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# Effect of Corporate Governance on Cash Holding: The Role of Product Market Competition

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## ABSTRACT

Corporate cash holding is among the fundamental areas in corporate finance. Recently, corporate cash holding has gained critical attention due to the dynamic business environment. Both practitioners and academicians have focused on the firms' cash holding decisions in the recent era. The purpose of this research is to investigate the effect of corporate governance on cash holding and to check the role of product market competition on corporate governance and cash holding relationship. The research investigated that whether product market competition plays substitution role for corporate governance in a relationship with cash holding. Substitution effect argument claims that external market discipline is enough to resolve agency problem between managers and shareholders even firm level governance is weak. For this study, unbalanced panel data of 196 companies from the year 2006 to 2014 is selected. All models include time dummies and industry fixed effect with standard error cluster to the firm. The results show that corporate governance has a significant negative effect on corporate cash holding which supports flexibility hypotheses. Moreover, product market competition has substitution role for corporate governance in relationship with corporate cash holding.

**Keywords:** Corporate governance, Cash holding, Product market competition, Pakistan

## 1. INTRODUCTION

Firms hold cash because the cost of internal financing is lower compared to the cost of external financing. As the pecking order theory claims, the most expensive source of financing is equity financing, while the cheapest source of financing is the internal financing. Firms hoard cash to get the benefit of transactional economies of scale or firms

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### Article info

Received Dec 27, 2017

Accepted June 15, 2018

Published June 30, 2018

hold cash for precautionary motive or firms hold cash to avoid underinvestment is explained under financial friction argument (Mulligan, 1997; Opler, Pinkowitz, Stulz, & Williamson, 1999; Almeida, Campello, & Weisbach, 2004). However, the benefit of maintaining cash should be greater than the cost of hoarding cash. The extant literature advocates the trade-off between the cost and benefit of hoarding cash for precautionary motive (Jain, Li, & Shao, 2013). Cash is prone to the agency problems since it can easily be appropriated by entrenched managers for their personal benefit at the cost of shareholders (Mayers & Rajan, 1998; Pinkowitz, Stulz, & Williamson, 2006; Harford, Mansi, & Maxwell, 2008). Therefore, proper corporate governance is needed to reduce agency problem and align the interest of managers with the interest of shareholders. Corporate governance has got attention from academicians and policymakers after the Enron; Worldcom crises and Taj company scandal in Pakistan, etc.

However, the effect of corporate governance on cash holding is mixed in the extant literature like Harford et al. (2008). Harford et al. (2008) found positive relationship between corporate governance and cash holding. Dittmar, Mahrt-Smith, and Servaes (2003) found that firms hold less cash where investor protection is high and vice versa. On the other hand, Kalcheva and Lins (2007) found that corporate governance has an insignificant effect on cash holding. Moreover, it is not clear whether the effect of corporate governance on the level of cash holding vary across different industries. The present study adds to the extant literature by investigating the effect of product market competition on the relationship of corporate governance and level of cash holding in the context of a developing country i.e., Pakistan. The concept of product market competition and its effect on the corporate decision is thoroughly discussed in the economics literature. Finance researchers have also discussed the effect of degree and nature of competition in product market on cash flows of the firm, investment and choices of firm finances (e.g. Haushalter, Kalsa, & Maxwell, 2007; Xu, 2012; Hou & Robinson 2006; Hoberg & Phillips, 2010). The role of product market competition in the corporate governance and level of cash holding relationship is explained on the basis of substitution effect argument. Product market competition is a substitute to firm level corporate governance in the sense that it works as an external market discipline and resolve agency

problem even when the firm level corporate governance is weak.

Therefore, corporate governance do has low significance in competitive industries compared to the concentrated industries.

### **Gap Identification**

Firm level of cash holding has got attention from both practitioners and academicians in the recent era. Harford et al. (2008) suggest that future research should be conducted on the relationship of corporate governance on cash holding in other economies where corporate governance structure and situation is different. Kalcheva and Lins (2007) suggest that future research should be conducted on other related factors in addition to agency problem (e.g., product market competition). Masood and Shah (2014) conducted research on corporate governance and cash holding in Pakistan but they did not use corporate governance index. Moreover, they recommend that besides agency problem other aspects should also be investigated with cash holding. Therefore, the present study measured corporate governance through index and also checked that whether product market competition play substitution role for corporate governance in relationship with cash holding.

