
The impact of working capital management on the decision of Indian production firms about the amount of dividends

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Abstract: This study examines the impact of working capital management on decisions concerning the extent of distribution of dividends. Results suggest that working capital management plays a role in decisions concerning dividend distribution in the Indian production firms. The findings of this study indicate that cash level has a strong impact on decisions concerning dividend distributions for Indian production firms holding higher cash balances compared with non-dividend paying Indian production firms. This study contributes to the literature on the factors that impact firms' decisions concerning the distribution of dividends.

Keywords: working capital management; dividend payout; cash holding; Indian production firms.

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1 Introduction

Working capital management is among the most crucial factors for consideration to maximise shareholders' wealth. One way to maximise the shareholders' wealth is to maximise share price, and another way is to maximise dividend payout. Working capital management refers to the management of current assets and current liabilities. The components of working capital management include receivables, inventory, payables, cash holdings for day-to-day operations (Gill and Biger, 2013) and other transactions such as cash dividend payout. Among the important components of working capital management, cash is the most crucial factor in the decision to pay dividends but it can cause an agency problem¹ between managers (agent) and shareholders (principal).

The agency problem and asymmetric information are among the most important challenges that confront modern firms (Louis and Urcan, 2015; Li and Zhao, 2008) and these challenges affect firms' dividend policy. Even though Miller and Modigliani (1961) proved that dividend policy is irrelevant to share price in a perfect and efficient market, dividend payout does matter to the existing shareholders and new investors to maximise their wealth. Louis and Urcan (2015) argued that firms use dividend payout to mitigate agency problems between managers and shareholders. The models developed by notable authors (i.e., Bhattacharya, 1979; John and Williams, 1985; Miller and Rock, 1985, etc.) suggested that managers know more about the true value of the firm than investors do and use dividends to convey information to the market.

Nadiri (1969) pioneered a study on working capital management and Lintner (1956) pioneered a study on corporate dividend policy and the dividend decision. Since the seminal work of Lintner (1956) on corporate dividend policy and dividend decisions, many studies attempted to identify the factors influencing dividend decisions in organisations. While some studies concentrated on key determinants of the decision to

pay dividends by showing cash as a key determinant of the decision to pay dividends (see Aivazian et al., 2003; Ho, 2003), other studies attempted to find answers to why firms hold cash (see Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004; Harford et al., 2014). Several researchers have developed new theory by using the models of Lintner (1956) and Nadiri (1969) relating the desired level of real cash balances in the firm. Nevertheless, there has been a little research done on the relationship between working capital management and decisions about the amount of dividends; therefore, this study concentrates on the relationship between working capital management and decisions about the amount of dividends by using the following research questions:

Do dividend paying Indian production firms hold higher cash compared with the non-dividend paying Indian production firms?

Does working capital management affect the decision about the amount of dividends to distribute in Indian production firms?

The Republic of India shares land boundaries with Bangladesh (formerly Pakistan East), Bhutan, Myanmar (formerly Burma), China (PRC), Nepal, and Pakistan [Dana, (2000), p.86]. Following the seminal work of Lintner (1956), this study used a sample of Indian production firms and found that cash level has a significant impact on the decision about distribution of dividends and dividend-paying Indian production firms hold higher cash balances compared with the non-dividend paying Indian production firms. Findings of this study suggest that working capital management plays a role in decisions concerning dividend distributions in Indian production firms. In addition, firm performance, firm size, and capital structure play key roles in decisions concerning dividends. This study lends some support to the findings of the previous notable study by Lintner (1956) and other studies (Aivazian et al., 2003; Ho, 2003; Omet, 2004; Musa, 2009; Imran, 2011; Gill et al., 2013; Abuaf, 2012; Botoc and Pirtea, 2014; Chen et al., 2013, etc.) related to the relationship between working capital management, firm performance, capital structure, and decisions about the amount of dividends in Indian production firms. This study contributes to the literature on the relationship between the working capital management and the decision about the amount of dividends in Indian production firms.

The structure of the paper is as follows. Section 2 examines the previous literature and develops hypotheses. Section 2 describes the data and methodology used to investigate the research questions. Section 4 analyses, discusses, and concludes the empirical results. Section 5 considers the limitations of the findings and provides recommendations for future research.

