International Journal of Economic Policy in Emerging Economies

ISSN online: 1752-0460 - ISSN print: 1752-0452
https://www.inderscience.com/ijepee

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DOI: 10.1504/IJEPEE.2024.10063336

Article History:

Received:	01 March 2022
Accepted:	11 August 2022
Published online:	12 April 2024

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Abstract: The objective of this study is to examine the relationship between firm's working capital and financial performance across three distinct sectors namely services sector, food and agro sector, and real estate sector. Using three different datasets for the three sectors spanning a period of ten years from 2011 to 2020, we found a positive and statistically significant relationship between working capital and financial performance across all sectors. The magnitude of the relationship is strongest in the food and agro sector, followed by the services sector and the real estate sector. The net working capital is the highest in the real estate sector, which is unsurprising given its capital intensive nature. Surprisingly, the proportion of debt to total assets is the highest in the services sector. The constituent components of net operating cycle are statistically significant for all the sectors but with varying degree. Promoter's holding is more than 50% across all sectors and the promoters' composition (predominance of Indian versus foreign promoter) is largely statistically insignificant in determining the return on assets (ROA) for the services and real estate sector.

Keywords: working capital; net operating cycle; firm performance; multisectoral study.

JEL code: O16, F65, G32.

Reference to this paper should be made as follows: Ahamed, N. (2024) 'Working capital as a determinant of firm performance', *Int. J. Economic Policy in Emerging Economies*, Vol. 19, No. 1, pp.86–102.

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This paper is a revised and expanded version of a paper entitled 'Working capital as a determinant of firm performance: a multisectoral study in an emerging economy' presented at the 15th International Conference on Business and Finance (ICBF), virtually, IBS Hyderabad, India, 27–29 January 2022.

1 Introduction

The importance of working capital as a crucial determinant of firm performance and ultimately firm value has been discussed in the extant literature (see Smith, 1980; Deloof, 2003). It deals with managing the day to day expenses of companies while its cash is locked during the operating cycle (Wang and Yan, 2007; Tripathi and Ahamed, 2016, 2017). The management tries to strike the right balance between liquidity and profitability by adopting a conservative/aggressive working capital management policy. A conservative working capital policy would lead to more liquidity and less risk of stock-out cost, etc. However, it increases costs related to the storage, safekeeping and costs related to obsolescence. Hence, adopting a conservative working capital management policy would lead to less risk and less profitability and vice-versa (see Wang, 2002; Tripathi and Ahamed, 2017). Also, adopting a conservative working capital management policy might drive firms to utilise funds earmarked for capital expenditure/other long term requirement, hampering the growth of the firm. Ultimately firms would face the problem of asset liability mismatch due to utilisation of long term funds for working capital and vice-versa due to the non-synchronicity of asset-liability maturity.

The static approach of working capital management only requires a firm to have sufficient amount of current assets to honour its current liabilities. This view however, is restrictive because it doesn't take the changes of current assets and current liabilities over time into account. The dynamic approach of working capital management requires companies to have sufficient amount of cash/cash equivalent in order to sustain their day to day operations during their operating cycle. The issue of working capital is vital to the very existence of firms across sectors. The similitude of working capital is that of fuel in a car[1]. Different sectors have different duration of operating cycles during which they have to sustain their operation without interruptions. The net operating cycle is constituted by the following components (Tripathi and Ahamed, 2016):

a average raw material storage period (in days)

b average work in process (semi-finished goods) conversion period (in days)

c average finished goods storage period (in days)

d average cash collection period from debtors (in days)

e average cash payment period to creditors (in days)

We have chosen three sectors for our study namely the services sector (excluding banking and financial services); food and agro sector; real estate sector. The rationale behind choosing these three sectors is their heterogeneous character in terms of working capital requirements/usage. The services sector because of its very nature does not require large inventory stock, whereas the real estate sector on the other hand, does have a large stock of raw materials, semi-finished finished products that can be carried on the books for years. The food and agro sector falls in the middle of the other two sectors in terms of inventory requirement/usage.

Due to minimal/no requirement of raw material for the services sector, first three components of net operating cycle are virtually non-existent helping reduce the operating cycle drastically. Thus, they need less amount of cash/cash equivalent in order to sustain themselves during their short operating cycle. Due to requirement of perishable raw

material/s and fast moving finished goods off the shelf for the food and agro sector, the time taken for the first three components of net operating cycle are usually in days or weeks. Thus, they need more amount of cash/cash equivalent in order to sustain themselves during their moderately long operating cycle. Due to requirement of sturdy/expensive raw material for the real estate sector, the components of net operating cycle are much longer (usually in months or years if not multiple years). Thus, they need a large amount of cash/cash equivalent in order to sustain themselves during their relatively long operating cycle. Figure 1 exhibits the major distinction/s among the sectors chosen for this study.

