$

$$MBR_{it} = \alpha + \beta (\text{CCC}_{it}) + \lambda_1 (\text{SIZE}_{it}) + \lambda_2 (\text{LEV}_{it}) + \lambda_3 (\text{GROW}_{it}) + \lambda_4 (\text{OER}_{it}) + \lambda_5 (\text{GDP}_{it}) + \omega_{it} \dots \dots \dots \text{(M8)}$$

Results and Discussions

Table 01 shows the summary statistics of the various indicators taken for the study. To present a holistic view a comparative analysis is shown alongside all Indian listed firms. The mean value of ROA is 0.05 and MBR is 0.31 which indicates that the average return on assets is 5 percent and the average market value of equity is 31 percent of book value. The figures also reveal that the average ICP, ARP, APP, and CCC are approximately 160, 203, 268 and 126 days respectively. The mean value of 0.23 for LEV suggests that about 23 percent comprises debt out of the total assets in the Indian firms. The growth rate during the study period is 29.06 percent and operating expenses are 34 percent of net sales. Upon comparison with the all-India listed firms, it is noticeable that the working capital dimensions are longer in the real estate industry. This can be seen through a longer ICP, ARP, APP and CCC signifying larger working capital requirement in the real estate firms. The ICP, ARP, APP and CCC of all-India listed firms are 81, 78, 70 and 94 days respectively which is much lower indicating a lower working capital requirement as per the operating cycle approach. This also indicates a better working capital management policy.

On the hindsight the positive aspect of the comparison is that OER is significantly lower in real estate companies (0.34) in comparison to the Indian Listed Companies (0.95). The ROA is however, lower for the real estate companies against 0.087 for the Indian Listed Firms. The same identifiable with MBR. The debt-to-equity ratio indicates that the Indian Firms are more dependent on debt than the real estate firms. The size is relatively similar in both the categories.

Table 02 displays the correlation results of the variables. Both ROA and MBR have a significant relationship with the independent variables except GDP and GROW respectively. There is a significant positive relationship between firm performance and working capital management. The negative relationship is observed ARP and ICP with ROA and MBR whereas a positive relationship is observed with ICP. On the other hand, the CCC has a positive relationship with both ROA and MBR. The correlation matrix indicates that most of the variables are related with statistical significance. In order to check the multicollinearity issue VIF (Variance Inflation Factor) (Gujarati, Porter, and Gunasekar, 2012) has been rendered. The values are within limit signifying that multicollinearity will not be an issue.

Table 01: Descriptive Statistics of Variables

| Indicator | Variable | Definitions | MEAN | | MEDIAN | | SD | | MIN. | | MAX. | | N | | EXPECTED RELATIONSHIP | |
|------------------|----------|-----------------------------------------------------------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|-------------------------|--------------------------|-------------------------|-----------------------|------|
| | | | Real Estate Listed firms | All Indian Listed firms | Real Estate Listed firms | All Indian Listed firms | Real Estate Listed firms | All Indian Listed firms | Real Estate Listed firms | All Indian Listed firms | Real Estate Listed firms | All Indian Listed firms | Real Estate Listed firms | All Indian Listed firms | ROA | MBR |
| Firm Performance | ROA | <i>Net Operating Income after Interest and Taxes / Average Total Assets</i> | 0.05 | 0.087 | 0.04 | 0.082 | 0.06 | 0.091 | -0.05 | -0.209 | 0.18 | 0.401 | 123 | 1187 | ---- | ---- |
| | MBR | <i>Market to Book ratio</i> | 0.31 | 0.96 | 0.00 | 0.00 | 0.64 | 2.024 | 0.00 | -0.519 | 2.37 | 12.47 | 123 | 1187 | ---- | ---- |
| WCM | ICP | <i>Inventory/ (cost of goods sold/365) in days</i> | 160 | 81 | 12 | 60 | 241 | 92 | 0 | 0 | 781 | 583 | 123 | 1187 | - | - |
| | ARP | <i>Accounts receivable/ (sales/365) in days</i> | 203 | 78 | 65 | 54 | 367 | 109 | 0 | 0 | 1493 | 872 | 123 | 1187 | - | - |
| | APP | <i>Accounts payable/(sales/365) in days</i> | 268 | 70 | 74 | 47 | 534 | 107 | 0 | 0 | 2191 | 905 | 123 | 1187 | + | + |
| | CCC | <i>Cash Conversion Cycle = ICP+ARP-APP in days</i> | 126 | 94 | 87 | 73 | 553 | 143 | -1520 | -406 | 1229 | 860 | 123 | 1187 | - | - |
| Size | SIZE | <i>Total Assets</i> | 4.41 | 4.987 | 4.36 | 4.84 | 2.23 | 2.003 | 0.34 | 1.019 | 8.31 | 10.53 | 123 | 1187 | + | + |
| Leverage | LEV | <i>Debt to Total Assets Ratio</i> | 0.23 | 0.312 | 0.20 | 0.275 | 0.20 | 0.293 | 0.00 | 0 | 0.65 | 1.88 | 123 | 1187 | - | - |
| Growth | GROW | <i>(Current year sales/previous year sales) – 1</i> | 29.06 | 15.00 | 0.96 | 1.00 | 98.49 | 41.50 | -85.85 | -73.90 | 347.06 | 263.6 | 123 | 1187 | + | + |
| Cost Efficiency | OER | <i>Operating Expenses/Net Sales</i> | 0.34 | 0.95 | 0.20 | 0.92 | 0.38 | 0.317 | 0.01 | 0.421 | 1.42 | 3.27 | 123 | 1187 | - | - |
| Economic Status | GDP | <i>Gross Domestic Product</i> | 6.77 | | 7.41 | | 1.47 | | 3.09 | | 8.50 | | | | + | + |

