Corporate Cash Holdings: A Growth and Mature Firm Perspective in Pakistani Context

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Abstract

Purpose: Present study aims to investigate the determinants of cash holdings of Pakistani Firms over the period (2003-2008) in terms of traditional theories like Trade off theory and Pecking order theory but with the distinction of mature and growth firms. The study seeks to find out that cash determinants must be different for growth and mature firms depending upon the firm specific factors like: investment expenditures, dividend payment, size, cash flow volatility, level of liquid assets, cash flows, working capital and fix assets.

Methodology: Tobin's Q is use as a proxy for firm growth opportunities and firms who are above from the median TQ of that year are considered as growth firms and those who are below from the median are considered as mature firms. Using different regression approaches like cross sectional and Penal data including the fixed effect and random effect the study addresses the above questions.

Findings: The study finds out that for the overall sample of Pakistani firms cash holdings increase because of higher cash flows, cash flow volatilities and higher capital expenditure requirements and it has negative relation with leverage, liquid asset substitute of cash and fix assets. Descriptive statistics show that cash holdings of growth firms are almost double than that of mature firms. The determinants of growth and mature firms are the same as whole sample except that dividend payment is negative and significant only for growth firms and size is negatively associated with mature firms.

Practical implications: It will provide important insights for investors and will also contribute to the field of management sciences.

Originality: This would be first study in answering above questions in Pakistani context.

Keywords: Cash Holdings, Mature and Growth firm, Firm value, Penal data

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I. Introduction:

According to Kim, Mauer and Sherman (1998) and Harford (1999) approximately eight percent of firm's total assets are comprised of cash and marketable securities in US even when those assets provide only a nominal return and investors do not value them then why do firms hold so much cash (Wan and Fadulker; 2006). Is there any optimal level of cash? How does it affect firm value and performance?

Most of the knowledge about cash holdings has mostly been derived from data of developed economies that have many institutional similarities while little has been done in terms of developing market context. Kim, Mauer and Sherman (1998) analyzed the determinants of cash holdings for a sample of US companies. They report that firms facing higher costs of external financing, having more volatile earnings, and those firms with relatively lower returns on assets hold significantly larger liquid assets. For similar firms, Opler, Pinkowitz, Stulz and Williamson(1999) provide evidence that small firms and firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total non-cash assets, and firms that have the greatest access to the capital markets, such as large firms and those with high credit ratings, tend to hold lower ratios of cash to total non-cash assets. Pinkowitz and Williamson (2001) examine the cash holdings of firms from the United States, Germany, and Japan . In addition to the findings similar to those in Opler, they document that the monopoly power of banks has a significant impact on cash balance. Ozkan (2004) investigated the empirical determinants of corporate cash holdings for a sample of UK firms. They suggest that ownership structure of firms plays an important role in determining cash holdings of UK companies. And they also reveal that firms' growth opportunities, cash flows, liquid assets, leverage and bank debt are important in determining cash holdings. Then Drobetz et al (2007) investigated the determinants of cash in Switzerland with the argument that governance practices are some what different here than in US/UK and results support agency explanation.

In Pakistani context Shah (2010) cited that annual report of OGDC shows a whooping cash balance of Rs. 19 billion in the year 2003 which further inflated to Rs. 25 billion in the year 2004. Not only the magnitude of OGDC's cash holdings is huge, the cash-to-total assets ratio is also very high. The cash-to-total assets ratio is 22.89% and 26.38% in the year 2003 and 2004, respectively. Similarly, FFC has Rs. 3.1 billion and Rs. 4.1 billion assets in the form of cash and cash equivalents in the year 2003 and 2004 respectively.

As reported by Afza and Adnan (2007) the mean cash ratio for a sample of Pakistani firms is about 13.5% for the period (1998-2005). These statistics are very close to US firms' mean cash ratio of 17% as reported by Opler et al (1999) and the European firms' mean cash ratio of 14.8% as reported by Ferreira and Vilela (2004). Later Shah (2010) reported the average cash ratio for a sample of 370 firms listed on Karachi Stock Exchange over the period from 2000 to 2004 is 8.61%. Kim et al. (1998) found that the average cash ratio for US firms is 8.1%. Ozkan and Ozkan (2004) report that average cash ratio for UK firms is 9.9%. These evidences show that cash ratios in Pakistan are quite high like in other developed countries and act as an important research question which needs to be answered because corporate insiders are supposed to take a step which maximizes the wealth of outside shareholders but piling up firm's asset in to least productive one is difficult to justify.