Figure 1 Major Distinction/s among the sectors

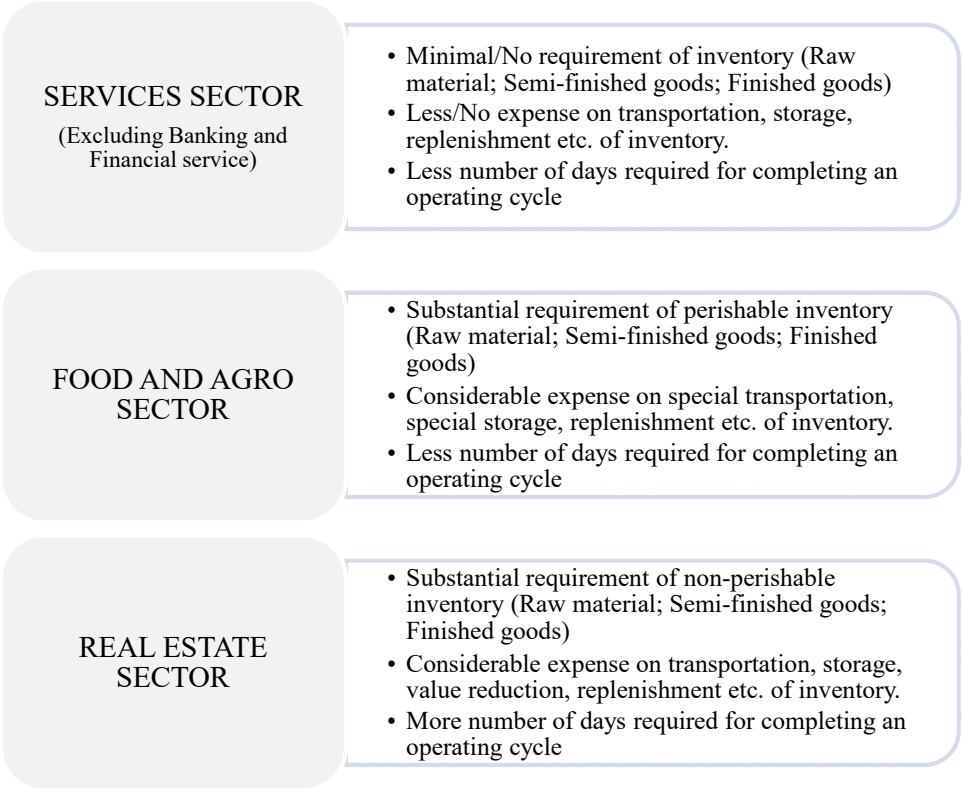

Figure 1: This figure is developed by the authors form various sources. It exhibits the salient characteristics of the three sectors used in this study with one respect to their inventory requirement/usage; type/s of inventory; type/s of expenses incurred by each of them. The heterogeneity in their inventory usage and operating cycle is expected to have an impact on the overall profitability of the firm.

The remainder of this article is as follows. Section 2 contains review of the relevant literature. Section 3 contains hypotheses postulation. Section 4 contains data and variable construction. Section 5 contains the results of this article. Finally, Section 6 contains conclusion.

2 Literature review

Working capital decisions are as crucial as if not more than, capital expenditure decisions for the survival of companies. The cases of highly profitable companies struggling to run their day to operations smoothly for the want of required working capital are not uncommon. Companies invest a sizeable amount into their working capital either through internal earnings or external finance. The literature on working capital have explored the determinants of such investment (see Kim et al., 1998; Opler et al., 1999; Tripathi and Ahamed, 2017). A multitude of factors such as perishable nature of raw materials, availability of raw materials freely, risk of obsolescence, availability of inexpensive credit, access to and the depth of capital markets, duration of operating cycle, commonly accepted trade credit practices of the sector, state of the economy as whole, etc. determines the working capital policy of firms (see Einarsson and Marquis, 2001; Braun and Larrain, 2005; Chiou et al., 2006; D'Mello et al., 2008; Tripathi and Ahamed 2016).

