Determinants of Corporate Cash Holdings: Empirical Analysis of Pakistani Firms

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Abstract: *Keeping a suitable level of cash within the organization is crucial for the fluent operations of firms. If firms hold cash and cash equivalents it will provide the convenience of reinvestment. The aim of the study is to explore the determinants of corporate cash holdings of non financial firms among diverse firm sizes and diverse industries in Pakistan. For our analyses we used a sample of 50 Public Limited companies listed at Karachi Stock Exchange over the period of 2012-2014. The study applied descriptive statistics, co relational and multiple regression line. On behalf of multiple regressions we conclude that firm size, board size, net working capital and investment significantly affect the corporate cash holdings. Debt structure, leverage and return on asset are non significant and have negative association with cash holdings.*

Keywords: *Cash holdings, firm size, board size, net working capital, debt structure, leverage, return on asset, investment, cash and cash equivalent, correlation*

I.   Introduction

Empirical studies regarding the determinants of corporate cash holdings have recently got a great deal of attention in corporate finance literature. Cash and cash equivalents are considered as some of the most important component of current assets and are the lifeline of corporate financial Management. The Managers hold a substantial portion of their assets in the form of cash and liquid securities for reinvestment distribution to shareholders and to keep cash inside the firm. Managers make decisions regarding how much liquidity a firm's balance sheet should have. Cash holding, according to Gill and Shah (2012) is defined as cash in hand or readily available for investment in physical assets and to distribute to investors. Cash holding is considered as cash and cash equivalents that can be easily converted into cash. Therefore cash holdings include cash in hand and bank, short term investments and T-bills.

Why do firms hold cash? A famous explanation is that cash allows low cost of financing for firms. Raising external finance cost more so managers trying to mitigate the cost of external financing in imperfect capital market and may see it best to sustain sufficient internal cash holdings. Holding cash may have adverse consequences such as agency conflicts existing between managers and shareholders.

The corporate cash holdings framework is usually stated under tradeoff theory, pecking order theory, transaction cost, precautionary and speculative motives.

According to tradeoff theory, (Ferreira & Vilela 2004) they set their optimal level of cash holding by considering the marginal costs and marginal benefits of holding cash. Both costs and benefits are associated with cash holding. Benefits rendered by cash holding allow firms to avoid the cost of liquidating existing assets and raising funds and provide growth opportunities and mitigate the likelihood of financial distress. If firms have inadequate amount of cash it does not only causes firms to confront high cost of financing and to forgo profitable investment projects. The cost of holding cash constitutes opportunity cost of the capital due to the low return on liquid assets.

According to pecking order theory (Myer's 1984) firms finance investments with three sources first with retained earnings then with safe debt and risky debt and finally with equity. If retained earnings are insufficient to finance investments then firms use cash holdings and if required issue debt.

Firms require liquidity to meet their current expenses for several motives such as transaction, precautionary and speculative. Transaction cost motive (Keynes 1936) pertains to cash which is held for routine transactions to pay for day-to-day operations. For unexpected fluctuations corporations hold cash in reserves for precautionary motives. Speculative motives (Besley & Brigham 2005) refer to cash held for getting benefit from bargain purchases.

Board of directors are responsible for cash management and corporate governance issues. Board size can lead to higher cash holdings that can ultimately lead to agency problems. Directors may not work in best interest of shareholders.

Lawrencia et al. used dataset of 54 Nigerian firms listed on Nigerian stock exchange. They found that cash flow, net working capital, leverage, investment in capital expenditures and profitability has significant impact on corporate cash holdings in Nigeria. Gill and Shah studied the determinants of corporate cash holdings in Canada. By applying co relational and non-experimental research design results demonstrate that leverage, CEO

duality, net working capital and board size increase cash holdings and net working capital, market to book ratio and firm size bring down the corporate cash holdings. This study extends these studies using data of Pakistani non financial firms.

It is important to sustain appropriate level of liquidity within organization for performing operations smoothly. Recently researchers have started to consider corporate cash holdings in empirical literature. The aim of this study is to explore the factors that determine the level of corporate cash holdings of non financial firms in Pakistan across different sectors and different firm sizes. First distinct from earlier empirical studies our study considered three variables ROA, DS and investment in Pakistan. Second we consider the role of board size to determine corporate cash holdings in Pakistan.