According to Drobetz et al (2007) firms whose values are mainly determined by growth options should have larger cash reserves to avoid foregoing some profitable investment opportunities. These firms are considered as having higher information asymmetries that's why they avoid accessing external financial resources. Therefore, it is valuable to build up financial slack (Myers, 1984). In order to test this phenomenon following Soudder (2006), determinants of cash holdings are examine by dividing the whole sample in to two sub samples i.e growth firms and mature firms. This paper is one of the first papers in investigating the determinants of corporate cash holdings for the whole sample and then in terms of growth and mature firm in Pakistani context.

For present study a sample of 261 KSE listed Pakistani firms are taken for the period (2003-2008) then firms are categorized as growth and mature firms on the basis of their growth opportunities proxied by Tobin's Q for each year. The data is penal in nature and cross sectional and penal data regressions are applied.

Paper is organized as follow. In section II, there is literature review, in section III there is data description and hypothesis formulation, section IV presents methodology, section V describes Empirical tests and Result, section VI shows conclusion.

II. Literature Review:

In the frictionless world of Miller and Modigillani there are no optimal cash levels and firms could have raise funds any time whenever they found that internal funds are in sufficient for their daily operations and for financing positive NPV projects. Under these circumstances, firms are not expected to hold cash as these holdings do not create any shareholder wealth. As opposed to perfect capital market's predictions, literature shows that US. firms as well as European firms hold significant amounts of cash on their balance sheets (e.g. Kim *et al.,* 1998; Opler et al., 1999; Dittmar et al., 2003 and Ferreira and Villela, 2004). However in reality there exists market imperfections in the form of information asymmetries, agency problems, transaction cost and costs of financial distress which induces firms to hold cash and there are optimal levels of cash as well that balances costs and benefits and maximizes value of the firm (Opler et al; 1999).
As discussed earlier there are two main theories which describe optimal cash level (1) Trade off theory (2) Pecking order Theory.

Trade off Theory:

Transaction cost Motive:

According to this theory there are benefits and costs associated with holding cash. According to trade off theory there is optimal cash level which is that point where the benefits associated with holding cash become off set by their costs. Benefits include that it act as safety buffer which avoid firm to go to financial markets for raising fund or liquidating existing assets for financing their growth opportunities. This is because they have to incur lots of financing costs. Its cost include low pecuniary return, tax disadvantage from shareholders point of view i.e If a firm holds liquid assets, the accrued interest income is taxed twice and shareholders could earn a higher pre-tax return from holding these securities directly.

Agency Cost of Managerial Discretion:

In case of large amounts of cash there are costs associated with managerial discretion because now they have larger assets under their control (Jenson; 1976). Cash allow them to make investment that capital market would not be willing to finance. So excess cash help them to avoid the discipline of capital markets.

Precautionary Motive:

It states that since firms operate in imperfect markets so it is not always possible that they can access cash easily whenever they want due to information asymmetry and agency cost of debt as a result they have to forgo good investment opportunities. Myers and Majluf (1984) suggest that asymmetric information between managers and investors makes external financing costly. In the presence of adverse selection costs, securities may be mispriced, and firms prefer internal over informationally sensitive external finance. If adverse selection costs become extreme, a firm may find it more profitable not to sell securities and even to forego investments. Therefore, it is valuable to build up financial slack.

Agency cost of debt:

It arises when the interests of shareholders deviate from the interests of debt holders or among different classes of debt holders. Moral hazard problems make it difficult and expensive for highly leveraged firms to raise additional debt and/or renegotiate existing debt contracts to prevent bankruptcy. Jensen and Meckling (1976) argue that these firms have strong incentives to engage in asset substitution, making debt more expensive both in terms of the required yield and in terms of the covenants attached to the debt. Moreover, highly leveraged firms will likely suffer from under investment problem, where the old shareholders have little incentive to provide additional equity capital even when a firm has profitable investment projects because the cash flows from these investments disproportionately accrue to the creditors. In both cases agency costs of debt are so high that firms cannot raise funds and forego profitable investment projects.

Pecking Order Theory:

Within the second theory, the financing hierarchy model, asymmetric information can lead to pecking order behavior (Meyers and Maljuf, 1984). This theory predicts that there is no optimal amount of cash and firms adjust their cash levels in response to their internally generated funds and investment needs. Under this theory, the cash level would just be the result of the financing and investment decisions. According to this theory issuing new securities is very costly for firms because of information asymmetries. When operational cash flows are high, firms use them to finance new profitable projects, to repay debts, to pay dividends and finally to accumulate cash. When retained earnings are insufficient to finance new investments, firms use their cash holdings, and then issue new debt and finally when they got out of their debt servicing capacity they will issue securities.