In what can be considered as one of the pioneer studies in the stream of working capital, Shin and Soenen (1998) found a negative relationship between efficiency of working capital management and profitability for the US based firms. The inverse nature of this relationship is established for non-financial Belgian companies (see Deloof, 2003); Greek companies (see Lazaridis and Tryfonidis, 2006); Spanish companies (see Garcia-Teruel and Martinez-Solano, 2007). At the face of it, the results look uniform across different economies, however there is heterogeneity in the results when profitability was regressed on the constituent components working capital.

Working capital policy of companies is primarily a trade-off between liquidity and profitability (conservative and aggressive working capital policy respectively). Soenen (1993) asserts that either form of working capital policy would have an impact on profitability of the firm. This result was corroborated by Jose et al. (1996) for US based firms. He found an inverse relationship similar to Deloof (2003). However he found the inverse relationship to be different across industries.

Unlike Deloof (2003), Bardia (2004) found a positive relationship between liquidity and profitability in his study on a steel company conducted on a dataset for a period of ten years. Ghosh and Maji (2004) studied the working capital management efficiency of the cement sector of India for a period of ten years from 1992–2002 and concluded that the companies were slow in achieving their target efficiency level. Amit et al. (2005) explored the same relationship in India for the pharmaceutical companies with no certain conclusion.

Another similar empirical study by Raheman and Nasr (2007) in the context of Pakistani firms found a statistically significant negative relationship between different ratios of working capital and profitability. This study confirms the results obtained in previous studies in different economies (see, Howorth and Westhead, 2003; Padachi, 2006; Afza and Nazir, 2007). Samiloglu and Demirgunes (2008), studied the relationship between working capital management and profitability for a period of ten years. Different constituent components of working capital have different sign/s with respect to profitability. Results obtained by Zariyawati et al. (2009) on the sample dataset of Malaysian firms from different sectors found that there is an inverse relationship between net operating cycle and profitability. Similar results were discovered by Falope and Ajilore (2009) in the context of Nigerian firms.

Overall, we can observe that there exists a mixed bag of results with some authors finding a positive, some negative and others uncertain relationship between working

capital and firm performance. Such results warrant further exploration of this topic, so we chose three structurally different sectors for this study.

3 Hypotheses

The working capital is a crucial determinant of a firms' performance. It is the capital required to sustain the day to day smooth functioning of a company. Even highly profitable companies suffer when their working capital is not able to sustain their operating cycle. In order to determine the nature of relationship between adjusted net working capital and firm performance, we postulate the first null hypothesis:

H1 Adjusted net working capital does not impact firm performance.

The net operating cycle is the time required for cash to go through the whole cycle and get converted back to cash. During this whole cycle firms need to have sufficient cash/cash equivalent to sustain its day to day operations. Firms would like to have a shorter net working capital cycle after taking other important considerations into account. Considerations such as nature of business, trade credit, discount, etc. are taken into account to strike the right balance between duration of net operating cycle and profitability. In order to determine the nature of relationship between adjusted net operating cycle and firm performance, we postulate the second null hypothesis:

H2 Adjusted net operating cycle does not impact firm performance.

In order to determine the nature of relationship between the constituent components of adjusted net operating cycle and firm performance, we postulate a battery of second null hypothesis:

H2a Average raw material storage period does not impact firm performance.

H2b Average work in process conversion period does not impact firm performance.

H2c Average finished goods storage period does not impact firm performance.

H2d Average cash collection period does not impact firm performance.

H2e Average cash payment period does not impact firm performance.

The extant literature (see Nashier and Gupta, 2020; Ganguli and Agrawal, 2009) assert that concentration of promoters' ownership impact firm performance. In this study, we intend to study the impact of predominance of promoters' domicile on firm performance. In order to determine the nature of relationship between predominance of promoters' domicile and firm performance, we postulate a battery of third null hypothesis:

H3 Promoters' composition does not impact ROA

The hypotheses postulated above are tested and their results are exhibited in the sections below.

