The Impact of Country-Level Governance and Firm-Level Corporate Governance on Cash Holdings in PSX-100 Index Listed Firms of Pakistan

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ARTICLE INFO	ABSTRACT
	The central goal of our study is to observe the influence of country level governance, firm level corporate governance and control variables on the cash holdings of non-financial PSX listed firms in Pakistan. The data is collected from 2007 to 2018 of PSX 100 index listed firms of Pakistan in order to perform the analysis. Furthermore, unit root test, Breusch-Pagan test and regression test are the panel techniques which are used in the study. The findings of unit root test show that there is no existence of trend among the variables. Similarly, the Breusch-Pagan test detects that the fixed/random effect model is the suitable method among pooled regression model and fixed/random effect model. The results of regression test tell that country-level governance, board size, board independence, CEO duality and sales growth have positive relationship with corporate cash holdings however the managerial ownership structure, firm size and leverage are negatively related to cash holdings. *© 2022 The Authors, Published by iRASD. This is an Open Access article under the Creative Common Attribution Non-Commercial 4.0*

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1.   Introduction

The most exquisite and emergent area of interest in corporate financial sector is cash holdings (Ozkan & Ozkan, 2004). Subsequently the extra cash can be described as the cash that is not currently required for investments (Fresard & Salva, 2010). It can also be explained as that the amount of cash that is readily available for the purpose of investment in physical assets and then to allocate among investors (Gill & Shah, 2012; Raza, 2015). One of the advantage of cash holding is that it helps managers in avoiding market visits to get funds when the cost of funds is high (Seifert & Gonenc, 2018). Although, Yahyazadehfar, Tabari and Akbari (2013) states that those companies which believe in holding of cash more than optimal cash, will ultimately have lesser return on investment.

Such as the two reasons of cash holdings of firm are transaction cost and for the protection purpose (Chen, 2008). Moreover, cost of transaction represents that by increasing the borrowing in the markets which are long-term or capital is pricier than cash holding. The latter reason describes that the firms may want to reduce their investments during the time of cash shortage (Ozkan & Ozkan, 2004). Though Damodaran (2005) believe that companies hoard extra cash with the intention to fulfil the business operational' requirements or the cash demands which are unforeseen that is also necessary for the safety of the firm. Moreover, there are few researchers who claim that there is no optimum level of cash holdings as the cost of internal financing is lower than the external financing cost for investing in different projects due to unevenness of information so the firms prefer to spend the existing cash rather than financing from some external sources (Chen, 2008). Another important factor that can influence the holding of cash is corporate governance (Seifert & Gonenc, 2018).

If governance might be explained generally then it could be explicitly elaborated as it comprises of those instruments which make sure that a return must be given to the shareholder for their investment (Shleifer & Vishny ,1997; Raza et al., 2014). Therefore, businesses are organized and controlled through a system which is recognized as corporate governance (Khan, Bibi & Tanveer, 2016). Similarly, it can be indicated that the two major forms of governance are firm governance and country governance; the combination of country's culture, norms, its laws and the bodies which impose the regulations is known as country- level governance whereas Aggarwal, Erel, Stulz and Williamson (2007) defined the firm level corporate governance as the instruments that operate within the firm. Following the idea of Jensen and Meckling (1976), when instruments of firm-governance are weak, firm insiders i.e. managers don't play a role of benefactor for their shareholders. It is to be taken in to consideration that the shareholders are usually impaired by the managers of the firm as managers do investments that gives lower expected return or shift corporate cash in their pockets instead of shareholders as the cash is probably the easiest asset that can be transformed into the category of private benefits (Myers & Rajan, 1998). That is why the corporate governance has a massive significance in reducing the agency problems such as issues between managers and shareholders, among shareholders, restricting the private benefits and take away control from owners (Bruno & Claessens,2007). Further for sustaining the optimal cash level Masood and Shah (2014) claimed that it is necessary to have a better corporate governance by the firms.

There are some prior dominant studies which have examined the idea of corporate level governance with cash holding. One of the research that was conducted by Harford, Mansi and Maxwell (2008) studied the impact on cash holding of corporate governance but found that there is a weak relationship between the two variables and more researches are required in other economies where the structure and situation of corporate governance are not the same. Moreover, Dittmar and Mahrt-Smith (2003) explored the same variables but in a global context and discovered that those countries which give little protection to its shareholders are more prone to have higher holdings of cash. Similarly, the association between the traits of firm's corporate governance and cash holdings was observed by Kusnadi (2011) for the companies of Malaysia and Singapore. The result disclosed that organizations with better governance hold less cash than the poorly governed firms. To be precise, there are numerous other studies conducted in the past that discussed the cash holding with corporate governance but have not discussed the cash holdings, country-level governance, firm-level corporate governance altogether.

Likewise, there are more literature that have seen the connection between the cash holding and corporate governance in the developed countries as compared to developing countries. Dogru and Sirakya-Turk (2018) and Dittmar and Mahrt-Smith (2007) analyzed the same variables to some extent but restricted to the US framework. Manoel, Moraes, Nagano and Sobreiro (2018) considered the association between cash holdings and corporate governance but only in the perspective of Brazilian firms. Also one of the previous research conducted by Seifert & Gonenc (2018) has discussed the both levels of governance substitutes on the cash levels and cash valuation on a larger firm sample size from 46 countries for the period 2002-2013 but the study had not included the country Pakistan in its data set.