II.   Literature Review

Ferreira & Vilela (2004) used a sample of 400 firms in 12 Economic and Monetary Union (EMU) countries for the period of 1987-2000 to examine the determinants of corporate cash holdings. The study reveals that cash holdings are positively associated with investment opportunity set and firms cash flows, while asset's liquidity, leverage, firm size and bank debt negatively affect the cash holdings. The study also found that concentration on ownership is inversely related to the level of cash holdings.

Ozkan & Ozkan (2004) studied the empirical determinants of corporate cash holdings for a sample of industrial firms in UK. Their primary focus was to study the importance of managerial ownership among other corporate governance characteristics including board structure and ultimate controllers of companies. They found that cash holdings are negatively influenced by bank debt, liquid assets and leverage whereas cash holdings are positively influenced by cash flows and growth opportunities.

Nguyen (2005) investigated the hypothesis that cash balances have a precautionary motive and serve to mitigate the volatility of operating earnings. A sample of 9168 firms-year observations from Tokyo Stock Exchange over the period of 1992 to 2003 was obtained. By applying regression analysis their results demonstrated that cash holdings are positively related with firm level risk, but negatively related to industry risk, cash holdings were found to be decreasing with the firm's size and debt ratio, and increasing with its profitability, growth prospects, and dividend payout ratio.

Hofmann (2006) investigated the determinants of corporate cash holdings of non-financial firms in New Zealand. He found the main determinants of corporate cash holdings growth opportunities, availability of liquid asset substitute, cash flows variability, dividend payments and leverage in New Zealand firms. Cash holdings are positively associated with growth opportunities and cash flows while cash holdings are negatively associated with large dividend payments and liquid asset substitutes.

Saddour (2006) observed a sample of 297 publicly traded French firms for the period of 1998-2002, through Regression analysis. Saddour endow that when activities are risky and the levels of their cash flow are high then French firms increase their cash level, and reduce it when they are highly leveraged. Mature companies hold lower cash levels than growing companies. For growing companies, there is a negative relationship between cash and the following firm's characteristics: size, level of liquid assets and short term debt. The cash level of mature companies increase with their size, their investment level, and the payout to their shareholders in the form of dividends or stock repurchases, and decreases with their trade credit and their expenses on research and development.

Afza & Adnan (2007) consenter at preserving appropriate level of liquidity for pleasant operations of firms. They collected data of 205 public limited companies from 1998 to 2005. They endow negative relationships between market-to-book ratio, net working capital, leverage, dividends, and cash holdings, and positive relationships between firm size, cash flow, and cash holdings. They showed that firm size, cash flow, cash flow uncertainty, net working capital, and leverage significantly affect the cash holdings of non-financial firms in Pakistan.

Chen & Mahajan (2010) consenter on determining the corporate cash holdings of 15 European Union (EU) countries and 31 non-EU countries for the period of 1994 to 2004. Their findings reveal that corporate governance variables such as anti-director rights, closely held shares and creditor rights are important in determining corporate cash holdings.

Daher (2010) collected data sample from public and private firms (more than 60,000 firms) for the purpose of studying the factors affecting the cash holdings over the period 1985- 2005. The study involves that an increasing cash holding ratio of private firms, almost double between 1994 and 2005.They focused on the relationship between cash holdings and different variables and found that cash holdings are negatively associated with net working capital, firm size, leverage, capital expenditures and cash flows.

Kim et al. (2011) investigated a panel data set a sample of 125 publicly traded US restaurant firms over the period 1997-2008.The study shows that restaurant firms with greater investment opportunities tend to hold more cash. The findings explain that precautionary and transaction motives are important in determining cash

holdings. They describe that large restaurant firms hold liquid assets other than cash, firms with higher capital expenditures, and firms paying dividends were shown to hold less cash.

Gill & Shah (2011) collected data from 166 Canadian firms for a period of 3 years (from 2008 to 2010) to study the determinants of corporate cash holdings in Canada. By applying co relational and non-experimental research design results demonstrated that leverage, CEO duality, net working capital and board size increase cash holdings and net working capital, market to book ratio and firm size bring down the corporate cash holdings and relationship between dividend and cash was non-significant.

Benjamin & Samuel (2012) collected data sample from 1999-2008 of Ghana listed companies. The purpose of the study is to find the relationship between bank cash holdings and the net working capital. They used the random effects technique for the analysis of findings and found that profitability has positively significant relationship with cash holdings. They determined that bank size, capital, cash conversion cycle and collection period of debtors was negatively related with cash holdings of bank.