Table 1 Construction of variables

Serial no	*Variables*	*Construction*
01	Return on assets (ROA)	$\frac{Profit\ after\ tax\ (PAT)}{Total\ asset\ (TA)}$
02	Age	$2022 - Year\ of\ incorporation$
03	Total promoters holding (Tot_Prom)	$\frac{Number\ of\ shares\ held\ by\ promoters}{Number\ of\ share\ outstanding}$
04	Leverage	$\frac{Debt}{Total\ asset\ (TA)}$
05	Net working capital (NWC)	$Current\ asset - current\ liability$
06	Net operating cycle (NOC)	$(Average\ raw\ materials\ storage\ days + Average\ work\ in\ process\ conversion\ days + Average\ finished\ goods\ storage\ days + Average\ debtor\ days\ or\ collection\ days) - Average\ creditor\ daysor\ payment\ days$
07	Adjusted net working capital (ANWC)	$\frac{Net\ working\ capital\ (NWC)}{Total\ asset\ (TA)}$
08	Adjusted net operating cycle (ANOC)	$\frac{Net\ operating\ cycle\ (NOC)}{365}$
09	Average raw materials storage period (RM)	$\frac{Average\ stock\ of\ raw\ materials}{Average\ daily\ consumption\ of\ raw\ materials}$
10	Average work in process conversion period (WIP)	$\frac{Average\ stock\ of\ raw\ materials}{Average\ daily\ consumption\ of\ raw\ materials}$
11	Average finished goods storage period (FG)	$\frac{Average\ stock\ of\ raw\ materials}{Average\ daily\ consumption\ of\ raw\ materials}$
12	Average collection period or debtors days (DD)	$\frac{Average\ stock\ of\ raw\ materials}{Average\ daily\ consumption\ of\ raw\ materials}$
13	Average payment period or creditors days (CD)	$\frac{Average\ stock\ of\ raw\ materials}{Average\ daily\ consumption\ of\ raw\ materials}$
14	Asset turnover	$\frac{Sales}{Reserve}$
15	Equity multiplier	$\frac{Total\ asset\ (TA)}{Reserve}$
16	Return on equity (ROE)	$ROA * Equity\ multiplier$
17	Profit margin	$\frac{Profit\ after\ tax\ (PAT)}{Sales}$

4 Data and variables

This study has used data from companies falling under three different sectors namely services sector excluding the financial and banking services; food and agro sector and real estate sector. The rationale behind choosing these three sectors is their heterogeneous character in terms of working capital requirements/usage.

The datasets are extracted using the Prowess database[2] for a period of ten years from 2011 to 2020. A three level filter is applied to arrive at the final set of companies for each of the three sectors. First, all the firms of each of the three sectors are extracted from Prowess. Next, all the firms not listed on NSE was removed. Next, all the merged entities were removed. Next, all the firms listed on NSE after the year 2010 was removed. Finally, we arrived at the final sample set of companies for all the three sectors. There are a total of 301 companies in the services sector, 88 companies in the food and agro sector and 98 companies the real estate sector in the final sample dataset. After data extraction, the variables required for this study are constructed. Table 1 exhibits the construction of variables.

The proxy variable meant for measuring firms' performance is return on assets (ROA). The variable age indicates the age of the firm after its incorporation. The variable Tot_Prom indicates the proportional holding of promoters in the company. The variable Leverage indicates the proportion of debt in the total assets of the company. The variable net working capital is the amount of residual current asset after covering for the current liabilities. The net operating cycle is the period (in number of days) taken for unlocking cash. The variable adjusted net working capital is the ratio of the net working capital to total asset. The variable adjusted net operating cycle is the ratio of the net operating cycle to the number of days in a year.

5 Results

The study reveals interesting results, some of which are in line with our expectations while others are not. At the face of it, there is a strong and clear positive relationship between the adjusted net working capital and firm performance across the sectors. It indicates that having large quantum current assets after covering the current liabilities as buffer have a positive impact of firms' profitability. Also, there is a negative relationship between adjusted net operating cycle and firm performance. However, this relationship is statistically not significant for firms' in any sector. The differences across the sectors start to emerge when we look closely at the constituent components of the adjusted net operating cycle. It would be elaborated in detail in Section 5.2.

5.1 Descriptive statistics

The descriptive statistics of the sample datasets for the companies in the services sector (excluding banking and financial services), companies in the food and agro sector; real estate sector are provided in Panel A, B and C respectively of Table 2. The mean ROA for companies in the services sector, food and agro sector and the real estate sector are –2.6%, 2.6% and –1.4% respectively. The ROA is most normally distributed in the food and agro sector with the mean and median values (not shown here) lying very close to each other.

The promoter holding is in excess of 50% for all the sectors as indicated by both measured of central tendency namely mean and median. It is a clear indication of predominance of extremely concentrated ownership in the firms across sectors in India.

