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DETERMINANTS OF CASH HOLDING: EVIDENCE FROM FINANCIAL AND NON-FINANCIAL FIRMS LISTED ON PAKISTAN STOCK EXCHANGE

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ABSTRACT

Corporate cash holding involves both trade-off and packing order for cost and benefit analysis. The purposes of this study is to investigate the determinants of cash holding for financial and non-financial firms listed at Pakistan Stock Exchange as KSE-100 index. This study takes secondary data of 74 non-financial firms and 14 financial for the period of 2013-2019. Moreover, this study take cash holding as dependent variables while determinants of cash holding are Leverage, Firm Size, Cash Flow to Assets, Net Working Capital, Investment in tangible and intangible assets, this study takes three control variables which are PV-GDP, MCAP-GDP, TV-GDP, based on the diagnostic test and recommendation of Hausman test, results of Random Effect Model reveled that, leverage has positive and insignificant effect on cash holding, firm size were found negative and significant, cash flow to assets were found positive and significant, investment in tangible and intangible assets has positive, negative significant and insignificant effect on cash holding, while NWC were found positive and insignificant, control variables were found positive but have insignificant effect on cash.

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At last Dummy variables for comparison were added in model which shows that there exists significant difference between financial and non-financial firms for holding cash level, which suggest that on average both sectors hold different level of cash and cash equivalent. The findings of this study is aligned with trade-off and pecking order theory and previous researcher, moreover the findings of this study suggest that it will be beneficial for company manager, who could employ minimum debt level or use an optimum level of capital structure, in order to deviate the managerial conflict, such study is also benefited for shareholders, creditors and investors.

Keywords: *Karachi Stock Exchange, Net working capital, Private Credit to GDP, Market Capitalization to GDP, Total Turnover to GDP.*

Cash holding and academic literature on such area is subjected to the field of finance and obtained a great deal which is considering in financial area, and it comes under the umbrella of business administration. Practically due to nonexistence of fractional markets where security is traded and intern such companies directly cannot collect funds, persistently required it for financial decision through which they can move forward to external sources for rising funds, such dilemma cross question mark to some question which need to be address liked, why such firms are in need to main cash? Is there any optimum level for cash holding? Does such firm hold to much cash who are top traded rather than low traded companies? For answering such question many researchers strived to make such decision which can answer and subjected to such dilemma. Such work can be dated back to the work of Keynes (1936), who proposed two stages and main benefits for cash holding for such firms, it can be traced with the low cost transaction for firms who are not in stage to liquidated their assets when they are unable to make payment to their stake and stock holders or facing such buffer of contingences planning. Such areas can also highlight the work of Miller and Orr (1966), who proposed a model for trade-off which determined the optimum level of cash holdings for such firms through which they can maintained the trade-off between balancing of cash run out and the cost which bear by such firms for holding non-interest cash.

Priory, pertaining to such dilemma, Pecking order theory for such firms, contended that targeted cash and optimum level of does not exist in real since, while such

firms are required to minimized the asymmetrical information in accessing the cost of external financing, he also argued that firms can use retained earnings for their financing of investment projects, and obtain their debt at last, and instead of earlier payment and cash usage of debt holder, they can use their equity in their investments (Myers, 1984).

Such work can also traced back to the work of Jensen (1986), who present Free cash Flow theory for such firms, which postulates that sometimes the manager tries to make self-interest instead of maximizing the firm value and shareholder's wealth, such kind of fiduciary obligation create a problem between manager and shareholder's we openly called it Agency Problem, if such kind of problem persist it needs to be address, such theory stated that managers are required to hold cash and impair their power over the investment and other decision made by the firms.

Moreover, Cash Holding has its own cost and benefit, while the basic aim and purpose of cash holding by firms is reduced the chances of financial shocks which faced by such firms in contingent situation (John, 1993). And minimizing transaction costs (Keynes, 1936). Although Denis and Sibilkov, (2010) stated that in such circumventing situation face by such firms and allow external sources for financing the investment projects and holding to many cash can increase the efficiency for such firms in financial constraints. The benefit of holding to many cash by such firms reserves the act of buffering to commensurate in future financial crisis, it can also reduce transaction costs for liquidating assets and the cost associated with funds which rise by firms from external sources (Mulligan, 1997). Although, Foley et al., (2007), concluded that holding too much cash by firms can create a problem of double taxation for firms who traded internationally, it can also subject the firms for tax payment in host country especially when truncating their foreign income in home currency.