Source: Computed and compiled by Author

Table 02: Correlation Matrix

| Variabl es | ROA | MBR | ICP | ARP | CPP | CCC | SIZ E | LEV | GRO W | OE R | GD P |
|---------------|-------|--------|--------|-------|--------|--------|----------|--------|----------|---------|---------|
| ROA | 1 | | | | | | | | | | |
| MBR | 0.22* | 1 | | | | | | | | | |
| ICP | 0.13* | 0.11* | 1 | | | | | | | | |
| ARP | 0.23* | -0.10* | 0.06** | 1 | | | | | | | |
| CPP | 0.25* | -0.11* | -0.10* | 0.27* | 1 | | | | | | |
| CCC | 0.10* | 0.08* | 0.48* | 0.39* | -0.61* | 1 | | | | | |
| SIZE | 0.29* | 0.51* | 0.26* | 0.01 | -0.13* | 0.23* | 1 | | | | |
| LEV | 0.10* | 0.12* | 0.10* | 0.09* | -0.03 | 0.01 | 0.29* | 1 | | | |
| GROW | 0.18* | -0.02 | 0.03 | 0.13* | -0.15* | 0.05** | 0.03 | -0.04 | 1 | | |
| OER | 0.33* | 0.05** | -0.04 | 0.22* | -0.27* | 0.06** | 0.02 | 0.05** | 0.21* | 1 | |
| GDP | -0.01 | 0.06** | 0.03 | -0.01 | 0.05** | 0.04 | 0.04 | 0.00 | 0.01 | 0.03 | 1 |

Note: *, ** and *** respectively denote results are statistically significant at 1%, 5% and 10% level respectively.

Source: Computed and Compiled by authors

Econometric Analysis:

ROA results

Table 03 presents the ROA regression results. The results focus on four models viz. M1, M2, M3 and M4. A significant positive relationship of Size, Growth and OER is identified in all the ROA models. The positive relationship of ICP in M1 signifies that a longer conversion period in inventory affects the ROA of the firms. Contrary to the operating cycle approach which suggests that a shorter cycle in inventory and accounts receivables decreases the working capital requirement further reducing dependency on other sources of finance. This increases the chance of profitability. In M2 and M3, the ARP and APP have a negative relationship with ROA. The ARP relationship indicates that a shorter receivables period has a positive effect on financial performance. However, a longer payable period in APP will impact in lowering the financial performance. Leverage and GDP have a negative relationship in M1, M2 and M3. Except for ICP and APP the results of the ROA models fall in the line of the existing literature.

MBR Results

The second part of regression analysis uses MBR as dependent variable. Table 04 presents the MBR results. A strong significant relationship of the working capital variables with MBR is missing except with ARP. This indicates that there might be no direct linkage of WCM with the market value of the real estate firms. Although ARP has a significant negative relationship which implies that a longer receivable period from the debtors affects the market value of the firms.