2 Literature review

Cash holding plays an important role in decisions concerning the payout of dividends (Oladipupo and Ibadin, 2013). The findings of Mun and Jang (2015) showed that efficient working capital management increases cash level in the firm. However, Jo and Pan (2009) found that firms with entrenched managers are more likely to pay dividends and paying dividends reduces cash holdings. Previous studies showed that firms hold cash to pay dividends, meet precautionary, speculative, and transactional motives (Oladipupo and Ibadin, 2013; Gill and Biger, 2013). Higher levels of cash holdings, however, may cause an agency problem between managers and shareholders.

While the results of Abuaf (2012) showed that cash-rich companies are receptive to paying regular dividends and special dividends to shareholders, Botoc and Pirtea (2014) concluded that when investor protection is high, cash needs are more important in explaining dividend payout; when investor protection is poor, liquidity seems to be more important. On the other hand, Chen et al. (2013) found that the negative covariance between the firm's rate of return on equity and the firm's growth rate has a negative effect on the firm's dividend payout.

The findings of Al-Najjar and Belghitar (2011) suggested that cash, corporate leverage, firm growth, firm size, risk, and profit are key factors that affect dividend policy. Aivazian et al. (2003) demonstrated that emerging market firms exhibit dividend behaviour similar to US firms, insofar as dividends are explained by profitability, debt, and the market-to-book ratio. Ho (2003) found that firm size and liquidity affect the dividend policy of the firm. Thus, cash holding is a principal factor affecting dividend decisions.

Growth in production level increases levels of cash, inventories, and accounts receivable (Michalski, 2008). However, building unnecessary working capital eventually begins negatively affects shareholders' wealth. Paying accounts payable late hurts the firm because of the penalty charged by suppliers (Gill and Biger, 2013). Therefore, an optimal working capital management policy is necessary for the firm to maximise shareholders' wealth by maximising dividend payout.

Lintner (1956) indicated that current year's earnings influence the dividend payment pattern of a firm. Asymmetric information can lead to earnings manipulation as well as an agency problem because managers know more than shareholders do concerning working capital management. For example, overstating inventory in the current year will have a negative impact on earnings of future years. The findings of Goergen et al. (2005) suggested that the incurrence of a loss and the level of net earnings are key determinants of dividends; that is, firms are more likely to reduce their dividends when earnings deteriorate. Li and Zhao (2008) found a negative relationship between asymmetric information and dividend policy. Thus, agency problems and asymmetric information have a negative impact on dividend payout. To mitigate agency and asymmetric information problems, bondholders use strict covenants (Smith and Warner, 1979) which have a negative impact on dividend payouts to shareholders.

Amidu and Abor (2006) found that cash flow is a very important factor in the decision to pay dividends. However, Alam and Hossain (2012) gave more importance to liquidity and profitability in dividend payout ratios; that is, the decision about the amount of dividend payout. Hamill (2012) found that the level of inside ownership, the number of shareholders, and the level of institutional ownership significantly influence the dividend payout ratio. This may be because inside ownership, institutional ownership, and the number of shareholders play an important stewardship role to control working capital management, which in turn, influences decisions about dividends.

Omet (2004) discovered that tax (current liability) does not greatly influence the dividend policy of the firm; therefore, the Jordanian listed companies were able to maintain stable dividend policies. Since tax liability falls under accounts payable, the accounts payable period should influence the decision about the amount of dividend payout. While Musa (2009) noted that current earnings, previous dividend, and cash flow impact dividend policy of the Nigerian publicly traded firms, Adesola and Okwong (2009) showed firm performance as a significant determinant of dividend payment. The

results of Gill et al. (2010) suggested that profit margin, sales growth, and debt-to-equity ratio, tax, and market-to-book ratio significantly affect the dividend payout decision in the USA.

A study by Imran (2011) noted that earnings per share, profitability, cash flow, sales growth, and firm size play a significant role in dividend policy decisions. Similarly, Mehta (2012) found that firm performance and firm size significantly affect the dividend decisions of UAE firms. Likewise, the findings of Aizomaia and Al-Khadhiri (2013) indicated that earnings per share are an important factor that influences dividend payment decisions in Saudi Arabian firms.