Sometimes too much cash holding leads to in efficiency, because of it may some companies can have lost investment prospects, certain firms are also required to hold cash for such motives like precautionary, tax motive and agency motive as well. POT advocates that firms are tended too much on internal financing rather than external financing epically in decision of investment (Myers, 1984). On the contrary (Jensen, 1986) pointed out in free cash flow theory, that when manager have more excess to cash, then they are not required to go for external source of financing, due to this sometimes they go for such project which have negative NPV, in term it may adversely affect Shareholders value. Various studies suggest that there exists an optimum level of cash for such firms to hold (Olper et al., 1999; Ozkan & Ozkan, 2004; Bates et al., 2009; Rehman & Wang, 2015). In emerging market like Pakistan, studies on such topic had been conducted by majority of researchers, Azam and Shah, (2011) concluded that FC has been face by Pakistani firms in shape of high dividend payout

ratio, such issue restrict them to invest in fruitful projects, Age of firm were also found to be a major factor when making investment decision.

Since Pakistan has developing country its economies, business and political structure has gain a lot of search from researcher around the world, as discussed earlier cash holding and maintaining an optimum level of cash in order to deviate the future financial constraints it become major challenge for firms especially operated in developing economies country like Pakistan, several studies had been conducted by many researcher in the context of Pakistan on such problem like Azam and Shah (2011), Ghulam Ayehsa Siddiqua and Ajid ur Rehman (2018), who concluded that firms who are financial constrained firm hold more cash faster than firm those firms which are financially unconstrained. This study will have intended to investigate determinants of cash holdings and effect of macro level variables on, by providing evidence from financial and non-financial firms listed on PSX as KSE-100 index. Furthermore, this study makes contribution in existing literature in at least two ways, alpha this studies add macro level variable and its effect on cash holding, priory this study also added investment in tangible and in intangible assets as explanatory variables, priory this studies has investigated the mean comparison of cash holding for both financial and non-financial firms on PSX. This study also takes financial sector such as commercial banks on which least literature is available in the context of Pakistan. This study will provide an insight for company manager, investment companies to insure optimum cash level and make investment in fruitful projects.

Rest of the study is organized as followed; section 2 provides the brief articulation on literature review with covering related and supportive theories, relation and linkages between explanatory and exploratory variables, section 3 consist on methodology used in this study with covering variables computation, section 4 consist on result and different diagnostic tests, section 5 consist on conclusion, recommendation, policy implication and direction for future research.

Literature Review

Various studies had been conducted by many researcher on topic like cash holing and cash management in the context of Pakistan and provide evidence around the world, such work can be traced back for review and suggested that firms normally are liked to hold more cash for precautionary motive (Olper et al., 1999; Mikkelson & Partch, 2003) and the efficiency of management to reduce transaction cost (Mulligan, 1997) and maintaining too much cash can lead firms for payment of double taxation specially for a firm operated internationally as it can be marked as multinational companies and subjected to its taxation on transaction cost when exchanging foreign funds into home currency (Jensen, 1986; Harford, Mansi & Maxwell, 2008; Nikolov

& Whited, 2014).

Although, Dittmar et al., (2003) conducted a study on such topic and proposed two type of costs, which is linearly associated with firm's cash holding, despite of it they also proposed two prime drives which advanced the benefit and advantage of cash holding, in the first motive they state cost for transaction as and its motive for firms to hold more cash be such firms when the opportunity cost and cost associated with fund rising from external sources are relatively high. In case of asymmetrical information, firms specifically hold more cash for precautionary and preventive measure.

Myers, (1984) stated that according to the financing hierarchy of any firms, no such optimum and targeted level of cash for firms, and optimum level of debt structure exist. There exists an optimum level of cash for which the firms are required to maintain it through which they can maximized their firm value and ensure shareholder's wealth, rather any divergence from such level leads the firm to face downward trend in their firm's value and operation (Martínez-Sola et al., 2013 & Jarrow et al., 2018). There exist and optimum trade-off which portrays optimist link between optimum cash level and such decision made for investment and for CE face by firms during investment and financing hierarchy and such relationship sometimes holds opposite site between these two (Dittmar et al., 2003).

likewise, the work of miller and Modigliani and other researcher stated that, there exist an optimum level of debt structure and leverage which persist a firms to make such decision and create trade-off between the cost which obtained for debt financing, rather any deviation from such trade-off leads the firms to acquire and set new target for leverage (Denis & McKeon, 2012).