III. Data Description and Hypothesis:

Data:
Present study is based on Pakistani firms listed in Karachi Stock Exchange over the period (2003-2008). The data is taken from "Balance Sheet Analysis of Joint Stock Companies Listed on Karachi Stock Exchange (2003-2008)", a publication of State Bank of Pakistan. The publication provides information about Balance Sheets and Income Statements of all the listed non-financial firms.
For the present study all the listed firms in the Karachi Stock Exchange are included except for the financial firms and firms with negative equity. After excluding those firms final sample consist of a penal of 261 firms and a total of 1566 firm year observations with 684 observations of mature firms and 732 observations of growth firms for the year (2003-2008).

Variables:

Following earlier studies (Opler et al, 1999; Drobetz et al, 2004 and Saddour, 2006) variables are define as follows:

Cash:

Cash is the main dependent variable which is taken as a ratio of cash and cash equivalents to net assets, where net assets are computed as total assets less cash and cash equivalents.

Other independent/ explanatory variables are as follows:

Growth Opportunities:

For estimating a firm's growth opportunities Tobin's Q is use which is the ratio of market value of equity plus the book value of debt, divided by the book value of assets, the median value of Tobin's Q in sample is .94 for mature firms it is .79 and for growth firms it is 1.25. If a firm has enough growth opportunities then the expected losses would be more due to forgoing growth opportunities because of cash shortages. Moreover growth opportunities can hardly be liquidated in case of bankruptcy and will lose most of the value. Therefore, the firms with more growth opportunities have the incentive to hold more cash. In addition to this growth firms are also characterized by high degree of information asymmetry and according to pecking order theory it is more costly for them to raise external funds. So these explanations suggest a positive relationship between cash holdings and growth opportunities.

Hypothesis 1: Cash holdings are positively related to firm's growth opportunities.

Tangibility:

Ratio of fixed to total assets is use as a proxy for assets tangibility. The median firm in whole sample has 82% of their assets in the form of fix assets. For growth firms it is 76% and for mature firms it is 85%. It can be said that firm's with more tangible assets can be expect to hold less liquidity because fix assets can be sold in case of cash shortfall. Moreover according to Titman and Wessels (1988) firms with more collateral encounter fewer problems to issue debt and thus they have less need to build up cash reserves.
Hypothesis 2: Cash holdings have negative relation with firm's fix assets

Dividend Payments:

In order to see whether dividend payments have any impact on firm's liquidity dividend dummy is use which takes the value of 1 for the firm years in which it pays dividend and 0 otherwise. From the descriptive statistics it can be seen that in whole sample firm's 43% of them are dividend payers. Among mature firms 25% of them pay dividend and in case of growth firms the percentage is 62. It can be hypothesized that dividend paying firms can have easy access to capital markets because they are better monitored and dividend cuts justifies lower cash holdings by dividend paying firms (Opler et al; 1999). Thus the proposed relationship between the two is negative. Contrary to this it can also be argued that dividend paying firms hold larger amounts of cash in order to avoid situations of dividend cut. In this case the relationship would be positive. So the predicted relationship between the cash holdings and dividend payments is not clearly determined under the trade-off model. For the present study negative relationship is expected between cash holdings and dividend payments.

Hypothesis 3: Cash holdings are negatively related to dividend payments.

Cash Flow Volatility:

Cash flow volatility is measured as the standard deviation of the firm's cash flow over the period of study. It is well argued in literature that cash flow volatility could affect a firm's cash holdings. Firms tend to hold more liquid assets if their industry average cash flow volatility is higher (Opler et al, 1999). Mikkelson and Partch (2003) show that firm's that consistently hold larger cash reserves do not underperform when compared with their peer firms. Therefore it can be said that firms use internally generated funds to hedge against future cash flow uncertainty and to increase their cash holdings in response to increase in cash flow volatility.

Hypothesis 4: Cash holdings are positively related to cash flow volatility

Cash Flow:

Cash flow is measured as net operational income plus depreciation and for present study cash flow to net asset ratio is use. Firms with higher cash flows/profitability use them for building liquidity to finance their investments, thus they tend to hold more cash (Opler et al., 1999; Ferreira and Villela, 2004).