Gill et al. (2013) indicated that the changes in corporate leverage and financial efficiency cause changes in decisions about dividends in Indian firms. Their findings also indicated that corporate leverage and financial efficiency play some role in the decision to pay dividends. Their findings suggested that firm size, financial performance, operating cash flow, and cash holding positively impact the decision to pay dividends. Asif et al. (2011) found that the level of corporate debt (leverage) significantly affects the dividend policy of Pakistani firms.

2.1 Summary of literature review and hypotheses development

Literature review shows that efficient working capital management increases cash level (Mun and Jang, 2015), which in turn, plays an important role in decisions concerning the amount of dividend payout (Oladipupo and Ibadin, 2013). In summary:

- Cash is the most liquid assets and current ratio measures the liquidity of the firm; therefore, both the cash holdings and current ratio are expected to have positive impact on the decision about the amount of dividends. Oladipupo and Ibadin (2013) showed cash and liquidity as important factors in decisions concerning the amount of dividends.
- Higher accounts receivable period and higher cash conversion cycle delay in cash collection; therefore, both the accounts receivable period and the higher cash conversion cycle are expected to have negative impact on the decision about the amount of dividends.
- Higher inventory holding period delays the product sales and cash collection; therefore, higher inventory holding period is expected to have a negative impact on the decision about the amount of dividends.
- Higher accounts payable period shows delays in accounts payable and thus, cash remains in the firms' accounts; therefore, higher accounts payable period is expected to have a positive impact on the decision about the amount of dividends. The higher accounts payable period may not be because of the poor cash inflow but rather because of the extension granted by inventory suppliers.
- Cash conversion efficiency increase cash inflow; therefore, cash conversion efficiency is expected to have a positive impact on the decision about the amount of dividends.

The above components of working capital show that higher – accounts receivable period, inventory holding period, accounts payable period, cash conversion cycle period, and

cash conversion efficiency affect cash holdings in the firm. Following the summary of literature review, it is hypothesised that:

- Hypothesis 1 (H1) Dividend paying firms hold higher cash compared with the non-dividend paying firms.
- Hypothesis 2 (H2) The decision about the amount of dividends is positively associated with the higher:
- H2A level of cash holding.
 - H2B level of current ratio.
 - H2C accounts payable period.
 - H2D cash conversion efficiency.
- Hypothesis 3 (H3) The decision about the amount of dividends is negatively associated with the higher:
- H3A accounts receivable period.
 - H3B inventory holding period.
 - H3C cash conversion cycle period.

3 Methods

3.1 Research design and measurement

The study applied co-relational and non-experimental research design. This process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. To remain consistent with previous studies, measures pertaining to working capital management were adopted from Gill and Biger (2013) and measures pertaining to the decision about the amount of dividends were adopted from Gill et al. (2013). There is no single measure that fully expresses working capital management. Therefore, seven different component measures of working capital were chosen and used as main explanatory variables. The seven main explanatory different independent variables include cash holding, current ratio, accounts receivable, inventory, accounts payable, cash conversion cycle, and cash conversion efficiency [Gill and Biger, (2013), p.121]. Table 1 shows the measurements of the dependent, independent, and control variables that were used in regression analysis.

3.2 Data collection

Using COMPUSTAT of Wharton Research Data Services (<http://www.wrds-web.wharton.upenn.edu/wrds/>), 15,686 observations were collected from Indian production firms for a period of seven years (from 2009–2015). After deleting the observations that were missing information, only 6,563 observations were usable.

Table 1 Proxy variables and their measurements*

<i>Dependent variables</i>	<i>Measurement</i>
Decision about the amount of dividends (<i>DAAD_i</i>)	Natural log of total amount of cash dividends
<i>Independent (explanatory) variables</i>	<i>Measurement</i>
Cash holdings (<i>CH_i</i>)	Natural log of cash and cash equivalent
Current ratio (<i>CR_i</i>)	Current assets ÷ current liabilities
Accounts receivables (<i>AR_i</i>)**	(Accounts receivables ÷ sales) × 365 days
Inventory (<i>INV_i</i>)**	(Inventory ÷ cost of goods sold) × 365 days
Accounts payables (<i>AP_i</i>)**	(Accounts payables ÷ cost of goods sold) × 365 days
Cash conversion cycle (<i>CCC_i</i>)**	(No. of days A/R + no. of days inventory) – no. of days A/P
Cash conversion efficiency (<i>CCE_i</i>)	Cash flow from operations ÷ sales
<i>Control variables</i>	<i>Measurement</i>
Firm size (<i>FS_i</i>)	Natural log of average assets
Firm performance (<i>FP_i</i>)	Net income after tax ÷ revenue
Short-term debt to total assets ratio (<i>SDA_i</i>)	Short-term debt ÷ total assets
Long-term debt to total assets ratio (<i>LDA_i</i>)	Long-term debt ÷ total assets
Total debt to total assets ratio (<i>TDA_i</i>)	Total debt ÷ total assets
Internationalisation of the firm (<i>MULTI_i</i>)	Assigned value 1 for international firm and 0 for otherwise

