CASH – CASH FLOW SENSITIVITY OF PAKISTANI MANUFACTURING FIRMS

Kamran Abdullah[1], Naeem Ullah[2], Shah Hassan[3]

[1](Foundation University Rawalpindi Campus, Pakistan)

[2](Assistant Professor Department of Business and Economic FURC, Pakistan)

[3](Lecturer IBMS, Agriculture University Peshawar, Pakistan)

ABSTRACT*: We investigated the model cash-cash flow sensitivity by proceeding the 165 Pakistani manufacturing firms data that published by the authentic government body state bank of Pakistan and these firms are listed in Karachi stock exchange. The observation period started from 2007 to 2010. This study disclose that Pakistani manufacturing firms try to escalate the cash holding level that beyond the firm cash flow level there should be two aspects of more holding first they hold for precautionary and second investment motives.*

KEYWORDS*: Cash, Cash flow sensitivity, Pakistan, Manufacturing firms*

INTRODUCTION

The main objective of this research is to identify the cash to cash flow sensitivity. Cash flow sensitivity is focal point of this study is elaborate in a way that how much change in the cash flow has an impact on cash holding. Cash holding level of every firm vary with the nature of the firm. Keynesian theory works with the assets that are easily converted into cash and this reason it is called liquidity preference approach. Firms manage the cash with three aspects which is categories with different objectives. Every corporation keeps in hand a subscribe amount of assets that can easily converted into cash, in the other words cash for various purposes to take preventive measure, speculation and transitional (isshaq & bokpin, 2009). Transitional objective point out cash is most liquid asset which is help for daily transaction that related to trade and payment. We can say that firms hold a certain amount of cash to content the day to day operations that are related to trade and payment operations. Preventive objective says that firms keeps and subscribe limited cash or liquid assets to protect from the uncertainty that is free to say that cash or liquid asset kept for unexpected situation. Speculation objective says that firms keep a certain amount of cash to avail the benefits if any opportunity emerge (Besley & Brigham, 2005).

Asymmetric information also gives a variable in cash holding. When in the market information is ambiguous and level of information asymmetry is high then the result of this attitude of the market firm increase their cash holding reason is managers are against to dispense the cash to shareholders (Harford et al,2005). The foot print of firms cash holding depended on certain positions that firms are belong to financially constraint position that firms escalate there cash holding in reaction to becoming a considerable cash flow volatility. In opposition to, which firm do the business in a

25

unconstrained situation of the market that firm not enough conscious to cash flow volatility (Seungin Han et al ,2007).

Which firms have high level of financial constraint incline to keep the cash In contrast; to which firm is not constraint. Another window of opportunity which is investment also plays an important factor that affects cash flow. According to the one study that done by Ran Duchin (2007) that establishes inverse correlation between precautionary demand and investment. If firm keeps the cash for preventive motives it provides liquidity and gives an external benefits to face the future uncertainty respective to external finance.

According to Almeida et al (2004) financially constraint firms mostly don't use cash that the result is no borrowing reason is they try to escalate there cash holding. The obvious difference between financially constrained and unconstrained firm cash polices gives us a way to build a observational prognosis about the consequences of the firm position (constrained and unconstrained) on the firm policies. According to the Almeida investigation demonstrate that that firms associated to financially constraint firms try to increase the level of cash holding beyond the cash inflow which suggested cash to cash flow sensitivity.

The cash flow sensitivity of cash to financial constraint can help us in investment-cash flow literature dilemma that belongs to this literature. For unconstraint firms, cash flow and future investment are not dictating the level of cash holding. So there is no systematic pattern in cash polices for financial constraint. There are many literatures that build the relationship between cash holding and cash flow but differ methodically which surrogate financially friction is stronger and few debatable material available for financial constraint to play a constructive role. (to Almeida et al,2004).

As reported Schaller (1993) there is a more cash to cash sensitivity in Canada, those firms which are associated with the small size and which are not harmonize with the corporate group while others vice. As Fazzari Hubbard and Peterson (1998) figure out that when sample is divided with different aspects like size, which firms a small comparatively show low cash flow coefficient. According to Hu and Schiantarelli (1998) result shows that there are more chances for financially constraint firms have a large size. Their findings demonstrating that firm size and ownerships have a inversely related that lessen the agency problems.

This study investigates the scope to which the cash to cash flow sensitivity gives us a analytical valuable measure. This study will also play the role in literature and as limited study available on Pakistani manufacturing firms so our inclination to extend more valuable work on Pakistani manufacturing firms. This paper consists of five sections. First section related to introduction of cash holding and their sensitivity with different aspect. Second section which is related to discussion of previous studies. Third section demonstrates the methodology then follows the result and discussion section and lastly conclusion.