Hypothesis 5a: Cash holdings are positively related with cash flows.

Contrary to this it can also be argued that if cash and cash flows are substitutes and firms use profits to repay debt, there should be negative relationship as proposed by Kim et al. (1998).

Hypothesis 5b: Cash holdings are negatively related with cash flows.

Liquid Asset Substitute:

The ratio of net working capital to net assets is use as a proxy for liquid asset substitute of cash**.** It is argued that liquid assets other than cash can be converted easily in to cash and therefore use as substitutes of cash holdings (Opler et al, 1999). Thus it is argued that there would be negative relationship between cash holdings and liquid asset substitute of cash.

Hypothesis 6: Cash holdings are negatively related with net working capital ratio.

Investment:

Investment is measured as ratio of capital expenditures and net assets. For the whole sample the median of capital expenditure is 1%. For mature firms it is 1% and for growth firms it is about 5%. Under trade off theory it is argued that cash holdings enable firms to avoid costly external funds and thus to undertake their profitable investment project.

Hypothesis7a: Cash holdings are positively related with investment level.

Under pecking order view it is argued that for firms with high investment level must use their internal funds first which include cash as well. So negative relationship is expected between the two variables.

Hypothesis 7b: Cash holdings are negatively related with investment level

Leverage:

Leverage is calculated as a ratio of total debt to total assets. Leverage of median firm in whole sample is 62% which is very high. For median mature firm it is 62% and for median growth firm it is 59%. Under trade off theory explanation of leverage firms with less leverage must accumulate cash in order to avoid capital market monitoring. Moreover, debt can also be seen as a substitute of cash for financing firm's investment opportunities. So negative relationship is expected between cash and leverage. Contrary to this explanation it can also be argued that debt ratio can be considered as a proxy for the ability of firm to issue new debt. Thus highly leveraged firms have an easier access to capital markets and hold less cash. But at the same time debt also increase the probability of financial distress and bankruptcy and to reduce this probability firms with higher leverage are expected to hold more cash. So, the predicted relationship between leverage and cash holdings is not clearly determined under the trade off model. According to pecking order theory when investment needs are high and exceed retained earnings firm issue new debt. Thus leverage increases when cash holdings fall. However, when investment needs are less than retained earnings firms repay their debt and accumulate cash.

Hypothesis 8a: Cash holdings are positively related with leverage.

Hypothesis 8b: Cash holdings are negatively related with leverage.

Size:

Size is measured as the natural logarithm of firm assets. Larger firms have high level of operational cash flow. Therefore they increase their cash holdings and the relationship between cash holdings and size is expected to be positive (Opler et al., 1999).

Hypothesis 9a: Cash holdings are positively related with firm size

Due to economies of scale it is cheaper for the large firms to issue securities and in addition to this larger firms exhibit fewer information asymmetries and face lower costs of external financing than small firms (Drobetz et al, 2007). On the basis of this explanation it is propose that:

Hypothesis 9b: Cash holdings are positively related with firm size

IV. Methodology:

Following the methodology applied by Saddour (2006) the aim of present study is to determine the determinants of cash holdings in terms of growth and mature firms. For that whole sample is divided in to two sub samples: growth firms and mature firms. Tobin's Q is use as a proxy for growth opportunities. It is measure as the ratio of market value of equity plus the book value of debt to the book value of assets. For a given year growth firms are the firms with Tobin's Q greater than the median for that year and mature firms are those with TQ lower than the median firms.

In order to study the determinants of cash holdings cross sectional regression, fixed effect regression and Random effect regressions are applied (Opler et al, 1999; Drobetz et al, 2004 and Saudder, 2006).

V. Empirical Tests and Results

Table 1: Descriptive Statistics

Whole Sample								
	Mean	**Max.**	**.75 Quantile**	**Median**	**.25 Quantile**	**Min**	**Std.Dev**	N
Cash ratio	0.193	10.91	0.1400	0.0358	0.0078	0	0.6174	1566
CAPEX	0.011	1.198	0.0663	0.0129	-0.0273	-2.6606	0.2678	1566
TQ	1.1058	6.7083	1.2467	0.9477	0.7907	0.05	0.604	1566
CFV	422.85	15028.14	270.1951	86.5141	36.6098	0	1203.404	1566
CF/NA	0.1777	26.64	0.1954	0.1172	0.0679	-0.929	0.7	1566
nwc/na	-0.0723	0.8349	-0.1842	-0.0569	0.0589	-2.3	0.2817	1566
Leverage	0.5883	1.1014	0.7382	0.6218	0.4730	0.0037	0.2004	1566
Div dummy	.4361	1	1	0	0	0	.496	1566
SIZE	7.4397	12.1404	8.4530	7.2904	6.3809	3.1223	1.499	1566
Fix asset	0.816	2.1194	1.0316	0.8231	0.6029	0	0.3415	1566
Mature Firms								
Cash ratio	0.1344	10.911	0.0720	0.0202	0.0052	0	5653	684