Ogundipe et al. (2012) used dataset of 54 Nigerian firms listed on Nigerian stock exchange for a period of 15 years from (1995-2010). This study applied co-relational research design. They found that cash flow, net working capital, leverage, investment in capital expenditures and profitability has significant impact on corporate cash holdings in Nigeria.

Islam (2012) investigated the determinants of corporate liquidity holdings of manufacturing firms in Bangladesh. A sample of 54 manufacturing companies listed on Dhaka Stock Exchange for a period of 4 years (from 2006-2010) was selected. Through regression analysis they found that current asset, operating income, intangible asset, leverage ratio, size, short term debt, total debt, net cash and tangibility ratio have significant relationship with cash hold by the manufacturing firms whereas net working capital, Tobin's Q and Volatility of cash flow do not have significant relationship with cash hold by the firms.

Zia-ul-Hannan & Nadia (2010) used sample of 22 non-financial firms listed at KSE over the period of 2005 to 2010. Dependent variable was cash while independent variables were bank debt, leverage, cash flow, liquidity, market to book, size, variability, and dividend. They found a negative relationship between corporate governance and cash holdings from non-financial firms.

Sara & Qaisar (2013) collected data of 395 non financial companies of Pakistan listed at Karachi Stock Exchange over the period of 2005-2011. To conduct analysis descriptive statistics, Pearson correlation, multiple regression and ANOVA were used. The results showed significant relationship between cash holdings and working capital, leverage and cash conversion cycle except sales growth.

Theoretical Framework:
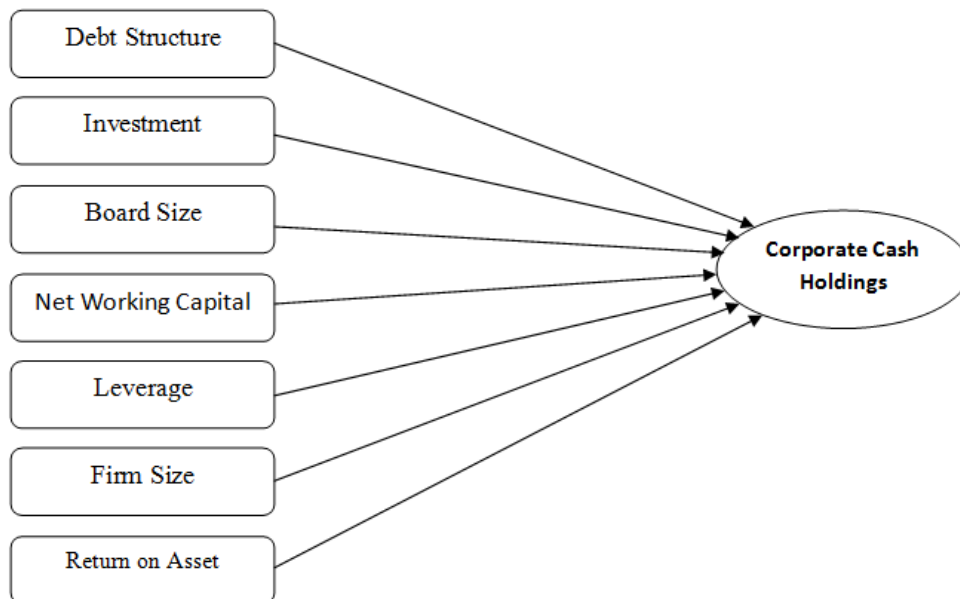
III. Methodology

Cash holdings provide firms the convenience of undertaking their profitable investments projects without confronting high transaction cash of external financing. Thus accumulating cash would provide an advantage of profitable investment. Therefore we analyze, in particular, the determinants of cash holdings by

taking sample of non financial firms in Pakistan. We study the determinants of cash holding using OLS Regression model and panel data.

Sample size:

For our analyses we used sample of 50 Public Limited companies listed at Karachi Stock Exchange over the period of 2012-2014. Data is mentioned in terms of Pakistani rupees. We excluded the financial firms for obvious reason that their capital structure is different from non financial firms.

For remaining consistent with the major previous studies, all the instruments related to determinants of corporate cash holdings were taken from Afza and Adnan (2007) except board size, investment and debt structure. The measurement of independent and dependent variables as follows.

