INTERNAL FINANCIAL CONSTRAINTS, EXTERNAL FINANCIAL CONSTRAINTS AND INVESTMENT CHOICE: EVIDENCE FROM PAKISTANI FIRMS

Dr. Muhammad AZAM (Corresponding Author)
Assistant Professor, Department of Business Administration,
Iqra University, Karachi-75300, Pakistan
E-mail: azam.m@iuk.edu.pk

Syed Anum SHAH
Iqra University, Karach-75300, Pakistan
E-mail: shah_anu25@hotmail.com

ABSTRACT

The purpose of this study is to analyze the impact of internal and external financial constraints on investment choice. The data have been taken from 9 major sectors (52 listed firms in the Karachi Stock Exchange) namely; Pharmaceutical & Bio Technology, Textile, Sugar, Tobacco, Chemicals, Oil and Gas, Fixed line Telecommunication, Industrial metal and Mining, and Cement sectors for the time period 2004 to 2010 on annual basis. Multiple regression analysis has been done to examine the relationship among firm's size, dividend payout ratio, firm's age, and investment. The empirical findings show that there is positive relationship between the firms' size and investment while a negative relationship exists between firms' age and investment. It also reports that there is negative relationship between dividend payout ratio and the investment. This shows that if a firm grows old or high dividend payout ratio then it will tend to spend less for expansion as compared to the young firms.

Key Words: *Internal Financial Constraints, External Financial Constraints, and Investment*

1. INTRODUCTION

In the past years the study about how much the firm's investment is constrained or dependent upon the accessibility of finance and more about that what kind of relationship exist between the cash flow and investment.? So this relationship can be seen as an indicator of financial constraints. For the purpose of explaining the trend of production and the investment, we must have to identify those factors which might be effecting the investment. Fazzari *et al* (1988) pioneering research, according to them the firm would be depending on internal funds more as they are facing tight external financial constraints. It means that, the sensitivity is high for the financial constrained firm's investment to internal cash flow when compared to that of a less financial constrained firm.

On the other hand, Kaplan (1997) and Cleary (1999) reported that, when firms can easily avail the opportunity of external fund they used to depend on the internal funds for the purpose of financing their investments. They further said, due to the risk averse nature of the managers of firms that are financially constrained the decision taken by them for the investment is therefore, less sensitive to the internal funds accessibility.

It is also observed that these kinds of firms who face difficulties in obtaining external finance so they accumulate cash. Almeida and Weisbach (2004), and Almeida, and Campello, (2007) gave evidence about those firms facing financial frictions externally while raising finances from outside used to safe cash flows as compared to those companies who face fewer frictions. According to them holding the cash are of great importance for the high constrained as compared to low constraint financially firms. So, cash holding are considered to be valuable when the other forms of funds are insufficient to fulfill the needs of the company.

The past debate has been conducted on both the quoted and unquoted firms in UK, Malaysia and many other countries. This research is going to be conducted in the (9 major sectors listed in KSE, Pakistan) Pharmaceutical & Bio Technology, Textile, Sugar, Tobacco, Chemicals, Oil and Gas, Fixed line Telecommunication, Industrial metal and Mining, and Cement sectors. The investment required in these sectors is having great importance and their investment is being affected by the financial constraints they are facing. The objective of this study is two dimensional: first is to identify the nature of relationship between the internal & external financial constraints and the investment and secondly the extent to which the investment is being affected by the internal and external financial constraints in the various sectors in Pakistan.

The remainder of the paper is organized as follows. A review of the relevant literature regarding the internal financial constraints external financial constraints and investment choice is given in section 2, and section 3 presents the data and methodology to be applied while section 4 contains the empirical results. Lastly, the conclusion will be given in section 5.

2.   LITERATURE REVIEW

Over the last decade, an enormous body of literature has analyzed the internal constraints, external constraints and investment choices in different perspectives. Hernando and A. Tiomo (2002) conducted a research about the investment in France and Spain by focusing on the effect of financial constraints. The result suggests that the expenditure of investment of the firms which are paying no dividend as they are constrained by the availability of the generated funds internally. Zhangkai Huang (2002), have used US listed companies' sample to study the investment cash flow sensitivity and financial constraints. He has shown that there is a non-linear relation between investment cash flow sensitivity and financial constraints. Guariglia, A. (2005), has taken 24,184 firms of UK from the period of 1993-2003 to study the investment sensitivity to cash flow with different ranges of financial constraint. Toni M. Whited, (2006) has studied about that whether the timing of investment is being affected by the financial constraints or not. They reported that real investment decision is being influenced by the external financial constraints.