The mean value of leverage is the highest in the services sector. It might be because we have measured leverage as the ratio of debt to total asset. Companies in the services sector do not have much asset, unlike companies in other sectors such as food and agro and real estate. Hence, the ratio can be higher in services sector because of a lower value in the denominator.

The net working capital and the net operating cycle are the highest in the real estate sector as per both the measures of central tendency, which is in line with our expectation.

Table 2 Descriptive statistics sector wise

Variables	*Panel A*			*Panel B*			*Panel C*		
	Obs.	*Mean*	*Std. dev*	*Obs.*	*Mean*	*Std. dev*	*Obs.*	*Mean*	*Std. dev*
ROA	3,481	–0.026	0.57	867	0.026	0.14	1,240	–0.014	0.27
Age	3,960	35.10	16.01	880	46.04	22.76	1,375	40.34	19.07
Tot_Prom	3,370	49.88	19.50	865	52.96	16.36	1,233	54.65	16.97
Leverage	2,469	0.31	1.29	765	0.11	0.15	1,063	0.16	0.44
ANWC	3,497	–0.55	25.31	867	–0.06	1.15	1,240	0.006	0.43
ANOC	526	4.57	49.58	635	–0.27	15.41	302	–3.57	93.20

Notes: Return on assets refers as ROA; age refers as age of the firm; total promoters holdings refers as Tot_Prom; debt to total assets refers as leverage; net working capital refers as NWC and net operating cycle exhibits as NOC. Descriptive statistics of service sector represents in Panel A; food and agro sector in Panel B and real estate sector in Panel C. Each panel comprises of three columns consisting the number of observations; mean and standard deviation values. All the variables are following a normal distribution as evident from the p value of JB statistic (Not shown here in the table).

5.2 Inferential statistics

The results obtained through regression analysis of firm performance on a list of independent variables across three distinct sectors are presented in Table 3. As expected, there is a clear and statistically significant positive relationship between adjusted net working capital and firm performance (measured by ROA).

Table 3: This table exhibits the results of regression model for companies in service sector (Panel A); food and agro sector (Panel B) and real estate sector (Panel C). Each panel is further divided into two sub-panels. The first sub-panel exhibits the parameter estimates for adjusted net operating cycle. The second sub-panel exhibits the parameter estimates for the constituent components of adjusted net operating cycle. Each cell consists of parameter estimates and VIF values. The parameter estimates have a superscript a, b and c when the estimate values are significant at 1%, 5% and 10% level of significance.

This relationship is most pronounced in its magnitude in the food and agro sector which might be because of a short not operating cycle followed by this sector. In line with our expectation, there is an inverse relationship between adjusted net operating cycle

and firm performance (measured by ROA). The relationship however, is not statistically significant uniformly across the three sectors.

Firms from all the three sectors despite their characteristic differences, behave uniformly in terms of their relationship between working capital and firm performance. However, the uniformity disappears and sector specific results manifest when we analyse the relationship between firm performance and the constituent components of adjusted net operating cycle. Adjusted net operating cycle is broken into five constituent components as mentioned in the 'Introduction' section.

Table 3 Empirical results

	Service sector (Panel A)		*Food and agro sector (Panel B)*		*Real estate sector (Panel C)*	
	Parameter estimate (VIF value)		*Parameter estimate (VIF value)*		*Parameter estimate (VIF value)*	
	A1	*A2*	*B1*	*B2*	*C1*	*C2*
Intercept	–0.009	0.097	0.014	0.102[a]	0.003	0.122[a]
	(0)	(0)	(0)	(0)	(0)	(0)
ANWC	0.056[a]	0.168[a]	0.210[a]	0.227[a]	0.146[a]	0.152[a]
	(1.00)	(1.32)	(1.03)	(1.21)	(1.03)	(1.20)
ANOC	$-4*10^{-4}$[c]		$4.5*10^{-6}$		$2.51*10^{-6}$	
	(1.00)		(1.00)		(1.00)	
RM		–0.007		0.001		–0.008b
		(1.28)		(1.13)		(1.22)
WIP		–0.003		–0.004[a]		–0.001
		(1.15)		(1.52)		(1.55)
FG		–0.010		–0.005[a]		–0.002
		(1.10)		(1.13)		(1.53)
DD		–0.026c		–0.023[a]		–0.020[a]
		(2.02)		(1.71)		(1.49)
CD		0.017		0.008[a]		0.005
		(2.22)		(1.62)		(1.63)
Leverage	–0.008	–0.042[a]	–0.080[a]	–0.083[a]	–0.051[b]	–0.032
	(1.01)	(1.19)	(1.04)	(1.05)	(1.06)	(1.15)
Tot_Prom	–0.037[c]	$4*10^{-4}$	$2.5*10^{-4}$	$1.04*10^{-5}$	$3.79*10^{-6}$	$-3.86*10^{-5}$
	(1.00)	(1.28)	(1.02)	(1.05)	(1.10)	(1.13)
Adj r^2	0.184	0.184	0.335	0.421	0.278	0.323
F	24.05[a]	12.49[a]	106.27[a]	77.02[a]	25.93[a]	16.41[a]

