

EFFECTS OF FIRM SPECIFIC MEASURES AND BOARD ATTRIBUTES ON WORKING CAPITAL: EVIDENCE FROM TEXTILE INDUSTRY OF PAKISTAN

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Abstract

The core objective of this paper is to investigate whether firm specific variables and board attributes affect the working capital ratio of textile composite, textile spinning, textile weaving and overall sample of firms listed on Pakistan Stock Exchange (formerly Karachi Stock Exchange) during 2008-2014. Profitability is positively related to working capital ratio in textile spinning, textile weaving and in over sample of firms. Alternatively, profitability is inversely related to working capital ratio in textile composite. Firm size, leverage and assets tangibility have shown consistent results and negatively related to working capital ratio in all regressions. Age is positively related to working capital ratio in textile composite and in overall sample of firms. Board size is unrelated to working capital ratio. Board composition is positively (in textile composite only) while CEO duality is negatively (in textile spinning only) related to working capital ratio. In sum, firm specific variables have a significant while board attributes have a minute impact on working capital ratio of textile firms in Pakistan.

Keywords: Board Attributes, Firm Specific Variables, Working Capital, Pakistan.

JEL Classification: G310

Introduction

Working capital management is an important area of finance as it includes the management of current assets (i.e. investment) and current liabilities (i.e. financing). The ultimate goal of any profit-oriented organization is to maximize the shareholders wealth.

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Corporate managers can attain this goal by making the right investment, financing and dividend decisions. Although a few studies have explored the variables that may affect the working capital ratio of firms in Pakistan but the results are unclear. Moreover, results of these studies are based on a cumulative sample of firms rather than the sample of firms belonging to a particular industry/segment of the economy like textile, cement, sugar, fertilizers, chemical and pharmaceutical, paper and board etc. According to Filbeck and Krueger (2005) different industries use different techniques to manage the working capital. Moreover, working capital management techniques change across time. Furthermore, measures of working capital change significantly as time passes. The findings of this survey study have provided the rationale to explore the variables that may affect the working capital ratio of a particular industry of a country. Since little is known about how working capital is managed within different industries in Pakistan. Thus, limited research on an industry in Pakistan is an important reason that has evoked the need to identify the important variables that affect the working capital ratio. For this purpose we have chosen the textile industry, and for in depth analysis we have divided the textile industry in three clear segments namely composite, spinning and weaving. The reason to choose textile industry is that textile sector is the backbone of Pakistan's economy. Moreover, its importance can be assessed with the fact that Pakistan is the 3rd largest country in yarn production. The value chain is fairly long, ranging from cotton picking to finished garments/-made-ups. Notably, finished goods of one industry are the basic raw materials for another industry. Moreover, it uses about forty percent of the banking credit available to the manufacturing sector. More importantly, textile industry contributes nearly eight percent in gross domestic product, and in exports approximately fifty seven percent. We are sure that an in-depth analysis of firms belong to textile industry will provide new results to the chief financial officers (CFOs) and controllers in choosing an optimal working capital financing policy.

The rest of the paper is structured as follows. Literature review reported in Section 2. Methodology, variables and data sources are presented in Section 3. Summary statistics and regression results are presented in Section 4. Section 5 provides discussion on empirical results, and conclusion is presented in Section 6.

Literature Review

Several empirical studies have analyzed the effects of firm specific, corporate governance and country specific variables on working capital management of firms but unluckily their results are unclear. For instance, Nadiri (1969) analyzed the data of the US manufacturing firms during 1948-1964 to investigate the determinants of real cash balance. Results indicate that interest rate, inflation rate, factor prices and output (e.g. wealth) are few important variables that significantly affect the real cash balance. Fazzari and Petersen (1993) analyzed the data of the US manufacturing firms during 1970-1979 to investigate the relationship between working capital and fixed investments. In particular, they used the data of firms that face financial constraints and pays no dividend. Results indicate that working capital is inversely related to fixed investments. Deloof (2003) exam-