In Pakistan, the Corporate Governance Code was developed in the year 2002 hence there is an emergent importance to the idea of corporate governance in the country (Shamsi, Bashir & Panhwar, 2013; Boubaker & Raza, 2016). Masood and Shah (2014) observed the effect of corporate governance on cash holding on non-financial companies present in PSX. Furthermore, in the context of Pakistan, Basheer (2014) inestigated the effect on cash holding of corporate governance but only targeted the manufacturing sector listed firms of PSX-100 index. Therefore, both the mentioned studies had not examined all the three major variables that are collectively.

The major goal of our study is to check the effect of country-level governance, firm-level corporate governance on cash holdings in the firms listed in PSX-100 index of Pakistan because the problem is that the countries like Pakistan where there is immense mismanagement of extra cash and shareholders' potential rights are also quite weak which lead to make investors feel reluctant about investing more. Therefore, if we want to bring betterment in the matter of cash holding, it is extremely important to address what impact do firm-level corporate governance and country level governance make on cash holding. This will help out to the firms in defining that how modification in the components of country-level governance and firm corporate governance can play a beneficial role in boosting the country's economic performance. Similarly,

by knowing the impact of the relationship among variables the firm's executives will have improved understanding of management of excess cash. Moreover, this research will facilitate the non-financial companies of Pakistan in overcoming the agency disputes by underlining the impact of leverage, growth, firm size on cash holdings.

Last but not the least, this research adds in the inadequate yet emergent aspect of corporate governance literature particularly in Pakistan as this is the first study which is observing the effect of two main types of governance i.e. country governance and firm-level corporate governance on levels of cash holdings in the PSX-100 index listed firms. Therefore, by conducting this empirical study, the related gap will be fulfilled.

2. Theoretical Background and Literature Review
2.1. Agency Theory

This theory was suggested by theorists Stephen Ross and Barry Mitnick in 1970s which explained that how problems arise when one entity can take decisions on behalf of other entity. In the past, there are some studies which don't believe that due to agency issues, the levels of cash holdings get effected. For example; one of the research conducted by Harford (1999) stated that, there is no important connection between cash holding and firm-level corporate governance. Some studies claim that there is fragile link between the both variables. The association between companies hoarding higher level of cash and agency problems is sustained by weak indication only (Kalcheva & Lins, 2007).

In contrast, there are numerous researchers who consider that there is a resilient link between agency disputes and holdings of cash. There is an importance of agency problems on the levels of cash (Gao, Harford & Li, 2013). The agency issue arises with its cost and its cost increases when the interests of shareholders and debt holders vary from each other as it creates trouble for highly debt taking companies in hovering further borrowings (Opler, Pinkowitz, Stulz & Williamson, 1999). Moreover, Jensen and Meckling (1976) showed that the shareholders can pledge themselves that only decisions which act best in shareholder's favour will be made by the agents by providing them proper incentives, also firm monitoring is necessary.

The impact on cash holding of country governance and firm corporate governance has been observed by different studies such as Doidge, Karolyi and Stulz (2007) discovered that country-level features comprise for a huge portion of discrepancy of firm-level corporate governance.

2.2. Trade-Off Theory

The theory was given by Mayer (1984) which examined that how a company selects the portion of equity and debt in its capital structure. This concept suggests that there are mainly two reasons of a firm's cash holding: cost of transaction and the protective purpose (Chen, 2008). Transaction cost purpose shows that raising borrowings in the markets of capital is costlier than retaining cash available that is why they hold back cash. The second reason suggests that at the time of cash scarcity, the companies may want to cut down their investments (Guney, Ozkan & Ozkan, 2007).

2.3. Empirical Studies

Manoel et al., (2018) explored the interaction between cash holding and corporate governance in the context of Brazil. The data was obtained through Econometric database and GMM (Generalized Method of Moment) technique was used. Moreover, the sample size was taken from 2001 to 2014 of Brazilian firms. It was found that those firms which are listed in new market (NM) and provide shares with voting rights only have substantial positive impact on holding of cash. It has been recommended that future researches can use larger sample so that it can be generalized in new context.

Shah and Shah (2018) examined the effect of corporate governance on cash holding and checked the role of product market competition on the link between variables. The governance data was drawn together from the annual reports of 196 companies from 2006 to 2014 whereas the accounting data was assembled from the analysis of balance sheet provided by State Bank

of Pakistan. The measuring instruments were the Corporate Governance Index and Panel data analysis. The results confirm that the corporate governance has a significant negative impact on corporate holdings of cash. On the other hand, product market competition has an exchange role for corporate governance in association with cash holding. Thus, the future researchers may work on whether the outcomes of cash holding and corporate governance differ in established and developing economies.

Dogru and Sirakaya-Turk (2017) considered the connection between cash holding and corporate governance in hotel firms of USA. The financial data for public hotel corporations was gathered from COMPUSTAT database for company filings. As key performance measuring instruments, they used Tobin's Q, regression analysis and robustness checks. The results tell that more holding of cash occurs in well governed hotel firms in comparison to those hotel firms that are poorly governaned. This shows that hotel firms with weak governance have more chances to face agency issues than those with good governance. It has been highlighted that there is a need of research on the topic of "the effect of growth prospects and the quality of corporate governance mechanisms on agency disputes in hotel firms".

Al-Najjar and Clark (2017) observed the influence on cash holding of corporate governance practices in MENA countries. All the financial data was gathered from Datastream database for the year from 2000-2009. Moreover, the corporate governance information was amassed from Thomson One Banker database. To explore this relationship, panel data analysis, regression test and robustness test were used. The result revealed that both the types of corporate governance are significant. Also, there is a counter relationship between cash holding and board size which means to decrease the agency problems, firms hoard less cash. Therefore, it has been highlighted that better governance practices, enhanced shareholder rights and active rules and regulations that head company's performance can help in forming improved compliance with the standards of international governance in emerging countries.