The food and agro sector stands out from the other two sectors in this study when firm performance is regressed against the constituent components of net operating cycle. There is similarity between the food and agro sector and the services sector in terms of

the signs (positive/negative) of the parameter estimates. However, the estimates are statistically significant for four out of five constituent components of the net operating cycle. The parameter estimates are negative for all the components of net operating cycle[3] indicating that lesser the number the days utilised in them would help improve the firm performance.

Table 4 Empirical results

	Pooled OLS		*Least square dummy variable (Fixed effect)*	
	Parameter estimate (VIF value)		*Parameter estimate (VIF value)*	
	A1	*A2*	*B1*	*B2*
Intercept	–0.011	0.097[a]	–0.020	0.096[a]
	(0)	(0)	(0)	(0)
ANWC	0.182[a]	0.188[a]	0.181[a]	0.188[a]
	(1.04)	(1.18)	(1.05)	(1.21)
ANOC	$-8.9*10^{-5}$		$-8.5*10^{-5}$	
	(1.00)		(1.01)	
RM		$-9.3*10^{-4}$		$-9*10^{-4}$
		(1.17)		(1.27)
WIP		–0.003		–0.003[a]
		(1.20)		(1.64)
FG		–0.007[a]		–0.007[a]
		(1.10)		(1.33)
DD		-0.024[a]		–0.023[a]
		(1.73)		(1.97)
CD		0.010[b]		0.010[b]
		(1.67)		(1.73)
Leverage	–0.039[a]	–0.040[a]	–0.038[a]	–0.040[a]
	(1.04)	(1.07)	(1.05)	(1.08)
Tot_Prom	$5.5*10^{-4}$	$1.7*10^{-4}$	$5*10^{-4c}$	$1.7*10^{-4}$
	(1.04)	(1.09)	(1.05)	(1.10)
Food			0.025[b]	0.001
			(1.31)	(1.86)
RE			–0.003	–0.001
			(1.31)	(1.86)
Observation	1,244	1,242	1,244	1,242
Adj r^2	0.218	0.240	0.222	0.239
F	88.11[a]	50.12[a]	60.20[a]	40.03[a]

Table 5 Test statistics (t-test)

Year	*Service sector (Panel A)*			*Food and agro sector (Panel B)*			*Real estate sector (Panel C)*		
	Ind_prom	*For_prom*	*Diff*	*Ind_prom*	*For_prom*	*Diff*	*Ind_prom*	*For_prom*	*Diff*
	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$
2011	0.017	0.038	–0.021	0.043	0.129	–0.086[b]	0.016	0.025	–0.009
			(–0.79)			(–2.16)			(–0.42)
	0.017	0.038	–0.021	0.043	0.129	–0.086[b]	0.016	0.025	–0.009
			(–0.80)			(–2.77)			(–0.77)
2012	0.006	–0.002	0.009	0.038	0.114	–0.076[b]	0.002	0.032	–0.030
			(0.15)			(–2.34)			(–0.77)
	0.006	–0.002	0.009	0.038	0.114	–0.076[b]	0.002	0.032	–0.030b
			(0.16)			(–2.45)			(–2.39)
2013	0.015	0.043	–0.027	–0.002	0.124	–0.127	0.020	0.024	–0.004
			(–0.80)			(–1.44)			(–0.07)
	0.015	0.043	–0.027	–0.002	0.124	–0.127[a]	0.020	0.024	–0.004
			(–1.33)			(–3.20)			(–0.23)
2014	–0.010	0.053	–0.063	0.011	0.078	–0.067	0.013	0.018	–0.005
			(–1.54)			(–1.41)			(–0.17)
	–0.010	0.053	–0.063[a]	0.011		–0.067	0.013	0.018	–0.005
			(–3.06)			(–1.12)			(–0.35)
2015	–0.046	0.040	–0.087	0.011	0.078	–0.062	$3.08*10^{-4}$	–0.005	0.005
			(–0.94)			(–1.34)			(0.16)
	–0.046	0.040	–0.087a	0.011	0.073	–0.062	$3.08*10^{-4}$	–0.005	0.005
			(–2.17)			(–1.47)			(0.49)

