Impact of Corporate Governance Practices on Working Capital Management Efficiency: A Structural Equation Modelling Approach

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Abstract

Working capital management and corporate governance are two important issues of overall firm management. The purpose of this study was to explore the impact of corporate governance practices on working capital management (WCM) efficiency of firms in a growing economy like India. We used data from 127 large Indian manufacturing sector firms and employed structural equation modelling to study this relationship. The period of the study is from 2004-2013 (10 years). We found that corporate governance indicators like board size, number of independent directors in a board, and percentage of independent members in an audit committee do significantly affect the efficiency of working capital management. We also found that an increase in independence of the board and audit committee compels the management to be conservative in managing short term capital, which in turn negatively affects WCM efficiency. It was observed that an increase in board size weakens control and allows the management to follow aggressive WCM strategies. The results also revealed that the size and independence of a board has more effect on WCM efficiency than the independence of the audit committee. The results of the study will help the practitioners, investors, and analysts to better understand the relation between effective corporate governance and short term funds management and enable them to take better and informed decisions.

Keywords: working capital management, corporate governance, board size, audit committee, CEO duality, cash conversion cycle, net trade cycle

JEL Classification: G310, G320, G340

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One of the important constituents of financial decision making is working capital management. Working capital management (WCM) deals with managing short-term financing and short-term investment decisions of a firm (Sharma & Kumar, 2011). The objective of working capital management is to maintain balance of various working capital components (Filbeck & Krueger, 2005). In today's global competitive economy, it is essential for firms to strive towards efficient working capital management. Hyun-Han and Soenen (1998) stated that efficient working capital management is an integral component of the overall corporate strategy to create shareholder value.

The importance of trade-offs between the two goals of working capital management, that is, liquidity and profitability have always been stressed in literature (Smith, 1980). There can be broadly three approaches to working capital, namely aggressive, moderate, and conservative. These three approaches differ from each other in

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their liquidity vs. risk characteristics. An aggressive approach involves keeping low proportion of current assets and high level of current liabilities. This results in low liquidity and high-risk characteristics. On the other hand, a conservative approach involves keeping a high level of current assets and low level of current liabilities. This results in high liquidity and low risk characteristics. The moderate approach follows a mid-level path in between an aggressive and conservative approach. Excessive push towards WCM efficiency and too much conservatism are both harmful for shareholder's wealth. It, therefore, becomes necessary that there is a proper governance mechanism in firms that prevents the managers from either taking too many risks or becoming too relaxed in managing working capital.

Xu and Wang (1999) defined corporate governance as the institutional arrangements and mechanisms through which outside investors in the firm controlled the insiders of the firm to ensure returns on their investment. Effective corporate governance should thus work towards protection of shareholder's interests. The CEO along with the board of directors is responsible for framing of policies regarding inventory levels, receivables, and creditor's levels, and the board along with the audit committee and CEO help to ensure that the firm is not run according to the whims and fancies of the individual managers. Therefore, effective corporate governance in a firm should be able to ensure that the optimal level of WCM efficiency is maintained and consequently, the shareholders' interest is preserved. It is thus also expected that corporate governance must have some impact on the efficiency of working capital management.

The purpose of this paper is to empirically investigate the effect of corporate governance practices on the efficiency of working capital management in a growing economy like India. A sample of 127 firms belonging to the Indian manufacturing sector were taken, and the structural equation modelling approach was applied to test the relationship.

Previous Studies

Working capital management plays an important role in a firm's profitability, risk, as well as in its value (Smith, 1980). However, working capital management has often been ignored in financial decision making since it involves investment and financing in short term period, whereas the concentration of managers is generally on long term fund management. Excessive working capital may have a negative effect on a firm's profitability, while a low level may lead to problems of liquidity and stock-outs, resulting in difficulties in maintaining smooth operations. Berryman (1983) said that improper working capital management is the primary reason for business failures. Minimization of investments in short term assets relative to the level and patterns of a firm's operations is a crucial element in the total management of operating funds. WCM efficiency implies achieving maximum scale of operations, while having least investment in working capital.