Abdioglu (2016) explored the quality of corporate governance on corporate holding of cash in the organizations of Turkey. The data was gathered from reports of firms listed in Borsa Istanbul 100 Index during the time of 2009-2013. The statistics of corporate governance are attained from Public Disclosure Platform of Turkey. The method of estimation used in the research is Generalized Method of Moments. The study reveals that when the quality of corporate governance declines, firms cash holdings increases. Consequently, poor governance led managers use corporate possessions for their own benefits at shareholders' expenditure. It has been suggested that government quality is a major factor in firms' cash holding decisions so more researches are needed in this area.

Khan et al., (2016) studied the connection between corporate governance and cash holdings in the industries like services and manufacturing of Pakistan. The data of 80 non - financial firms was obtained from the annual reports from period 2010 to 2014. To test the relationship among the variables regression test and panel data analysis were used. The results reveal that growth of manufacturing firms is positively impacting the cash holdings whereas board independence and dividend are significantly affecting the cash holding of servicing firms in Pakistan. In a nut shell, most of the proxies are proved to be insignificant which show the weak corporate governance in controlling decisions of cash holdings in Pakistan. It has been indicated that future studies may investigate the same topic on different sector such as the financial services firms of Pakistan.

Masood and Shah (2014) observed the relationship between cash holding and corporate governance in the PSX-100 index listed companies of Pakistan during 2002-2010. The data was gathered from yearly reports of firms listed in PSX. The techniques used for the analysis were pooled regression, fixed effect regression, random effect regression and Hausman test. The end discovers that firms with improved governance hoard a smaller amount of cash in contrast to those firms with poor governance. Also, rise in ownership of directors would result decline in cash holdings. More stakes provided by the firm's managers can cut down the agency issues. Likewise, if the board size increases, cash holdings declines. It has been recommended that influence of on firm performance in Pakistan should be checked. Another idea was to lengthen the study to cross country analysis.

Basheer (2014) investigated the impact of corporate governance on managerial decisions of cash holding. The data was gathered from the annual reports of manufacturing firms listed in

PSX from 2008 to 2012. Moreover, the techniques used to perform analysis were pooled ordinary least square, regression and F-statistic to get the significance of OLS regression model. The findings indicate that there is a negative relationship between the variables as the proxies of corporate governance that are CEO duality and managerial ownership are negatively related to cash holdings. Similarly, the negative association between leverage and cash holdings reveal that those firms which have more current assets use those assets to convert them in to cash. In the last it was suggested that the in order validate the findings, reproduction of this study in other industries is needed.

Schauten, Van Dijk and Vander Waal (2013) studied the association between quality of corporate governance and cash holding for large companies of UK. The dataset was given by Deminor ratings. Moreover, financial data of 300 European companies period covering from 2000-2007 was obtained from Worldscope database, Datastream and Thomson Financial Database. The tests used in the analysis were regression test and robustness analysis. The end reveals that value of cash holdings is positively impacting the takeover defences score only and it is indicating governance instruments are not sufficiently strong to avoiding managers from wasting the excess cash. In short, firms with weak governance waste excess cash relatively speedily with a negative effect on their operating performance. Accordingly, it was suggested that if there is more concentration on variations of the level of excess cash, there will be noteworthy effects for civil-law country firms.

Chen et al. (2012) studied the impact of corporate governance on corporate cash holding with the perspective of Chinese's alteration of spilt share structure. The data of 1,293 Chinese non-financial firms from 2000-2008 was retrieved from CSMAR, and WIND databases. The tests used by researchers were a sensitivity test, cross-sectional regression and robustness checks. The result of the study shows that firms with improved corporate governance have lower corporate cash holdings contrary to those firms which have weak corporate governance. It has been advised that the influence of corporate governance on firm value should be observed by more studies as firm value is also an imperative variable.

Kusnadi (2011) analysed the link between cash holdings and instruments of firm corporate governance in the context of Malaysian and Singaporean firms. The data sources were Datastream, Worldscope and yearly reports of 276 firms from the year 2000 to 2005. To examine the association between both the variables, univariate test, regression analysis and robustness checks were used. The result shows that those firms which have poor corporate governance traits are expected to hold excess cash than those with good corporate governance. Thus, the findings of the paper recommend that a few firms should be discounted by the shareholders where they expect that the agency issues can be severe.

Fresard and Salva (2010) analysed the relationship between US firm's cash holdings and corporate governance. The data for the period 1989-2005 was collected from Worldscope and Datastream was used to obtain the historical rates of exchange. Moreover, Standard and Poor's Emerging Market Database was used to get the classification scheme of emerging and developed countries. The tests used were W-test, F-test and cross-sectional test. The result indicates that private benefits present in corporate cash holdings is lessen when US firms are dependent on its institutions and monitoring environment. It has been left for the future research to study how few firms with no investment opportunities unload their cash balances through stock repurchases, dividends or debt pay off.

Isshaq et al., (2009) investigated the connection between cash holding and corporate governance in companies present in Stock Exchange of Ghana. Ghana Stock Exchange Factbook series and own survey results were used to derive the data from the year 2001-2007. A regression analysis was done in this study to explore the relationship among variables. It was discovered that companies with good corporate governance system hold less cash relative to those with poor governance. So it has been offered that more studies should be made in order to extravagant the standpoint as well as include the perceptive of corporate managers.