CAPEX	0.0316	1.6933	0.0698	0.0134	97.825	-0.0226	0.1936	684
TQ	0.7609	1.6694	0.8745	0.7908	0.6750	0.05	0.1947	684
CFV	131.37	260.73	148.6977	65.43	23.8498	0	257.26	684
CF/NA	0.1403	26.64	0.1312	0.0876	0.0489	-0.929	1.0248	684
nwc/na	-0.0518	0.8349	0.0284	-0.0675	-0.1767	-2.3	0.2423	684
leverage	0.5814	0.9828	0.7325	0.6266	0.4751	0.0037	0.2078	684
Div dummy	0.8589	2.1194	1.0408	0.8519	0.6715	0	0.3209	684
SIZE	7.0724	10.581	7.8498	7.0202	6.3119	3.7062	1.2011	684
Fix asset								
Growth Firms								
Cash ratio	0.2676	7.045	0.2218	0.0702	0.0152	0.0001	0.7031	731
CAPEX	0.0884	2.8332	0.1291	0.0515	0	-1.7862	0.2501	731
TQ	1.4552	6.7083	1.6454	1.2501	1.0384	0.2928	0.7035	731
CFV	678.62	15028.14	540.4581	133.64	56.8129	2.4334	1624.23	731
CF/NA	0.2286	3.3044	0.2939	0.1736	0.10302	-0.2378	0.2443	731
nwc/na	-0.0754	0.6203	0.0983	-0.0397	-0.1756	-2.098	0.3139	731
leverage	0.5761	0.9967	0.72020	0.5924	0.4566	0.0758	0.1908	731
Div dummy	0.62158	1	1	1	0	0	0.4853	731
SIZE	7.7396	12.1404	8.8886	7.6837	6.5424	3.1223	1.644	731
Fix asset	0.7604	1.888	1.0035	0.7632	0.5031	0	0.3625	731

The table shows data description of 261 Pakistani nonfinancial firms over the period from (2003-2008). Results show that during the sample period, Pakistani firms hold on average, 19.3% of their net assets in cash, with a leverage of 58%, investment approximately of 1% and 43% of sample firms pay dividend. The mean book value of total assets for the sample firms are 5655 million Rs and its median is 1466 million Rs.

Mature companies hold on average 7.1% of their net assets in cash, the mean of their total book assets is about 2440 million Rs. (median is 1119) ; the mean of their leverage is about 58%. 25% of mature firms pay dividend and they spend about 3% of their net assets on capital expenditures.

Growth firms holds on average 26% of their net assets in cash, with a leverage of 57%, invest approximately 8% of its net assets and 62% of growth firms pay dividend. The mean book value of total assets for sub sample of growth firms is about 8170 million Rs. (their median is about 2173 million Rs.).

Results show that on average growth companies have considerably higher levels of cash than mature companies' i.e almost double this result initially proves the hypothesis. Moreover, they invest more have more cash and they pay more dividend. In addition to this mature companies have smaller no. of their assets in cash, they have less capital expenditure, pay less dividend and have more fix assets.

In literature there are two common ways to calculate the cash ratio. The first and most common method is to divide cash and cash equivalents by the book value of total assets (e.g., Kim et al., 1998). Other authors follow Opler et al. (1999) and normalize cash with net assets, i.e., book value of total assets minus cash and cash equivalents. In this paper cash ratio is calculated following Opler et al. (1999) and it is about 19.3% which is quite high for nonfinancial firms but it is closer to US firms' mean cash ratio of 17% as reported by Opler et al (1999) and for the

sample of Swiss firms of about 21% as reported by Drobetz et al (2007) . This higher average cash ratio is probably due to their definition of cash ratio which consists in normalizing cash to total net assets rather than total assets.