LITERATURE REVIEW

Liquid assets play the vital role in the firm and cash is the most liquid asset that helps to improve the organization payment ability. Cash holding yield the liquidity means corporation able to content the bills on time and help to lessen the impact of uncertain situation. Corporations have to

hold a certain level of cash by observing the situation that generates constructive cash flow condition by using the cash management tools. So, cash is the centers of gravity for a business that yield the business sustain and thrive. Cossin and Hircko (2004) explain that for firms cash holding yield the benefit in a way that if any investment opportunity arises they should be grab it. Nonetheless, sometime excessive cash holding should be costly and for a business it shouldn't have a good sense. Thus financial mangers needs use the cash management tools perfectly and constructive cash holding level in a firm.

Precautionary objective says that firm should have a certain level of cash balance that helps to mitigate the impact of cash flow instability and measure the level of instability that is risk and associated with the earning (Naguye, 2005). Keynes examines consideration and inclination help to minimize the dispersion of money and resources and focal point of their study is to identify the tools that help to identify the use cheap and sound means to save the cash and resources and also assist to lessen the impact of uncertain situation.

 Demand theory demonstrates that cash holding have two aspects, first is active cash balance which says that cash holding for different objective like transactional and precautionary objective and required level of these objectives are high. The third objective come under idle cash balance which is speculative objective and for this objective you don't have high demand for cash balance but in this objective cash holding require for ambiguous situation. Demand theory also recommended that which money people save and hold in hand it doesn't mean it is demand for money and fisher is also endorsing demand theory in a way that demand of money it doesn't mean which people usually keeps in hand.0

Kim et al (1998) investigated the best cash holding level for a firm as well as provide the optimal investment opportunity and it doesn't spotlight the cash holding for the precautionary objective. For future liquidity requirements manger required to take a decision about the best level of cash holding and decision about the optimal short term investment. They also said that firms get less marginal return on their short term investment for those firms which are financially unconstrained and have additional cash findings. On the other hand financially constrained firms demonstrate nil cash holding and financially unconstrained firms keeps the positive cash holding.   Further, firms have to take the objective that because of additional cash funding they have to show the positive cash holding and behind this it shouldn't be precautionary motives.

As reported to Farrari et al (1998), financially constraints firm should be have high cash flow sensitivity. Which also express the division between internal and external cost and some firms present the higher cash flow sensitivity reason is they have high growth rates, low dividend payout ratio and firms have a small size. According to Kavas and Autore (2005) findings demonstrate that some firms have a equity issue and they try to go to external financial markets because they have a low information asymmetry. Firm can be escalate their value when firm focus on internal capital market. Besides, the information asymmetry should be low for those firms which have high values.

According to Harford (2005) asymmetry information is also pays a dominant role in cash holdings. It is also seen that when information asymmetry is high the expectation is that escalate the cash holdings reason is that manager try to avoid dispense the cash to shareholders. Almieda et al (2004) findings stipulate that unconstrained firms express low cash to cash sensitivity as contrast

to constrained firms which show the greater cash to cash sensitivity. Acharya (2006) findings demonstrate that he putted as a factor investment opportunity and found that investment opportunity factor also have impact on cash flow and was found the inverse correlation between the two. Further, he then takes this relationship in money demand perspective and findings demonstrate that along with the external founds better investment opportunity we can avail but in reaction   the precautionary objective for cash hold becomes a devalue. Hence, precautionary demand plays on vital role when the investment or business risk is high in order to reserve cash.

As reported vilela and Ferreira (2004) study the corporate cash holdings elements. Those findings express that if you have greater opportunity of investment then there should a possible chance increase in cash holding find but the liquidity, leverage and firm size have a negative impact on the cash holding.

 As reported Dittmar in 2003 that identify the element that play a vital role to defining a certain level of cash holding that is corporate governance and he found that those firms have a higher shareholder preservation hold less cash holding while those constrained firms and have low shareholders preservation and those firms hold more cash. Additionally, it is seems that which firms have a high cash holding that is possibility they have an access easily more cash.

Hofmann (2006) study that non-financial firms how much influenced by corporate cash holding and establishes firstly that dividend payment is inversely proportional to cash holdings. While the vital element in growth opportunity is corporate cash holding, Cash flow variability and leverage & dividend payments

Furthermore, those firms have a high cash holdings also have a better operating performance they can avail the optimal investment opportunity and also escalate their growth rate (Partch and Mikkenlson , 2003). But they have also study that bad corporate governance can escalate the level of cash holding. Along this one study observed that where shareholder preservation is low then the result shows firms value negatively influenced by cash holding (Lins and Kalcheva , 2006; Stulz, Williamson,and Pinkowitz, 2006).