Denis, (2011) conduct study and concluded that maintaining to many high leverage ratio substantially deviate the firms to achieve optimum cash level, sometimes the manager do not set optimum leverage level as the first concern of manager to capital structure decision, furthermore they suggested that in short spine of time and cash shortage and crisis, firms are usually go for initial debt browning to curtail and tackle such issue, even they are in above target and optimum debt level, while in surplus of cash level they make payment to debt holder to reduce to retain the pro rata of capital structure.

Likewise, easily access to cash capital market provides such facilities for to fund providers and can also assimilate the fund which immediately to be raised, albeit such firms tended to go for maintaining assets which are less liquid in their reserves. The similarity and maintaining the investor rights and protection in countries, company hold more cash as twice where their rights and well protected, in such scenario

investor cannot forbid manager to hold more cash, further more in investment horizons where optimal opportunity arise the firms hold more cash to avoid such divergence activity where there in short of cash, precautionary motive and cash holding for its also suggest that such risky financing decision also effect firm cash holding level because firms hold too much cash in order to avoid such risky decision and Sucre contingencies planning, and firms save more cash which result from company cash inflow and provide their obligation to finance provider (Harford et al., 2014; Xie et al., 2017).

Evidence from Pakistan

Consequently Azam and Shah (2011) conduct study and found that, more financial constraints faced by Pakistan firms rather firms operated in developed world, such constraints include high dividend payout ratio which in term restricts the firms to invest in fruitful projects, the other constraints is Age of firms which indicate the investment decision taken by old and new firms, firm size, response to earnings and energy crisis are other important constraints which capture the intention of researcher, their findings reveled the positive association between investment and firm size and negative linkage between firm's age, investment and dividend payout, and concluded that dividend payout ratio and firms age are attributes of financial constraints for firms in Pakistan context.

Although Anjum and Malik (2013) conduct study on such topic and provided evidence by taking the data od 345 non-financial listed firms for period of 2005-2012, their results reveled that Size has direct relation with firm cash holding while working capital also shows positive and direct relation, leverage indicate negative response.

Lala Rukh et al, (2015) conduct study on factor effecting cash holding by taking sample of 349 non-financial listed firms for the period of 2005-2012, their results reveled that capital employed and leverage has positive effect on cash holdings, cash flow, size and working capital has positive and significant effect on cash holding, global financial crisis indicate negative and insignificant effect on cash holding for such non-financial firms listed.

Shabbir et al. (2016) conduct study on determinants of corporate cash holding by taking data of non-financial firms for the period of 2004-2012, their study concluded that growth opportunity, firm size and cash flow had positive effect while leverage and liquidity found negative and significant.

Ghulam Ayehsa Siddiqua and Ajid ur Rehman (2018), who concluded that firms who are financial constrained firm hold more cash faster than firm those firms which are financially unconstrained.

Trade off Theory

Static theory indicates that the value of the leveraged and non-leveraged is not similar. Rendering to trade off theory the three factors which are taxes bankruptcy costs and agency costs that affect the company'scorrection toward an optimum leverage. Ross (2008) says that the firm can maximize their value at the point where the marginal cost of debt and marginal debt give equivalent benefits.

Agency Theory

Jensen and Mackling (1976), Explain the agency cost the two types of conflict theory, that is, between managers and shareholders and between holders of debt and shareholders. Jensen (1986), Stulz (1990) that this problematic can be resolved by reduce the accessibility of free cash flow by employing more debt and by increasing the ownership of the managers in the firm. If corporate governance is a virtuous then lower the agency cost will be.

Pecking Order Theory

This theory suggest that cost of borrowing for to finance their obligation is increasing with asymmetric information, such type of financing usually aroused by firm from three integrated sources, which are internal funds, can capital structure, albeit mostly companies prioritized their investment, like gathering of funds from internal sources, if it is not possible then they switch to debt, lastly they off for equity financing, this theory suggest that business need to draw hierarchy to for better reconciliation.