Notes: *To minimise endogeneity issues, the most important variables that impact decision about the amount of dividends were used and the measurements were borrowed from the previous empirical studies. **To reduce heteroscedasticity (i.e., stabilise variance), the natural logarithm (ln) was calculated for accounts receivable days, inventory holding days, accounts payable days, and cash conversion cycle days was calculated.

4 Empirical model and analysis

4.1 Empirical model

The components of working capital management (*WCM*), in the context of this study, include cash holding (*CH*), current ratio (*CR*), accounts receivable (*AR*), inventory (*INV*), accounts payable (*AP*), cash conversion cycle (*CCC*), and cash conversion efficiency (*CCE*). As described in the direction of relationships in hypotheses, *CH*, *CR*, *AP*, and *CCE* positively, and *AR*, *INV*, and *CCC* negatively affect the decision about the amount of dividends (*DAAD*) of production firms; therefore, all the components of the working capital efficiency were used as main explanatory variables to estimate the following regression model:

$$DAAD_i = \alpha_0 + \alpha_1 WCM_i + \sum X_{ij} + \varepsilon_i \quad (1)$$

In the model i refers to the production firm, $DAAD$ is the decision about the amount of dividends, and X_{ij} represents individual control variables (j) corresponding to production firm i . ε_i is a normally distributed disturbance term. In the estimated model, α_1 measures the magnitude at which WCM (i.e., components of $WCM - CH, CR, AP, AR, INV, AP, CCC$, and CCE) affects the decision about the amount of dividends. Model (1) is extended by considering different set of control variables once at a time. The coefficients of variables of model were estimated by applying ordinary least square (OLS) regressions.² Firm size (FS), firm performance (FP), short-term debt to assets ratio (SDA), long-term debt to assets ratio (LDA), total debt to total assets ratio (TDA), and internationalisation ($MULTI$) were used as control variables. Equation (1) is relevant for testing Hypothesis 2 and 3.

4.2 Descriptive statistics

Table 2 shows descriptive statistics of the collected variables. The explanation on descriptive statistics is as follows:

- $DAAD = 3.62$.
- $CH = 3.89$ million.
- $CR = 1.81$ times.
- $AR = 4.57$ (122.55 days).
- $INV = 4.47$ (116.15 days).
- $AP = 3.92$ (73.04 days).
- $CCC = 4.84$ (165.66 days).
- $CCE = 0.05$.
- $FS = 7.84$ million.
- $FP = 1\%$.
- $SDA = 0.40$.
- $LDA = 0.16$.
- $TDA = 0.59$.
- $MULTI = 1$.

T-test shows that dividend paying Indian production firms hold higher cash compared with the non-dividend paying Indian production firms. For example, the mean CH score among the dividend paying Indian production firms is INR 4.58 million compared to INR 3.05 million in the case of the non-dividend paying Indian production firms, and their differences are significant at the one percent level (see Table 2). Thus, there is support for Hypothesis 1. The findings of this study lend some support to the findings of Gill et al. (2013).

In addition, dividend paying Indian production firms had lower accounts receivable period, lower inventory holding period, lower accounts payable period, lower cash conversion cycle period, higher cash conversion efficiency, larger firm size, higher firm

performance, lower short-term debt to assets ratio, lower long-term debt to assets ratio, lower total debt to total assets ratio, and lower internationalisation of the firm compared with non-dividend paying Indian production firms.