METHODOLOGY

Data and sample Period:

The data for different variable use in the estimation obtain from balance sheet analysis (BSA). This source was selected because these figures authentic and reliable published by government body published by state bank of Pakistan (SBP). This sample period start from 2007 to 2012. However, two years were sacrifice for lead relation. The estimation period from 2007 to 2010 the period is robust because during the Pakistani economy went through lot of thick and thin .For this research paper 165 firms were taken and that also listed in Karachi stock exchange in Pakistan and we have 558 observation.

Baseline regression model:
We will estimate the following Baseline regression model.

$$\text{CASH i,} = \alpha_0 + \beta_1(CF)i,t + \beta_2(LEV)i,t + \beta_3(MBR)i,t + \beta_4(SIZE)i,t + \beta_5(VARIA)i,t + \epsilon_i,t$$

Where CF

Cash flow= (EBT+DEP) / Total Assets -cash

Cash to cash equivalents divided total assets minus cash is measures cash holding while the "Cash flow" is the sum of earnings before interest tax and depreciation divided by total assets minus cash.

Where LEV

LEV= (Long + Term Debts + Unsecure long debt +Debentures/TFCs) / (Total Asset)

Leverage is measured by added Long term secured loans; short term Secured loans, Debentures/TFCs and Long term unsecured loans divided total Asset. Leverage in which firms borrowed the funds from different financial institutions and then engage that funds buying the assets, conviction are that cost of the borrowing will be lowered compare to the benefits from the assts or assets price appreciation. Essentially there is a high risk associated with that lead to the losses means if the income from the assets in shape of assets price depreciation or in other shape will be the lowered in contrast the cost of the borrowing.

Where MBR

Market to Book ratio = Book value of firm / market value of firm

 The market to book ratio point out if or not a company's asset value is proportionate to the market price of its stock. That the reason it can be useful for finding value stocks. It is particularly useful when valuing companies that are comprised of mostly liquid assets.

Where Size

Size= natural log (Total Asset)

To take the size of Pakistani manufacturing firms by applying the natural log of total assets prices from 2007 to 2010

 Panel data regression model

In order to estimate the impact of independent variable on dependent variable, we will estimate common effect model, random effect model and fixed effect model.

Common effect model:

We will estimate the following common effect model:

$$\text{CASH i,} = \alpha_0 + \beta_1(CF)i,t + \beta_2(LEV)i,t + \beta_3(MBR)i,t + \beta_4(SIZE)i,t + \beta_5(VARIA)i,t + \varepsilon i,t$$

This model has been estimated because all of our manufacturing firms. Common effect model has serious weakness as it assumes the homogenous cross section unites. Our firm all though are manufacturing firm, differ in some aspects. Some of that firm seasonal component in their income and some follow industrial norms thus homogenous of cross sectional unit overly simple system. Thus we are afraid that common effect not gives us robust and generalizable.

Fixed effect Model:

We will estimate the following fixed effect model:

$$\text{CASH i,} = \alpha_1 + \beta_1(CF)i,t + \beta_2(LEV)i,t + \beta_3(MBR)i,t + \beta_4(SIZE)i,t + \beta_5(VARIA)i,t + \varepsilon i,t$$

Fixed effect Model powerful estimation technique because it assumes the heterogeneity of cross section unit it does that by estimating unique intercepts. Cross section unite allows us to accommodate heterogeneity cross unite and also accommodate cross cost by omitted variable. However fixed effect model does not control biases cause by error term.

Random effect model:

$$\text{CASH i,} = \alpha_1 + \beta_1(CF)i,t + \beta_2(LEV)i,t + \beta_3(MBR)i,t + \beta_4(SIZE)i,t + \beta_5(VARIA)i,t + \varepsilon i,t$$

Random effect model is powerful panel data estimation technique it allows for controlling the biases cause by error term. Sometimes, Fixed effect model and random effect model gives us conflicting result in this case we conduct houseman test. The houseman test will be conducted under the following hypotheses.

H_1 = *Fixed effect result are accept*

H_0 = *Random effect result are accept*

By conducting the houseman test these hypotheses are p-value of 0.05 or higher then we will accept the random effect model and if the p-value of 0.05 or lower we will compel us accept the result of fixed effect model.