Variables	Description
	Dependent Variable
Cash	Cash and cash equivalents/ Book value of asset-Cash and cash equivalents
	Independent variables
NWC	Net currents assets-Cash and cash equivalents/ Total assets - Cash and equivalents
LVRG	Debt / Total assets - Cash and equivalents
FS	Natural log of Sales
BS	Number of directors serving on the board
DS	Short term debt/ Total assets
INV	Fixed asset / Net total asset.
ROA	Net profit / Net total asset.

For firm *i* in year *t*, our regression model is as follows:

$$CASH_{it} = \alpha_0 + \alpha_1 DS_{i,t} + \alpha_2 SIZE_{i,t} + \alpha_3 BS_{i,t} + \alpha_4 NWC_{i,t} + \alpha_5 LEV_{i,t} + \alpha_6 ROA_{i,t} + \alpha_7 INV_{i,t} + \varepsilon_{it}$$

α_0 is the intercept

$\alpha_1 - \alpha_7$ are the independent variable coefficients

ε_{it} is the error term

Descriptive Statistics

Table 1:

	Cash	DS	INV	LVRG	NWC	ROA	Firm Size	BS
Mean	-4.07912	0.414222	0.496004	0.588199	0.465159	0.064940	22.81200	2.054597
Median	-3.99008	0.360242	0.517085	0.559228	0.452564	0.063125	22.74131	2.079442
Maximum	-0.19584	1.429146	1.131765	2.157235	0.972147	0.369358	27.81328	2.564949
Minimum	-9.7512	0.001592	0.003551	0.002702	0.000936	-1.0567	18.34774	1.609438
Std. Dev	1.779347	0.240087	0.239957	0.272781	0.242588	0.128662	1.772172	0.159458
Skewness	-0.26517	0.950916	-0.09579	1.238695	0.278389	-4.27221	0.097938	0.653001
Kurtosis	2.867234	4.102630	2.366864	8.749750	2.191573	40.17139	3.357378	4.678250
Jarque-Bera	1.868094	30.20475	2.734757	244.9818	6.022228	9091.995	1.038039	28.26351
Probability	0.392960	0.000000	0.254774	0.000000	0.049237	0.000000	0.595104	0.000001
Sum	-611.869	62.13334	74.40057	88.22989	69.77383	9.741033	3421.800	308.1896
Sum Sq. Dev.	471.7452	8.588627	8.579320	11.08703	8.768517	2.466539	467.9485	3.788615
Observations	150	150	150	150	150	150	150	150

Table 1 shows descriptive statistics of the collected variables. The explanation on descriptive statistics is as follows:

Total observations: 50 x 3 = 150 Non financial firms

a) CASH (Corporate cash holdings) Average= -4.079 (Standard deviation 1.779347 and range from -9.7512 to-0.19584)

b) DS (Debt structure) Average = 0.414 (Standard deviation 0.240087and range from 0.001592 to1.429146)

c) INV (Investment) Average = 0.496 (Standard deviation 0.239957and range from 0.003551to1.131765)

d) LVRG (Leverage) Average = 0.588(Standard deviation 0.272781and range from 0.002702 to 2.157235)
e) NWC (Net working capital) Average = 0.465 (Standard deviation 0.242588 and range from 0.000936 to-0.972147)
f) ROA (Return on Asset) Average = 0.064 (Standard deviation 0.128662and range from -1.0567 to 0.369358)
g) FS (Firm size) Average = 22.81 (Standard deviation 1.772172 and range from 18.34774 to 27.81328)
h) BS (Board size) Average = 2.05 (Standard deviation 0.159458 and range from 1.609438 to 2.564949)

Correlation Analysis:

Table 2:

	Cash	DS	INV	LVG	NWC	ROA	Size	BS
Cash	1.0000	0.066779	-0.248393	-0.046499	0.379923	0.150852	0.345798	0.256142
DS	0.066779	1.000000	-0.368566	0.780635	0.455814	-0.460851	0.267352	-0.067531
INV	-0.248393	-0.368566	1.000000	-0.142100	-0.833850	-0.128342	-0.489127	-0.169617
LVG	-0.046499	0.780635	-0.142100	1.000000	0.225153	-0.568807	0.062945	-0.093380
NWC	0.379923	0.455814	-0.833850	0.225153	1.000000	0.140206	0.419678	0.196420
ROA	0.150852	-0.460851	-0.128342	-0.568807	0.140206	1.000000	0.151252	0.117805
SIZE	0.345798	0.267352	-0.489127	0.062945	0.419678	0.151252	1.000000	0.160288
BS	0.256142	-0.067531	-0.169617	-0.093380	0.196420	0.117805	0.160288	1.000000