Chen and Chuang (2009) discussed the relationship within corporate cash holding and corporate governance in the highly-tech firms. The financial information was obtained from COMPUSTAT and governance data was gathered through different proxy statements of companies. The data related to the period 1997-2003. Generalized Method of Moments (GMM)

was used in this study to perform analysis. The outcomes discover that CEO ownership and independent directors play crucial roles in corporate cash holding policy. Hence it was recommended that effective corporate governance can resolve the issues of excess cash holding.

Lee and Lee (2009) looked at the association between corporate governance and cash holding. The sample size consists of 1,061 firms from 2001 to 2005.Furthermore, the data sources were Worldscope database, annual reports and company websites. The tests used were regression test, Tobin's Q and robustness analysis. It was revealed that firms with better corporate governance i.e., lower projected managerial entrenchment and higher board independence hoard less amount of excess cash. Thus, the findings recommend that to make the firm valuation strong, there is dire need to upgrade the structure of corporate governance in a manner that lower the agency cost of free cash flow.

Harford et al., (2008) observed the association in between the holding of excess cash and corporate governance in the context of US firms. The data of 1,500 companies was drawn together from the RiskMetrics database and COMPUSTAT. Moreover, the blockholder data was obtained from Andrew Metrick's website. To examine this relation, indexes were made namely; GIndex that was proposed by Gompers et al. (2003) and EIndex. The result shows that a firm with lower rights of shareholder use excess cash more in relative to a firm which has higher shareholder rights. In other words, governance is one of those variables that influences provision of cash holdings that is why holding of excess cash is less in poorly governed firms and vice versa. It has been proposed that there is a need of more research to confirm the explanations of researcher's findings.

Chen (2008) explored the influence on the firm's cash holding procedures of corporate governance in the perceptive of new economy vs. old economy firms. Financial related information and governance data of 1,500 firms from the period 2000-2004 was gathered from COMPUSTAT. The tests used in the research were Tobin's Q and regression analysis. It was found that corporate governance attributes effect the cash holding in a different way in both the settings. In listed new economy firms, cash holdings are increased due to higher board independence. A suggestion was made that degree of freedom for suitable business decisions may expand efficiently if there is an establishment of better governance instruments.

Ginglinger and Sadour (2008) investigated the link connecting the cash holding and quality of corporate governance. The data of non-financial firms presented on Euronext Paris for the year 1998, 2000 and 2002, respectively. The data sources in the study were COMPUSTAT, DataStream and firms' annual reports. Univariate test, regression analysis and robustness check were done to assess the variable connection. The result shows that in few financially constrained firms especially those which have barriers to capital markets i.e., family firms, the connection among the quality of governance and cash holding is positive. Besides, corporate governance index does not make footprints on cash holding when the organizations are less financially restricted. Lastly, the related insides were recommended to the management of the firms.

Dittmar and Mahrt-Smith (2007) explored the relationship in the middle of corporate governance and cash holdings. The data was assembled from the database of Global Vantage which contains 16000+ US publicly traded companies' data from 80 countries for the year 1990-2003. The test used to analyse this relationship was pooled cross-country regression. Robustness checks were also done. They revealed that companies with good governance have a noteworthy effect on total cash which shows that a contrary relationship occurs between cash holding and corporate governance. It has been recommended that a main area for future study is exploring the outcomes of hoarding excess cash in an international market.

Pinkowitz et al., (2006) explored the impact of corporate governance on cash holding. The data of 500 companies registered on the Stock Exchange of Singapore (SGX) was obtained from Worldscope database. Also used from the International Country Risk Guide to get indices. To evaluate the link between the variables, the researchers conducted regression test, t- test and robustness test. They found out that those countries that have fragile protection for investor are likely to have more dividends payments that leads to rise the cash valuation. A recommendation has been made that the future studies may consider more than 10 cross sections to check for the connection between the bond market capitalization and cash valuation.

Chang and Noorbakhsh (2006) investigated the influence of corporate governance theories on cash holding. The financial data was gathered from World Scope 2000 database having information of 22,000 companies from various sectors established in 48 countries around the world. Pooled cross-country regressions test was used in the study. It was discovered that countries with weak protection of shareholders rights have a tendency to experience the conduct of corporate managers which lead to more agency issues. Also, the firms with smaller size are more inclined to accumulate cash balances as compared to their total assets. In conclusion, it was suggested that lowering the firm's capital cost in established equity markets can play a beneficial role in improving profitability of the firm which may reflect as higher level of excess cash held by them.

Luo and Hachiya (2005) studied the influence on cash holding of corporate governance in Tokyo Stock Exchange. The financial information of 15,832 firms covering period from 1989 to 2002 was obtained from Nikkei Corporate Financial Database. To examine the connection between the variables, Tobin's Q and regression was executed. It was found that features of corporate governance impact the cash holding negatively. Hence, the better the corporate governance is, the lesser the cash holding will be and vice versa. Lastly, it was recommended for future research that there is a gap to discover the part of corporate governance characteristics on cash holdings more keenly along with enhanced wide-ranging data.

Dittmar and Mahrt-Smith (2003) explored the connection in the middle of international corporate governance and corporate cash holdings. The data sources were Global Vantage database and measure of shareholder rights given by LLSV in 1998. The database consists of financial statistics for 16,157 firms from 80 countries. The techniques used to evaluate the bond between variables were pooled cross-country regression test and robustness checks. It was discovered that those countries which give little protection to its shareholders have higher probability of holdings of cash. The future studies may consider the topic of effects of more cash holding in an international setting.