Variable Description and Theoretical Relation

Table 1: Variable Description and Theoretical Relation

Variable Name	Relation with dependent variable	Computed Sign	Tradeoff-theory	Pecking order theory	Paper findings
Leverage	Positive and negative (Diamond, 1991; A. Ozkan & N. Ozkan, N., 2004).	+/-	Positive/negative	Negative	+ve
Firm Size	Positive (Bates, Kahle,& Stulz, 2009).	+/-	Negative	Positive	-ve

Cash flow	Afza & Adnan, 2007; Al-Najjar and Belghitar, 2011; Olper et al., 1999)	-	Negative	Positive	+ve
Net working capital	Ali & Yousaf, 2013; Bates et al., 2009; Ferreira & Vilela 2004; Gill & Shah, 2012; Olper et al., 1999	-	Negative	Negative	+ve

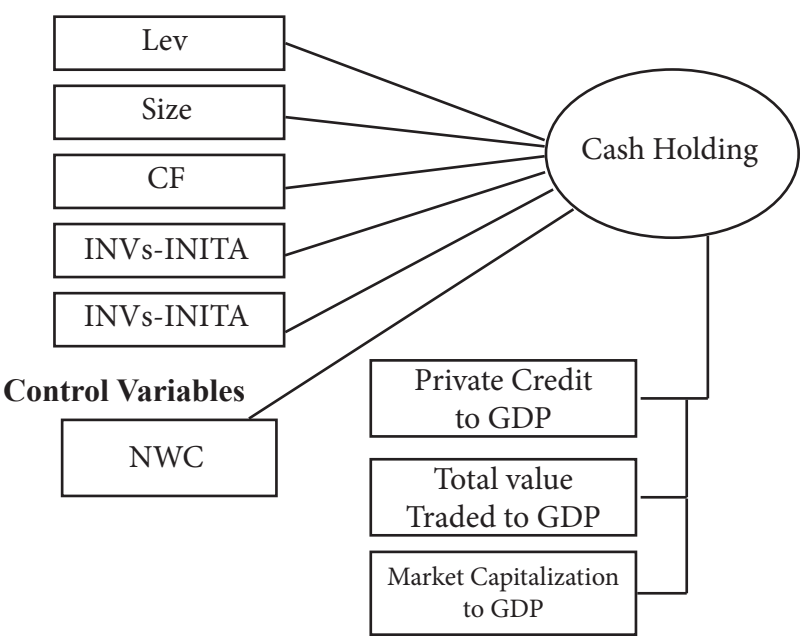
Research Hypotheses

The following two hypotheses has been designed from above literature.

H1: Firm level variable has significant effect on Firms Cash Holding.

H2: Firms level variable has insignificant effect on Firm's Cash Holding.

Fig. 1: Theoretical Framework



RESEARCH METHODOLOGY

Nature of the Study

This research is quantitative in nature, set of 88 firms were taken which are financial and non-financial listed on PSX as KSE-100 index for the period of 2013-2019, selected companies were further classified in two sets, in which 74 are non-financial and 14 are financial such as banks. Moreover, this sample were selected on basis of data availability which is consider as top listed companies and more representative of respective sectors, moreover the financial sector was also added in this study for cash holding comparison.

The selected sample were taken from the following sector, Power generation and distribution, refinery oil and gas exploration companies, technology and communication, fertilizer, transport, chemical, cement oil and gas marketing companies, textile composite, glass and ceramics, cable and electrical goods engineering, pharmaceuticals, synthetic and rayon tobacco, food and personal care products, auto mobile assembler, paper and board, automobile parts and accessories, Miscellaneous, sugar and allied industry, lather and tanneries Woolen and all 14 public and commercial banks.

All the data is secondary and collected from secondary sources while the data for variables computation is extracted from company annual reports published by concerns companies, Financial statement analysis for both sectors were downloaded from State bank of Pakistan and Pakistan stock exchange official website, for the period of 2013-2019, while the data for control variables were taken from World Bank Data base, FRED, Macro trend.

Variables Description

The following table shows the variable description representation and computation.