Table 5 Test statistics (t-test) (continued)

Year	*Service sector (Panel A)*			*Food and agro sector (Panel B)*			*Real estate sector (Panel C)*		
	Ind_prom	*For_prom*	*Diff*	*Ind_prom*	*For_prom*	*Diff*	*Ind_prom*	*For_prom*	*Diff*
	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$	$\overline{ROA}$
2016	0.006	0.009	–0.003	0.030	0.089	–0.059	–0.033	0.016	–0.049
			(–0.06)			(–1.45)			(–0.25)
	0.006	0.009	–0.003	0.030	0.089	–0.059	–0.033	0.016	–0.049
			(–0.07)			(–1.50)			(–1.21)
2017	–0.020	0.046	–0.066	0.005	0.022	–0.016	–0.013	0.014	–0.027
			(–1.30)			(–0.25)			(–0.36)
	–0.020	0.046	–0.066	0.005	0.022	–0.016	–0.013	0.014	–0.027
			(–2.32)			(–0.17)			(–1.49)
2018	0.019	–0.077	0.096	–0.005	0.070	–0.076	–0.032	0.019	–0.051
			(1.43)			(–0.93)			(–0.45)
	0.019	–0.077	0.096	–0.005	0.070	–0.076	–0.032	0.019	–0.051
			(0.85)			(–1.63)			(–1.91)
2019	–0.025	–0.072	0.047	0.020	0.085	–0.064	–0.067	0.010	–0.078
			(0.82)			(–1.00)			(–0.40)
	–0.025	–0.072	0.047	0.020	0.085	–0.064	–0.067	0.010	–0.078c
			(0.43)			(–1.43)			(–1.72)
2020	–0.022	–0.048	0.026	0.030	0.090	–0.059	0.013	0.001	0.012
			(0.55)			(–1.06)			(0.15)
	–0.022	–0.048	0.026	0.030	0.090	–0.059	0.013	0.001	0.012
			(0.27)			(–1.45)			(0.61)

We have similar sign/s for the slope of the above mentioned parameter estimates for the services sector alluding towards same inferences drawn from the food and agro sector. The results from the real estate sector stands in moderate contrast compared to the other sectors. We observe the signs of two variables, i.e., work in process conversion days and cash payment days completely opposite to our expectation. This can be due to the nature of the business model adopted by the real estate sector. It usually takes months if not years for real estate projects for completion. During this period the semi-finished projects hold value due to their non-perishable nature and general inflation. Also, during this period the timely payment to the suppliers would help ensure uninterrupted supply of required raw materials. The sign/s for the remaining variables, nonetheless statistically insignificant is similar to their counterparts from other sectors and in line with our expectation.

There is an inverse relationship between leverage and firm performance as expected. Higher leverage leads to large fixed payments commitment in the form of interest payments directly impacting profitability. It can be observed from Table 3, that the parameter estimates leverage is negative in statistically significant across sectors.

In Table 4, we run the same regression as in Table 3 except that we use dummy variables instead of running three separate regressions for all the sectors. The services sector is taken as the reference sector and food and agro and real estate sector are assigned dummy variables. It is exhibited in the column B1 and B2 of the fixed effect model that the adjusted net working capital is positively and statistically significant in impacting firm performance. Thus, hypothesis H1 is rejected.

The intercept term in column B1 is –0.020; 0.005 and –0.023 for the services sector, food and agro sector and the real estate sector respectively.

Table 4: This table exhibits the results of regression model for companies in service sector (Panel A); food and agro sector (Panel B) and real estate sector (Panel C). Each panel is further divided into two sub-panels. The first sub-panel exhibits the parameter estimates for adjusted net operating cycle. The second sub-panel exhibits the parameter estimates for the constituent components of adjusted net operating cycle. Each cell consists of parameter estimates and VIF values. The parameter estimates have a superscript a, b and c when the estimate values are significant at 1%, 5% and 10% level of significance.

The intercept term in column B2 is by and large similar across sector, i.e., 0.096; 0.097 and 0.095 for the services sector, food and agro sector and the real estate sector respectively. The coefficients corresponding the average number of days for work in process, finished goods, debtor days and creditor days are all statistically significant. Hence, all the hypothesis in the battery of hypotheses H2 are rejected except for H2a.