Table 2 Descriptive statistics

	Mean	Standard deviation	Minimum	Median	Maximum	Firms with DAAD	Firms without DAAD	Compare mean t-test
DAAD	3.62	1.80	-1.08	3.47	12.12			
CH	3.89	2.20	-3.86	3.76	13.27	4.58	3.05	1.53**
CR	1.81	2.81	0.04	1.34	98.68	1.83	1.79	0.04
AR	4.57	0.69	0.51	4.58	7.83	4.53	4.61	-0.08**
INV	4.47	0.77	-0.95	4.52	9.61	4.46	4.47	-0.01
AP	3.92	1.00	-4.47	4.10	9.57	3.87	3.97	-0.10**
CCC	4.84	0.79	-2.46	4.89	8.12	4.82	4.86	-0.04†
CCE	0.05	0.21	-5.06	0.06	4.23	0.07	0.03	0.04**
FS	7.84	1.72	3.34	7.71	14.75	8.31	7.26	1.05**
FP	0.01	0.22	-4.29	0.03	3.75	0.06	-0.05	0.11**
SDA	0.40	0.23	0.00	0.39	6.29	0.38	0.44	-0.06**
LDA	0.16	0.19	0.00	0.10	2.76	0.12	0.20	-0.08**
TDA	0.59	0.31	0.01	0.60	6.50	0.53	0.67	-0.14**
MULTI	1.00	0.06	0	1	1	0.99	1.00	-0.01*

Notes: †p < 0.10, *p < 0.05, and **p < 0.01; variables include decision about the amount of dividends (DAAD), cash holding (CH), current ratio (CR), accounts receivables (AR in days), inventory holding (INV in days), accounts payables (AP in days), cash conversion cycle (CCC in days), cash conversion efficiency (CCE), firm size (FS), firm performance (FP), short-term debt to total assets ratio (SDA), long-term debt to total assets ratio (LDA), total debt to total assets ratio (TDA), and internationalisation (MULTI).

4.3 Correlation coefficient

The correlation coefficient matrix exhibits that CH, AP, CCE, FS, FP, and LDA are positively and significantly correlated with DAAD ($\rho_{CH,DAAD} = 0.707$; $\rho_{AP,DAAD} = 0.133$; $\rho_{CCE,DAAD} = 0.183$; $\rho_{FS,DAAD} = 0.818$; $\rho_{FP,DAAD} = 0.238$; and $\rho_{LDA,DAAD} = 0.056$), implying that higher level of cash holding, higher fitted value of cash, higher accounts payable period, higher cash conversion efficiency, larger firm size, higher financial performance, and higher long-term debt to assets ratio positively impact on the decision about the amount of dividends. The correlation coefficient matrix also exhibits that CR, CCC, SDA, TDA, and MULTI are negatively and significantly correlated with DAAD ($\rho_{CR,DAAD} = -0.036$; $\rho_{CCC,DAAD} = -0.046$; $\rho_{SDA,DAAD} = -0.159$; $\rho_{LDA,DAAD} = -0.066$; and $\rho_{MULTI,DAAD} = -0.144$), suggesting that lower current ratio, higher cash conversion cycle period, higher short-term debt to assets ratio, higher total debt to total assets ratio, and internationalisation of the production firms negatively impact on the decision about the amount of dividends in India (see Table 3).

Table 3 Correlation coefficient

	DAAD	CH	CR	AR	INV	AP	CCC	CCE	FS	FP	SDA	LDA	TDA	MULTI
DAAD	1													
CH	0.707**	1												
CR	-0.036*	-0.027*	1											
AR	0.004	0.008	0.154**	1										
INV	0.030	0.069**	0.007	0.157**	1									
AP	0.133**	0.120**	-0.229**	0.314**	0.295**	1								
CCC	-0.046**	-0.026*	0.183**	0.620**	0.573**	-0.008	1							
CCE	0.183**	0.065**	-0.034**	-0.083**	0.019	0.004	-0.058**	1						
FS	0.818**	0.779**	-0.132**	0.029*	0.093**	0.140**	-0.003	0.073**	1					
FP	0.238**	0.114**	0.078**	-0.069**	0.000	-0.059**	-0.022	0.066**	0.034**	1				
SDA	-0.159**	-0.037**	-0.287**	-0.051**	0.017	0.195**	-0.134**	-0.062**	0.006	-0.204**	1			
LDA	0.056**	-0.005	-0.076**	-0.030*	0.008	-0.025*	-0.016	-0.045**	0.150**	-0.261**	0.017	1		
TDA	-0.066**	-0.025*	-0.267**	-0.067**	0.011	0.129**	-0.119**	-0.066**	0.111**	-0.320**	0.756**	0.643**	1	
MULTI	-0.144**	-0.124**	0.008	0.023	-0.019	-0.023	0.010	-0.022	-0.133**	-0.014	0.035**	-0.022	0.008	1