Table 2 depicts the correlation among variables. Correlation explains the relationship between variables e.g. how change in one variable causes change in other variable. A "correlation coefficient" is a value that indicates whether there is a linear relationship between two variables. The absolute value of the correlation coefficient will be in the range 0 to 1.

The result in table 2 below shows positive relationship between cash holding and DS, ROA, NWC, BS and firm size and negative relationship with INV and Leverage. There is positive relationship between Cash and NWC (r=0.3799). Higher NWC, higher will be the cash holding of the firms. Firm size has positive relationship with cash holdings (r=0.3458). The analysis further shows that there is a negative association between Cash and Leverage (r=-0.0465).

Regression analysis:
Regression Line:
CASH = -19.35444 - 0.657076DS + 0.289790SIZE + 3.102101 BS + 4.235029NWC -0.629742LEV - 1.042314ROA + 2.056221INV + ε_{it}

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DS	-0.657076	0.997414	-0.658780	0.5111
INV	2.056221	0.922172	2.229758	0.0274
LVG	-0.629742	0.797561	-0.789585	0.4311
NWC	4.235029	0.988301	4.285162	0.0000
ROA	-1.042314	1.301691	-0.800739	0.4246
SIZE	0.289790	0.095427	3.036776	0.0029
BS	3.102101	0.885053	3.504988	0.0006
C	-19.35444	2.870251	-6.743116	0.0000
AR(1)	0.502473	0.074090	6.781941	0.0000

R-squared	0.734707	Mean dependent var	-4.088341
Adjusted R-squared	0.7002405	S.D. dependent var	1.781752
S.E. of regression	1.377370	Akaike info criterion	3.536731
Sum squared resid	265.6008	Schwarz criterion	3.718177
Log likelihood	-254.4864	Hannan-Quinn criter.	3.610449
F-statistic	13.45742	Durbin-Watson stat	1.963323
Prob(F-statistic)	0.000000		

Dependent Variable: CLOG
Method: Least Squares
Date: 25/11/15 Time: 12:56
Sample (adjusted): 2 150
Included observations: 149 after adjustments

Dependent Variable: Cash
Independent Variable: DS, INV, LVG, NWC, ROA, Size, BS

The results in table 3 depict the regression analysis. The ordinary least square (OLS) regression analysis was used to conduct data analysis. R Square value is .73 it means independent variables are explaining 73% of dependent variable. The diagnostic test carried out to find out the auto-correlation in the residuals was Durbin Watson. The value 1.963 implies that in this model no auto-correlation exists in the residual. Prob (F-statistics) value is 0.00000000 it means our results are jointly significant.

Our results show that cash level increases significantly with firm size, board size, net working capital and investment. Firm size, board size, net working capital and investment increases the cash holdings of non financial firms. Debt structure, leverage and return on asset are non significant and have negative association with cash holdings.

Some of our results are consistent with previous empirical evidence and some of them do not confirm the findings of previous studies. We find that A positive and significant relationship find between net working capital and cash holdings. The findings are supported by (Amarjit Gill and Charul Shah (2012)). Relationship between investment and cash holdings is significant and positive. When firms have more cash they get the opportunity of investing more conveniently. Our results are similar to (Lawrence et al. 2012 these findings are also in accordance with trade off theory, pecking order theory and transaction cost motives.

We find a significant and positive relationship between cash holdings and firm size. Large firms tend to hold more cash. Our findings are supported by the findings of (Afza & Adnan 2007)).

A negative and non significant association found between cash holdings and leverage it means cash holding decreases when firms increase leverage. These results are opposite to the previous empirical studies. (Afza & Adnan (2007), Ferreira and Vilela (2004), Saddour (2006)). Debt structure and return on asset also have negative and non significant with cash holdings. These results are Contrast to previous findings of (Lawrence et al. 2012). When board size increases it increases the cash holdings of firms. According to earlier findings a direct and significant relationship exists between two variables (Gill & Shah (2012).