### **The objectives of the study are:**

1. To investigate the effect of corporate governance on the level of cash holding
2. To investigate substitution role of product market competition for corporate governance in a relationship with cash holding.

## **2. LITERATURE REVIEW**

Cash holding is one of the important decisions for firm managers. In case of the perfect capital market, the worth of cash is negligible because the firm can raise finances easily and with zero cost through the capital market (Opler et al., 1999). This is not the case in the real world because raising funds to support firms operation bears some cost.

The determinants of cash holding were properly discussed by Opler et al., (1999) under a framework of trade-off model and financial hierarchy theory. According to the trade-off model firms hold extra cash however; it negatively affects wealth of shareholders if equilibrium does not exist between cost and return of holding extra cash

of holding cash. On the other hand, financial hierarchy theory claims that cash and debt have no optimal level. Firm's cash holding behavior is explained in the context of investment and as discussed by pecking order theory for financial decisions. Firm's cheapest source of financing is internal fund and the costliest source of financing is equity financing and this is the reason that firms maintain internal liquidity. Variables used in explaining trade-off model and hierarchy theory are almost the same but their predictive signs are different. According to trade-off model, the predictive sign of capital expenditure is positive in relationship with the level of cash. On other hand, hierarchy theory explains negative relationship of capital expenditure with cash. In the same way, hierarchy theory considers leverage is a substitute for cash and it has a negative relationship with cash (Dittmar et al., 2003).

As the level of cash normally increases with firms due to economic expansion, managers of the firms have to decide whether the excess cash should be accumulated, or it should be spent. The utilization of internal funds is the main problem between managers and shareholders (Jensen, 1986). Agency theory claim that self-interested managers use cash for their own benefit instead of serving the benefit of shareholders. If firm level governance is efficient, minority shareholders interest is protected from exploitation of entrenched managers and controlling shareholders (Myers & Rajan, 1998; Papaioannou, Strock, & Travalos, 1992; Chen & Chuang, 2009). Managers and controlling shareholders destroy cash for their own benefit under poor corporate governance at the cost of minority shareholders (Nenova, 2003; Dyck & Zingales, 2004).

The relationship of corporate governance with cash holding is supported by three hypotheses, which are summarized by Harford et al. (2008) that is 1) flexibility hypothesis 2) spending hypothesis 3) shareholder power hypothesis.

### **Flexibility Hypothesis**

Flexibility hypotheses claim that entrenched managers hold high cash because these managers want to free themselves from outside monitoring (Jensen, 1986) and shareholders are unable to force managers for the low level of cash holding. So, corporate governance has a negative relationship with cash holding.

### **Spending Hypothesis**

Spending hypothesis claim that firms with high agency problem than managers disburse cash in negative NPV projects for their own benefits at cost of shareholders and destroy the value of the firm. This means that corporate governance according to spending hypothesis posits positive relationship with cash holding.

### **Share Holder Power Hypothesis**

The shareholder power hypothesis claims that minority shareholders have the power to exert pressure on managers to work efficiently. In this case, minority shareholders will allow managers for holding high cash to prevent them from under-investment and protect from bankruptcy. Myers and Majluf (1984) model show that shareholders should make a decision that how much cash managers should hold to avoid underinvestment problem because information asymmetry exists between providers of capital and managers. Shareholders should make a decision that how much cash managers should hold to avoid under-investment problem. In the context of shareholder power hypothesis corporate governance shows a positive relationship with cash holding.

However, the empirical literature shows inconclusive results on the effect of corporate governance on cash holding. Harford et al. (1999) posit that corporate governance has an insignificant effect on the level of cash holding. Kalcheva and Lins (2007) used international data and found that corporate governance has no significant effect on level of cash holding. Dittmar et al. (2003) also conducted research on international data and found that those countries where investors are less protected hold a high level of cash and countries where investors protection is highly protected hold less cash. Shareholders pressurize management of the company in countries where investors' protection is high to efficiently utilize excess cash especially in the form of a dividend to the shareholders. Kusnadi (2011) also investigated the effect of corporate governance on cash holding in family firms and found that high agency problem leads to high level of cash and lower agency problem leads to low level of cash. Amman, Oesch, and Schmid (2013) conducted research on European economies and found the negative relationship of corporate governance with the level of cash holding and their result is supported by flexibility hypotheses. In contrast, Harford et al. (2008) conducted research in U.S.A and

found the positive relationship between corporate governance and cash holding. Their result is supported by spending hypothesis.