ined the data of 1009 Belgium firms during 1992-1996 to look at the affect of working capital on profitability. Results indicate that the average collection period, inventory turnover and average payment period are inversely related to profitability. Moreover, results suggest that managers may increase the shareholders wealth by speeding up the collection period and accelerating the inventory turnover to a reasonable maximum. In short, the findings indicate that working capital significantly affect the firm's profitability. Eljeljy (2004) used the data of 29 companies in Saudi Arabia during 1996-2000 to examine the relationship between liquidity (measured as current ratio) and profitability. Results show that liquidity is inversely related to profitability. Moreover, results indicate that CCC (i.e. cash conversion cycle) has more pronounced affect on profitability (i.e. performance) than the current ratio. In a survey study on nearly 1000 firms belonging to different industries, Filbeck and Krueger (2005) observed that different industries use different techniques to manage the working capital. In addition, working capital management techniques change across time. More importantly, measures of working capital change significantly as time passes.

Padachi (2006) used the financial data of 58 small Mauritian firms in manufacturing sector over a period of 6 years from 1998 to 2003 to analyze and understand the effects of working capital management on performance. Results suggest that excessive investment in inventories and receivables leads to reduction in performance. Nazir and Afza (2009) have examined the association between profitability and working capital using the data of 204 listed companies in Pakistan from 1998 to 2005. Results show that corporate managers may create value for the shareholders if they employ conservative working capital policy. Chhapra and Naqvi (2010) used the data of 55 textile firms in Pakistan during 2003-2008 to estimate the effects of working capital on performance. They observed that profitability is directly linked to working capital management. Banos-Caballero et al. (2010) used the financial information of 4076 SMEs in Spain during period 2001-2005 to explore the factors that affect the cash conversion cycle. They found that older firms and firms having excessive cash have long cash conversion cycle. In contrast, highly levered firms, firms with opportunities for growth, investment in tangible assets and high profitability prefer to rely on aggressive policy. Hill et al. (2010) have conducted an empirical study to find the factors that affect the net operating working capital. They found that sales growth, sales volatility, cost of external finance and probability of default are some important variables that encourage the managers to rely on aggressive approach. In contrast, firms with positive retained capital and access to capital markets use conservative approach. Zariyawati et al. (2010) used the data of 119 manufacturing firms in Malaysia during 2000-2006 to identity the important factors that affect the working capital. Results show that the size of the firm, leverage and growth are inversely linked to working capital. Board attributes namely board size and independent directors have no impact on working capital. Finally, gross domestic product (GDP) is directly while inflation is inversely linked to the working capital.

In an empirical study on 66 quoted Nigerian firms during 1997-2007, Akinlo (2012) observed that leverage is inversely related to working capital requirements. In contrast, economic activity, firm size, sales growth, operating cycle and permanent working capital are few important

variables that are positively related to working capital. Gill and Bigger (2013) have conducted an empirical study to understand the relationship between working capital and corporate governance. They used the data of 180 US manufacturing firms listed on NYSE during 2009-2011. They used multiple proxies of working capital management efficiency namely current ratio, cash conversion cycle, cash holdings, account receivables, cash flow from operations to sales ratio, inventory and account payables. Results indicate that corporate governance variables namely CEO duality, audit committee, CEO tenure and board size partially affect the working capital of US firms. Wasiuzzaman and Arumugam (2013) analyzed the data of 192 Malaysian companies from 2000 to 2007 to observe the important determinants of net operating working capital. Results indicate that firms with low leverage, less tangible assets, safe earnings, low asymmetric information, high sales growth, and high operating cash flows tend to invest more in working capital during the period of economic expansion/-boom. In addition, their findings indicate that corporate governance attributes are unrelated to working capital investment. Jamalinesari and Soheili (2015) analyzed the data of 115 companies listed on Tehran Stock Exchange during 2008-2013 to investigate the effects of board size, independent directors, institutional ownership and ownership concentration on working capital measured as current ratio, cash conversion cycle, cash holdings level and average debt payment. Results indicate that corporate governance variables, to some extent, affect the working capital. Chaudhary and Ahmad (2015) have examined the data of listed manufacturing firms in Pakistan during 2010-2013 to explore the important governance variables that influence the working capital measured as cash conversion cycle. Results exhibit that board size, audit committee, and board independence are important variables that are negatively linked to cash conversion cycle. Sheikh et al. (2016) conducted an empirical study on listed textile firms to analyze and understand the association between performance and working capital. They have shown that different measures of working capital have different effect on firm performance. For instance, current assets and CCC (i.e. cash conversion cycle) are positively related to book-based and market-based performance measures. Average age of inventory (AAI) and net working capital (NWC) are positively while average payment period (APP) and average collection period (ACP) are inversely related to performance. In sum, positive and negative coefficients of explanatory variables clearly indicate that working capital has substantial effects on management in value creation process. Adekola et al. (2017) have analyzed the data of 50 Nigerian-quoted service sector (non-financial) companies during 2002-2011 to investigate the association between performance and working capital. Results show a positive association between liquidity and profitability. In addition, results indicate that cash conversion cycle is negatively related to gross profit margin and operating profit margin. Notably, results indicate that the association between working capital and profitability is affected by the sector to which a firm belongs.