Table 2: Tests of Equality

	Cash ratio	CAPEX	CFV	CF/NA	nwc/na	leverage	Div dummy	SIZE	Fix asset
Mean	0.0001***	0.00***	0***	0.0238**	0.1161	0.6137	0***	0***	0***
Median	0***	0.00***	0***	0***	0.0779*	0.1143	0***	0***	0***

P-values are reported for the test for equality of means (Student test), and the test for equality of medians (Wilcoxon test). ***, **, * indicate coefficients significance level: 1%, 5% and 10% respectively.

Table 2 shows the descriptive statistics test of equality between the two groups of firms for their means and medians. Results show that except for networking capital ratio to net assets and leverage all the variables are significantly different from each other not only in terms of their means but also their variances. This result further justifies that two groups are significantly different from each other.

Table 3: Correlation Matrix

	Cash ratio	CAPEX	CFV	CF/NA	nwc/na	leverage	Div dummy	SIZE	Fix asset	TQ
Cash ratio	1	-0.237	0.1774	0.4415	-0.4286	-0.2420	0.1248	0.1502	-0.316	.0994
CAPEX		1	-0.027	-0.114	0.0472	0.0788	0.0881	-0.019	0.0589	0.116
CFV			1	0.1774	-0.1410	-0.0838	0.1423	0.5391	0.0057	0.1750
CF/NA				1	-0.229	-0.1179	0.0879	-0.002	-0.122	0.0901
nwc/na					1	-0.4472	0.1231	-0.184	-0.122	-0.036
Leverage						1	-0.2268	0.1172	0.0367	-0.043
Div dummy							1	0.2703	-0.240	0.3334
SIZE								1	-0.201	0.1924
Fix asset									1	-0.104
TQ										1

Table 3 shows correlation coefficients calculated with the values of the sample of 261 Pakistani nonfinancial firms over the period 2003-2008.

Table 4: Regression Results

Whole Sample

	cross sectional	Pooled	Fixed Effect	Random Effect
intercept	1.430121*** **(0.00)**	1.380968*** **(0.00)**		1.146201*** **(0.00)**
CAPEX	-0.29956*** **(0.00)**	0.550452*** **(0.00)**	0.459931*** **(0.00)**	0.454692*** **(0.00)**
CFR	0.158803*** **(0.00)**	0.189206*** **(0.00)**	0.175393*** **(0.00)**	0.171412*** **(0.00)**
CFV	1.80E-05* **(0.0725)**	2.32E-05** **(.0177)**	-0.000245 **(1.00)**	3.75E-05** **(.0239)**
DIV	-0.002438 **(0.9145)**	-0.02715 **(.2188)**	0.001315 **(.951)**	0.004704 **(.815)**
LEVERAGE	-1.468629*** **(0.00)**	-1.33373*** **(0.00)**	-0.601962*** **(0.00)**	-0.960973*** **(0.00)**
NWCR	-1.384348*** **(0.00)**	-1.34419*** **(0.00)**	-1.273912*** **(0.00)**	-1.306357*** **(0.00)**
SIZE	-0.001359 **(.8724)**	-0.00834 **(.315)**	-0.046185** **(0.0276)**	-0.024025 **(.0483)**
TENG	-0.62511*** **(0.00)**	-0.59819*** **(0.00)**	-0.358438*** **(0.00)**	-0.485759*** **(0.00)**
TQ	0.014346 **(.4111)**	-0.0129 **(.4472)**	0.013684 **(.5444)**	0.016022 **(.4012)**
Adjusted R(square)	0.610437	0.628636	0.817656	0.83826
N	1566	1566	1566	1566
Whole Sample (Without TQ)				
intercept	1.441661*** **(0.00)**	1.371295*** **(0.00)**	0.45903*** **(0.00)**	1.160458*** **(0.00)**
CAPEX	-0.296178*** **(0.00)**	0.548412*** **(0.00)**	0.45903*** **(0.00)**	0.453934*** **(0.00)**
CFR	0.159521*** **(0.00)**	0.188588*** **(0.00)**	0.175252*** **(0.00)**	0.171533*** **(0.00)**
CFV	1.87E-05* **(.0604)**	2.25E-05* **(.0208)**	-0.000241 **(1.00)**	3.90E-05** **(.0186)**
DIV	0.002657 **(.9032)**	-0.03193 **(.1312)**	0.002022 **(.9245)**	0.007565 **(.7027)**
LEVERAGE	-1.468291*** **(0.00)**	-1.33529*** **(0.00)**	-0.596174*** **(0.00)**	-0.95482*** **(0.00)**
NWCR	-1.385605*** **(0.00)**	-1.3435*** **(0.00)**	-1.27344*** **(0.00)**	-1.30619*** **(0.00)**
SIZE	-0.001096 **(.8969)**	-0.00851 **(.3048)**	-0.048131** **(0.0201)**	-0.02431** **(.0463)**
TENG	-0.625878*** **(0.00)**	-0.59786*** **(0.00)**	-0.359424*** **(0.00)**	-0.48564*** **(0.00)**
Adjusted R(square)	0.610518	0.628737	0.817745	0.83844