Kusnadi (2003) explored relationship among cash holdings and the mechanisms of corporate governance in Singapore Stock Exchange (SGX). The financial data of 230 SGX listed companies was gathered from DataStream and firm reports. To test this relationship, regression test and robustness analysis were performed. The result indicates that one of the most vital factor of corporate governance i.e. board size is positively linked to cash holding. It was advised that future research should explore that whether the rulings will play better role in enhancing the corporate disclosure quality or not.

2.1. Literature Gap

There is a considerable amount of literature that has thrown light on the relationship of corporate governance and cash holdings of firms. But the gap which is need to be filled is observing the impact of country level governance and firm-level corporate governance on cash holding collectively in Pakistan. Therefore, this study will shade lights on association of country level governance and firm-level corporate governance with cash holding.

3. Research Methodology

There are three kinds of research purpose; descriptive, exploratory, and explanatory. Exploratory research is defined as finding something unique for the first time, explanatory research is used to explain something which has already discussed earlier in different context and descriptive research is used for social phenomena (Masood & Shah, 2014). In this study explanatory research purpose is used because we are also going to observe the same phenomena which was prior explained in a different setting. The approach of the research can be qualitative and quantitative. To get detailed information for better understanding, qualitative approach can be used. And to obtain data in numbers based on facts and figure, quantitative can be useful as this type of approach depends on calculation and examination of numeric data (Render et al., 2008). Our research is based on quantitative approach.

Design of research plays a vital role in order to get a whole view of the data which has been gathered and evaluated (Christensen, Johnson & Turner, 2011). The design of our study is correlational research which is used upon the constructs to examine the connection between the

variables (Jawaid & Raza, 2016; Walden et al., 2017). Therefore, the major goal here is to see to what extent the independent variables country governance and firm-level corporate governance are interconnected with the dependent variable cash holdings.

3.2. Data Source

There are two major forms of data source, primary and secondary. The secondary form of data has been gathered in our study. To evaluate the connection between country governance and firm level corporate governance and cash holding, the data related to variables is assembled from the index of corporate governance, data of world governance indicators from World Bank and financial reports of 46 firms of PSX-100 index.

3.3. Sample Size and Period

The sample size for this research has been taken from the 46 firms listed in PSX-100 index of Pakistan. Due to non-availability of some firms' data, the time period of data ranges from 2007 to 2018.

3.4. Research Model

$$CASH_{i.t} = \alpha + \beta_1 \, SALES\_GROWTH_{i.t} + \beta_2 \, SIZE_{i.t} + \beta_3 \, LEVERAGE_{i.t} + \beta_4 \, COUNTRY\_GVSCORE_{j.t} + \beta_5 \, FIRM\_GV_{i.t} + \varepsilon_{i.t}$$

Whereas,
CASH= Cash Holdings
SALES GROWTH= Sales of firm
SIZE= Firm's size
 LEVERAGE= Short-range and long-range debt
COUNTRYGVSCORE= Country-level governance score
FIRMGV= Firm-level corporate governance which is measured through the proxies of board structure and ownership structure
ε = Error term.

3.5. Model Hypothesis

H1= Country-level governance has a significant impact on cash holding of Pakistani's firms listed in PSX-100 index.
H2a= Board structure has a significant impact on cash holding of Pakistani's firms listed in PSX-100 index.
H2b= Ownership structure has a significant impact on cash holding Pakistani's firms listed in PSX-100 index.
H3= Sales growth has a significant impact on cash holding of Pakistani's firms listed in PSX-100 index.
H4= Firm size has a significant impact on cash holdings of Pakistani's firms listed in PSX-100 index.
H5= Leverage has a significant impact on cash holding of Pakistani's firms listed in PSX-100 index.

3.6. Statistical Techniques

This study has used the E-Views software. The tests applied on the data included descriptive statistics, unit root analysis, Breusch-Pagan test, Hausman test and regression analysis.

3.7. Variable Descriptions
3.7.1. Cash Holdings

The retaining of excess cash that the company keeps for the purpose of future prospects is known as cash holding. We can measure the cash holding of a firm through the formula given below.

Cash = total cash +short term investments /total assets

3.7.2. Sales Growth

It is the capacity of a firm's sales team to upsurge the profits over a stable time period. Unit of measurement is: Change in Sales = present year sales – last year sales

3.7.3. Firm Size

The size of the firm means the total employees an organization is having. It can be measured through:

Size = logarithm (total assets)

3.7.4. Leverage

Leverage is the method through which the investor enlarges his revenue and damages. The formula to measure leverage is: Leverage = total liability / total assets

3.7.5. Country Level Governance

It shows the creditability of the country governance and it is measured through the average of six world governance indicators that are Rule of Law, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Voice and Accountability, Control of Corruption and Regulatory Quality. The country governance score is accordance with the study conducted by (Seifert & Gonenc, 2018; Aftab, Qureshi & Javid, 2019).