Initially, ratios like current ratio and quick ratio were used to measure the efficiency of WCM. However, due to numerous criticisms of the method, Gitman (1974) introduced the cash cycle concept to measure WCM efficiency. This method measured the duration between the time payment is made for purchasing raw material to the time of sale of goods. Richards and Laughlin (1980) later extended it by incorporating account payables to give the concept of cash conversion cycle (CCC). CCC, which is sometimes also called networking capital cycle (NWC), is a WCM efficiency measure which measures the efficiency in days.

$$CCC = \text{Days in inventory} + \text{Account receivable days} - \text{Payable day} \qquad (1)$$

where,

$$\text{Days in Inventory} = \left(\frac{\text{Inventory}}{\text{Annual Cost of Sales}} \right) \times 365 \qquad (2)$$

$$\text{Account Receivable Days} = \left(\frac{\text{Accounts Receivable}}{\text{Annual Sales}} \right) \times 365 \qquad (3)$$

$$\text{Payable Days} = \left(\frac{\text{Accounts Payable}}{\text{Annual Cost of Sales}} \right) \text{ x } 365 \qquad\qquad (4)$$

Besides CCC, another measure was introduced by Hyun-Han and Soenen (1998) and Erasmus (2010) called the net trade cycle (NTC).

$$\text{NTC} = \left(\frac{\text{Inventory + Account Receivables - Creditors}}{\text{Sales}} \right) \text{ x } 365 \qquad\qquad (5)$$

CCC and NTC are by far the most commonly used methods for measuring efficiency of working capital. There are a number of indicators that serve as a proxy for corporate governance. The size of the board as an indicator of governance has been most stressed in literature. Since it is the board that has the final say in most managerial matters, therefore, the importance of a board in governance is unquestionable. Jensen (1993) stressed that one of the value relevant attributes of the board of directors is the board size. There are, however, multiple opinions about what the board size should be. Some authors suggest that a small board size will be able to take decisions more quickly and effectively, while others stressed that a large board size will lead to loss of coordination. Still others like Vafeas (1999) suggested that as board size increases, board activity is expected to increase to compensate for increasing process losses.

John and Senbet (1998) pointed out that an independent board is able to take more effective decisions. Cotter, Shivdasani, and Zenner (1997) stressed that as the number of independent directors in the board increases, independence of the board increases, and there is greater protection of the shareholder's interest. We can ,therefore, say that the number of independent members on the board have some influence on corporate governance.

Duality refers to cases when the CEO also holds the position of the chairman of the board. Jensen (1993) argued that in cases where there is no independent leadership, it becomes difficult for the board to respond to failures of top management. Fama and Jensen (1983) also suggested that when there is a concentration of decision control, the board's effectiveness is hindered. However, Rechner and Dalton (1991) pointed out that duality helps in taking quick decisions without undue influence and thus, this is beneficial for the firm. The evidence on direction of influence remains inconclusive, but it is clear that CEO duality is an important element of corporate governance.

Kyereboah-Coleman (2008) stated that an audit committee is a governance mechanism which can improve the quality and effectiveness of a firm's financial management. It is suggested that an audit committee should be as independent as possible. Kyereboah-Coleman suggested that the audit committee should have members who are non-affiliates of the company. The percentage of independent members of the audit committee should thus measure the extent of independence of the committee and should be a corporate governance indicator. Kaur and Arora (2013) and Ahamed (2014) studied the effect of corporate governance practices and their disclosures on the performance of firms and found a significant relationship between the two. Similarly, Chandra, Chouhan, and Goswami (2012) found significant effects of WCM on the performance of firms.

A number of authors, including Chiou, Cheng, and Han-Wen (2006), Palombini and Nakamura (2012), and Chandra and Selvaraj (2012) studied the impact of various firm specific variables on WCM efficiency, but not many have explored the relationship between corporate governance and WCM. Harford, Mansi, and Maxwell (2008) and Chen and Chuang (2009) analyzed the effect of corporate governance on cash holding and found that the impact is significant. Harford et al. (2008) found that weakly controlled managers quickly spent all cash on acquisitions and capital expenditures. Chen and Chuang (2009) found that the effect of corporate governance on cash holding is significant for younger firms.

Some other authors like Drobetz and Grüninger (2007), Gill and Shah (2012), and Lau and Block (2012) also studied the relationship between corporate governance and cash holding and obtained mixed results. Recently, two studies, that is, Kajananthan and Achchuthan (2013) and Gill and Biger (2013) analyzed the influence of corporate governance practices on WCM efficiency. Kajananthan and Achchuthan (2013) used a small sample of

25 firms to study the relationship in manufacturing firms in Sri Lanka and found no significant relationship between WCM efficiency and corporate governance.