Najar and Clark (2017) conducted research on MENA countries and considered internal and external governance variables and found that board size has negative effect on level of cash holding. Furthermore, firms hold less cash in those economies where the bank has high and strict supervision and international security law standards are followed. Overall their results show the negative relationship of corporate governance with the level of cash holding. Lee and Lee (2009) investigated the effect of corporate governance attributes on the level of cash holding and found that firms whose board size and management entrenchment hold less cash. Furthermore, independent directors on board also show a negative relationship with cash holding. Another study conducted by Amman et al. (2013) found that firm level governance shows a negative relationship with the level of cash holding and firms with good governance does not spend excess cash on internal investment.

Similarly, the studies that are conducted in Pakistan e.g., Basheer (2014) investigated the effect of corporate governance variables on cash holding and found that board independence has a positive effect on the level of cash holding. Moreover, CEO duality and family dummy shows the negative and insignificant effect on the level of cash holding, while managerial ownership shows a nonlinear relationship with the level of cash holding. Similarly, Ullah and Kamal (2017) investigated the relationship between board characteristics and cash holding. Their result support agency theory and found negative relationship between board characteristics and level of cash. In the same way, Masood and Shah (2014) found board size and independent board has negative effect on level of cash holding and ownership variables shows a positive relationship with cash holding. So, on the basis of above discussion corporate governance and cash holding has inconclusive results and deduce the following hypothesis.

**H<sub>1a</sub>:** *Corporate governance has a significant effect on the level of cash holding*

### **2.1. Corporate governance, Product market competition, and cash holding.**

The theoretical argument made by economist demonstrates that firms compete with rivals in competitive industries on basis of internal liquidity. “Deep pockets

argument” developed by Bolton and Scharfstein (1990) on the work of Telser (1966) argues that firms will compete with their rivals on the basis of internal funds. Haushalter et al. (2007) argue that firms facing under-investment problem in product market due to insufficient funds lose their market share in the market. Firms operating in competitive industries raise funds through debt financing. In response, competitors take advantage of this situation and utilize their internal funds on investment (Chevalier, 1995; Campello, 2003, 2006).

Product market competition works as an external market discipline and mitigate agency problem which force managers to work efficiently in the best interest of shareholders (Amman. Oesch, & Schmid, 2011; Alimov, 2014). Corporate governance matters in the industries where external market discipline is weak and shows substitution effect of product market competition to corporate governance (e.g., Holmstrom, 1982; Nalebuff & Stiglitz, 1983; Hart, 1983; Giroud & Mueller, 2010, 2011; Guadalupe & Perez-Gonzalez, 2010; Amman et al., 2013). On the other hand, Jain et al. (2013) shows the joint effect of corporate governance and product market competition on cash holding and shows corporate governance significantly affects cash holding in competitive industries. So, on the basis of above discussion, this research generated its 2nd hypothesis as follows.

**H<sub>2</sub>:** *Product market competition has substitution effect for corporate governance in a relationship with cash holding.*

### 3. RESEARCH METHODOLOGY

#### 3.1. Population and Sample size

The governance data is taken from annual reports, while the accounting data is taken from balance sheet analysis published by state bank of Pakistan from the year 2006 to 2014. Our population consists of 396 companies from various sectors listed on Pakistan stock exchange (PSX). The sample consists of 196 randomly selected firms.

**Table 3.1 Variables of the Study**

Cash holding	CH	Cash and marketable securities divided by the net asset
Ownership structure	OS	Total shares with board of directors to total shares outstanding

Board Size	BS	Natural log of numbers of board members
Board independence	BI	Non-executive directors on board to total number of board members
Audit committee size	ACS	No. of Directors in Audit committee
Audit Committee Independence	ACI	Non-executive directors in audit committee total number of directors in the audit committee
CEO Duality	CEOD	Whether CEO and Chairman is the same person is assigned 1 otherwise 0.
Board meeting	BM	Number of board meeting per year
Control variables Cash flow	Cflow	Profit After Tax and Dividend but before depreciation to net assets
Industry cash flow volatility	Indcv	The standard deviation of past 3 years cash flow and calculated the median standard deviation of each industry for each year and then subtract industry median from the standard deviation of each firm cash flow on a yearly basis
Market to book ratio	MtoB	Market value of asset to book value of the asset
Leverage ratio	LEV	Total debt to book value asset ratio
Networking capital	NWC	Current liabilities are subtracted from current asset to net asset
Size	Size	Natural log of total asset
Capital expenditure	Capex	Annual change in fixed assets plus annual change in depreciation divided by net assets
Dividend	Div	Equal to 1 if the firm pays a dividend in particular year otherwise 0.