3.7.6. Firm Level Corporate Governance

It shows the reliability of the firm governance and measured by corporate governance index using proxies of board structure and ownership structure

4.   Results and Discussions
4.1.   Results

The table 1 represents the summary statistics related to all the variables comprising 46 non-financial PSX 100 index listed firms. As per our findings, the highest value of CASH is 72.99% and lowest is 0.02% along with the mean and standard deviation value of 11.06% and 14.90%, respectively. The sales growth (GROWTH) represents the highest value of 97.87% and lowest value of -50% with mean and S.D values of 13.39% and 21.27%, correspondingly. Likewise, the highest value of firm size (SIZE) is 24.977 and the lowest value is 13.988 whereas its mean value is 17.94 and standard deviation is 2.429. The leverage has a maximum value of 92.09%, minimum value of -37.10%, mean value of 48.29% and standard deviation of 21.42%. On the other hand, the highest value of country governance (COUNTRYGOV) is -0.965 and lowest value is -1.178 along with the mean and standard deviation of -1.067 and 0.07, respectively. The maximum value of managerial ownership structure (OS) is 94.80%, minimum value is 0%, mean value is 15.50% and standard deviation value is 16.70%. The board size (BS) shows the highest value of 17 and lowest value of 6 with the mean and standard deviation of 9.132 and 2.147, correspondingly. Last of all, the variable CEODUALITY has maximum value of 1, minimum value of 0, mean value of 0.0817 and standard deviation value of 0.274.

Table 1
Descriptive statistics of the variables

	CASH	GROWTH	SIZE	LEVERAGE	COUNTRYGOV	OS	BS	CEODUALITY	IND
Mean	11.06%	13.39%	17.94	48.29%	-1.067	15.50%	9.132	0.0817	0.13
Median	3.44%	12.71%	17.434	50.76%	-1.062	1.19%	9.00	0.00	0.11

Maximum	72.99%	97.87%	24.977	92.09%	-0.965	94.80%	17.00	1.00	0.86
Minimum	0.02%	-50.05%	13.988	-37.10%	-1.178	0.00%	6.01	0.00	0.00
Std. Dev.	14.90%	21.27%	2.429	21.42%	0.07	16.70%	2.147	0.274	0.147
Observations	552	552	552	552	552	552	552	552	552

4.2. Unit root Analysis

In table 2, the unit root test is applied to examine the stationary nature of variables (Raza & Shah, 2018). Both test types that are Levin, Lin and Chu as well as Im, Pesaran and Shin were used. Moreover, the analysis is done on intercept and then on intercept and trend. The H0 of unit root test is that there is an existence of unit root in series and the H1 is that no unit root exists in series. By considering the results present in table 2, we can say that there is no existence of unit root in series as all the probability values are less than 0.10, hence the H1 is accepted whereas the H0 is rejected. In other words, it can be stated that at level, the nature of all variables is stationary and there is no issue in proceeding with regression analysis (Unlu & Yagli, 2016).

Table 2
Results of Unit Root Test

	LEVIN ,LIN & CHU T (LLC)		IM, PESARAN & SHIN (IPS)	
	C	C&T	C	C&T
CASH	-10.349	-6.193	-1.336	-0.039
	0.000	0.000	0.091	0.052
COUNTRY GOV	-2.577	-28.434	-2.304	-2.954
	0.095	0.000	0.089	0.002
BS	-7.820	-12.682	-3.601	-2.801
	0.000	0.000	0.000	0.000
IND	-3.399	-3.838	-0.444	-0.187
	0.000	0.000	0.033	0.043
OS	-5.100	-3.080	-13.746	-13.202
	0.001	0.001	0.000	0.000
SALESGROWTH	-4.359	-7.986	-1.940	-1.891
	0.000	0.000	0.026	0.029
FIRMSIZE	-19.953	-16.472	-3.405	-9.373
	0.000	0.000	0.000	0.000
LEVERAGE	-6.596	-2.331	-1.440	-0.206
	0.007	0.010	0.075	0.041

Source: authors' estimation

4.3. Breusch-Pagan Analysis

Furthermore, as table 3 shows, we have performed Breusch-Pagan test to decide which method is the most preferred one among pooled regression and fixed/random effect. The test was first proposed by Breusch and Pagan (1979). As observed from table 3, the value of probability is less than 0.10 therefore, it is indicated that pooled regression is not an appropriate model and either random effect or fixed effect model should be considered for further analysis (Unlu & Yagli, 2016).

Table 3
Results of Breusch-Pagan test

	Statistics	
	d.f	Prob.
	3052.094	
Breusch-Pagan LM	1035	0.0000

Source: authors' estimation

4.4. Hausman Test

Hausman (1978) developed a test known as Hasuman test to find out which model is more suitable among fixed effect model (FEM) and random effect model (REM). The null

hypothesis of this test is that the estimators of both models are similar scientifically. Thus, FEM is the preferred model if the null hypothesis is rejected whereas if the null hypothesis is accepted it means we will go with REM. The results in table 4 shows that random effect model is the suitable model as the P-value is greater than 0.10, hence the null hypothesis is accepted (Greene, 2007). The results are presented in the following table

Table 4
Results of Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.3162	8	0.7233
Period random	1.5845	7	0.9792
Cross-section and period random	4.4641	7	0.725

Source: authors' estimation

4.5. Regression Analysis

In the table 5, the coefficient values denote the nature of association among the variables while the probability value shows the significance of variables. If we summarize the table 5, we can say that country-level governance (COUNTRYGOV) has a positive but insignificant impact on (CASH) cash holdings. Similarly, board size (BS) and CEO duality (CEODUALITY) both have positive significant connection with CASH. The LEVERAGE and FIRM SIZE both have negative and significant effect on CASH. Likewise, Board Independence (IND) is positively and significantly related to holdings of cash. Likewise, Ownership structure (OS) has a negative insignificant effect on CASH. The link between Sales growth and CASH is positive but insignificant. Last of all, the adjusted R-squared value in the above table represents that there is a 41.5% multivariate correlation among the variables being observed. In other words, all the independent variables are predicating dependent variable by 41.5%.

