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RE-EXAMINING WORKING CAPITAL MANAGEMENT AND FIRM PERFORMANCE NEXUS: DOES INVESTMENT POLICY MATTER?

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ABSTRACT

Financial crises and macroeconomic imbalances have recently posed serious challenges to firms operating in developing countries. Thus, firms require efficient working capital management (WCM) to remain profitable. The purpose of this study is to examine the impact of WCM on firm performance (FPR) of 'Food & Personal Care Industry' of Pakistan using balanced panel data of 22 listed firms for the period of 2006 to 2022. Further, the study estimates the moderating effects of investment policy (IP) on WCM- FPR relationship. The study has used return on assets to measure FPR, while WCM is measured by a comprehensive measure of cash conversion cycle (CCC) comprising accounts receivable period (ARP), accounts payable period (APP), and inventory period (ITP). The findings reveal that CCC and ITP have a significant negative association with FPR, suggesting shorter CCC and ITP increase FPR. However, ARP and APP are positively associated with FPR, suggesting efficient utilization of ACR and delay in payment bills may increase FPR. Moreover, the results show that IP negatively moderates the impact of all components (except APP) of WCM on FPR. These results imply that a conservative IP mitigates the adverse impact of liberal WCM practice on FPR. The study also discussed the useful implications for managers and policymakers along with limitations of the study in the conclusion section.

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INTRODUCTION

Working capital management (WCM) refers to the administration of a firm's ability to bridge the gap between current assets (CA) and current liabilities (CL), ensuring liquidity for routine business operations (Deloof, 2003). According to the 'theory of the firm', maximization of profit and value are the ultimate objectives of every firm's manager, using all available financial, physical, and human resources (Kotlar et al., 2018). The literature of corporate finance emphasized the significance of efficient WCM policies and their effects on firm productivity and performance (Raheman and Nasr, 2007).

Furthermore, WCM helps maintain the balance between profitability and liquidity (Morshed, 2020; Sajid et al., 2023) because managers have to meet the day-to-day financial needs of business operations. Managers face several challenges, but one of the most frequent ones is maintaining a balance between CA and CL to provide sufficient liquidity to the firm for operational efficiency (Deloof, 2003). Thus, liquidity is a significant factor affecting firm performance (FPR) in the long run (Sajid et al., 2023). Liquidity further affects WCM and other policies, such as investment, financing, and marketing strategies of the firm, which collectively determine FPR (Iqbal et al., 2023a; Simon et al., 2021).

The literature on WCM provides mixed findings about the implications of WCM on FPR (Abuzayed, 2012; Deloof, 2003; Nobanee et al., 2011). For instance, Smith (1980) found that an efficient WCM enhances profitability while it reduces financial risks. However, Van Horne and Wachowicz (2005) argue that firms must optimize the difference between CA and CL because if

CA is greater than CL, it reduces profitability. On the other hand, they argue that the ratio of CA to CL of less than 1 increases the probability of financial risk and bankruptcy. Thus, managers and policymakers must utilize their analytical skills, dedication and focus to formulate and implement efficient WCM (Seth et al., 2021). Furthermore, a common measure of WCM is cash conversion cycle (CCC), which is widely used in the literature, and includes three important components: account receivable, account payable, and inventory investment.

Moreover, FPR is heavily dependent on adequate and timely policies related to WCM (Seth et al., 2021). For example, investment policy (IP) is one of the most discussed policies in the recent literature regarding WCM (Amponsah-Kwatiah and Asiamah, 2021; Compennolle et al., 2019; Kabuye et al., 2019). Furthermore, the internal environment of the organization and IP have a strong impact on FPR and productivity (Kayani et al., 2023; Padachi, 2006). To the best of our knowledge, the moderating role of IP on the WCM and FPR is not well-documented, and very little research has been done in this area (Amponsah-Kwatiah and Asiamah, 2021; Singh and Kumar, 2017). Thus, this literature gap provides the justification and need for this study, specifically in the context of Pakistan's food and personal care industry. Moreover, our study explored the understanding regarding WCM and IP, and their impact of the FPR.

Based on the aforementioned research gap, our study has five specific research objectives. First, to examine the impact of CCC on

the FPR in Pakistan's food and personal care industry. Second, to estimate the impact of ITP on FPR. Third, to estimate the effects of ARP on FPR. Fourth, to measure the impact of APP on FPR. Lastly, to examine whether or not IP moderates the effects of CCC, ITP, ARP, and APP on the FPR.

Due to the ongoing poly-crisis in Pakistan, such as inflationary pressure, supply disruptions, political instability, and financial uncertainty, there is a demand for highly effective WCM for firms to remain profitable and sustained in the long run (Arintoko et al., 2023; Tiwari et al., 2023). These macroeconomic imbalances create uncertainty, further encouraging firms to pay attention to WCM (Yarba and Guner, 2020). One of the most important decisions regarding WCM is investment policy (Banerjee and Deb, 2023; Bhattacharyay, 2023; Venkataramani and Kayal, 2023). Every firm must make effective IP decisions in order to manage its WCM, which could have effects on its profitability.