Chen, M. (2007) used a panel of 815 Chinese listed firms over the period 1998-2004 to study how the investment-cash flow sensitivity differs across firms facing different levels of internal and external financial constraints, firms with and without state ownership. All firms are situated in different geographical locations. The findings suggest that the firms facing lower internal constraints have higher investment-cash flow sensitivity, and firms facing higher external constraints have higher sensitivity. The dependency of investment on cash flow is weaker for state controlled firms, especially the large ones, than other firms. Firms in the eastern and central China are subject to significant and stronger financial constraints than firms in western China, which may be closely related to China's regional development policy.

Dr Xin Chang *et al* (2007) have studied both the collective and separate impact of financial market mispricing along with the financial constraints on the cash flow and investment sensitivity. They took sample of all the manufacturing firms of USA ranging from the period 1971-2004. The result showed that the higher sensitivity towards investment cash flow when the unconstrained firms were compare to the constrained ones. As they tend to have higher sensitivities while undervaluation and have low sensitivities while overvaluation. This can give the reason that why constrained firms have low valuations than unconstrained.

David and Valeriy (2007) have tried to study that why for financial constrained firm cash holdings are important when compared to unconstrained. And what are those reasons which compel the firms to hold little cash. The result for the research suggested that firms which have high hedging needs are the financially constraints and that's why they hold cash for high level of investment. Through these findings they come to the conclusion that value increasing projects can be undertaken by the high cash holding companies. One more point generated from this study is cash holdings are value increasing to the externally costly financing.

Almeida H., and Murillo Campello, (2007) have identified the effect of tangibility by a theoretical framework. In this framework all the firms can go for new investment as they have limited accessibility for pledging the cash flows. The findings say when the asset tangibility increases the cash flows for the financial constrained firms also increases. Kadapakkam Rajan Palani *et.a*l, (1998) also conducted a research regarding the size of company. They report that if the firm's size is big then it will do investment more.

Sai Ding *et al*. (2010) have used 12000 Chinese firms to study the relationship between the financial constraints, investment and working capital from the period ranging from 2000-2007. They have constructed firm level sensitivities to the cash flow. The results of their research have shown that there is existence of the fluctuations in firms which are older, larger and they allow growing firms while the firm having low cash flows used to bear the internal financial constraints and they are active in adjusting the working and fixed capital investment.

Giulio Bottazzi, *et al.* (2010), signifies that credit rating is a good measure of financial constraints. They have got new evidence that how can the financial constraints relate to the age and conducted in Italy. They also find that there is positive contribution towards the average growth which is the result of the young firms which are strongly financially constrained.

3. METHODOLOGY

This study is designed to know the effect of financial constraints on the investment of the companies in an organized way and for that we have taken manufacturing firms those are listed in Karachi Stock Exchange (KSE), Pakistan. The data have taken from 9 major sectors (52 listed firms in KSE) namely; Pharmaceutical & Bio Technology, Textile, Sugar, Tobacco, Chemicals, Oil and Gas, Fixed line Telecommunication, Industrial metal and Mining, and Cement sectors for the time period 2004 to 2010 on annual basis.

The purpose to conduct this study is to see the impact of financial constraints on the investment made by the firms. Following is the hypothesis:

Hypothesis
H_1: Internal financial constraints have a significant impact on investment choice.
H_2: External financial constraints have a significant impact on investment choice.

In this study Investment has been taken as dependent variable while the independent variables are firms' size, age and dividend payout ratio. Multiple regression analysis has been done to examine the effect of financial constraints on the investment choice and regression model is shown as follows:

$$INV = \beta_0 + DP\beta_1 + SIZ\beta_2 + AG\beta_3 + \varepsilon$$

Whereas:

β = shows the constant affecting investment on financial constraints

INV = Investment = the natural log of fixed investment in fixed tangible assets
DP = Dividend payout ratio
SIZ = Size of the firm = the natural log taken of the firms' sales
AG = Age of the firm

4. DATA ANALYSIS

The descriptive statistics is used to exhibit the quantitative analysis in an appropriate manner. A large sample of data can be easily described by the descriptive statistics.