Notes: *p < 0.05 and **p < 0.01; Variables include decision about the amount of dividends (DAAD), cash holding (CH), current ratio (CR), accounts receivables (AR in days), inventory holding (INV in days), accounts payables (AP in days), cash conversion cycle (CCC in days), cash conversion efficiency (CCE), firm size (FS), firm performance (FP), short-term debt to total assets ratio (SDA), long-term debt to total assets ratio (LDA), total debt to total assets ratio (TDA), and internationalisation (MULTI).

Table 4 Working capital management and decision about the amount of dividends^a

<i>Dependent variable = DAAD</i>				
<i>Variables</i>	<i>DAAD (I)</i>	<i>DAAD (II)</i>	<i>DAAD (III)</i>	<i>DAAD (IV)</i>
<i>CH</i>	0.583** (58.19)	0.077** (6.62)	0.053** (4.88)	0.047** (4.28)
<i>CR</i>	-0.006 (-0.55)	0.031** (3.61)	0.031** (4.13)	-0.016* (-2.00)
<i>AR</i>	-0.189* (-3.17)	-0.367** (-8.50)	-0.401** (-9.90)	-0.366** (-9.04)
<i>INV</i>	-0.086 (-1.59)	-0.161** (-4.12)	-0.140** (-3.83)	-0.112** (-3.05)
<i>AP</i>	0.041 (1.28)	0.081** (3.46)	0.002 (0.10)	0.060** (2.72)
<i>CCC</i>	0.057 (0.87)	-0.003 (-0.07)	0.042 (0.95)	-0.048 (-1.07)
<i>CCE</i>	1.799** (8.74)	0.825** (5.32)	1.075** (7.54)	0.602** (4.19)
<i>FS</i>		0.800** (53.70)	0.903** (61.61)	0.884** (61.16)
<i>FP</i>		5.060** (21.35)	4.451** (20.38)	3.530** (15.32)
<i>SDA</i>		-0.681** (-5.61)		
<i>LDA</i>			-2.861** (-22.78)	
<i>TDA</i>				-2.203** (-22.51)
<i>MULTI</i>		-0.088 (-0.51)	-0.234 (-1.45)	-0.046 (-0.28)
<i>Constant</i>	1.628** (8.45)	-1.393** (-5.75)	-1.756** (-7.86)	-0.814** (-3.59)
<i>N</i>	6563	6563	6563	6563
<i>F-test</i>	535.78**	957.79**	1132.22**	1127.96**
<i>R²</i>	0.514	0.748	0.778	0.778

Notes: * $p < 0.05$ and ** $p < 0.01$; dependent variables is the decision about the amount of dividends (*DAAD*). Independent variables include cash holding (*CH*), current ratio (*CR*), accounts receivables (*AR* in days), inventory holding (*INV*) in days, accounts payables (*AP* in days), cash conversion cycle (*CCC* in days), cash conversion efficiency (*CCE*), firm size (*FS*), firm performance (*FP*), short-term debt to total assets ratio (*SDA*), long-term debt to total assets ratio (*LDA*), total debt to total assets ratio (*TDA*), and internationalisation (*MULTI*).

^aThe lowest tolerance is 0.193 and the highest VIF is 5.128 indicating that multicollinearity is not a serious issue.