### 3.2. Corporate Governance Index

For the measurement of corporate governance, this research used corporate governance index (CGI). Corporate governance variables are adopted from Shah (2009). This research measured additive index following the work of Aggarwal, Erel, Ferreira, & Matos (2011); Amman et al. (2011); Uddin (2016) by dividing the score into 5 quintiles and using the reverse coding for negative attributes.

### 3.3. Product Market Competition

HHI is concentration measure and computed by dividing total sales of the company in a particular year by total sales of the industry to which the firm belongs and square that market share of all firms in particular industry for a particular year. Sum



square of all market shares are divided in terciles and firms in particular year belongs to lowest tercile industry is assigned 1 for competition and otherwise 0 for concentration. This research excludes firm in particular year whose sales figure is missing.

### 3.4. Panel Data Analysis

Panel data techniques are used for the analysis of data. Panel data technique has an advantage over cross-section and time series data due to heterogeneity. Panel data has low chances of heterogeneity as compared to cross-sectional and time series data (Baltagi, 2008). Furthermore, multicollinearity problem is less in panel data as compared to time series and cross sectional-data (Baltagi, 2008). This research also considers endogeneity problem and uses GMM estimation to control it. The dynamic panel data model like GMM gives more generalizable results in panel data (Wooldridge, 2001).

$$\begin{aligned} \text{Cash holding}_{i,t} = & \alpha + \delta_1 \text{cflow}_{i,t} + \delta_2 \text{CGI}_{i,t-1} + \delta_3 \text{MtoB}_{i,t} + \delta_4 \text{NWC}_{i,t} \\ & + \delta_5 \text{size}_{i,t} + \delta_6 \text{leverage}_{i,t} + \delta_7 \text{PC}_{i,t} * \text{CGI}_{i,t-1} + \delta_8 \text{PC}_{i,t} + \delta_9 \text{indcvolt}_{i,t} \\ & + \delta_{10} \text{Div}_{i,t} + \delta_{11} \text{capex}_{i,t} + u_{i,t} \end{aligned}$$

## 4. RESULTS AND DISCUSSION

Table 4.1 shows descriptive statistics of all variables. The first term in each cell is mean, while the second term in the bracket is a standard deviation. The second column shows full sample, the third column shows firms belonging to competitive industries which are measure through HHI lowest tercile is competitive industry and middle and highest tercile is concentrated industries. The fourth column shows firms belonging to concentrated industries.

Table 4.1 Descriptive Statistics			
Variable	Full Sample	Com	Con
Cash	0.054	0.041	0.078
	(0.115)	(0.095)	-0.142
CFLOW	0.095	0.088	0.107
	(0.112)	(0.102)	-0.127
INDCV	0.01	0.012	0.008
	(0.051)	(0.053)	-0.046
Lev	0.552	0.555	0.546
	(0.201)	(0.198)	-0.207

NWC	0.039	0.031	0.053
	(0.218)	(0.21)	-0.233
Div	0.588	0.556	0.646
	(0.492)	(0.497)	-0.479
Govindex	0.453	0.465	0.431
	(0.198)	(0.202)	-0.191
Size	15.465	15.127	16.084
	(1.491)	(1.252)	-1.686
MtoB	0.066	0.09	0.188
	(0.606)	(0.602)	(0.595)
CAPEX	0.064	0.058	0.074
	(0.045)	(0.025)	(0.067)
The first term is a mean and second term in the bracket is a standard deviation. The second column shows descriptive statistics for the full sample, the third column represents firms belonging to competitive industries. The fourth column shows firms belonging to concentrated industries. cflow stands for cash flow, indcv stands for industry adjusted cash flow volatility, lev stands for leverage, nwc stands for net working capital, div stands for the dividend, size stands for the size of the firm, mtob stands for the market to book ratio and capex stands for capital expenditure			

Cash holding which is measure cash divided by the net asset. The descriptive shows that average firms in Pakistan hold 5.4% cash. The result is slightly higher than (Masood & Shah, 2014; Ullah & Kamal, 2017). The result also posits that companies hold less cash in competitive industry compared to companies in concentrated industries. Firms belongs to competitive industries defend themselves from rivalry actions of competitors hold high cash. Moreover, companies from competitive industries have less leverage, networking capital, size, dividend and capital expenditure compared to the companies belonging to the concentrated industry.