In short, results of earlier empirical studies indicate that firm specific variables have material effects on working capital. In contrast, corporate governance variables and country specific variables partially affect the working capital. Thus, mixed findings of earlier empirical studies are an important reason that has motivated us to conduct this empirical study.

Data and Methodology

The core objective of this empirical study is to analyze and understand the affect of firm specific factors and board attributes on working capital ratio of firms belonging to textile industry. For an in depth analysis the firms in textile industry were separated into three broad categories such as textile weaving, textile spinning and textile composite. A total of 157 textile companies were found listed on Pakistan Stock Exchange (formerly Karachi Stock Exchange) during the period 2008-2014. Owing to missing and incomplete financial data a number of companies were removed from the analysis. Finally, 97 companies with complete information were included in the study. Pooled ordinary least squares (OLS) method used to analyze the effects of firm specific variables and board attributes on working capital ratio. Table 1 reports the definitions of dependent and independent variables. The definitions are taken from earlier empirical studies that have explored the impact of different explanatory variables on working capital.

Table 1
Definition of Variables

Variable	Symbol	Definition
<i>Dependent variable</i>		
Working capital	<i>WC</i>	Current assets / Current liabilities.
<i>Independent variables</i>		
Profitability	<i>PR</i>	Profit after taxes / Total assets.
Tangibility	<i>TG</i>	Fixed assets / Total assets.
Firm size	<i>SZ</i>	Natural log of total assets.
Firm's age	<i>AG</i>	Current year minus listing year.
Leverage	<i>LV</i>	Total liabilities / Total assets.
CEO duality	<i>CD</i>	1 if CEO is the chairman board of directors, otherwise 0
Board composition	<i>BC</i>	Number of independent/non-executive directors / Total directors.
Board size	<i>BS</i>	Log of board size.

Empirical Results

Summary Statistics

Table 2 reports the summary statistics of variables. Mean working capital ratio, measured as current assets to current liabilities, is 1.188 times. As working capital ratio is greater than one which

shows that managers of textile firms rely on conservative policy and use long-term funds for investment in current assets. The mean profitability is 22.16 percent. The mean firm size, defined as natural log of assets, is 21.58. The mean total debt ratio is 66.36 percent. This average show that debt is the most dominant source of funds for textile firms which may be due to the reason that Pakistan is bank-based economy and security market is not mature. More importantly, textile industry use forty percent of total debt allocated to the manufacturing sector. As per accounting equitation assets are equal to liabilities and stockholder's equity however the highest value of total debt ratio (i.e. leverage) is 307 percent which is due to deficit/accumulated losses of some firms included in the analysis. On average tangible assets are 56.72 percent of total assets. The mean age of sample firms is 26.43 years. The mean board size, measured as log of total directors, is 0.8572. The mean board composition is 55.16 percent showing the percentage of independent/non-executive directors in a board. On average in 22.97 percent instances chief executive officer of the company act as chairman board of directors.