Table 5 Findings of previous authors

<i>Author</i>	<i>Finding(s)/argument(s)</i>
Michalski (2008)	<ul style="list-style-type: none"> • Found that growth in production level increases cash, inventories, and accounts receivables.
Lintner (1956)	<ul style="list-style-type: none"> • Dividend payment pattern of a firm is influenced by the current year's earnings.
Amidu and Abor (2006)	<ul style="list-style-type: none"> • Argued that cash flow is very important factor in the decision to pay amount of dividends.
Hamill (2012)	<ul style="list-style-type: none"> • Found that inside ownership, the number of shareholders, and the level of institutional ownership significantly influence the dividend payout ratio.
Omet (2004)	<ul style="list-style-type: none"> • Found that tax (current liability) does not impact much on the dividend policy of the firm.
Musa (2009), Adesola and Okwong (2009)	<ul style="list-style-type: none"> • Found that firm performance is the significant determinant of dividend payment.
Gill et al. (2010)	<ul style="list-style-type: none"> • Found that profit margin, sales growth, and debt-to-equity ratio, tax, and market-to-book ratio significantly impact the dividend payout decision.
Imran (2011)	<ul style="list-style-type: none"> • Found that earnings per share, profitability, cash flow, sales growth, and firm size play a significant role in dividend policy decision.
Mehta (2012)	<ul style="list-style-type: none"> • Found that firm performance and firm size significantly impact dividend payment decision.
Aizomaia and Al-Khadhiri (2013)	<ul style="list-style-type: none"> • Found that earnings per share are important factors that influence dividend payment decision.
Gill et al. (2013)	<ul style="list-style-type: none"> • Found that the changes in corporate leverage and financial efficiency cause changes in the decision about the amount of dividends. Firm size, financial performance, operating cash flow, and cash holding positively impact the decision to pay the amount of dividends.
Asif et al. (2011)	<ul style="list-style-type: none"> • Found that the level of corporate debt (leverage) significantly affects the dividend policy.
Abuaf (2012)	<ul style="list-style-type: none"> • Found that the cash-rich companies are more respective to paying regular dividends and special dividends to shareholders.
Botoc and Pirtea (2014)	<ul style="list-style-type: none"> • Found that when investor protection is high, cash needs are more important in explaining dividend payout; when investor protection is poor, liquidity seems to be more important.
Al-Najjar and Belghitar (2011)	<ul style="list-style-type: none"> • Found that dividend policy is affected by cash, corporate leverage, firm growth, firm size, risk, and profit.
Aivazian et al. (2003)	<ul style="list-style-type: none"> • Found that emerging market firms exhibit dividend behaviour similar to US firms, in the sense that dividends are explained by profitability, debt, and the market-to-book ratio.
Mun and Jang (2015)	<ul style="list-style-type: none"> • Found that efficient working capital management increases cash level in the firm.
Chen et al. (2013)	<ul style="list-style-type: none"> • Found that the negative covariance between the firm's rate of return on equity and the firm's growth rate has a negative effect on the firm's dividend payout.

4.4 Regression results

Table 4 reports the estimated coefficients of equation (1). In equation (1), *CH*, *CR*, *AP*, *AR*, *INV*, *AP*, *CCC* and *CCE* (components of working capital management) are used as main explanatory variables. As shown in Table 4, *DAAD* is positively and significantly associated with *CH*, *CR*, *AP*, *CCE*, *FS*, and *FP*, and negatively and significantly associated with *AR*, *INV*, *SDA*, *LDA*, and *TDA*.

The coefficients of *CH* in columns (I) to (IV) are positive and significant at the 1% level, implying that higher cash holding positively affects the decision about the amount of dividends in the Indian production industry. Likewise, the coefficients of *CR* in columns (II) and (III) are positive and significant at the 1% level, indicating that higher current ratio positively affects the decision about the amount of dividends in the Indian production industry.

The coefficients of *AR* in columns (I) to (IV) are negative and significant at the 5% and 1% level, respectively, suggesting that higher accounts receivable period negatively affects the decision about the amount of dividends in the Indian production industry. Similarly, the coefficients of *INV* in columns (II) to (IV) are negative and significant at the 1% level, implying that a higher inventory-holding period negatively affects the decision about the amount of dividends in the Indian production industry.

The coefficients of *AP* in columns (II) and (IV) are positive and significant at the 1% level, indicating that a higher accounts payable period positively affects the decision about the amount of dividends in the Indian production industry. Likewise, the coefficients of *CCE* in columns (I) to (IV) are positive and significant at the 1% level, implying that higher cash conversion efficiency positively affects the decision about the amount of dividends in the Indian production industry.

The coefficients of *FS* and *FP* in columns (II) to (IV) are positive and significant at the 1% level, suggesting that firm size and firm performance positively influence the decision about the amount of dividends in the Indian production industry. Similarly, the coefficients of *SDA*, *LDA*, and *TDA* in columns (II), (III), and (IV), respectively, are positive and significant at the 1% level, indicating that the short-term debt to total assets ratio, long-term debt to total assets ratio, and total debt to total assets ratio negatively influence the decision about the amount of dividends in the Indian production industry.