Table 2: Variables Description

Variables	Symbol	Description	Formula	Citation
Dependent Variable	DP	Exploratory variable		
Cash Holding	CH	Exploratory Variable	Cash and cash equivalents/ Total Assets	Olper, (1999) Ferreira and Vilela, (2004)

Independent variables				
Leverage	Lev	Explanatory variables	Total Debt/ Shareholder's equity	Ozkan and Ozkan, (2004)
Investment in tangible assets	Ivst in TA	Explanatory variables	One year change in value of tangible fixed assets/ total assets	Sandra Mortal et al., (2016)
Investment in intangible assets	Ivst in ITA	Explanatory variables	One year change in value of intangible assets/total assets	Sandra Mortal et al., (2016)
Net working capital	NWC	Explanatory variables	Current assets-current liability-dividend payment/ total assets	Sandra Mortal et al., (2016)
Cash flow to assets	CFA	Explanatory variables	Net cash generated from operation/total assets	
Firm Size	FS	Explanatory variables	Log of Total Assets	Scott and Martin (1976)
Control variables				
Private credit to GDP	PC_GDP	Control variable	Ratio of private credit to GDP(Pakistan)	Djankov, McLeish and Sheifer(2007)

Market capitalization to GDP	MC_GDP	Control variable	Ratio of Market capitalization to GDP(Pakistan)	Dermiguc-Kunt and Levine (1996) and Love (2003) World bank data base
Total value traded to GDP	TV_GDP	Control variable	Ratio of total value of turnover to GDP(Pakistan)	
Dummy variable	Dummy	Dummy variable	Financial firms assigned 1, if not then 0.	Own computation

Econometric Model

$$Y_{it}=\alpha+\beta X_{it}+\beta Z_{it}+\beta Y^{*}_{it}+€_{it} \quad \text{..... eq (1)}$$

In the above equation Yit represent Cash holding for the firm I with time trend t, followed by Xit which comprised on set of firm level variable consist on(Leverage,Investment in tangible assets,Investment in intangible assets,Net working capital,Cash flow to assets, Firm Size) for the firm I with time trend t. followed the equation Zit which consist on set of control variables(Private credit to GDP, Market capitalization to GDP,Total value traded to GDP) for level I with time trend t. Where Y*it represent dummy variable included in the model for cash comparison with firm I with time t trend.

RESULTS AND DISCUSSION

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Cash Holding	616	.096	.182	0	1.919
Lev	616	1.965	6.405	-31.493	131.903
FS	616	7.774	.811	5.51	10.639
CFA	616	.108	.245	-2.273	1.935
INVITA	616	.502	.508	.001	7.553

INV_IITA	616	.017	.066	0	.811
NWC	616	.301	.514	-1.27	7.221
MCAP to GDP	616	24.058	5.631	15.248	32.967
PV to GDP	616	16.864	1.12	15.589	18.83
TV to GDP	616	28.93	2.67	25.3	33.33

Table 3 present the main variables used in this study by applying descriptive statistics which give summary statistics and characterization of data such description is consist on Mean, standard deviation, minimum and maximum value of the data, while looking in to Cash ratio for Pakistani non-financial and financial firm listed on Pakistan stock exchange as KSE 100-index. Cash holding has been observed as 9.6%. looking into the previous result it is found similar with the result of cash ratio by Shah (2011), Shabbir et al., (2016) in Pakistan context. Similar to it Ogundipe et al., (2012) concluded that Nigerian firms on average hold 7% of cash ratio to total assets, however such ratio is low as it is compared with ratio which is hold by developed countries like UK and US, contrary with other result Olper et al., (1999) conducted study and examined that Publicly traded firms is US held 17% of cash ratio, the results may be due to accounting and ratio measuring procedure like in case of cash normalization and marketable securities divided by total assets and deducting cash and marketable securities rather than total assets. While other researcher like Kalcheva and Lins (2007) found in their study that such firms held 16% of cash and cash equivalent to their total assets, and 8.1 % cash ratio was found by (Kim et al., 1998). The standard deviation shows fluctuation of data from mean value, looking in to the mean value of Leverage which is 1.965 which is too high as compared with developed companies as results examined by previous researcher, which suggests that non-financial companies of Pakistan tend to use higher amount of debt, to finance their assets as compared with developed countries, while in study of Shabbir et al., (2016) their examined 55% of leverage. Investment in tangible assets have mean value of .502 which suggest that 50% of investment is made in fixed assets by such firms and it suggest that this much of increase will be made to total assets. Priory Cash flow to assets have mean value of .108, while it has 1.935 maximum and -2.273 minimum value with .245 standard deviation.