Table 2
Summary Statistics

Variable	N	Mean	Std.Dev.	Min	Max
<i>WC</i>	679	1.1886	0.9600	0.0058	12.218
<i>PR</i>	679	0.2216	1.7626	-1.1741	19.406
<i>SZ</i>	679	21.587	1.3337	16.414	25.298
<i>LV</i>	679	0.6636	0.3111	0.0048	3.0793
<i>TG</i>	679	0.5672	0.1650	0.0038	0.9994
<i>AG</i>	679	26.432	12.798	1.0000	61.000
<i>BS</i>	679	0.8572	0.0294	0.8451	1.0414
<i>BC</i>	679	0.5516	0.1694	0.1250	0.8750
<i>CD</i>	679	0.2297	0.4209	0.0000	1.0000

Correlation Matrix

Pair wise correlation of variables presented in Table 3. The coefficients of different explanatory variables are justly small and indicate no serious issue of multicollinearity. Profitability is significant and negatively associated with working capital ratio. Size of the firm is directly associated with working capital and inversely linked to profitability. Leverage is negatively linked to working capital ratio and firm size while positively related to profitability. Tangibility is inversely associated with working capital ratio and size while directly linked to leverage and profitability. Age is significant and positively associated with working capital ratio and negatively linked to leverage. Board size is significantly directly linked to firm size and age while inversely linked to assets tangibility and leverage. Board composition is significantly negatively linked to assets tangibility while positively linked to working capital ratio and board size. Finally, CEO duality is significantly positively linked to tangibility and board size while negatively linked to board composition.

Table 3
Correlation Matrix

Variable	WC	PR	SZ	LV	TG	AG	BS	BC	CD
WC	1.00								
PR	-0.09**	1.00							
SZ	0.09**	-0.34***	1.00						
LV	-0.41***	0.66***	-0.42***	1.00					
TG	-0.36***	0.24***	-0.33***	0.25***	1.00				
AG	0.16***	-0.03	0.03	0.10***	0.02	1.00			
BS	0.05	-0.04	0.10***	-0.07**	-0.15***	0.13***	1.00		
BC	0.15***	0.05	0.005	-0.06	-0.14***	0.05	0.22***	1.00	
CD	-0.07**	-0.01	-0.02	0.05	0.11***	0.03	0.11***	-0.11***	1.00

***, **, * significance level at 1%, 5% and 10%

Regression Results

Table 4 present the effects of firm specific variables and board attributes on working capital ratio of composite, spinning, weaving and all textile firms listed on PSX during 2008-2014. Results of textile composite firms indicate that profitability, firm size, leverage and assets tangibility are significant and negatively while age and board composition are significant and positively linked to working capital ratio. Board size is inversely while CEO duality is directly related to working capital ratio but relationship is statistically insignificant. Results of textile spinning firms indicate that profitability is directly while firm size, leverage, assets tangibility and CEO duality are significantly inversely linked to working capital ratio. Firm age, board size and board composition are directly linked to working capital ratio however the relationship is insignificant. Results of textile weaving firms show that profitability is directly while firm size, leverage and assets tangibility are significantly inversely linked to working capital ratio. Firm age and board composition are directly while CEO duality and board size are inversely related to working capital ratio but the relationship is insignificant. Results of all textile firms show that profitability and firm age are positively while size, leverage and assets tangibility are significantly negatively related to working capital ratio. Board composition is positively linked to working capital ratio but the association is statistically insignificant. In contrast, CEO duality and board size are inversely linked to working capital ratio but the association is insignificant.

In synopsis, profitability is inversely linked to working capital ratio in textile composite. In contrast, profitability is directly linked to working capital ratio in spinning, weaving and overall sample of firms. Firm size, leverage and assets tangibility have shown consistent results and are inversely linked to working capital ratio in all estimations. Age is directly linked to working capital ratio in textile composite as well as in all textile firms. Board composition is positively (in textile composite) while CEO duality is inversely linked to working capital ratio (in textile spinning). In short, results show that firm size, profitability, assets tangibility, leverage and firm age are some important predictors of working capital ratio of textile firms. In contrast, board size has no impact on working capital ratio however board composition and CEO duality partially affects the working capital ratio of textile firms.