Recently, global supply chain disruptions, contractionary monetary and fiscal policies, price hikes, and exchange rate instability caused severe financial crises, resulting in reduced availability of loanable funds in the financial market (Alessandria et al., 2023; Ferreira et al., 2021; Fornaro and Wolf, 2023; Sajid et al., 2023). Furthermore, the International Monetary Fund predicted an economic slowdown, especially for developing countries, for the next five years (Eicher & Kawai, 2023). Thus, this study offers valuable insight specifically to the listed food and personal care manufacturing companies on the cruciality of efficient WCM to maximize profit and sustain in the long run.

Furthermore, an efficient WCM not only improves FPR but also affects macroeconomic indicators, such as the unemployment rate in the economy, by expanding production efficiency and creating jobs (Akoto et al., 2013). In Pakistan, public policies are being designed to promote industrial development and enhance productivity by providing an enabling environment (Arif et al., 2022; Khan et al., 2022). However, amid macroeconomic imbalances and severe financial uncertainty, there are several challenges that require serious attention.

The literature on WCM and FPR provides mixed and inconclusive results. These mixed empirical findings confound policymakers and managers, making decision-making a more complex and difficult task. Several studies reported a significant negative impact of a conservative WCM approach on FPR (Chang, 2022; Deloof, 2003; Nobanee et al., 2011; Raheman and Nasr, 2007). On the other hand, few other studies found a significant positive impact of such an approach on FPR (Amponsah-Kwatiah and Asiamah, 2021; Knauer and Wohrmann, 2013; Lazaridis and Tryfonidis, 2006).

It is important to note that these mixed findings are obtained because of a few important reasons, such as the usage of different proxies for WCM and profitability, the use of different econometric techniques, and the nature of data, i.e., time series and panel dataset (Amponsah-Kwatiah and Asiamah, 2021; Aldubhani et al., 2022). Moreover, the empirical literature on the relationship between WCM and FPR in the context of Pakistan is limited and at the transition stage (Hashmi and Iqbal, 2022a). Thus, it provides us an opportunity to explore this relationship for the listed food and personal care industry in Pakistan. Further, this study fills this literature gap and provides empirical evidence on the impact of WCM and IP on firm financial performance.

Our study contributes to the existing literature in several ways. First, it examines the impact of CCC, ARP, APP, and ITP, on FPR. Second, the study explores the moderating effects of IP on the relationship between WCM and FPR for 22 listed firms in the 'Food and Personal Care' industry of Pakistan. Third, the study holds high value and relevance for firms operating in the industry

because it provides empirical-based evidence of the critical role of each component of WCM on firms' financial performance.

Theoretical Literature

Our study has adopted the Cash Conversion Cycle (CCC) theory proposed by Richards and Laughin (1980) to provide a theoretical foundation for our research. The theory emphasizes the time period (days) a firm takes to convert its investment (working capital and other resources) into cash from sales. According to the theory, a firm must manage its CCC to avoid a scarcity of working capital and liquidity (Richards and Laughin, 1980). The theory further implies that a long CCC tends to reduce liquidity and increase the chance of a financial crisis. Thus, firms should have a small CCC to avoid such risks and maximize profits.

Empirical Literature and Hypothesis Development

Several studies have estimated the relationship between WCM and FPR. However, the studies do not provide conclusive results, and the impact of WCM on FPR remains debatable. Moreover, little is known about the impact of IP on WCM and FPR relationship. In this section, the study discusses the existing empirical literature on the effects of WCM and IP on FPR.

WCM and FPR nexus

WCM is like blood in human veins; neither low blood pressure is desirable nor high blood pressure is beneficial. Similarly, managers have to maintain the balance between CA and CL of the firm to perform operations and optimize firm value (Deloof, 2003). In the finance literature, many studies have examined the role of WCM on FPR using different proxies for WCM (Deloof, 2003; Nobanee et al., 2011). However, the most common and effective measure of WCM is the cash conversion cycle (CCC), which shows the average number of days a firm takes to collect cash from the day of production (Yazdanfar and Ohman, 2014). WCM includes three important factors: accounts receivable, accounts payable, and inventory investment. Furthermore, firm profitability or FPR is measured by several factors, but return on assets (ROA) is generally considered an appropriate measure due to its relevance to the firm's assets (Hashmi and Iqbal, 2022a). Furthermore, empirical literature provides strong evidence of a significant association between WCM and FPR (Abuzayed, 2012; Chang, 2022; Deloof, 2003).