Table 4.2 shows the effect of corporate governance on cash holding and the role of product market competition. The dependent variable for each model is corporate cash holding which is measured as cash holding divide by the net asset. Model1 shows corporate governance and cash holding relationship. Model 2 shows the role of product market competition in the relationship between corporate governance and cash holding. Product market competition is measured through HHI index which is divided in tercile the lowest tercile is assigned 1 which measured competition and otherwise 0. Each model

has eight control variables including cash flow (cflow) , industry-adjusted cash flow volatility (indcv), market to book ratio (mtob), size of the firm (size), leverage of the firm (lev), net working capital (nwc), the capital expenditure (capex) and dividend (div). All models data is winsorized at 1% and 99%.

**Table 4.2 Effect of corporate governance on cash holding: Role of product market competition**

		<b>Model1</b>			<b>Model2</b>	
Cash	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value
Cflow	0.908	0.238	0.000	0.986	0.225	0.000
Indcv	0.926	0.439	0.035	0.653	0.399	0.102
Govindex	-0.325	0.089	0.000	0.162	0.151	0.282
Com*Govindex				-0.523	0.178	0.003
Com				0.168	0.098	0.085
Mtob	0.380	0.036	0.000	0.239	0.041	0.000
Size	0.015	0.012	0.221	-0.013	0.015	0.382
Lev	-0.964	0.118	0.000	-0.901	0.118	0.000
Nwc	-0.405	0.111	0.000	-0.422	0.104	0.000
indcapex	-0.327	0.187	0.080	-0.280	0.171	0.101
Div	0.151	0.045	0.001	0.111	0.042	0.007
Cons	-1.586	0.207	0.000	-0.770	0.275	0.005
N	1357					
R2	0.267					
F- P value	0.000					

The dependent variable is corporate cash holding. Model 1 shows the effect of corporate governance index on cash holding, model 2 shows the role of product market competition in the relationship of corporate governance and cash holding. All models are run with time dummies, industry fixed effect, and standard error cluster with firm effect. Govindex shows governance index and com shows firm belongs to competitive industries

The second column of Table 4.2 (i.e., Model 1) shows the effect of corporate governance score on the level of cash holding. The result shows that cash flow and industry-adjusted cash flow volatility have a positive and significant effect on cash holding. These findings are supported by the findings of Harford et al. (2008). The cash flow coefficient sign is supported by the static trade-off theory. The result shows that

those firms hold high cash whose cash flow is uncertain compared to industry median. On the other hand, the main variable i.e., corporate governance index depicts negative relationship with the level of cash holding. The result indicates that firms with good corporate governance hold less cash. The result is supported by agency theory (Jensen, 1986) which holds that high cash is expropriated by entrenched managers for their private benefit. Therefore, agency problem leads to high level of cash and spending of cash on value decreasing investments. These agency problems can be resolved through proper governance which leads to low level of cash holding (Jensen, 1986). Moreover, the result is also supported by flexibility hypothesis which posits that high entrenched managers hold high cash to derive private benefit at the cost of minority shareholders and tend to avoid external monitoring. This means that agency problem has a direct relationship with cash holding, while good corporate governance posits negative relationship with cash holding. Our results are in line with Dittmar et al. (2003) who used international data and found that companies hold less cash where investors' protection is weak as compared to the countries where investors' protection is high. Our result is also supported by Amman et al. (2011); Ozkan and Ozkan (2004) and Kusnadi (2011). Their findings suggest that firm level corporate governance posits negative relationship on corporate cash holding. Keeping in view the results H1a has accepted that corporate governance has a significant effect on corporate cash holding.