Table 4

Effects of Firm Specific Variables and Board Attributes on Working Capital Ratio

Variable	Textile Composite	Textile Spinning	Textile Weaving	Textile Industry (All firms)
<i>C</i>	8.874*** (3.96)	2.951*** (2.75)	5.751*** (4.36)	6.663*** (6.23)
<i>PR</i>	-0.6846* (-1.75)	0.385*** (5.85)	0.152*** (6.84)	0.181*** (7.86)
<i>SZ</i>	-0.1310** (-2.47)	-0.049* (-1.78)	-0.070** (-1.81)	-0.121*** (-4.73)
<i>LV</i>	-2.862*** (-8.72)	-1.083*** (-8.79)	-1.605*** (-7.84)	-1.858*** (-13.57)
<i>TG</i>	-3.735*** (-7.89)	-1.216*** (-7.03)	-1.708*** (-6.61)	-2.032*** (-10.29)
<i>AG</i>	0.010** (2.29)	0.001 (0.57)	0.001 (0.53)	0.009*** (4.02)
<i>BS</i>	-2.038 (-0.92)	0.715 (0.73)	-1.422 (-1.04)	-1.072 (-1.01)
<i>BC</i>	1.075** (2.31)	0.006 (0.04)	0.128 (0.52)	0.283 (1.53)
<i>CD</i>	0.092 (0.60)	-0.158** (-2.37)	-0.126 (-1.57)	-0.006 (-0.09)
<i>R²</i>	0.4717	0.3397	0.9058	0.3556
<i>Adj. R²</i>	0.4538	0.3251	0.8918	0.3479
<i>Root MSE</i>	1.009	0.5120	0.1667	0.7752
<i>F-Statistic</i>	26.34	23.28	64.89	46.22
<i>Prob.(F-Statistic)</i>	0.0000	0.0000	0.0000	0.0000
<i>N</i>	245	371	63	679

***, **, * significant at 0.01, 0.05 and 0.1 respectively

Debate on Empirical Results

Results explained earlier clearly shows a direct relationship between profitability and working capital ratio in textile spinning, textile weaving and in all firms. Summary statistics reported in Table 2 show that mean working capital ratio is 1.188 times which confirms that managers of textile firms rely on conservative policy and use long-term funds for investment in current assets. The use of long-term funds for investment in current assets not only increases the firm's ability to settle the short-term contractual obligations on time but also provide a buffer to support the operations. Thus, smooth operations along with strong creditability positively affect the firms' profitability. The positive relationship confirms the findings of Sheikh et al. (2016), Onaolapo and Kajola (2015), Wasiuzzaman and Arumugam (2013), Hill et al. (2010). The notable finding of this study is that profitability is inversely linked to working capital ratio in textile composite. The inverse relationship confirms the explanations given in finance text that conservative policy negatively affect the profitability due to high financing cost. More importantly inverse relationship confirms the argument of Filbeck and Krueger (2005) that different industries use different techniques to manage the working capital. Size is inversely related to working capital ratio. The negative relationship indicates that larger firms have less need for working capital than small firms due to their ability to meet the needs through internally generated funds (i.e. retained earnings). Moreover, negative relationship may be due to the reason that smaller firms have more need for working capital to exploit the growth opportunities while large firms (at maturity stage) need less working capital to support the operations. The negative effect of size on working capital confirms the findings of Wasiuzzaman and Arumugam (2013), Gill and Biger (2013).

Leverage is inversely related to working capital ratio. Descriptive statistics show that some sample firms have negative profitability. An in depth analysis of data depicts that 194 observations showing negative earnings ranging from -1.1741 to -0.0002. The negative profitability may be due to the energy crises (i.e. shortage of electricity and gas) faced by the firms in textile industry. Moreover, firms with negative earnings and low profitability cannot avail the tax shields on interest payment which in turn increase the effective cost of debt that diminishes the need for debt and thereby firms rely on equity capital. The negative association between leverage and working capital found consistent to the results of Onaolapo and Kajola (2015), Salawu and Alao (2014), Wasiuzzaman and Arumugam (2013), Akinlo (2012), Caballero et al. (2010), Nazir and Afza (2009). Tangibility is inversely linked to working capital ratio. Generally, a direct association is expected between tangibility and working capital due to the reason that increased investment in fixed assets necessitates the need for more working capital to support the expanded operations. However due to energy crises firms in textile industry may not utilize their fixed assets at full capacity which in turn reduces the need for working capital. The negative relationship between tangibility and working capital confirm the findings of Salawu and Alao (2014), Wasiuzzaman and Arumugam (2013), Caballero et al. (2010), Fazzari and Petersen (1993).