CCC and FPR nexus

The majority of existing literature reported a significant negative impact of CCC on FPR (Chang, 2022; Nobanee et al., 2011; Yazdanfar and Ohman, 2014). These studies argue that a long CCC significantly affects the firm's ability to maintain its liquidity and operational efficiency and to grab any possible short-lived opportunities (Zeidan and Shapir, 2017). However, few studies argue that profitable firms may have a longer CCC due to their large size and scale of operations, suggesting a positive association between CCC and FPR (Akoto et al., 2013; Prempeh and Peprah-Amankona, 2019). Thus, the study formulates the following hypothesis:

H₁: Cash conversion cycle has a significant impact on firm performance.

ARP and FPR nexus

Moreover, the literature on ARP and FPR reveals mixed and inconclusive results. The first strand of literature shows a significant negative impact of ARP on FPR (Akey, 2019; Deloof, 2003; Nobanee et al., 2011). These studies argue that a longer ARP

increases the risk of a liquidity crisis and affects the operations of the firm. Further, a longer ARP may result in bankruptcy and default for the firm (Deloof, 2003). On the other hand, a few other studies argue that firms may have to wait for collections from customers if they are operating in emerging economies and even ARP may positively affect their profitability by attracting more customers (Abuzayed, 2012; Amponsah-Kwatiah and Asiamah, 2021). Thus, the study formulates the following hypothesis:

H₂: The account receivable period has a significant impact on firm performance.

APP and FPR nexus

Similarly, empirical studies provide mixed results on the impact of APP on the FPR. For example, several studies reported a significant negative impact of APP on FPR and argued that less-profitable firms tend to delay their payments (Deloof, 2003; Gill et al., 2010; Samiloglu and Akgun, 2016; Ukaegbu, 2014). However, a few recent empirical studies reported a positive relationship between APP and FPR (Amponsah-Kwatiah and Asiamah, 2021; Lazaridis and Tryfonidis, 2006; Knauer and Wohrmann, 2013). These studies argued that firms often delay payments and utilize this 'trade credit' to minimize their cost of financing which ultimately improves their liquidity and profitability. Further, it helps maintain the balance between ARP and APP. Thus, the study formulates the following hypothesis:

H₃: Account payable period has a significant impact on firm performance.

ITP and FPR nexus

Furthermore, an efficient WCM requires firms to plan their inventory investments wisely because it not only improves liquidity but also affects the profitability of the firm (Smith, 1980). Thus, firms must optimize their ITP or they have to face serious consequences, such as a higher cost of inventory holding and liquidity crisis, or they may experience stock-out conditions and lose significant sales, leading to low profitability (Anwar, 2018; Bhatia and Srivastava, 2016; Vahid et al., 2012). For example, firms may experience lower costs of goods sold by reducing the ITP (Pong and Mitchell, 2012), and companies with low profits usually have larger ITP (Al-Debi'e, 2011). Thus, the study formulates the following hypothesis:

H₄: Inventory period has a significant impact on firm performance.

IP, WCP and FPR nexus

Firms may use aggressive IP, which refers to the low value of CA relative to total assets (TA), or they may adopt a conservative IP, which refers to a higher ratio of CA relative to TA (Kaur and Singh, 2014). Further, IP is considered to be an important policy variable that affects WCM and FPR (Agrawal, 2013; Kaur and Singh, 2014; Murniati et al., 2019; Pawlina and Kort, 2005). The study by Kaur and Singh (2014) argues that aggressive IP is associated with higher risk; however, Murniati et al. (2019) found a significant positive association between aggressive IP and FPR. Thus, the literature suggests a significant impact of IP on FPR through WCM practices (Nireesh, 2012). Recently, Vlismas (2023) conducted an empirical study and found that a conservative IP negatively moderates the impact of WCM on FPR, suggesting that an adverse impact of WCM on FPR becomes less severe when a conservative IP approach is used by the firm. Thus, the study formulates the following hypotheses:

H₅: Investment policy significantly moderates the impact of the cash conversion cycle on firm performance.

H₆: Investment policy significantly moderates the impact of the accounts receivable period on firm performance.

H₇: Investment policy significantly moderates the impact of the inventory period on firm performance.

H₈: Investment policy significantly moderates the impact of the accounts payable period on firm performance.

SIZE, LEV, CR and FPR nexus

Furthermore, firm size (FSIZE), current ratio (CR), and leverage (LEV) are commonly used in the literature of corporate finance to examine their impact on FPR (Akoto et al., 2013; Hashmi et al., 2022b; Tufail and Khan, 2013). Specifically, FSIZE may have a positive or negative impact on FPR depending upon the type of industry (Storey, 1990). Similarly, the effects of LEV on FPR also depend upon firms' characteristics, and the existing empirical literature has reported a significant impact of LEV on FPR (Danso et al., 2021; Hutten, 2014; Ilyukhin, 2015). Lastly, CR is also a significant factor affecting FPR, and recent empirical studies have examined the impact of CR on FPR (Ibhagui and Olokoyo, 2018; Sawarni et al., 2020; Youn and Gu, 2009).