Table 4: Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

(1) Cash Holding	1.000									
(2) Lev	-0.054	1.000								
(3) FS	-0.127	0.122	1.000							
(4) CFA	0.258	-0.027	-0.115	1.000						
(5) INVITA	-0.047	-0.050	-0.315	0.140	1.000					
(6) INV_IITA	0.120	-0.018	-0.029	0.100	0.017	1.000				
(7) NWC	0.113	0.076	-0.057	0.072	0.420	0.059	1.000			
(8) MCAP to GDP	0.007	0.072	0.152	-0.050	-0.065	0.042	0.042	1.000		
(9) PV to GDP	-0.036	0.076	0.238	-0.132	-0.099	0.030	0.092	0.691	1.000	
(10) TV to GDP	-0.068	0.096	0.191	-0.142	-0.089	0.013	0.104	0.367	0.581	1.000

Table 4 shows the association between dependent variable which is cash to assets ratio in this study of non- financial and financial firms listed at Pakistan Stock Exchange with its key explanatory variables. Leverage has negative correlation with cash holding which means that making too much payment to the debt holder will result catalytic decrease in cash holding for such firms. Cash flow to assets has positive correlation with cash ratio which means that increase in cash in flow from operating will add more cash to cash and cash equivalent for such firms, investment in tangible has negative correlation and intangible assets have positive correlation with cash holding meaning that increase in such explanatory will generate more cash for such firms, net working capital have positive correlation with cash ratio which suggest that decrease in current assets and make payment to debt holder and dividend payment will result decrease in cash and cash equivalent for non-financial and financial firms listed at Pakistan stock exchange. Result of VIF test has all value less than 10 for all explanatory variables which indicate that is no problem of Multicollinearity exist among explanatory variables. For explanatory variables which indicate that no such problem of Multicollinearity exists If VIF value exceeding 4.0, or by tolerance less than 0.2 then there is a problem with Multicollinearity (Hair et al., 2010).

Table 5: Variance Inflation Factor

	VIF	1/VIF
PV credit to GDP	2.609	.383

MCAP to GDP	1.978	.505
TV-GDP	1.589	.629
CFA	1.439	.695
V	1.364	.733
FS	1.192	.839
Indicator	1.075	.931
NWC	1.039	.963
Lev	1.038	.964
INVs INITA	1.019	.982
Mean VIF	1.434	.

Table 6: Individual Result of Both Sector

Individual Result of Financial Sector					Individual Result of Non- Financial Sector			
Cash Holding	Coef.	St.Err.	t-value	p-value	Coef.	St.Err	T-value	P-value
Lev	-.02	.011	-1.89	.062	-.001	.001	-1.30	.1941
Size	-.254	.058	-4.36	0	-.031	.009	-3.41	.000
CFA	.163	.056	2.93	.004	.0179	.028	6.20	.000
INVITA	.395	.691	0.57	.569	-.007	.015	-4.62	.000
INVIITA	-.917	.287	-3.20	.002	.228	.105	2.16	.0306
NWC	.672	.077	8.74	0	.062	.015	4.14	.000
MCAP to GDP	-.001	.004	-0.12	.908	.001	.001	.821	.4116
PV to GDP	.062	.025	2.45	.016	-.001	.009	-.101	.918
TV to GDP	-.003	.008	-0.39	.695	-.003	.003	-1.10	.2716
Constant	1.392	.552	2.52	.014	.425	.134	3.15	.001
R Square	76%				12%			
F value	35.12(0.000)				9.78(0.000)			

Results of individual models, show that leverage has negative and insignificant

effect on cash holding in both sector, while size have negative and significant effect on cash holding in both sector, cash flow to assets have positive and significant effect on cash holding in both sectors, while investment in tangible assets found positive and insignificant, while it has negative but significant effect on cash holding in non-financial firms, investment in tangible assets found positive, negative but significant in both sector, net working capital have positive and significant effect on cash holding in both firms, private credit to GDP has positive and significant on cash holding in banking sector while it has insignificant in non-financial firms.

Moreover, in individual regression results financial sector has 76% explanatory power, which suggest that cash holding is that much explained by determinates. In non-financial sector explanatory power of the model is 12%. Based on the P-value of F statistics, the overall model is statistically significant and valid for forecasting and policy implication.