Kajananthan and Achchuthan (2013) also checked for influence of board committees, board meetings, and proportion of non-executive directors on accounts receivable, accounts payable, accounts inventory, and cash conversion cycle, and found no conclusive evidence of any relationship. Gill and Biger (2013) studied selected manufacturing firms listed on the New York Stock Exchange and found that there was some role of corporate governance in changing WCM efficiency. According to Gill and Biger (2013), a larger board size may not be in favour of American manufacturing firms because it does not improve working capital management efficiency. Their results support the trade-off theory of cash holdings to some extent, which states that firms hold cash by comparing the marginal costs and marginal benefits of holding liquid assets. However, there is still no clarity on the impact of effective corporate governance practices on WCM efficiency in a growing economy like India.

Methodology

⊃ **Variables :** The variables that were selected for analysis belonged to three categories as given below :

⊃ **WCM Efficiency :** Consistent with previous studies, we used the two popular measures - cash conversion cycle (CCC) and net trade cycle (NTC) for measuring WCM efficiency. A smaller value in each case indicates lower level of working capital investment as percentage of operation and thus higher WCM efficiency.

⊃ **Corporate Governance :** Again, taking reference from previous studies, we have taken board size, number of independent directors in board, CEO duality, and percentage of independent members in audit committee as indicators of corporate governance. Board size depicts whether there is a concentration of control and number of independent directors on board represents its independence. Similarly, a number of independent members in audit committee represents the independence of audit committee. CEO duality represents the presence or absence of independent leadership.

⊃ **Control Variables :** Firm size measured by *ln (total assets)* (natural log of total assets) and age of firms measured by year of reference - year of incorporation were used as control variables. The size of the firm is expected to have an effect on the style of management of working capital as the larger firms are able to have greater influence on their suppliers and buyers. Similarly, age of firms represents the duration for which the firm has been in market and is expected to have an influence on the working capital management. The variables and the abbreviations used for their representation are given in the Table 1.

⊃ **Data :** Data was collected using Centre for Monitoring Indian Economy (CMIE) Prowess database (Prowess is a database of the financial performance of Indian companies. The database covers listed and unlisted companies). We took BSE 500 (Bombay Stock Exchange) firms as they are the firms having the largest market cap and are expected to have effective corporate governance practices in place. From BSE 500 firms, we removed all non-manufacturing sector firms and then selected only those firms which had data available for all 10 years (2004-2013). After cleaning for outliers, we were left with 127 firms. Thus we have 127 x 10 = 1270 observations for each variable. The descriptive statistics of the dependent and independent variables are given in the Table 2. The table shows that there is considerable variation in each variable, which is good for our analysis.

The Table 3 shows the correlation between all independent variables. A correlation value of above 0.50 or below -0.50 indicates a high correlation between the variables which may lead to the problem of multicollinearity. The Table indicates that no two independent variables are highly correlated, and thus the problem of multicollinearity does not exist in our sample.

⊃ **Model :** Our aim is to find the extent of the influence of corporate governance indicators on WCM efficiency measures. Since we have more than one efficiency measures as dependent variables (*CCC* and *NTC*), we chose the

Table 1. Variables Used in the Study and Their Abbreviations

Variable	Abbreviation Used
Control Variables	
Age of firm	AGE
Size of firm	SIZ
Corporate Governance Variables	
Board Size	BOD
Number of independent directors	IND
CEO duality	DUL
Percentage of independent members in audit committee	AUD
Working Capital Efficiency Variables	
Cash conversion cycle	CCC
Net trade cycle	NTC

Table 2. Descriptive Statistics of Variables Used in the Model

	Mean	Median	Maximum	Minimum	Std. Dev.
SIZ	9.98	9.84	14.97	5.58	1.41
AGE	41.21	36.00	104.00	4.00	22.29
BOD	9.97	10.00	22.00	3.00	2.73
IND	5.15	5.00	12.00	0.00	1.84
DUL	0.32	0.00	1.00	0.00	0.47
AUD	86.52	90.00	100.00	0.00	17.85
CCC	94.26	83.61	669.81	-659.78	107.12
NTC	95.39	75.25	3480.10	-106.32	138.23

Source: Eviews Statistical Tool

Table 3. Correlation Between Independent Variables

Correlation	AUD	BOD	IND	DUL	AGE	SIZ
AUD	1.000000					
BOD	0.084805	1.000000				
IND	0.384959	0.435595	1.000000			
DUL	0.047642	0.120969	0.109566	1.000000		
AGE	-0.043243	0.069866	0.092787	-0.017205	1.000000	
SIZ	0.089105	0.185157	0.128763	0.108085	0.223897	1.000000

Source: Eviews Statistical Tool

structural equation modelling approach to find the relationship between independent and dependent variables. Structural equation modelling has the ability to simultaneously deal with more than one dependent variable and find their relationship with independent variables. Using separate multiple regressions would be partially incorrect as both *CCC* and *NTC* are indicators of the same latent variable (WCM efficiency), and thus, separate measurement would not give optimal results. SEM is also able to give a number of estimates for model fit and standardize the estimates of coefficients. The SEM model used for our analysis is given in the Figure 1.