Literature Gap

This section of the literature review discussed and identified a significant research gap based on the above-mentioned literature review. To the best of our knowledge, many studies have examined and analyzed the impact of WCM on FPR and reported useful insights, but our study identified two major research gaps in the existing literature. First, the existing empirical studies provide little evidence on the moderating effects of IP on CCC, ARP, APP, and ITP on FPR. Second, the majority of the literature is skewed towards developed economies, and insights about developing countries are not well-reported. Thus, our study fills these significant gaps by incorporating IP as a moderator in the models of our study to examine the impact of IP on WCM and FPR nexus in the Food and Personal care industry of Pakistan.

METHODOLOGY

Sample and Data

The sample of this study comprises 22 listed firms from the 'Food and personal Care Industry of Pakistan', and sample data were collected from the annual reports and PSX for the period of 2006 to 2022. Moreover, firms with missing data and illogical values, i.e., nonpositive values of assets, liabilities and capital, were removed. We have chosen the 'Food and Personal Care Industry' due to two important reasons. First, firms operating in the industry face intense competition, and an efficient WCM is the only option to remain competitive and profitable in the market. Second, the prices of food and personal care products have faced a significant rise in Pakistan, making it difficult for the firms to keep their sales stable. In addition, inflationary pressure also increased the cost of production, which further created problems for firms in the industry.

Furthermore, the selection of the sample is based on the relative share of each firm in the industry and publicly traded companies (listed on PSX).

Variables

The study examines how FPR is affected by WCM components, considering the moderating role of investment policy (IP). To achieve the objectives of our study, we have followed the empirical framework suggested by Deloof (2003).

Dependent Variable

In the literature of finance, FPR is often measured through various proxies, i.e., return to equity ratio (ROE), return to assets ratio (ROA), Tobin's q, and gross operating income (DeLoof, 2003; Mithas et al., 2012). However, ROA is commonly preferred as a measure of FPR, among others (Sami et al., 2011). Therefore, this study used ROA as the measure of FPR for the sample firms.

Explanatory and moderating variables

The study used the components of working capital management (WCM) as independent variables, proxied by the cash conversion cycle (CCC) which includes ARP, APP, and ITO. Furthermore, the study used IP as a moderator in the models, with IP generally classified as either conservative or aggressive. Conservative IP refers to a higher level of investment in CA relative to TA by a firm, while a lower level of investment in CA relative to TA indicates an aggressive IP (Kaur and Singh, 2014). Lastly, three control variables—LEV, FSIZE, and CR—were included in the model to mitigate panel heterogeneity and obtain robust results. These variables have been extensively used in previous literature (Hashmi et al., 2022b; Ibhagui and Olokoyo, 2018; Lam and Lee, 2008). Descriptions and measurements of all variables are presented in Table 1.

Methods and Techniques

The study employs correlation and two robust panel data regression techniques to examine the impact of WCM, IP, and their interaction. Although, correlation analysis helps in understanding the relationship among the sample variables (Sajid et al., 2021), but it does not provide the direction of causality. Therefore, two panel data regression techniques were employed to estimate the relationships.

Model specifications

This section outlines the model specifications used to empirically test the relationship between WCM, IP and FPR. Models 1-4 estimates the impact of CCC, ITP, ARP and APP on FPR, respectively. Ydum and Fdum represent Year dummies and Firm Dummies, respectively.

$$FPR = \alpha + \lambda_1 CCC + \lambda_2 CR + \lambda_3 FSIZE + \lambda_4 LEV + \lambda_5 Ydum + \lambda_6 Fdum + \mu \quad (1)$$

$$FPR = \alpha + \lambda_1 ITP + \lambda_2 CR + \lambda_3 FSIZE + \lambda_4 LEV + \lambda_5 Ydum + \lambda_6 Fdum + \mu \quad (2)$$

$$FPR = \alpha + \lambda_1 ARP + \lambda_2 CR + \lambda_3 FSIZE + \lambda_4 LEV + \lambda_5 Ydum + \lambda_6 Fdum + \mu \quad (3)$$

$$FPR = \alpha + \lambda_1 APP + \lambda_2 CR + \lambda_3 FSIZE + \lambda_4 LEV + \lambda_5 Ydum + \lambda_6 Fdum + \mu \quad (4)$$

Furthermore, Models 5-8 estimates the moderating effects of IP on WCM and FPR. Specifically, if the interaction terms i.e., CCC*IP, ARP*IP, APP*IP, and ITP*IP are statistically significant, there is evidence of moderating effects of IP.

$$FPR = \alpha + \lambda_1 CCC + \lambda_2 IP + \lambda_3 CCC*IP + \lambda_4 CR + \lambda_5 FSIZE + \lambda_6 LEV + \lambda_7 Ydum + \lambda_8 Fdum + \mu \quad (5)$$

$$FPR = \alpha + \lambda_1 ITP + \lambda_2 IP + \lambda_3 ITP*IP + \lambda_4 CR + \lambda_5 FSIZE + \lambda_6 LEV + \lambda_7 Ydum + \lambda_8 Fdum + \mu \quad (6)$$

$$FPR = \alpha + \lambda_1 ARP + \lambda_2 IP + \lambda_3 ARP*IP + \lambda_4 CR + \lambda_5 FSIZE + \lambda_6 LEV + \lambda_7 Ydum + \lambda_8 Fdum + \mu \quad (7)$$

$$FPR = \alpha + \lambda_1 APP + \lambda_2 IP + \lambda_3 APP*IP + \lambda_4 CR + \lambda_5 FSIZE + \lambda_6 LEV + \lambda_7 Ydum + \lambda_8 Fdum + \mu \quad (8)$$