RESULTS AND DISCUSSION

Table No: 1

Variables	Observation	Means	Std.deviation
Cash	558	0.338657	0.984705
Cft	558	0.6591487	11.77898
Mbr	558	38.22745	441.2273
Lev	558	13.80831	218.4021
Size	558	14.25187	1.709811
Varia	558	0.0441265	.335860

Descriptive statistics stipulate we have 558 observations and calculation of descriptive static of Pakistani manufacturing firm that shows that firm cash holding level is high reason is mean of cash flow 0.65 while that of cash and cash flow are 0.33 and 0.65 respectively. That shows that almost 65% cash flow represent cash holdings are almost 33%. Therefore, we can say high cash to cash flow sensitivity.

Correlation Matrix

Table 2 represents the Correlation matrix use in the study

```
12 . correl cash cft mbr lev size varia
    (obs=558)

                  cash       cft       mbr       lev      size      varia

        cash    1.0000
         cft    0.4324    1.0000
         mbr    0.8313    0.4408    1.0000
         lev    0.6045    0.0532    0.7630    1.0000
        size   -0.4021   -0.2710   -0.5220   -0.3815    1.0000
       varia    0.1203    0.1462    0.1161    0.0728   -0.1506    1.0000
```

Correlation matrix use for checking the multicollinearity and if the correlation 0.5 or more that the in depended variable will show multicollinearity. The multicollinearity Means two are more independent variables in a regress model are highly correlated. In correlation matrix table market to book ratio and cash is showing highly correlated.

We have multicollinearity issue but it does not reduce the predictive power or reliability of the model as a whole, at least within the sample data themselves.

Table 3

	Variables	Coef .	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Common Effect Model	Cft	.0006192	.0002509	2.47	0.014	.0001264	.0011121
	mbr	.0001874	.0000107	17.45	0.000	.0001663	.0002085
	Lev	-.0000101	0000187	-0.54	0.591	-.0000467	.0000266
	Size	.0029428	.0015878	1.85	0.064	-.000176	.0060617
	Varia	.0062561	.0069745	0.90	0.370	-.0074437	.0199559
	Cons_	-.0157858	.0229007	-0.69	0.491	-.0607689	.0291973

Table 4

	Variables	Coef .	Std. Err.	T	P>|t|	[95% Conf. Interval]	
fixed Effect Model	Cft	-.0005763	.0019634	-0.29	0.769	-.0044371	.0032845
	mbr	-.000162	.0005753	-0.28	0.778	-.0012933	.0009693
	Lev	7.57e-06	.0000312	0.24	0.808	-.0000537	.0000688
	Size	-.0033292	.0073314	-0.45	0.650	-.0177456	.0110871
	Varia	. 0067155	.005155	1.30	0.193	-.0034212	.0168522
	Cons_	.0874853	.1067262	0.82	0.413	-.1223789	2973494

Table 5:

	Variables	Coef .	Std. Err.	T	P>|t|	[95% Conf. Interval]	
Random Effect Model	Cft	.0006064	.0001546	3.92	0.000	0003034	.0009094
	mbr	.0001858	.0000107	17.41	0.000	.0001649	.0002068
	Lev	-9.97e-06	.0000113	-0.88	0.377	-.0000321	.0000122
	Size	.0020672	.0022116	0.93	0.350	-.0022675	.0064019
	Varia	.0067461	.004968	1.36	0.174	-.002991	.0164833
	Cons_	-.0040629	.0316856	-0.13	0.898	-.0661655	.0580396

We commenced our study from the common effect model with standard error. The table no1 represents the estimation of common effect model. Cash flow shows the positive and significant impact on cash holding that indicate company receive more cash and managing the well and spending less that enable it to pay bills on time. This situation shows company liquidity position is good. Our result endorses by another study and their study found that which Pakistani manufacturing firm cash is holding level of their firm is high as compare to cash flow of the firm. Besides, this is significant that when Pakistani manufacturing's firms foresee risk in their operating cash flows they try to escalate their level cash holding Almeida et al (2004). Along these firms escalate their cash holding when market to book ratio representing as here the positive and highly significant. Other studies also endorsing our results they have used same approach to investigate ratio-cross sectional predictive ability by using the market to book ratio Hunt (1996). Leverage showing negative impact on cash holding that means or borrowed money is costly as compare to investment return which firm made to borrowed money along this size has significant and positive impact.