Table 5
Regression Test Results

Variable	Coefficient	Std. Error	t–Stat	Prob.
C	0.336	0.108336	3.101966	0.002
COUNTRYGOV	0.228	0.057489	3.978232	0.000
BS	0.003	0.004583	0.686115	0.000
IND	0.058	0.043258	-1.34946	0.017
CEODUALITY	0.043	0.02079	2.108689	0.035
OS	-0.006	0.003333	-1.90865	0.556
SALESGROWTH	0.033	0.019343	1.743558	0.881
FIRMSIZE	-0.001	0.003852	0.28407	0.077
LEVERAGE	-0.052	0.027286	-1.93107	0.054
	Weighted Statistics			
R-squared	0.055436	Mean dependent var		0.024313
Adjusted R-squared	0.4152	S.D. dependent var		0.094798
S.E. of regression	0.092809	Sum squared resid		4.677142
F-statistic	3.983586	Durbin-Watson stat		0.654578
Prob(F-statistic)	0.000133			
	Unweighted Statistics			
R-squared	0.015232	Mean dependent var		0.11058
Sum squared resid	12.05329	Durbin-Watson stat		0.254001

Source: authors' estimation

4.6. Discussions

The variable country-level governance (COUNTRYGOV) is positively related to CASH. The coefficient value is 0.228 and the P-value is 0.000 hence the relationship is significant. The

finding of the present study is backed by the result of (Aftab, Qureshi & Javid, 2019; Pinkowitz, Stulz & Williamson, 2015). Those studies highlighted that in the case of better country governance, the mindset of Asian shareholders is that they tend to get less worried and concerned about the tendency of the managers regarding holding of excess cash. In other words, this positive relationship shows that firms' managers are permitted to hold more cash for the sake of future investment projects, when the country level governance is strong (Aftab, Qureshi & Javid, 2019).

The coefficient value of board size (BS) is positive 0.003 and statistically significant as (P < 0.10). It shows that one unit rise in board size will bring 0.003 units increase in cash holding. The result of the present study is sustained by the findings of (Lee & Lee, 2009; Yermack, 1996). They believed in the ideology that larger board size proves to be incompetent and brings synchronization issues which then led to increase hoarding of excess cash.

Furthermore, the relationship between board independence (IND) with CASH is positively significant. This denotes that whenever there is an increase in shares of independent directors by one unit then the ratio of cash increases by 0.058 units. Also, the probability value of this relationship is less than 0.10 which shows its significance. The finding is seconded by the results of (Shah & Shah, 2018; Basheer, 2014; Zia-Ul-Hannan & Asghar, 2013; Azam & Raza, 2018). They supported the idea that the higher shareholding of independent directors brings higher cash holdings. A possible justification given by the mentioned studies is that when independent directors have more shares, they get more power and eventually it will make them hoard more cash. Moreover, the developing countries such as Pakistan where shareholder's protection is quite weak, it is even more difficult to raise funds through external financing hence the Pakistani firms with higher shares of independent directors hoard more cash so that they can gain any cost-effective opportunities (Masood & Shah, 2014).

The variable (CEODUALITY) has a positive significant relationship with firm's cash holding. Moreover, the coefficient value is 0.043 and P<0.10 which confirms its significance. The present findings are in line with the previous studies conducted by Razzaq and Ullah (2014), Kusnadi (2011) and Lee and Lee (2009) which proposed that the firms where the CEO and chairman positions are held by the same individual then those firms have higher cash holdings. A reasonable explanation indicated by Javaid (2015) and Drobetz and Gruninger (2007) is that when the CEO and board chairman is the same individual then the financial decisions of firm get effected as there would be a dual responsibility on that individual, helping the well-being of the management team as well. Therefore, one technique to keep the team's position protected is to hoard the excess of cash.

Additionally, the association of managerial ownership structure (OS) with cash holding is negatively insignificant. It indicates that the cash ratio cut down by -0.006 units when there is one unit rise in ownership structure. The insignificance of the relationship is confirmed by the P-value which is greater than 0.10. Moreover, Khan et al., (2016), Ullah, Saeed and Zeb (2014) and Ehikioya and Yuanjian (2009) reported the similar results. All the studies consider that if the managerial ownership increases, then the firm's cash holding eventually decreases. Though negative relationship between the variables is because of the reason that when the ownership of acting directors increases then their decision making related to keeping excess cash becomes more aggressive so they keep a lesser amount of cash in the organization as it is believed that having more idol cash available impacts negatively to the profitability of the firm (Ullah, Saeed & Zeb, 2014).

On the other hand, the relationship of variable sales growth (SALESGROWTH) is found to be positively insignificant with cash holding as it can be confirmed by the P-value i.e. (P>0.10). Findings showed that an increase in sales growth by one unit will bring increase in cash holding by 0.033 units. The finding is supported by few prior studies which were conducted by (Khan et al., 2016; Masood & Shah 2014; Castiglionesi, 2013, Arif et al., 2019). This means that the Pakistan's growing organizations believe in the idea of holding the excess cash more than those firms who are already developed (Khan et al., 2016). Shabbir, Hashmi and Chaudhary (2016) justified this positive relationship by highlighting the aspect that those firms which have better chances of sales growth are more inclined towards cash holdings as need to increase capital for future investments opportunities.

Similarly, the firm size (FIRMSIZE) has a negative significant relationship with cash holding. The coefficient value is -0.001 and the probability value is less than 0.10 which indicates that the cash holding will decrease by 0.001 units if the firm size increases by one unit. The result is consistent with Khan et al., (2016), Basheer (2014) and Masood and Shah (2014) findings which suggest that larger size firms hold a lesser amount of cash in comparison to those organizations which have smaller size as they have better economies of scale for the sake of cash management as well as they are more diversified which reduced their probability of going bankrupt. Moreover, Basheer (2014) explained the negative relationship in a manner that larger firms can get quick access to capital markets without any hindrances in order to raise funds therefore, they don't consider a need of holding much of excess cash.