Statistical analysis

The study has used the Prais-Winsten regression with panel corrected standard errors (PCSE) to estimate the relationship between WCM, IP, and FPR. We employed the PCSE technique because the data exhibited heteroscedasticity, autocorrelation, and cross-dependence, demanding the estimation of robust standard errors (Greene, 2003; Hasan et al., 2022). Moreover, the feasible generalized least squares (FGLS) technique was also employed to obtain reliable estimates.

Table 1. Description of variables.

Variables	Symbol	Measurement/Definition	Expected Sign
<i>Dependent Variable</i>			
Firm Performance	FPR	FPR = total net profit before tax divided by total assets of a firm.	
<i>Independent Variables</i>			
Inventory Period	ITP	Inventory divided by cost of sales × 365 days	-/+
Accounts receivable period	ARP	Account receivable divided by total sales × 365 days	-/+
Accounts payable period	APP	Account payable divided by total sales × 365 days	-/+
Cash Conversion Cycle	CCC	ARP plus ITP minus APP	-/+
<i>Control Variables</i>			
Firms Size	FSIZE	The natural logarithm of total assets of a firm.	+
Leverage	LEV	Long-term debt divided by total assets of a firm.	-
Current Ratio	CR	Current assets divided by current liabilities of a firm.	+
<i>Moderating Variable</i>			
Investment Policy	IP	Total current assets divided by total assets. Higher ratio indicates conservative IP, while lower ratio indicates aggressive IP.	-/+

RESULTS AND DISCUSSION

Descriptive Analysis

In Table 2, descriptive statistics for all variables are presented. The results show that average value of FPR is 18.6% (with an SD of 4.6%), implying that firms' return represents 0.186 of each Pakistani rupee invested in the assets of the firm. Similarly, the mean value of CCC is 75 days (with an SD of 115 days), indicating the average time period firms take to receive cash from the day of input payments. Similarly, the mean ARP is 55 days, implying that firms take almost two months to collect their accounts receivable. Furthermore, the results show that sample firms receive their cash by converting their inventory into cash sales after 99 days. Furthermore, firms take almost two months to repay their current liabilities, as the mean value of APP is 55 days.

Furthermore, FSIZE is measured as the natural logarithm of the total assets of the firm, and the results show that the average FSIZE is 13.5. Similarly, the average value of LEV is 50%, which is relatively high, indicating that the firms in the sample were highly leveraged. Furthermore, the average CR is 1.45 (with an SD of

1.75), indicating that the sample firms in the industry have enough monetary resources to remain solvent in the short-term period. Moreover, the average value of IP is 53% (with an SD of 22 %), revealing that sample firms use a conservative IP.

Correlation Analysis

To examine the degree of relationships between dependent variable, independent and control variables, the study estimated Pearson's coefficient of correlation (reported in Table 3). The results of correlation analysis in Table 3 show that FPR is negatively correlated with ITP, ARP, and CCC at 5, 5 and 10% significance levels, respectively. The findings suggest that firms with high profitability collect their receivables efficiently and take less time to repay their creditors. In contrast, the findings reveal that firms with high levels of profits tend to convert their inventories into cash in a short amount of time. Furthermore, the results show that FPR is negatively correlated with IP, CR and LEV, and positively associated with FSIZE.

Table 2. Descriptive and normality analysis.

Variables	Mean	SD	Skewness	Kurtosis	Shapiro-Wilk Statistic
FPR	0.186	0.046	-0.423	6.179	3.484 ^a
CCC	74.885	155.280	3.412	18.852	14.497 ^a
ITP	98.490	134.034	-0.768	3.511	4.578 ^a
ARP	42.583	58.585	-0.287	2.701	5.948 ^a
APP	55.278	46.857	-1.329	4.409	6.788 ^a
FSIZE	13.580	1.654	0.185	2.537	1.243
LEV	0.502	0.264	0.449	3.666	5.075 ^a
CR	1.458	1.750	3.017	21.113	5.148 ^a
IP	0.549	0.217	0.554	3.157	5.312 ^a

^a indicates significance at 1 percent level. Observations (N) = 374.

Table 3. Correlation analysis.