Finally, we observe that concentration of promoters' ownership is directly proportional with firm performance[4]. Higher degree of concentration of ownership is a usual practice around the world, especially in developing economies. It puts the promoters' in a commanding position through higher voting (control) and cash flow rights. This is a double edged sword as it enables promoters to use their clout and influence for taking progressive decisions. On the other hand, it can be dangerous as it gives promoters' an opportunity to siphon off and utilise the firm's resources in their personal interest.

5.3 Promoters' composition

Extant studies establish a clear relationship between working capital management and firm performance (see Aktas et al. 2015; Altaf and Ahmad 2019; Sawarni et al. 2021, etc. In this study, we tested the impact of promoters' composition on the firm performance. Since, firm performance is impacted by both working capital management and promoters' composition, it would introduce the problem of multicollinearity if both the independent variables are used in the same model.

It is however, interesting to look at the impact of promoters' composition on firm performance. The premise behind it lies in the fact that promoters' holding in Indian firms are concentrated and very complex through cross holdings. Foreign promoters thus, would prefer a large controlling right of the company through their holding over a large cash flow right in order to have a say. Under this premise, we set out to test if the composition of promoters' would have any impact on the overall firm performance. We found that largely, there is no statistical difference between the firms' performance based on promoters' composition on a year on year basis. Thus, there is no conclusive result to reject/not reject hypothesis H3.

The results obtained from Table 3 assert that there is a positive relationship between concentration of promoters' ownership and firm performance.

Table 4: This table exhibits the results of t-test between Group 1 and Group 2 of companies in service sector (Panel A); food and agro sector (Panel B) and real estate sector (Panel C). Each panel consists of three columns where the first column displays the mean ROA of the companies that had a majority of Indian promoters holding. The second column displays the mean ROA of the companies that had a majority of foreign promoters holding. Finally, the third column displays the difference between the mean ROA for majority holdings by Indian promoters and majority holdings by foreign promoters. The t value is provided in the parenthesis. The difference of mean ROA between the two groups has a superscript a, b and c when the estimate values are significant at 1%, 5% and 10% level of significance.

In order to better understand the impact of promoters' domicile on the firm performance, we bifurcated the firms into two groups. Group 1 has more than 50% of Indian promoters out of the total promoters. Group 2 has more than 50% of non-Indian (Foreign) promoters out of the total promoters. We conducted a two sample t-test (test statistics) to ascertain if there is any statistically significant difference between the two groups in terms of firm performance. The results of the t test across all sectors are exhibited in Table 5.

The results of t-test expose promoters' domicile related firm performance difference sectorally. There is no clear pattern that can be deciphered from the results. Barring a few exceptions the results are largely statistically insignificant for the services and real estate sector. In the food and agro sector, the difference of mean ROA between the groups are statistically significant for a few years. By and large, the results reveal that the mean ROA of firms with predominance of foreign promoters are higher than that of those firms with predominance of Indian promoters. These results however are not statistically significant for all the years and we have a mixed bag of results. Hence, there is no conclusive difference in the mean ROA of firms based on the domicile of promoters.

6 Conclusions

The study concludes that there is undoubtedly a concentration of promoters' ownership across sectors. Given the capital intensive nature of their business, the mean value of leverage is highest in the real estate sector. There is a positive relationship between adjusted net working capital and firm performance across all the sectors. The intensity of this relationship is strongest in the food and agro sector which might be because of a short not operating cycle followed by this sector. In line with our expectation, there is an inverse relationship between adjusted net operating cycle and firm performance. There is an inverse relationship between leverage and firm performance as expected. Higher leverage leads to large fixed payments commitment in the form of interest payments directly impacting profitability. The managers of companies in the above mentioned sectors can take cues about the nature of relationship of various variables with firm performance in order to take economically beneficial decisions. Sectoral salient characteristics should be taken into account while deciding about the net working capital decisions. The net working capital should be sufficient enough to sustain the firms operating cycle.

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Notes

1 The car, irrespective of its size, power, beauty, etc. must have sufficient quantity of fuel to get to the next filling station.

2 Prowess database is a comprehensive database aggregating the financial/non-financial data of listed/unlisted companies in India. It is managed by the Centre for Monitoring Indian Economy (CMIE).

3 Except for the average cash payment period to creditors for the food and agro sector.

4 Except in the first column of panel A, where the sign is negatively and weakly significant at 10% level.