N	**1566**	**1566**	**1566**	**1566**
Mature Firms				
intercept	1.744172*** **(0.00)**	1.744172*** **(0.00)**		1.905044*** **(0.00)**
CAPEX	0.265483*** **(.0016)**	0.265483*** **(.0016)**	0.292784*** **(0.0001)**	0.255573* **(.0011)**
CFR	0.142144*** **(0.00)**	0.142144*** **(0.00)**	0.064039*** **(0.0008)**	0.112841*** **(0.00)**
CFV	5.78E-05 **(.4274)**	5.78E-05 **(.4274)**	-0.00014 **(1.00)**	8.20E-05 **(0.3887)**
DIV	-0.03287 **(.3794)**	-0.03287 **(0.3794)**	0.01091 **(.7963)**	-0.00167 **(.9654)**
LEVERAGE	-1.50054*** **(0.00)**	-1.50054*** **(0.00)**	-1.19926*** **(0.00)**	-1.56087*** **(0.00)**
NWCR	-1.24028*** **(0.00)**	-1.24028*** **(0.00)**	-2.17189*** **(0.00)**	-1.55701*** **(0.00)**
SIZE	-0.0387** **(.0233)**	-0.0387** **(.0233)**	-0.18363*** **(0.0002)**	-0.05735*** **(0.0074)**
TENG	-0.64672*** **(0.00)**	-0.64672*** **(0.00)**	-0.6505*** **(0.00)**	-0.66647*** **(0.00)**
Adjusted R(square)	0.507556	0.507556	0.656587	0.643893
N	684	684	684	684
Growth Firms				
intercept	0.62849*** **(0.00)**	0.62849*** **(0.00)**		0.48658*** **(0.00)**
CAPEX	0.436006*** **(0.00)**	4.36E-01*** **(0.00)**	0.440197*** **(0.00)**	4.25E-01*** **(0.00)**
CFR	1.31552*** **(0.00)**	1.31552*** **(0.00)**	0.525574*** **(0.00)**	0.702186*** **(0.00)**
CFV	8.75E-07 **(.9217)**	8.75E-07 **(.9217)**	-0.00024 **(1.00)**	2.06E-05 **(.2042)**
DIV	-0.09905*** **(.0003)**	-0.099053*** (.0003)	-0.00431 **(.8225)**	-0.01454 **(.4686)**
LEVERAGE	-0.58934*** **(0.00)**	-0.589335*** **(0.00)**	-0.2588*** **(.0009)**	-0.44547*** **(0.00)**
NWCR	-1.16796*** **(0.00)**	-1.167959*** **(0.00)**	-0.92458*** **(0.00)**	-1.02285*** **(0.00)**
SIZE	-0.00672 **(.4573)**	-0.006721 **(.4573)**	0.003051 **(.8479)**	0.003796 **(.7606)**
TENG	-0.44159*** **(0.00)**	-0.441588*** **(.000)**	-0.27763*** **(0.00)**	-0.35762*** **(0.00)**
Adjusted	0.806224	0.806224	0.947634	0.952945

R(square)				
N	**732**	**732**	**732**	**732**

P-values are reported in parenthesis, where ***, **, * indicate coefficients significance level: 1%, 5% and 10% respectively.

Following Saddour (2006) Table 4 shows the results of cross sectional and penal regressions of cash on the independent variables for whole sample and two sub samples of growth and mature firms. In order to show the importance of growth opportunities in explaining firm's cash level, first the regression of cash is estimated for whole sample using Tobin's Q as one of the explanatory variables. Result does not support the hypothesis that Pakistani firms increase their cash level when they have important growth opportunities. Then, in the next set of regressions Tobin's Q is excluded from the explanatory variables and regressions are estimated for whole sample and the two sub samples of the growth and mature companies.

Both cross sectional and penal regressions including the fixed effect and random effect for the whole sample shows that the coefficient of cash flow to net assets ratio is significantly positive for the whole sample while capital expenditure to net asset ratio is also significantly positive for the whole sample except for the cross sectional regression in which it shows significant negative relationship with cash ratio. Coefficients of cash flow volatility are significantly positive for the whole sample except for the fixed effect regression.