Here, *WCM* is considered a latent variable having two indicators : *CCC* and *NTC*. All the independent variables (corporate governance and control variables) are hypothesized to have an impact on *WCM*. These independent

Figure 1. The SEM Model Used for Testing the Influence of Corporate Governance on WCM Efficiency
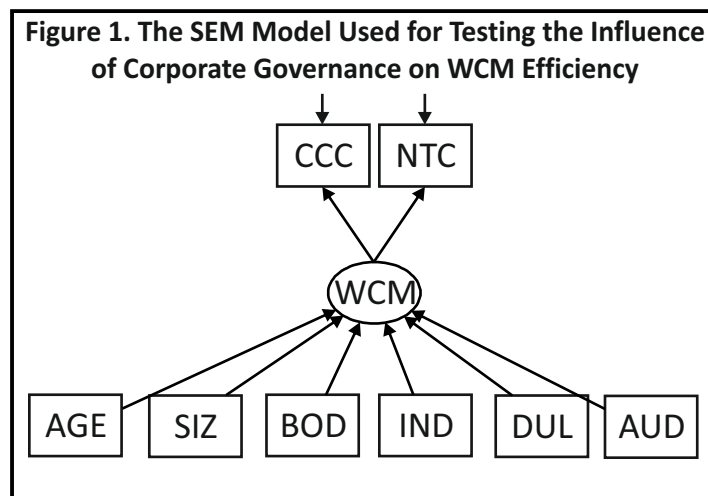
variables are all observed variables as they can be directly measured. We used Lavaan (Rosseel, 2012) software package (Latent Variable Analysis) in R Studio to run the hypothesized model. We selected Lavaan because it is free and intuitive to use. SEM assumes that the sample data is normally distributed. Since the data is not expected to be normal in our case, we used robust analysis using Satorra-Bentler (mean adjusted) test statistic. Satorra and Bentler (1994) developed a statistic that incorporates a scaling correction when distributional assumptions are violated; its computation takes into account the model and the sample kurtosis values.

Lavaan code used to run the model is as follows:

```
Mod1 = 'WCM = ~ NTC + CCC
\n WCM ~ AGE + SIZ + BOD + IND + DUL + AUD'
Mod1.fit = sem (Mod1, data = cgw , estimator = "MLM", test="satorra.bentler")
summary(Mod1.fit, fit. measures= TRUE)
```

where, 'cgw' is name of the data set

Analysis and Results

Traditionally, the chi-square test has been used to evaluate the model fit in SEM. However, this test statistic has been found to be extremely sensitive to sample size (Lei & Wu, 2007). The recent focus of studies has been on alternative goodness-of-fit indices such as root mean square of error approximation (RMSEA), standardized root

Table 4. Model Fit Values from SEM Run Using Lavaan

Number of observations	1270
Number of free parameters	12
Akaike (AIC)	58234.266
Bayesian (BIC)	58296.028
Sample-size adjusted Bayesian (BIC)	58257.910
P - value (Chi-square)	0.028
Comparative Fit Index (CFI)	0.967
Standardized Root Mean Square Residual (SRMR)	0.017
Root Mean Square of Error Approximation (RMSEA)	0.035

Source: Lavaan Package (R Statistical Tool)

Table 5. Estimates from SEM model

	Estimate	Std.Err	Z-value	P(>|z|)	Std. Estimates
Latent variables:					
WCM	=~				
CCC	1.000	-	-	-	0.488
NTC	0.454	0.159	2.865	0.004	0.172
Regressions:					
WCM	~				
AGE	-0.284	0.144	-1.969	0.049	-0.121
SIZ	-5.550	2.040	-2.721	0.007	-0.150
BOD	-6.814	1.396	-4.883	0.000	-0.355
IND	4.848	2.148	2.257	0.024	0.170
DUL	-3.237	5.693	-0.569	0.570	-0.029
AUD	0.306	0.167	1.835	0.046	0.104
Intercepts:					
CCC	133.850	17.710	7.558	0.000	0.969
NTC	178.902	22.096	8.096	0.000	1.671

Source: Lavaan Package (R Statistical Tool)

mean square residual (SRMR), and comparative fit index (CFI). Hu and Bentler (1999) suggested a two-index strategy, which is reporting SRMR along with one of the fit indices (e.g., CFI, or RMSEA). The Table 4 gives the model fit results from SEM run using Lavaan.