As we have said in methodology section that we couldn't rely on common effect model only because homogenous problem. We have different firms which are belong to different sectors and the prompted us to estimate fixed effect model with robust standard error. This model demonstrates the variable of cash flow, cash holding along this market to book ratio is negative and insignificant

along this leverage. These results are conflict with random effect model means both result are contradict so now we conduct the Housman test. The p-value of houseman test is 0.9645 that mean accept the "H_0" that says accept the random effect model result. As random effect model confirm by other studies that in Pakistani context firms have a significant coefficient shows that cash holding level of manufacturing firms are high out of their cash flow and we take the positive NP projects Almeida et al (2004). Precautionary objective indicates that cash holding and cash flow sensitivity have a positive relationship. While the level of cash holding also dependent on the firm size as our result show negative and significant impact on cash holding means small size firm try to hold more as compare to large size firm. . And these findings alignment with the Fazzari (1988) investigation that sat as the size of the firm escalate their information are symmetry, lessen and that the result they hold less cash. Zingales (1997) investigated and gave us a positive prediction.

CONCLUSION

For this study we had select 165 Pakistani manufacturing firms along this the total observation we had 558 and period were started from 2007 to 2010. The estimation for this research we were obtains data from BSA that publishes by state bank of Pakistan. We used panel data regression analysis first we did common effect model then we conducted fixed and random effect model the result of these model are contradicting then conducted houseman test that predict we should follow the random effect model. So the result of our study disclose that coefficient of cash flows significant which give us a prediction that Pakistani manufacturing firms escalate their cash holding level out of the cash flow and these reserve they will use in positive NPV projects. Firm's increase their cash holding level when there is high risk with the Cash flow was positive and significant.

Pakistani manufacturing firms their cash holding is high out of their cash flow and have cash to cash flow sensitivity. It should be confirmation that manufacturing firms hold cash for two reasons that they hold cash for precautionary and investment motive. But the growth opportunity is limited for these firms because the debt taken by these firms that indicate the cash-cash flow sensitivity. Hence, as an insurance to they try to hold the more cash to pay the debt in future. So it can be easily said that according to Pakistani economic condition and debt serving institutions plays vital role in cash flow sensitivity and these result are alignment with study that Pakistani firms have a high cash holding level out of their cash flow Almeida et al (2004).

REFERENCE

Ishaq, Z., & Bokpeen, G.A. (2009). *Corporate liquidity management of listed firms in Ghana*. Asia - P*acific Journal of Business Administration*, *1(2), 198-189,*

Besliy, S., & Brigham, E.F. (2005). *Essential of Managerial Finance* (13th Edition). Thomson, South-Western

Harford, J., Mansi, S.A.,& Maxwell, W.F. (2005).*Corporate governance and firm cash holdings.* Working paper, University of Washington, Virginia Tech and University of Arizona.

Han, S., & Qiu, J. (2007). *Corporate precautionary cash holdings*. *Journal of Corporate Finance, 13, 43-57.*

Almeida, H., Campello, M., & Weisbach, M.S. (2004). *Cash flow sensitivity of cash, forthcoming*. *Journal of Finance, 59, 1777- 1804.*

Schaller, Huntley (1993), .*Asymmetric Information, Liquidity Constraints and Cana- dian Investment.*, Canadian Journal of Economics, *26, 552-574*.

Fazari, Steven M., Glen R. Hubbard and Bruce C. Petersen (1988), .*Financing Con-straints and Corporate Investment.*.Brookings Papers on Economic Activity, *1, 141-195*.

Cossin, D., & Hricko, T. (2004). *The Benefits of Holding Cash*: A Real Options Approach. *Managerial Finance, 30(5), 29-43*,

Nguyen, P. (2005).*How sensitive are Japanese firms to earnings risk? Evidence from cash holdings.*School of Banking & Finance, University of New South Wales, NSW 2052, Sydney, AUSTRALIA.

Kim, C.S., Mauer, D.C.,& Sherman, A.E.(1998).*The determinants of corporate liquidity: Theory and Evidence*. Journal of Financial and Quantitative Analysis, 33, 335–359.

Autore, D., &Kovacs, T. (2005). *The pecking order theory and time-varying adverse selection costs.*Working paper, Virginia Tech, Department of Finance.

Harford, J., Mansi, S.A.,& Maxwell, W.F. (2005).*Corporate governance and firm cash holdings.* Working paper, University of Washington, Virginia Tech and University of Arizona.

Ferreira, M.A., & Vilela, A.S. (2004). *Why do firms hold cash? Evidence from EMU countries*. *European Financial Management, 10, 295-319*

Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). *International corporate governance and corporate cash holdings.Journal of Financial and Quantitative Analysis, 38, 111-133*..

Ozkan, A., & Ozkan, N. (2004). *Corporate cash holdings: An empirical investigation of UK companies*. *Journal of Banking and Finance, 28, 2103-2134.[23]*

Kaplan, S., &Zingales, L.(1997). *Do financing constraints explain why investment is correlated with cash flow? Quarterly Journal of Economics*,112, 169-215.