Table 1 Descriptive Statistics:

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Investment	193	-5.2591	9.1056	5.2917	1.9674
Firm Size	193	5.3804	13.1129	8.5905	1.4855
Dividend Payout Ratio	193	-5.9353	8.8038	3.4763	1.8204
Firm's Age	193	.69315	4.7707	3.3869	.65260

The descriptive statistics table 1 is showing the descriptive statistics of all the variables. This table consists of Mean values, Standard deviation values, Maximum and the minimum values. The sample size has taken of the all the variables collectively including dependent and independent variables. Investment is taken as dependent variable while cash flow to capital expenditure, dividend payout ratio, size and age of firm are taken as independent variables. The sample space consists of 193 observations from the period of 2004-2010.

We use Durbin Watson (1950) test to find out the presence of autocorrelation in the residuals (prediction errors). As we can see that in the table 2, there is a positive autocorrelation exits up to the 2nd order in the data.

Table 2 Autocorrelation (Durbin Watson Test):

	Order					
	1	2	3	4	5	6
DW	1.1122*	1.5652*	1.8254	2.0824	2.0338	1.8703
Pr<DW	(<.0001)	(0.0011)	(0.1326)	(0.7785)	(0.6977)	(0.2956)
Pr>DW	(1.0000)	(0.9989)	(0.8674)	(0.2215)	(0.3023)	(0.7044)

For the purpose of removal of error of autocorrelation we have applied Cochrane and Cochrane (1949) method in our data. Table 3 shows there is no autocorrelation up to the 36 Lags.

Table 3 Corrected Autocorrelation (Cochrane-Orcutt Method):

	Up to Lags					
	6	**12**	**18**	**24**	**30**	**36**
χ^2 **p-value df**	3.24	8.66	17.90	23.97	29.32	43.77
	(0.5192)	(0.5646)	(0.3300)	(0.3491)	(0.3965)	(0.1217)
	4	10	16	22	28	34

The above table 4 is demonstrating the results of the multiple regression analysis by using Ordinary Least Squares (OLS). It consists of values of coefficients, P-values, confidence interval values, F-values, significance values and Adjusted R^2 of the model. For the purpose of exploring relationship between the dependent and independent variable regression model is constructed by using coefficients and constant after the removal of auto correlation.

Table 4 Result Summary

Variables	Beta	t – stat	Probability	VIF
Constant	-0.036	-0.044	(0.965)	-
Firm Size	.824*	10.784	(0.000)	1.037
Dividend payout ratio	-0.107**	-1.738	(0.084)	1.018
Firm's Age	-0.419*	-2.430	(0.016)	1.018
Adjusted R- square: 0.733	**F-Statistic: 39.125 ***		**Prob (F-stat): (.0000)**	

*Significant at level 0.05   ** Significant at level 0.10

Firm's size has a positive and significant impact on the investment. It means when the size of a company is large then the investment made by them is relatively large as compared to the small companies. If the size of company is large then the size of investment made by them is also large as compared to the small firms. This result is confirming the studies of Kadapakkam Rajan Palani *et.a*l, (1998).

Dividend payout ratio has negative and significant impact on the investment. This shows if the dividend payout ratio increases the investment decreases. This is a financial constraints which is being faced by companies as when it increases the investment is decreased by the company because higher part of earnings are being given to the shareholders this means that the company is not retaining the income for further expansion of the business. This finding goes in the fever of Zhangkai Huang. Z (2002) who has conducted a research on US listed firms.

Firm's age has a negative relationship with the investment. As when the company grows old tends to decrease investment in fixed assets. In the earlier years of any company the make fixed investment, so with the passage of time the company decreases the investment.

5.   CONCLUSION AND RECOMMENDATIONS

This study has examined the impact of firm's size, Dividend payout ratio and firm's age on the investment. The data have taken from 9 major sectors (52 listed firms in KSE) namely; Pharmaceutical & Bio Technology, Textile, Sugar, Tobacco, Chemicals, Oil and Gas, Fixed line Telecommunication, Industrial metal and Mining, and Cement sectors for the time period 2004 to 2010 on annual basis.

The empirical findings show that investment by firms and the size of those firms are significantly and positively related. This shows that if the firm's size is big then it will do investment more. If the size of the firm increases the investment will tend to increase. This result is going to the fever of the studies of Kadapakkam Rajan Palani *et.a*l, (1998). The relationship between the dividend payout ratios and investment is negative and significant. It means if the company has high dividend pay out ratio then it would not able to invest in future projects except by taking debt This is a financial constraints which is being faced by companies as the company is not retaining the income for further expansion of the business. Zhangkai Huang. Z (2002) has conducted a research on US listed firms and reported the same findings. While devising the dividend policy the company should be very much careful as it can affect on their investment decision.