Therefore, both pecking order and trade-of theories predict negative relation of leverage with cash holdings (Diamong, 1991; Ozkan & Ozkan, 2004). The results in lined with results of other researcher findings like, Afza & Adnan (2007), Ferreria & Vilela (2004), Ogundipe, Salawau, and Ogundpie, (2012), their result concluded that leverage has negative relation with cash holdings. Similarly the result of firm size is also in line with result of Bates, Khale and Stulz, (2009), they argued that due to economies of scale companies are required to hold less amount of cash. Although Mulligan, (2007) suggested that according to trade-off theory and benefit of economy of scale larger firm can earn more profit from it, therefore firm size should have an inverse relation. Similar with the result of Cash flow to assets it also found with the similar outcomes of Afza and Adnan, (2007), Al-Najjar and Belghitar (2011), Dittmae et el., (2003). They concluded that there exist positive and significant relationship between cash flow and cash holdings, and it effect company to hold larger level of cash which is generated from integrated sources.

Table 7: Combined Regression Analysis of the Study

Variables Name	Fixed Effect Model				Random Effect Model			
Cash Holding	Coeff.	St. Err	T-Value	P-Value	Coeff.	St. Err	T-Value	P-Value
Leverage	0.01	.001	0.11	.909	0.0178	.001	0.01	.991
FS	-0.59	.01	-5.79	.000***	-.063	.01	-6.68	.000***
CFA	.08	.021	3.74	.000***	.093	.021	4.42	.000***

INVs-in INTA	.293	.09	3.25	.000***	.272	.086	3.15	.002***
INVS-TA	.02	.018	1.10	.27	.005	.016	0.28	.778
NWC	.007	.016	0.42	.677	.02	.015	1.40	.162
MCAP-GDP	.001	.001	1.18	.238	.001	.001	1.22	.222
PV-cred to GDP	.006	.006	0.97	.334	.006	.006	0.93	.354
TV-GDP	-.002	.002	-1.15	.253	-.002	.002	-1.20	.23
Dummy	-1.91	0.41	-4.64	.000***	-.192	.039	-4.87	.000***
Constant	.461	.096	-4.64	.000***	.663	.103	6.46	.000***

Model Characterization

H0: If P value is greater >0.05 Random Effect Model is Appropriate

H1: If P value is less< 0.05 Fixed Effect Model is Appropriate

Fitted Model	Random Effect Model H0 is accepted based on the value of Hausman test(P-value)
Hausman Test(P-value)	Hausman (1978) specification test Coef. Chi-square test value 12.018 P-value .212
Observation	616 / 616
R^2	15.3% / 23.7%
F test(P-value)	10.317(0.000, Prob>F)

Interpretation

In panel data regression model, analysis of leverage has coefficient of 0.0178 with T-value (0.01< ± 2) along with P- value of (.991>0.05) suggest that leverage has positive and insignificant effect on cash holding, Firm Size has coefficient of -.063 with T value (-6.68> ± 2) along with P-value of (0.000<0.05) indicating that firm size has negative and significant effect on firm cash holding, turning to other variable cash flow to assets has coefficient of 0.93 with T-value(4.42> ± 2) along with

P-value of (0.000<0.05) which represent that cash flow to assets have positive and significant effect on firm cash holding for non-financial and financial firms. Investment in intangible assets has .2.72 coefficients with T value (3.15>± 2) along with P value (.002<0.05) which suggest that investment in intangible assets have positive and significant effect on cash holding for selected non-financial and financial firms, similar with co efficient of investment made in tangible assets is .0.05 with T-value (0.28< ± 2) along with P-value (0.28>0.05) which suggest that investment in tangible assets have positive and insignificant effect on cash holding, Networking capital have coefficient of 0.2 with T and P-value (1.40< ± 2, with p value .162>0.05) which suggest that net working capital have positive and insignificant effect on cash holding, turning to control variables all the control variables has positive but in significant effect on cash holding. Dummy variable has negative coefficient but shows significant difference between cash holding level for both firms.

Moreover, this study has 23.7% explanatory power which suggest that cash holding for selected non-financial and financial firms is explain that much by explanatory variables while the rest or the other variables which is captured by error term included in the model, based on F test (P-value, 0.000<0.05) which is significant and it suggest that the overall model is statistically significant and valid for forecasting

Base on the diagnostic test and recommendation of Hasuman test (P-value .212>0.05), Random Effect model is more appropriate for this study, and hence H0 is accepted for model selection which is Random Effect model is appropriate.