IV. Conclusion And Recommendations

Findings suggest that firms in Pakistan hold substantial amount of cash and cash equivalents. Investment, net working capital, firm size and board size significantly affects the cash holdings in Pakistani non financial firms. In contrast to previous findings a negative and non significant association found between debt structure, leverage and return on asset with cash holdings. The study also endorses the statement that board size is crucial determinant of corporate cash holdings.

According to Ferreira and Vilela (2004) cash reduces the burden to perform well and allows managers to invest in projects that best suit their own interests. This may be one of the reasons that larger board size cash holdings in Pakistani firms which may not be in the shareholders best interest. Hardin III *et al.* (2009) explain that less cash in the organizations reduce agency problems. Therefore, Pakistani firms must use an optimal board size based on size of the firm.

The results of this study generally support the trade-off theory off and pecking order theory. Precautionary and transaction motives play important roles in explaining the determinants of cash holdings for Pakistani firms.

Future researches should explore the influence of corporate cash holdings on firm's performance. They may also consider the impact of independent non-executive directors, audit committee and institutional shareholders on corporate cash holdings.

Reference

[1].   Yeboah, Benjamin, and Samuel Kwaku Agyei
        2012   Working Capital Management and Cash Holdings of Banks in Ghana. European Journal of Business and Management 4(13): 120–130.
[2].   Ogundipe, Lawrencia Olatunde, Sunday Emmanuel Ogundipe, and Samuel Kehinde Ajao
        2012   Cash Holding and Firm Characteristics: Evidence from Nigerian Emerging Market. Journal of Business Economics and Finance 1(2): 45–58.
[3].   Ozkan, Aydin, and Neslihan Ozkan
        2004   Corporate Cash Holdings: An Empirical Investigation of UK Companies. Journal of Banking & Finance 28(9): 2103–2134.
[4].   Kim, Jiyoung, Hyunjoon Kim, and David Woods
        2011   Determinants of Corporate Cash-Holding Levels: An Empirical Examination of the Restaurant Industry. International Journal of Hospitality Management 30(3): 568–574.
[5].   Gill, Amarjit, and Charul Shah
        2012   Determinants of Corporate Cash Holdings: Evidence from Canada. International Journal of Economics and Finance 4(1): 70.
[6].   Anjum, Sara, and Q. Malik
        2013   Determinants of Corporate Liquidity: An Analysis of Cash Holdings. Journal of Business and Management 7(2): 94–

100.

[7].   Naiwei Chen, Arvind Mahajan
         2010   Effects of Macroeconomic Conditions on Corporate Liquidity—International Evidence. International Research
         Journal of Finance and Economics 35.
[8].   Besley, Scott, and Eugene Brigham
         2007   Essentials of Managerial Finance. Cengage Learning.
[9].   Nguyen, Pascal
         2006   How Sensitive Are Japanese Firms to Earnings Risk? Evidence from Cash Holdings. Evidence from Cash Holdings
         (June 2006).
[10].   Impact of Corporate Governance on Corporate Cash Holding: Evidence from Non-Financial Firms in Pakistan | IOSR Journals -
         Academia.edu
         N.d.
         http://www.academia.edu/4857773/Impact_of_Corporate_Governance_on_Corporate_Cash_Holding_Evidence_from_Non-
         Financial_Firms_in_Pakistan, accessed May 18, 2016.
[11].   Islam, Sohani
         2012   Manufacturing Firms' Cash Holding Determinants: Evidence from Bangladesh. International Journal of Business and
         Management 7(6): 172.
[12].   Myers, Stewart C.
         1984   The Capital Structure Puzzle. The Journal of Finance 39(3): 574–592.
[13].   Daher, Mai
         2010   The Determinants of Cash Holdings in UK Public and Private Firms. LANCASTER UNIVERSITY
         MANAGEMENT SCHOOL LANCASTER.
[14].   Ferreira, Miguel A., and Antonio S. Vilela
         2004   Why Do Firms Hold Cash? Evidence from EMU Countries. European Financial Management 10(2): 295–319.
[15].   Hofmann, C.
         2006   Why New Zealand Companies Hold Cash: An Empirical Analysis. Unpublished Thesis.
[16].   Keynes, John Maynard
         2007   General Theory Of Employment , Interest And Money. Atlantic Publishers &s Dist.