Variables	FPR	ITP	ARP	APP	CCC	IP	FSIZE	CR	LEV
FPR	1								
ITP	-0.196 ^a	1							
ARP	-0.158 ^a	0.143 ^b	1						
APP	0.115 ^c	-0.285	0.155 ^b	1					
CCC	-0.097 ^b	0.588 ^a	0.353 ^a	-0.142 ^b	1				
IP	-0.483 ^a	-0.176 ^b	-0.114 ^c	0.229 ^b	-0.214 ^a	1			
FSIZE	0.282 ^b	-0.298 ^b	-0.263 ^a	0.135 ^b	-0.320 ^b	-0.323 ^b	1		
CR	-0.145 ^a	0.147 ^b	0.195 ^a	-0.173 ^a	0.277 ^a	-0.239 ^a	-0.196 ^b	1	
LEV	-0.283 ^a	-0.010 ^c	-0.219 ^a	0.265 ^a	-0.235 ^a	0.910 ^a	0.399 ^a	-0.278 ^a	1

^{a,b,a} indicates significance at 1, 5, & 10 percent level of significance, respectively.

Results of Regression Analysis

Impact of WCM on FPR

The empirical estimations of Models 1 to 4 using PCSE and FGLS are reported in Table 4. According to the results, CCC has a significant and negative association with FPR at the 1% level. The findings suggest that a relatively shorter period of funds collection or lower CCC enhances FPR and makes it more profitable. These results suggest a negative association between CCC and FPR. Our

study's findings support those of a recent study by Chang (2022), which conducted an empirical examination of the relationship between WCM and FRP using panel data of 31,612 firms from 46 economies and found a negative association between CCC and FPR. The study provides useful insight for managers to maximize firms' FPR by efficiently managing their CCC. Furthermore, our findings are consistent with other existing studies (Lazaridis and Tryfonidis, 2006; Nobanee et al., 2011; Storey, 1990).

Table 4. Impact of working capital management on firm performance.

Variables	Prais-Winston Regression (PCSE)				Feasible Generalized Least Squares (FGLS)			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
CCC	-0.011 ^a (0.000)				-0.014 ^a (0.000)			
ITP		-0.078 ^a (0.012)				-0.054 ^a (0.01)		
ARP			0.486 ^a (0.024)				0.255 ^a (0.041)	
APP				0.346 ^b (0.171)				0.438 ^b (0.228)
FSIZE	-0.040 ^b (0.018)	-0.057 ^b (0.024)	-0.068 ^a (0.019)	-0.055 ^b (0.020)	-0.026 ^b (0.011)	-0.064 ^a (0.021)	-0.044 ^b (0.022)	-0.075 ^b (0.043)
LEV	-0.056 ^b (0.026)	-0.025 ^b (0.011)	-0.046 ^b (0.021)	-0.034 ^b (0.015)	-0.064 ^c (0.031)	-0.054 ^b (0.026)	-0.036 ^b (0.017)	-0.049 ^b (0.022)
CR	0.244 ^a (0.054)	0.312 ^a (0.066)	0.283 ^a (0.081)	0.280 ^a (0.046)	0.344 ^a (0.069)	0.318 ^a (0.058)	0.316 ^a (0.067)	0.340 ^a (0.076)
Intercept	1.118 ^a (0.217)	1.378 ^a (0.184)	1.025 ^a (0.183)	1.678 ^a (0.276)	1.003 ^a (0.253)	0.924 ^a (0.256)	0.837 ^a (0.251)	1.096 ^a (0.192)
No. of Obs.	374	374	374	374	374	374	374	374
R ²	0.848	0.887	0.842	0.862	n/a	n/a	n/a	n/a
Wald-χ ²	721.21 ^a	781.66 ^a	808.89 ^a	671.24 ^a	708.89 ^a	671.24 ^a	675.69 ^a	681.10 ^a
Firms	22	22	22	22	22	22	22	22
Ydum	Included	Included	Included	Included	Included	Included	Included	Included
Fdum	Included	Included	Included	Included	Included	Included	Included	Included

^b & ^a indicates significance at 5 & 1 percent level, respectively; Standard errors are reported in parenthesis.

Similarly, the findings of Model-2 show that ITP negatively affects FPR, and it is statistically significant at the 1% level. This finding suggests that FPR is constrained and could be reduced by higher ITP. In general, higher ITP is positively associated with other administrative costs (e.g., maintenance and rental expenses, insurance costs, etc.) which significantly affect FPR (Iqbal et al., 2023b). Thus, managers must avoid high ITP and always optimize it to enhance FPR. These findings are consistent with the existing studies, which further validate our results (Anwar, 2018; Al-Debi'e, 2011; Smith, 1980).

However, the findings reveal a positive effect of ARP on FPR. These findings imply that an increase in ARP may improve FPR for the sample firms. Furthermore, an increase in ARP as a component of WCM enhances FPR. These findings are consistent with existing empirical studies that argue efficient utilization of ARP promotes a firm's profitability (Abuzayed, 2012; Amponsah-Kwatiah and Asiamah, 2021; Haresh, 2012). However, the results do not support the findings of earlier studies, such as Deloof (2003) and Akey (2019), which reported a negative association of ARP on a firm's profitability, suggesting a tightening management of ARP for higher profitability.