DISCUSSION

Leverage has insignificant positive effect on the corporate cash holding for non-financial Pakistani firms which is consist with the result of Olper et al. (1999) who concluded that excessive level of debt level to cash ratio increase the probability of bankruptcy chances and because of that companies compelled to hold more cash as compared with other firms who have lower debt ratio to corporate cash holing level, thus this result support tradeoff theory.

Cash flow to assets has positive and significant effect on cash holding which support Pecking order theory which suggest that company choose such type of fruitful investment project which result more cash in cash holdings while excessive outflow from business operation and less cash inflow make lower addition to cash level for such firms, while during cash flow volatility firms are required to hold more cash which in term buffer the chances of insolvency the above result is consistent with previous findings of (Almeida et al., 2004; Ferreira & Vilela, 2004; Ozkan & Ozkan, 2004).

Firm size has negative and significant effect on cash holding, such result is consistent with trade-off theory which suggest that, firm size and cash have an inverse relation, because from economies of scale firm can earn more profit (Mulligan, 1997), chances of more diversification, the greater constant cash flow, lower the possibility of financial distress (Titman & Wessels, 1998) while it also result in getting easy accessibility to capital markets (Ferreria & Vilela, 2004).

Investment in tangible and intangible assets both have positive and significant and insignificant effect on cash holding for Pakistani non-financial firms which suggest that investment made in such fixed and non-fixed assets would result a greater increase in cash flow, such as equipped more planet and machinery, or make larger payment in company fixed assets which is used for operation. The above result is consistent with the previous findings of Sandra et al. (2016).

Net working capital has positive and insignificant effect on corporate cash holdings, the above results is consistent with the result of Ghulam Ayesha and Ajid ur Rehman (2018), who concluded that positive coefficient indicate that there is excess of current liability incurred by firms to finance their obligation as their cash conversion cycle is longer.

Private credit to GDP has positive and insignificant effect on cash holding, the result of positive coefficient is consistent with findings of Sandra et al. (2016) who concluded that for private firms it is expensive to sum up cash in countries where private credit availability is scare, limited and consequently the cost of debt is high.

Proxy of stock market development as MCAP-GDP have positive but insignificant effect on cash holding, which is further motivated by the literature which emphasize precautionary benefits for holding cash and the previous linkage of managerial agency problem and cash holdings, such result is consistent with the findings of Gao et al. (2013) who concluded that manager who are self-interested may hold more cash rather than to paying it to the shareholders because such payment reduce cash and increase managerial dissertation. Such firms with high degree of agency problem and managerial conflicts have smaller cash reserve because it quickly dissipates the cash (Dittmar & Mahrt-Smith, 2007; Hartford, Mansi & Maxwell, 2008).

For comparison dummy variables were created, which shows that there exist significant differences between financial and non-financial firms for cash holding level, which suggest that on average both sectors hold different level of cash.

CONCLUSION

The purpose of this study is to investigate factors effecting cash holdings for

financial and non-financial firms listed on PSX as KSE-100 index for the period of 2013-2019, with objective to investigate the cash level for such firms and with adding control variables like Private Credit to GDP, Market capitalization to GDP, total turnover made to GDP by taking secondary data from annual reports of such companies and data from World Bank, PSX, SBP as financial statement analysis, FRED, macro trend. This study has main objective to get new insight by adding macro level variables as control and by adding dummy variable in the model to determine the cash level for both firms in emerging market like Pakistan. Based from the above discussion results of this study is similar and consistent with previous researchers. Based on the concluding remarks this study has support both dynamics of trade-off and pecking order theory which plays significant role in explaining the determinants of corporate cash holding, the results are mostly and nearly similar with developed and developing countries as it is investigated by previous researchers, such results are consistent with previous findings, cash flow have positive and significant effect on cash holding, firm size have negative and significant effect on corporate cash holding, this study concluded that high cash is directly related with lower cash ratio, while higher debt ratio results in less cash and cash equivalent for non-financial firms, this study has recommended that company manager must concentrate on the optimum level of capital structure, make a tradeoff between company cash inflow and reserve more and more cash in order to curtail the chances of bankruptcy and financial distress.

This study has only investigated financial and non-financial firms listed on Pakistan stock exchange as KSE 100-index, this study has only taken the data from 2013-2019, while further research can also be done by employing and taken larger data set, such study can also be done to incorporate the effect of financial crisis, managerial dissertation, investor protection, creditor protection rights and such other factor which is highlighted by previous researcher, while the comparative study can also be done between the sectors.

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