Cash holdings decreases significantly with leverage, liquid assets substitutes of cash measured by net working capital, size and fix assets. All the results hold when Tobin's Q is included or excluded in the explanatory variables.

Regression results for the two sub samples show that in some categories they are similar while in other they are different. Both the regression results show that growth and mature companies increase their cash levels significantly with capital expenditure and cash flow to net assets. Dividend payment is negative and insignificant for both the growth and mature firms except for the cross sectional regression of growth firms. Cash flow volatility is found insignificant for both the growth and mature companies. Firm size has significantly negative association with mature firm's cash level while it is insignificant for growth firms. Leverage, tenability and liquid assets a substitute of cash has significant negative relationship with mature and growth firms' cash level.

It can be said that mature firms increase their cash holdings when they have high growth potential and high levels of operational cash flow while they decrease their cash levels when they have substitutes such as liquid assets, debt, fix assets and when their size increase. Cash holdings do not have any effect on payout to shareholders and smaller number of mature firms pay dividend.

Growth companies increase their cash levels when they have high investment levels and cash flow to net assets. These firms increase their cash level to finance their capital expenditures. They decrease it when they have substitutes such as debt, liquid assets, tangibility and when they have to pay dividend. Firm size and cash flow volatility do not have any impact on firm's cash holdings.

The main differences between the two groups of companies exist because of their investment opportunities. Thus the benefits of holding cash are not the same for the two categories of firms i.e accumulating high amounts of cash is more beneficial for growth firms that's why they have different determinants of cash holdings: growth firms hold cash to be able to undertake their profitable investments projects without raising outside funds at high transaction costs; whereas mature firms accumulate cash in order to increase the resources under their control and thus to enable them to invest in unprofitable projects.

Most of the results of this study are in line with the results of previous studies like cash holdings increases with cash flow level and decreases with leverage and this applies for both the growth and mature firms (Opler et al, 1999; Ferreira and Vilela, 2004). Consistent with the findings of previous studies, our results show that for growth companies, cash holdings decrease with their level of liquid assets substitutes of cash and (e.g. Opler et al.,1999). It is also found that growth firms decrease their cash level with their dividend payments (e.g Opler et al, 1999) while this relationship is insignificant in case of mature firms.

However, results confirm those of previous empirical studies concerning the positive relation between cash and investment level. Contrary to the previous studies which find a positive relationship between cash and size (e.g. Ozkan and Ozkan; 2004), it is find that mature firms decrease their cash holdings with size.

Next objective is to see which theory whether trade off or pecking order explains the cash holdings of Pakistani firms. For that the signs of relationship between cash and firm characteristics i.e size, cash flow level, capital expenditures and fix assets are examined.

For the whole sample most of the results are explain by Trade off theory like positive sign with capital expenditures, cash flow volatility and negative sign with liquid asset substitute of cash, size and tangibility. Positive sign with cash flows and negative sign with leverage coincide with the predictions of Pecking order theory. For the sub groups most of the results are same except that dividend is significant and negative for growth firms which are consistent with trade off theory and negative sign with size which is significant for mature firms only is also consistent with trade off. Over all, it can be said that both trade off and pecking order theories play an important role in explaining the determinants of cash holdings of growth and mature Pakistani firms.

VI. Conclusion:

The aim of present study is to investigate the determinants of corporate cash holdings for Pakistani firms and then further dividing those firms in to two sub groups: growth firms and mature firms on the basis of their growth opportunities for the period (2003-2008). Data is penal in nature and using different regression approaches it is found that overall Pakistani firms accumulate cash not because they have high growth opportunities this result is consistent with Drobetz et al (2007) for a sample of Swiss firms. Descriptive statistics shows that growth firms have almost double of their assets in the form of cash and cash equivalents. The determinants for whole sample as well as for growth and Mature firms are almost the same. For the whole sample firms increase their cash holdings when they have high cash flows, capital expenditures, cash flow volatility and decrease their cash levels when they have liquid assets substitute of cash,

leverage and larger amount of fix assets. The main difference between the growth and mature firm's lies in their dividend payments and firm size. It is found that size is negatively related with the cash holdings of mature firms and dividend payment is negatively related with the growth firm's cash holdings. Both trade off and pecking order theories are playing an important role in explaining the determinants of cash holdings for mature and growth firms.

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