Moreover, the results show that the coefficient of APP is positive and statistically significant at the 5% level. This finding suggests that an increase in APP (all else being equal) increases FPR. This implies that firms might experience higher profitability if they delay payments. Although these findings may contradict the majority of the literature (Deloof, 2003; Gill et al., 2010; Samiloglu and Akgun, 2016), they are consistent and also support a few recent studies' findings, suggesting that companies prefer this source of financing, such as trade credit, to reduce their cost of financing. (Amponsah-Kwatiah and Asiamah, 2021; Knauer and Wohrmann, 2013; Lazaridis and Tryfonidis, 2006; Osei et al., 2023).

Moreover, the coefficient of FSIZE is negative and statistically significant, indicating that larger firms tend to have lower FPR compared to smaller firms. These findings are consistent with existing studies on WCM and FRM (Aldubhani et al., 2022). However, a recent study by Amponsah-Kwatiah and Asiamah

(2021) reported a significant positive effect of FIZE on ROA for the 20 listed firms in Ghana's manufacturing sector.

Similarly, the variable of LEV is also negative and statistically significant, indicating that firms with higher LEV tend to experience lower FPR, on average. This negative relationship is mainly due to higher interest expense, financial risk, and investors' perception of the firm's sustainability (Uddin et al., 2023). The finding is consistent with existing literature (Danso et al., 2021; Hashmi et al., 2022b). Furthermore, CR is found to be positively associated with FPR, suggesting that firms with higher CR have higher liquidity and a lower risk of bankruptcy, enabling them to operate more efficiently and maximize their profits (Eljelly, 2004).

Impact of IP on WCM-FPR nexus

In Table 5, the results show the moderating impact of IP on the relationship between WCM and FPR. The findings reveal a significant negative impact of IP on CCC-FPR, ITP-FPR, and ARP-FPR relationships, respectively. In particular, the impact of IP on the CCC-FPR is negative and statistically significant at the 10 percent level, suggesting that a conservative IP may help firms overcome the negative effects of long CCC and provide sufficient liquidity to operate efficiently. Furthermore, the findings reveal the same impact of IP on ITP-FPR nexus, suggesting that firms with longer ITP might be in a better position by using a conservative IP to maintain their profitability in the long run.

Similarly, the results reveal a negative and significant impact of IP on the relationship between ARP and FPR. Although firms with longer ARPs are prone to severe financial and liquidity crises (Akey, 2019; Deloof, 2003), our findings support the argument that firms may overcome these risks by adopting a conservative IP. Thus, a conservative IP may protect firms from financial crises in the industry. Our findings are consistent with the empirical study by Tufail and Khan (2013) in Pakistan's textile sector. These authors provided empirical evidence of the negative impact of aggressive IP on FPR, suggesting a conservative IP for firms operating in Pakistan.

Table 5. Impact of IP on WCM and FPR nexus.

Variables	Prais-Winsten Regression (PCSE)				Feasible Generalized Least Squares (FGLS)			
	(5)	(6)	(7)	(8)	(5)	(6)	(7)	(8)
CCC	-0.010 ^a (0.000)				-0.016 ^a (0.000)			
ITP		-0.041 ^a (0.009)				-0.025 ^a (0.006)		
ARP			0.354 ^a (0.049)				0.433 ^a (0.066)	
APP				0.256 ^b (0.127)				0.272 ^a (0.068)
IP	-0.060 ^b (0.028)	-0.144 ^a (0.055)	-0.136 ^a (0.048)	-0.136 ^a (0.048)	-0.339 ^a (0.092)	-0.193 ^a (0.054)	-0.334 ^a (0.103)	-0.113 ^a (0.056)
CCC*IP	-0.001 ^c (0.000)				-0.000 ^c (0.000)			
ITP* IP		-0.031 ^b (0.015)				-0.057 ^a (0.018)		
ARP* IP			-0.045 ^b (0.018)				-0.043 ^a (0.013)	
APP* IP				-0.000 (0.000)				0.032 (0.021)
FSIZE	-0.085 ^a (0.025)	-0.085 ^a (0.025)	-0.085 ^a (0.025)	-0.091 ^a (0.025)	-0.119 ^a (0.019)	-0.092 ^a (0.019)	-0.125 ^a (0.018)	-0.110 ^a (0.020)
LEV	-0.327 ^a (0.036)	-0.309 ^a (0.034)	-0.309 ^a (0.034)	-0.324 ^a (0.036)	-0.195 ^a (0.053)	-0.220 ^a (0.048)	-0.174 ^a (0.053)	-0.226 ^a (0.058)
CR	0.000 (0.004)	0.001 ^a (0.003)	0.001 ^a (0.003)	0.001 ^b (0.003)	0.000 ^c (0.003)	0.001 ^a (0.003)	0.003 ^c (0.003)	0.000 ^b (0.003)
Intercept	0.924 ^a (0.256)	0.837 ^a (0.251)	0.837 ^a (0.251)	1.003 ^a (0.253)	1.378 ^a (0.184)	1.025 ^a (0.183)	1.292 ^a (0.172)	1.219 ^a (0.197)
No. of Obs.	374	374	374	374	374	374	374	374
R ²	0.793	0.864	0.864	0.794	n/a	n/a	n/a	n/a
Wald- χ^2	206.62 ^a	241.58 ^a	288.65 ^a	265.48 ^a	226.62 ^a	286.58 ^a	294.65 ^a	255.48 ^a
Firms	22	22	22	22	22	22	22	22
Ydum	Included	Included	Included	Included	Included	Included	Included	Included
Fdum	Included	Included	Included	Included	Included	Included	Included	Included