For a model to be good fit, the chi-square p-value should be > 0.05, CFI ≥ .95, SRMR ≤ .08, and RMSEA ≤ .06 (Lei & Wu, 2007). The p-value of our model is not in the desired range. However, as we have already stated that the chi-square p-value is sensitive to the sample size, and thus, is not such a good measure, we therefore, ignore this measure. All other fit statistics CFI, SRM, and RMSEA are found to be within range and thus indicate that our model is a good fit. We can ,therefore, proceed to analyze the significance levels and coefficients of independent variables in order to gauge their influence on WCM.

The Table 5 gives the coefficient estimate, standard error, Z-value, and p-value for all independent variables. It also shows the estimates for indicators (*CCC* and *NTC*) of latent variable WCM. Here, we would like to remind again that an increase in *CCC* and *NTC* means a decrease in WCM efficiency and vice versa. The p-value of *NTC* is 0.004, which is less than 0.05 and shows that it is a good indicator of *WCM* along with *CCC*. From p- values in regression, we find that all independent variables except *DUL* are significant at the 95% (values < 0.05) confidence interval, suggesting that they have significant influence on WCM efficiency. The control variables *AGE* and *SIZ* are found to be significant and indicate that both have an impact on WCM efficiency and are thus able to work as a control variable. Coefficients of both *AGE* and *SIZ* are negative, suggesting that as age and size of firms increases, the *WCM* levels come down, that is, the WCM efficiency increases. This might be due to the fact that with experience and growth, the firms will be able to achieve a position in the market where they are able to get longer credit from suppliers and have to extend shorter credit to buyers and are thus able to increase their WCM efficiency.

IND (number of independent directors in board) is statistically significant and has a positive coefficient. This indicates that as the number of independent directors increase, the WCM levels go up and thus, the WCM efficiency comes down. This may be consistent with the results of Harford et al. (2008), who found that in case of weak governance, the management tends to spend up all cash. Similarly, firms that have less number of independent directors may experience weak control, and thus, their management may tend to follow a highly aggressive WCM policy (by keeping excessively low level of inventory, and so forth). This will lead to low WC

levels and high WCM efficiency for firms with less number of independent directors and vice versa. None of the studies that considered the effect of corporate governance practices on WCM efficiency or its constituents examined the effect of independence of board (number of independent directors in a board).

AUD (percentage of independent members in audit committee) also follows a similar trend as *IND*. Here again, we have a positive coefficient indicating that as the percentage of independent members in an audit committee increases, the *WCM* levels increase, leading to lower efficiency. As we know that independence of an audit committee improves financial management, therefore, the results indicate that firms with a high percentage of independent members in the audit committee are following more prudent financial management practices, which may result in increasing of WC levels leading to decrease in WCM efficiency. While Kajananthan and Achchuthan (2013) did not consider an audit committee for their study, Gill and Biger (2013) found no significant relationship between independent members in an audit committee and WCM efficiency in American firms. However, our results show that there is a significant effect of independence of the audit committee in India. Lack of strong corporate governance laws in India, like those in USA, might attribute to the difference in results.

We find evidence that *BOD* (board size) is statistically significant, but has a negative coefficient. Authors have had contrasting opinions regarding board size. Some authors suggest that a larger board size leads to more effective and prudent decision making; whereas, others argue that a small board size will lead to making quick and effective decisions. However, all agree that it has significant influence on financial management. Our results suggest that as the board size increases, the WC levels come down and vice versa. We may infer from this that a larger board size is more effective in compelling the management to be more efficient in managing working capital and this leads to a reduction in the WC levels.

These results are in accordance with the studies of Hellman and Puri (2000) and Yermack (1996), who suggested that firms that have large boards tend to have poor corporate governance. Thus, our results indicate that as the board size increases, the board's control on the management weakens, and the management becomes extra aggressive in managing working capital. This result is in contrast to the results obtained by Gill and Biger (2013), who found that a large board size leads to lower WCM efficiency in American firms. The difference in results may be attributed to the type of economy, as firms in a growing economy like India behave much differently than those in developed economies.