There is a negative significant relationship exist between Firm's age and investment in our study. This reports that if a firm grows old it will tend to spend less on investment as compared to the young firms. In the beginning, a large amount investment is being made by firms but with the passage of time it tends to decrease. It might be another reason is the uncertainty which is currently prevailing in Pakistan. It does restrict the companies to do more fixed investment and they keep on relying on their old investment.

While taking dividend payout ratio as internal constraint the future research should identify the firms into two groups i.e. dividend paying firms and non dividend paying firms. The constraints which the firms are facing are not only the size, age and payout ratio, but more constraints (like earnings and energy crisis etc.) should be identified that is affecting the investment in Pakistan.

REFERENCES

1. Almeida, H., M. Campello, and M. Weisbach, (2004). The Cash Flow Sensitivity of Cash. *Journal of Finance, 59* (4), 1777-1804.
2. Almeida,H., and Murillo Campello, (2007). Financial Constraints, Asset Tangibility, and Corporate Investment. *The Review of Financial Studies,* 20(5).
3. Andrea Caggese (2006), Financing constraints, irreversibility, and investment dynamics. *Journal of Monetary Economics*, 54.
4. Azam Muhammad (2010), Factors Influencing the Price-earnings Multiples and Stock values in the Karachi stock exchange. *Interdisciplinary Journal of Contemporary Research in Business*, 2(5), 105-139.
5. Azam Muhammad. and Irfan S. (2011), Impact of Working Capital Management on Firms' Performance: Evidence from Non-Financial Institutions of KSE-30 index. *Interdisciplinary Journal of Contemporary Research in Business,* 3(5), 481-492.
6. Chen, M. (2007), Financial Constraints and the Investment of Chinese Listed Firms, mimeo, School of Economics, University of Nottingham.
7. Cleary, S. (1999), The relationship between firm investment and financial status. *Journal of Finance,* 54, 673–692.
8. Cochrane and Orcutt., (1949), Application of least squares regression to relationships containing autocorrelated error terms. Journal of the American Statistical Association, 44: 32-61.
9. David J. Denis, Valeriy Sibilkov, (2010), Financial Constraints, Investment, and the Value of Cash Holdings. *The Review of Financial Studies*, 23(11).
10. Dr Xin Chang, Robert Faff, Wing Chun Kwok, and George Wong (2009), Financial Constraints, Mispricing and Corporate Investment. *financial markets and portfolio management*.
11. Durbin, J. and G. S. Watson., (1950), Testing for Serial Correlation in Least Squares Regression. *Biometrika,* 37: 409-428.

12. Fazzari, S.M., R.G. Hubbard, and B.C. Peterson. (1988), Financing Constraints and Corporate Investment. *Brookings Papers on Economic Activity*, 1: 141–95.
13. Guariglia, A. (2005), Internal financial constraints, external financial constraints and investment choice: Evidence from a panel of UK firms. Journal of Banking & Finance, 32: 1795-1809.
14. Giulio Bottazzi, Angelo Secchi and Federico Tamagni (2011), Financial Constraints and Firm Dynamics. Dipartimento di Scienze Economiche (DSE), University of Pisa, Pisa, Italy.
15. Hernando, I. and Tiomo, A. (2002), Financial constraints and investment in France and Spain: a comparison using firm level data in French and Spanish industrial corporations over the period 1991-1999: a comparative study, Banque de France and Banco de España.
16. Kadapakkam, RR., P.C. Kumar and L. A. Riddick (1998), "The impact of cash flows and firm size on investment: the international evidence", *Journal of Banking & Finance,*22, p. 293-320
17. Kaplan S., Zingales L., (1997), Do investment-cash flow sensitivities provide useful measures of financing constraints?, *Quarterly Journal of Economics,* 112, 169–215.
18. Sai Ding, Alessandra Guariglia and John Knight, (2010), Investment and financing constraints in china: does working capital management make a difference? RePEc:gla:glaewp:2010_33
19. Toni M. Whited, (2006), External finance constraints and the intertemporal pattern of intermittent investment. *Journal of Financial Economics,* 81.
20. Zhangkai Huang, St. Hugh's College (2002), Financial Constraints and Investment-Cash Flow Sensitivity. Social Science Research Network.