Age is positively related to working capital ratio in textile composite and in overall sample

of firms. The direct association between age and working capital ratio indicates that older firms need more working capital to support their expended operations. Moreover, older firms have greater ability to arrange spontaneous as well as discretionary finance at favorable terms due to long history than newly established firms. In addition, suppliers of input feel easy while providing desired resources to the older firms at favorable terms than to newly established firms. The positive relationship between age and working capital confirm the findings of Caballero et al. (2010). Board size has shown an insignificant relationship with working capital ratio in all regressions. Board composition is positively related to working capital ratio in textile composite. The positive relationship indicates that independent/non-executive directors encourage the managers to rely on conservative working capital financing policy to support the business operations due to precarious business condition in the country because of war and terror. CEO duality is negatively related to working capital ratio in textile spinning. The inverse relationship shows that when chief executive officer of the company also lead the board then he/she may attempt to convince the board members that large part of retained funds should be used for investment in projects that worth more than cost, and fewer funds (sufficient to support the operations) should be invested in current assets. In short, results clearly indicate that measures of corporate governance have minute role in determination of working capital which may be due to weak governance mechanisms prevailed in the country (Caballero et al., 2010).

Debate on Empirical Results

This study explores the impact of firm specific factors and board attributes on working capital ratio of textile composite, textile spinning, textile weaving and overall sample of firms listed on PSX during 2008-2014. Profitability is positively related to working capital ratio. Summary statistics presented in Table 2 indicate that mean value of current ratio (a measure of working capital) is greater than one which clearly indicates that managers of textile firms use conservative policy and finance current assets with long-term funds so that they can settle the short term contractual claims on time, and to avoid any inconvenience in operations due to shortage of funds. Thus, high creditability along with smooth operations positively affects the firms' profitability. Firm size is inversely related to working capital ratio. The inverse relationship between size and working capital ratio indicates that smaller firms have more need for working capital to exploit the growth opportunities than the larger firms (at maturity stage) because larger firms have greater ability to generate funds internally (i.e. retained earnings). Leverage is negatively related to working capital ratio. The negative relationship is because of the fact that some textile firms have negative equity due to retained losses and also have low profits, and resultantly not been able to avail the tax concession on interest payment and prefer to use equity capital to finance the operations. Tangibility is negatively related to working capital ratio. Generally, a positive relationship is expected between tangibility and working capital due to the fact that increased investment in fixed assets necessitates the need for more working capital to support the expanded operations. However due to energy crises firms in textile industry may not utilize their fixed assets at full capacity which in turn reduce the need for working capital. Age is positively related to working capital ratio in textile composite as well as in overall sample of firms. The positive relation-

ship indicates that older firms need more working capital to support their expended operations. Moreover, older firms have greater ability to arrange spontaneous as well as discretionary finances at favorable terms due to long history than newly established firms. Board size is unrelated to working capital ratio. Board composition is positively linked to working capital ratio in textile composite. In contrast, CEO duality is inversely linked to working capital ratio in textile spinning.

In sum, empirical results indicate that firm specific variables have substantial while corporate governance variables have minute role to determine the working capital ratio. These findings indicate the prevalence of weak governance structure in the country. Moreover, results of this study (i.e. observed relationships) provide support to chief financial officers and controllers in textile industry in formulating a balanced working capital policy. On the basis of literature review and the findings of this study we strongly recommend that there is need to explore the working capital management techniques used by other industries in Pakistan like cement, paper & board, sugar, food sector, chemical, engineering etc. which is task of future research.

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