The other control variables for model 1 have a same predicted sign as expected. In line with Harford et al. (2008); Cheng and Chaung (2009); Kuan et al. (2011) the result shows that the growth opportunity measured by the market to book ratio has a positive significant relationship with the level of cash holding indicating that firms that have high growth opportunity hold a high level of cash. The result of the market to book ratio is also align with the static trade-off theory and also with financial hierarchy theory. Moreover, results indicate that leverage is a substitute to cash since it has a negative relation with cash holding. The result of leverage is more supported by financial hierarchy theory that explains leverage as a substitute to cash. Similarly, net working capital and capital expenditure also have a negative relationship with cash holding as suggested by previous studies (See, for example, Cheng & Chaung, 2009; Harford et al.,

2008; Kuan, Li, & Chu, 2011). Furthermore, the dividend has a positive relationship with the level of cash holding which indicates that dividend-paying companies hold a high level of cash. These results are in line with Tsai (2012) who also shows the positive relationship of dividend with corporate cash holding. The result of  $R^2$  is 26.8% means that cash holding is explained due to independent variables up to 26.8%.

The third column of Table 4.2 (i.e., Model 2) shows the role of product market competition for corporate governance in relationship with cash holding. Results suggest that high product market competition work as an external market discipline which discourages managers to expropriate free cash flows for their own interest. External market discipline put pressure on managers to work in best interest of shareholders compare to firms that are operated in concentrates industries (Holmstrom, 1982; Nalebuff & Stiglitz, 1983; Hart, 1983; Giroud & Mueller, 2010; Guadalupe & Perez-Gonzalez, 2010; Jain et al., 2013). Corporate governance is more concerned in industries where competition is low (Bena, Ferreira, Matos, & Pires, 2017).

The researcher also shows that strategic benefit of holding high cash in concentrated industries as compared to competitive industries because in concentrated industries firms face difficulty to raise funds in capital market (Haushalter et al., 2007). Moreover, in concentrated industries, low cash may raise the chance of underinvestment. However, external market discipline is weak in concentrated industries. Therefore, strong corporate governance minimizes the concern of shareholders about high cash holding in concentrated industries (Jain et al., 2013). In contrast, firms that operating in competitive industries has the problem of over-investment because they make investment against their rivals. Firms belong to competitive industries use internal funds to create barriers to new entrants in the market. In competitive industry firms have shorter product life cycle and shareholders prefer low cash due to the chance of over-investment.

Governance and cash holding relationship is supported is supported by flexibility hypothesis, which means strong corporate governance has a negative relationship with corporate cash holding in competitive industries. In concentrated industries, the relationship between strong corporate governance and cash holding is supported by shareholder power hypothesis and spending hypothesis means that strong corporate

governance posits positive relationship with cash holding in concentrated industries. Our findings are in line with the result of Jain et al. (2013).

On the basis of above discussion result of dissertation supported the H2 hypothesis that product market competition has substitution effect for corporate governance in a relationship with corporate cash holding is accepted. The interaction of corporate governance index and product market competition dummy is significant. The interaction term sign and the sign of main variables i-e., corporate governance index and product market competition is different which support substitution effect argument. According to Shen, Leng, and Wang (2015); Pattanayak (2010) if the sign of main variable and interaction term is different it assumes substitution effect argument.

#### 4.1. Control of Endogeneity

This research found the negative relationship between corporate governance and cash holding. The simple OLS may be biased on the basis that normally corporate governance and cash holding are jointly determined (Harford et al., 2008). To control endogeneity 2SLS is suggested in the literature. However, the problem is that 2SLS needs valid instrumental variable but literature is normally silent about proper instrumental variables in corporate governance and cash holding relationship (Harford et al., 2008). Therefore, to overcome this problem system GMM method has been used to control endogeneity problem. The advantage of system GMM is that it considers lag of dependent and independent variables as instrumental variables. Therefore, there is no need to provide specific instrumental variables.

**Table 4.3 Dynamic panel model (GMM)**

		Model1			Model2	
Cash	Coef.	Std. Err.	P-value	Coef.	Std. Err.	P-value
Cash <sub>t-1</sub>	0.153	0.069	0.026	0.154	0.069	0.025
cflow	0.997	0.244	0.000	1.009	0.245	0.000
indcv	0.212	0.588	0.718	0.262	0.589	0.656
Govindex	-0.186	0.106	0.083	0.145	0.130	0.267
Com*Govindex				-0.383	0.167	0.022
Com				0.145	0.067	0.031
lev	-1.051	0.263	0.000	-0.990	0.253	0.000

nwc	-1.092	0.210	0.000	-1.098	0.211	0.000
size	0.110	0.059	0.062	0.262	0.589	0.656
indcapex	-0.388	0.130	0.003	-0.413	0.132	0.002
div	-0.047	0.044	0.279	-0.039	0.043	0.373
mtob	0.180	0.047	0.000	0.188	0.046	0.000
cons	-2.691	0.929	0.004	-2.523	0.969	0.009
wald chi2	0.000			0.000		
AR2 p value	0.171			0.095		
Sargen p-chi2	0.770			0.845		