DUL (CEO Duality) is not found to be statistically significant in the model and thus, the sign of the coefficient is of no concern to us. We can hence say that CEO duality does not have significant influence on working capital levels. Our results are similar to the results obtained by Kajananthan and Achchuthan (2013), who also found that there was an absence of any significant relationship between CEO duality and WCM efficiency. However, the results are in contrast to those of Gill and Biger (2013), who found a significant relation between the two.

The last column of the Table 5 gives the standardized estimates of coefficients. We find that among all the corporate governance indicators, board size has the largest absolute value of standardized estimate. This clearly shows that board size has the maximum effect on WCM efficiency, and the effect is even more than the effect of control variables *AGE* and *SIZ*. *IND* has the second highest value, and indicates that the number of independent directors in the board also has a significant effect on *WCM*, but the effect is less than that of board size. The effect of *AUD* is less than it is of *BOD* and *IND*, signifying that audit committee independence is somewhat less important than size and independence of the board. Such ranking of corporate governance practices, by their influence on WCM efficiency, has not been carried out by any study till date, and thus, our study provides a new insight into the relative importance of corporate governance practices.

Overall, we find that corporate governance variables have a significant impact on WCM, which suggests that as the corporate governance mechanism changes in firms, the financial management of firms undergoes changes, which results in changes in WCM efficiency. Overall, we get an indication that in a growing economy like India, firms that have more effective corporate governance tend to have somewhat lower working capital efficiency. This might, in turn, suggest that due to competition, the managers tend to be overly aggressive in managing working capital, and the presence of effective governance puts a check on their aggressive practices.

Conclusion

The present study found that corporate governance practices do have a significant effect on working capital management efficiency of firms. We found that a number of independent directors in the board and the percentage of independent members in the board tend to reduce the working capital management efficiency to some extent. We sensed that this may be due to more prudent norms set up by independent directors and independent audit committee members, and the management is not able to take excessive risk and thus, there is fall in efficiency. On the other hand, board size was found to positively impact efficiency of working capital management. This suggests that a large board size weakens the control of the board on the management, and they resort to extra aggressive WCM practices. Thus, there is evidence that when there is an increase in independence and control by the board, then the management tends to become less aggressive in managing short-term capital, which in turn negatively affects WCM efficiency.

We also found that among the corporate governance indicators tested, board size and its independence has maximum influence on WCM efficiency, and the influence of audit committee independence is secondary. Overall, we may infer that in a growing economy like India, firms that have more effective corporate governance practices tend to have somewhat lower working capital efficiency. Although the lowered WCM efficiency may seem to harm shareholders, however, in the long run, effective governance surely helps in furthering shareholders' wealth. The results of this study will help the practitioners, investors, and analysts to better understand the relation between effective governance and short term funds management. The study also contributes to the literature on working capital management and the factors that influence the same.

Research Implications

Our study offers a number of important insights, which can be utilized by the stakeholders of firms. The investors/ shareholders of firms can use the results of the study to understand the importance of effective corporate governance and the nature of its impact on WCM. While it is known through previous studies that corporate governance practices are essential for effective management of a firm, our study provides a clear view of the impact of specific governance practices on the liquidity management of firms. This can serve as a guide to shareholders while they are in the process of electing and establishing board of directors and audit committees. The shareholders can use the results of the study to push for a board which is smaller in size, but has a higher number of independent directors, and for an audit committee which has a large number of independent members. This will increase the independence and effectiveness of governance and will provide tighter controls on financial managers.

Our study also advices the shareholders that a smaller board size leads to more effective control and that CEO duality has little influence, especially in firms belonging to a growing economy like India. The study further guides the investors that in comparison to audit committee, the board size has much more influence on the working capital management, and thus, the prime attention of the investor should be on appointing an effective and independent board. The implications of the study warn the shareholders that appointing capable financial managers is not enough to safeguard their long-term interests, and there needs to be a strict control of shareholders though an independent board and audit committee to restrict the wasteful activities of managers.

Earlier studies have already proven that a proper working capital management plays an important role in a firms' value, and a weak working capital management can lead to failure of firms. Our study helps the investors by offering practical solutions to ensure a proper WCM by making them aware about the important role of various effective corporate governance practices.

Limitations of the Study and Scope for Further Research

The limitation of the current study is that it considered only large-size firms and took into consideration a limited

set of corporate governance factors. Future research may extend the present study by taking more number of corporate governance variables and testing their influence on a larger sample of firms, including small, medium, and large sized firms. The study may also be extended to test the relationship in other developing and developed economies to obtain generalized results.

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