The study highlights that the link connecting LEVERAGE and cash holdings is negatively significant. The value of coefficient is -0.052 and P- value is less than 0.10 which specifies that if there is a rise in leverage by one unit then the cash holding will decrease by 0.052 units. The result is backed by the findings of of (Aftab, Qureshi & Javid, 2019; Khan et al., (2016); Masood & Shah, 2014; Zia-ul-Hannan & Asghar, 2013). Moreover, this connection between variables is consistent with pecking order theory which put forward that whenever an increase in retained earnings of firms' investments occurs, an inverse relationship between leverage and cash holding takes place. Khan et al., (2016) also justified this result by saying that debt cost increases with the rise in leverage so those firms with higher debt keep less cash.

5.   Conclusion & Recommendations

The core aim of the study was to assess the effect of firm level corporate governance, country level governance, and control variables on the cash holdings of non-financial PSX listed firms in Pakistan. For the purpose of analysis, the data has been gathered from 2007 to 2018. Moreover, different panel techniques were applied in the study such as unit root test, Breusch-Pagan test and regression test. The result of unit root test indicates that trend does not exist between the variables. Likewise, the Breusch-Pagan test identifies the most preferred model is fixed/random effect model between pooled regression model and fixed/random effect model. The finding of regression test reveals that country-level governance, board size, CEO duality, board independence and sales growth have positive relationship with cash holding however the managerial ownership structure, leverage and firm size are negatively linked to cash holding.

The finding of the present study represents that it is essential to have strong country-level governance as it is directly connected to the cash holding. Therefore, that extra cash reserves can be utilize by managers in future important investments prospects. Moreover, it is recommended to have smaller board size for better supervision of the activities of managers because larger board size is not much efficient in regulatory managers regarding the matter of cash holdings.

Likewise, it is proved through our findings that having a smaller board of independent directors' helps in reducing cash holdings as focused monitoring and better controlling of managers activities can be made. Therefore, it is recommended to the owners of the firms to have lesser bunch of shares of independent directors. The positive connection between CEO duality and cash holding shows that cash holding is greater when CEO and chairman of the firm is the same individual. Thus, it is recommended that firms should have different persons for each position.

Similarly, the cash holdings can be controlled by increasing directors' ownership as they make strict decisions of not keeping excess of cash because it is believed that cash is the least possible useful asset (Masood & Shah, 2014). So, it is recommended to have higher ownership structure of directors. The present study found that when the sales growth increases, cash holdings also increase. This highlights that emergent firm of Pakistan need to have cash available for performing better in future projects.

Similarly, the firm size is negatively associated to the firm's cash holding. In this case, it is recommended to the managers to upsurge the firm size to avoid holding of excess cash reserves. The results indicate that the higher leverage organizations lean towards less holding of cash as it is considered that debt can be used as an alternative to cash (Aftab, Qureshi & Javid,

2019). Hence, it is recommended to the firms' managers to have smaller debt structure so that the extra cash reserves can be used when they face cash shortfalls.

The present study has certain recommendations which can prove to be beneficial for the future researchers in having fresh insights. Firstly, the study has incorporated those firms which are listed on PSX, precisely only non-financial firms as due to dissimilarities in capital structures, we have excluded all the financial firms. Therefore, future studies may consider financial firms as well. In this study, there are total 46 non-financial companies from all the sectors involved in the analysis. Likewise, the time period of data ranges from 2007 to 2018.Thus, the future researchers may extend the time period along with the sector specific data. Moreover, our research has not used the qualitative data techniques that are interviews, surveys, focus groups and the like so the future research work may also include that. Last of all, the present study has not considered some key corporate governance variables such as institutional ownership and family ownership hence the future studies may work with those variables.

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Appendix

Table 6
List of non-finanical firms listed in PSX-100 index

S. No	Names of companies
1	K-Electric Ltd.
2	Nishat (Chun.)
3	Dadex Ltd.
4	D.G.K.Cement
5	Huffaz Seamless Pipe Industries Ltd.
6	Nishat Mills Ltd
7	Engro Corp
8	Pak Elektron
9	Fauji Cement
10	Cherat CementXD
11	Attock Refinery
12	Hub Power Co.
13	Bestway Cement
14	Oil & Gas Dev.
15	Fauji Fert.
16	Ibrahim Fibres
17	Kohinoor Textile
18	Service Industries Limited
19	Lucky Cement
20	Attock Petroleum
21	BYCO PETROLEUM
22	Maple Leaf Cement Factory Ltd.
23	Kohat Cement
24	Pak Petroleum
25	Atlas Honda Ltd
26	Fauji Fert Bin
27	Pioneer Cement Ltd.
28	ICI Pakistan
29	GlaxoSmithKlineXD
30	Ghani Glass Ltd
31	Agriautos Industries Limited
32	The Searle Co.
33	Shell Pakistan
34	Indus Motor Co
35	Honda Atlas Cars
36	J.D.W.Sugar XD
37	Pak Oilfields
38	Millat Tractors
39	Mari Petroleum
40	Murree Brewery
41	Nestle Pakistan XD
42	Azgard Nine Limited
43	Packages Ltd.
44	National Foods
45	Shifa Int.Hosp
46	Indus Dyeing Manufacturing Company Limited