Table 4.3 posits the result on effect of corporate governance on cash holding using GMM and cash holding using system GMM. The result shows the almost same result as table 4.2. Model 1 of table 4.3 shows that corporate governance index has a negative significant relationship with corporate cash holding which is same as the result of corporate governance and cash holding of the model1 in table 4.2. The only difference is that corporate governance and cash holding relationship is significant at 10% confidence level in table 4.3 as compared to table 4.2 where the relationship of corporate governance index and cash holding is significant at 1%. Similarly, all control variables have almost same direction and significance level. Furthermore, lagged cash holding is significant at 5% which indicates that past cash holding predicted future cash holding.

The difference in the result of table 4.3 and table 4.2 is that industry adjusted cash flow volatility is positive and significant in table 4.3 while it is insignificant in table 4.2. The result of Wald test shows that overall model is significant at 1% confidence level. Validity testing is required for both system GMM and difference GMM. The result of Sargen test is insignificant which counts against the null hypothesis that there is no over identification problem. Sargen test is used that whether over-identification problem exist. Null hypothesis of sargen test is that restriction of over-identification is valid. The result of AR2 is also insignificant which shows the autocorrelation is mitigated at lag 2. The result of p-value of sargen test indicates insignificance of sargen test and shows over-identifying restrictions is not valid. The result of column 3 (Model 2) of table 4.3 shows the result of the relationship between corporate governance and cash holding in the

competitive industry using system GMM. The result of interaction term of corporate governance index and product market competition posits negative relationship with cash holding which is similar to the previous result in table 4.2. The sign of main variable and sign of interaction term is different which again supported substitution effect of product market competition for corporate governance in relationship with cash holding. All control variables like cash flow, cash flow volatility, leverage, networking capital, market to book ratio and capital expenditure have same sign except dividend. Dividend has a positive relationship with cash holding in table 4.2, while it has a negative relationship with cash holding in table 4.3. This means that as dividend increases firms hold less cash because when firm hoard high cash than managers prefer to utilize cash in form of a dividend (Opler et al., 1999).

## 5. CONCLUSION

Research in corporate cash holding has got attention after the US subprime mortgage crisis because the firms having sufficient funds proved more viable during crises period. There is some cost attached to holding cash especially agency cost. The equilibrium is must between benefit and cost of holding cash. Cash is an imperative asset which can be easily expropriated due to agency problem by entrenched managers and controlling shareholders for their personal interests. The present study investigates the effect of corporate governance on the level of cash holding. The result shows that corporate governance leads to low level of cash holding and supports flexibility hypotheses presented by Harford et al. (2008). Managers hold high cash due to agency problem to free themselves from external monitoring. Agency problem has a direct positive relationship with cash holding according to flexibility hypotheses.

The result of control variables has almost same sign as past literature and predicted sign of static trade-off model and financial hierarchy theory. Cash flow, industry-adjusted cash flow volatility, size, and the dividend have a positive effect on cash holding. On the other hand, leverage, networking capital and MtoB has a negative effect on cash holding. Moreover, to investigate whether the relationship of corporate governance and level of cash holding varies across different forms of industries and study



investigate the role of product market competition on corporate governance and cash holding relationship. The result shows that product market competition has substitution role for corporate governance in a relationship with cash holding. Product market competition which measure external market discipline is enough to mitigate agency problem and corporate governance matters in concentrated industries compare to competitive industries. Literature shows that cash holding and corporate governance is jointly determined and the problem of endogeneity exists. To control endogeneity problem the result is also checked on GMM. The result of OLS and GMM is almost same.

### Future Direction

The current study shows of corporate governance and cash holding relationship. The study also investigated the substitution role of product market competition for corporate governance in relation to corporate cash holding in Pakistan. Future study should be conducted that whether the result of corporate governance and cash holding vary in developed and emerging economies. Furthermore, the role of product market competition to corporate governance varies in developed and emerging economies.

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