Table 03: Results of ROA Model

| Variables | M1 | | | M2 | | | M3 | | | M4 | | |
|--------------------------------|-------------|-----------|-------|-------------|-----------|-------|-------------|------------|-------|-------------|------------|-------|
| | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. |
| Constant | 0.079 | (2.66)* | 0.008 | 0.074 | (2.48)** | 0.013 | 0.071 | (2.40)** | 0.016 | 0.071 | (2.40)** | 0.016 |
| ICP | 0.001 | (3.3)* | 0.001 | ----- | ----- | ---- | ----- | ----- | ---- | ----- | ----- | ---- |
| ARP | ----- | ----- | ---- | 0.000 | (-3.26)* | 0.001 | ----- | ----- | ---- | ----- | ----- | ---- |
| APP | ----- | ----- | ---- | ----- | ----- | ---- | 0.001 | (-2.39)** | 0.017 | ----- | ----- | ---- |
| CCC | ----- | ----- | ---- | ----- | ----- | ---- | ----- | ----- | ---- | 0.001 | 1.620 | 0.105 |
| Size | 0.006 | (5.62)* | 0 | 0.007 | (6.28)* | 0.000 | 0.007 | (6.13)* | 0.000 | 0.007 | (5.84)* | 0.000 |
| LEV | -0.016 | (-2.14)** | 0.032 | -0.016 | (-2.14)** | 0.032 | -0.014 | (-1.82)*** | 0.069 | -0.014 | (-1.92)*** | 0.055 |
| GROW | 0.000 | (4.28)* | 0 | 0.000 | (3.93)* | 0.000 | 0.000 | (4.07)* | 0.000 | 0.000 | (4.36)* | 0.000 |
| OER | 0.045 | (10.76)* | 0 | 0.043 | (10.03)* | 0.000 | 0.042 | (9.83)* | 0.000 | 0.044 | (10.5)* | 0.000 |
| GDP | -0.019 | (-2.89)* | 0.004 | -0.017 | (-2.61)* | 0.009 | -0.017 | (-2.55)** | 0.011 | -0.017 | (-2.62)* | 0.009 |
| Wald Test (Model) | 450 | | | 451 | | | 445 | | | 439 | | |
| | .57* | | | .36* | | | .19* | | | .91* | | |
| Wald Test (Time-effect) | 172 | | | 166 | | | 177 | | | 177 | | |
| | .63* | | | .41* | | | .91* | | | .85* | | |
| R-Square | 0.27 | | | 0.28 | | | 0.28 | | | 0.27 | | |
| Breusch-Pagan Test | 943 | | | 836 | | | 845 | | | 928 | | |
| | .24* | | | .04* | | | .28* | | | .26* | | |
| Hausman Test | RE | | | RE | | | RE | | | RE | | |

Note: *, ** and *** respectively denote results are statistically significant at 1%, 5% and 10% level respectively.

Source: Computed and Compiled by authors

Table 04: Results of MBR Model

| Variables | M1 | | | M2 | | | M3 | | | M4 | | |
|-------------------------|-------------|---------|-------|-------------|---------|-------|-------------|----------|-------|-------------|----------|-------|
| | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. | Coefficient | Z-stat | Prob. |
| Constant | -0.492 | 1.43 | 0.151 | -0.465 | 1.37 | 0.172 | -0.499 | -1.46 | 0.143 | -0.519 | -1.52 | 0.128 |
| ICP | 0.001 | 0.58 | 0.563 | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- |
| ARP | ----- | ----- | ----- | 0.000 | (-3.51) | 0 | ----- | ----- | ----- | ----- | ----- | ----- |
| APP | ----- | ----- | ----- | ----- | ----- | ----- | 0.000 | -1.28 | 0.2 | ----- | ----- | ----- |
| CCC | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 0.001 | -0.74 | 0.461 |
| Size | 0.141 | (12.3)* | 0 | 0.143 | 12.64 | 0 | 0.142 | (12.43)* | 0 | 0.143 | (12.48)* | 0 |
| LEV | -0.069 | 0.82 | 0.412 | -0.081 | 0.96 | 0.335 | -0.060 | -0.71 | 0.479 | -0.072 | -0.85 | 0.395 |
| GROW | -0.001 | 0.78 | 0.435 | 0.000 | 1.21 | 0.227 | 0.000 | -0.91 | 0.364 | 0.000 | -0.73 | 0.465 |
| OER | 0.027 | 0.59 | 0.558 | -0.002 | 0.03 | 0.974 | 0.012 | 0.24 | 0.808 | 0.029 | 0.63 | 0.532 |
| GDP | 0.047 | 0.63 | 0.529 | 0.051 | 0.69 | 0.492 | 0.052 | 0.71 | 0.479 | 0.052 | 0.7 | 0.482 |
| Wald Test (Model) | 249.70* | | | 264.11* | | | 251.35* | | | 249.65* | | |
| Wald Test (Time-effect) | 51.09* | | | 47.39* | | | 52.64* | | | 50.52* | | |
| R-Square | 0.29 | | | 0.29 | | | 0.29 | | | 0.29 | | |
| Breusch-Pagan Test | 604.74* | | | 597.22* | | | 614.73* | | | 604.85* | | |
| Hausman Test | RE | | | RE | | | RE | | | RE | | |