a, b, c indicates significance at 1, 5 & 10 percent level, respectively. Standard errors are in parenthesis.

However, the results do not provide any statistical evidence of the moderating effects of IP on APP-FPR relationship for the sample firms. It suggests that the practices of the firms in how they manage their APP are not moderated or affected by their IP. Our results support and re-validate the notion that industries with a conservative IP have the ability to mitigate the adverse effects of long CCC on FPR (Kaur and Singh, 2014).

Hypotheses Summary

Based on the regression results reported in Tables 4 and 5, seven out of 8 hypotheses of our study were supported by the findings. In particular, H1 to H7 were supported by our results; however, H8 was not supported by the findings.

CONCLUSIONS

The objective of this study is to measure the impact of working capital management (WCM) on firm performance (FPR) measured by the return on assets ratio in the 'Food and Personal Care' industry of Pakistan. The study specifically focuses on the moderating role of investment policy (IP) on the WCM-FPR relationship, using balance panel data of 22 listed firms for the period from 2006 to 2022. Further, WCM is measured by a comprehensive measure, the cash conversion cycle (CCC), which comprises three components: accounts receivable period (ARP), inventory period (ITP), and accounts payable period (APP). We have employed the most appropriate econometric panel regression techniques to estimate the aforementioned relationships. To the best of our knowledge, our study is the first to examine the moderating effects of IP on the relationship between WCM and FPR in the context of Pakistan's industry.

The findings of the study reveal a significant negative impact of CCC and ITP on FPR. These findings imply that longer CCC and ITP pose serious threats to the firm in the form of financial risk, liquidity crisis, and lost opportunities, causing low profitability. Moreover, longer ITP not only affects liquidity but also increases other relevant costs. On the other hand, the coefficient of ARP is positive and statistically significant, supporting the existing literature that efficient utilization of ARP may increase FPR (Abuzayed, 2012; Amponsah-Kwatiah and Asiamah, 2021). Furthermore, results show that APP positively affects FPR, suggesting that companies perform well by delaying their payments, which could offset any possible adverse effects of ITP and CCC (Amponsah-Kwatiah and Asiamah, 2021). Moreover, the coefficients of FSIZE and LEV are negative and statistically significant, indicating a negative impact of FSIZE and LEV on the firm's FPR. However, the coefficient of CR is positive and significant, suggesting a higher ratio of current assets relative to current liabilities improves FPR due to higher liquidity and lower risk of bankruptcy.

Furthermore, the findings regarding the moderating effects of IP on WCM-FPR provide interesting insights. Firstly, IP significantly and negatively moderates the relationship between CCC-FPR, ITP-FPR and ARP-FPR, which suggests that a higher ratio of IP (conservative IP) tends to reduce the adverse effects of longer CCC, ITP, and ARP on FPR, providing firms with enough liquidity and managing their operation and remain profitable. However, the study found no empirical evidence of any moderating effects of IP on the relationship between APP-FPR. This finding suggests that IP does not affect or moderate the APP and its management.

Moreover, the study provides useful insights and policy implications to the managers and policymakers for efficient WCM. Our findings imply that firms operating in the food and personal care industry may improve their profitability by deferring payments to the creditors, as long as the credibility of the firm is not affected. Further, the firm must plan its inventory investment and sell it quickly. Moreover, findings imply that firms may sell on credit to customers and provide enough time to settle the accounts receivable, as it would help build a strong customer relationship. In addition, firms should use a conservative approach regarding IP due to several positive effects that mitigate the adverse effects of longer CCC for the firm. Lastly, managers must analyze all the important components of WCM (ARP, APP, ITP) separately, as our findings show mixed effects of all these components on FPR. Thus, a more disaggregated approach regarding WCM would improve the effects of managerial policies.

Furthermore, the study has some limitations. First, the findings of our study are related to Food and Personal Care Industry of Pakistan, and they are not generalizable to other industries. Second, we have used one measure of firm performance (ROA), while future studies may include other proxies to obtain valuable insights. Third, data were not available for a few major firms; therefore, we have used limited available data for listed firms. Thus, future studies may conduct similar research on other industries and consider other policy variables, such as financing and marketing policies, to provide a comprehensive understanding.

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