In summary, results repeatedly show that working capital management influences the decision about the amount of dividends in the Indian production firms. Thus, there is support for hypotheses H2A, H2B, H2C, H2D, H3A, and H3B.

4.5 Summary of findings, discussion, and conclusion

Findings of this study show that a higher level of cash holdings, higher current ratio, higher accounts payable period, and higher cash conversion efficiency positively, and higher accounts receivable period and higher inventory holding period negatively impact the decision about the amount of dividends. Positive relationships among cash holding, current ratio, and the decision about the amount of dividends show that cash and a high current ratio favour the dividend payout decision. Likewise, a positive relationship between cash conversion efficiency and the decision about the amount of dividends

shows that cash conversion efficiency increases operating cash inflow, which in turn, positively affects the decision about the amount of dividends. Similarly, a positive relationship between higher accounts payable period and the decision about the amount of dividends shows that higher accounts payable periods has a positive impact on the decision about the amount of dividends but it may not the firm because higher accounts payable period may lead to penalties for late payment.

Further, a negative relationship between higher accounts receivable period and the decision about the amount of dividends shows that a higher accounts receivable period decreases speed of cash collection, which in turn, has a negative impact on the decision about the amount of dividends. In addition, a negative relationship between higher inventory holding period and the decision about the amount of dividends shows that a higher inventory holding period delays the product sales and cash collection; therefore, a higher inventory holding period negatively affects the decision about the amount of dividends.

The results also show that firm size and firm performance positively, and capital structure negatively affect the decision about the amount of dividends. The positive relationships among firm performance, firm size, and the decision about the amount of dividends may be because larger firms with better financial performance have higher level of cash, which in turn, positively impacts the decision about the amount of dividends. The negative relationship between leverage and the decision about the amount of dividends may be because of the restrictive debt covenants imposed by bondholders which restricts dividend payments.

In summary, the results suggest that the decision about the amount of dividends is significantly influenced by working capital management in the Indian production industry. The decision about the amount of dividends is positively associated with firm size and firm performance, and negatively associated with the capital structure (leverage). Findings of this study lend some support to the findings of Lintner (1956), Amidu and Abor (2006), Omet (2004), Musa (2009), Adesola and Okwong (2009), Gill et al. (2010, 2013), Imran (2011), Mehta (2012), Aizomaia and Al-Khadhiri (2013), Asif et al. (2011), Abuaf (2012), Botoc and Pirtea (2014), Chen et al. (2013), Al-Najjar and Belghitar (2011) and Aivazian et al. (2003) in that firm size, firm performance, cash flow, and accounts payable period positively, and capital structure (leverage) negatively impact the decision about the amount of dividends. Table 5 provides details on the findings of previous authors.

In conclusion, working capital management significantly influences the decision about the amount of dividends. Since working capital management significantly influences the decision about the amount of dividends, it is strongly recommended for the production firms to improve the working capital management efficiency by decreasing cash conversion cycle period and improve cash conversion efficiency. Since a higher level of debt has a negative impact on the decision about the amount of dividends, Indian firms should consider an optimal capital structure. For example, a higher level of short-term, long-term, and total debt reduces the chances of dividend payout approximately by $e^{-0.681} - 1$, $e^{-2.861} - 1$, and $e^{-2.203} - 1$ or 49.39%, 94.28%, and 88.95%, respectively in India (see Table 4).

5 Limitations and future research

This co-relational study investigates the association between working capital management and the decision about the amount of dividends. There is not necessarily a causal relationship between the two. This study is limited to the sample of Indian production firms. The findings of this study may only be generalised to firms similar to those that were included in this research.

In practice, there may be implementation challenges of the findings. For example, improvement in working capital management may influence the decision about the amount of dividends in one company, but not in another company. In similar manners, other findings may not apply to other companies. Future research should investigate generalisations of the findings beyond the Indian production firms. Important control variables such as industry sectors from different countries should also be used.

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Notes

- 1 Agency problem is the part of agency theory developed by Jensen and Meckling (1976).
- 2 Dependent variable (*DAAD*) is a continuous variable; therefore, ordinary least square regression method was used.