Note: *, ** and *** respectively denote results are statistically significant at 1%, 5% and 10% level respectively.

Source: Computed and Compiled by authors

Firm Performance and Cash Conversion Cycle

Since ARP, ICP and APP are elements of working capital, the effect on firm performance has been addressed through individual models in the preceding sections. The combined effect of these elements is captured through cash conversion cycle (CCC) which is an extension of operating cycle approach. In both the models pertaining to ROA and MBR, the relationship with CCC could not be identified significantly. The coefficients for both the model are positive although insignificant, it points out the importance of CCC. This implies that a short conversion cycle will impact to a higher ROA and MBR.

Conclusion

Working capital is a vital aspect of financial management. An effective WCM policy enhances firms' profitability and performance. The current study is based on 123 Indian Real Estate listed firms for the period ranging from 2002-2019. Four measures of working capital management (WCM) are considered namely, ARP, ICP, APP and CCC. The results indicate that there is no significant effect of CCC on firm performance, both with ROA and MBR. One of the major reasons behind this result might be the restricted sample size. Further, in India, the sector can be classified into housing, retail, hospitality, and commercial segments which may bring few more characteristics. There is a possibility that these variables might bring new results, however, these classifications are not reported specifically. As suggested earlier, the study could not confirm linkage between CCC and firm performance among the real estate firms. Discretely, ICP on the other hand has a positive relationship with ROA indicating longer inventory conversion period negatively affects the financial performance of the firms. Further, the study establishes a significant negative relationship of ARP and APP with ROA and ARP with MBR. This implies that a longer receivable period has negative impact on returns, additionally a longer payable period on the other hand decreases financial performance. The observations are confounding to the operating cycle approach.

Real Estate is a capital-intensive industry having multiple edges. It ranges from land to raw materials acquisition, from labour to various regulatory payments for permits etc. which makes the requirement of working capital a vital component in its decision-making paradigm. In comparison to other sectors the working capital requirement in real estate is high as there is a huge demand for the short-term. The conversion periods in all the components as observed in the study are lengthier in comparison to all India listed firms indicating the unique nature of the real estate industry. Nonetheless, it is advisable that the real estate sector may consider few changes in working capital management. Firstly, the inventory position of the real estate firms could be improved by decreasing the conversion period. Secondly, the receivables period could be decreased in order to have a positive impact on the financial performance. Last but not the least, the firms might also consider increasing the payables period so that they can get more time for paying short term debt. This would have a positive impact on financial performance as firms will require less working capital, following the operating cycle approach. The essence of the operating cycle approach is that, a shorter period in accounts receivables and inventory conversion along with a longer payables period is beneficial for the firm. This would further provide liquidity for the firms as fewer funds are tied up in working capital, thus reducing the dependency of external sources. Consequently, a lesser use of working capital impacts lowering the cash outflow and decreases the financing costs. This helps in cost-reduction which complements better margins, thereby increasing the value of the firm. In terms of size, large firms with an ideal WCM policy have a higher chance for better financial performance. These results are intended in the direction of helping the managers and other stakeholders in identifying the need for an efficient working capital management policy.

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