

**The Impact of Leverage on Investment: Empirical Evidence  
from Low and High Growth**



**Submitted by**

**Saman Azam**

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**Supervised by**

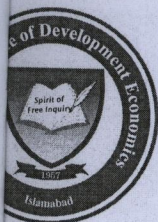
**Dr. Abdul Rashid**

Associate Professor IIUI

**Department of Economics and Finance**

**Pakistan Institute of Development Economics (PIDE),  
Islamabad, Pakistan**

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PAKISTAN INSTITUTE OF DEVELOPMENT ECONOMICS, ISLAMABAD

CERTIFICATE

This is to certify that this thesis entitled "The Impact of Leverage on Investment Empirical Evidence from Low vs High Growth" submitted by Ms. Saman Azam is accepted in its present form by the Department of Economics and Finance, Pakistan Institute of Development Economics (PIDE) Islamabad as satisfying the requirements for partial fulfillment of the Degree of Master of Philosophy in Economics and Finance.

Supervisor:

Dr. Abdul Rashid  
Associate Professor,  
IIU,  
Islamabad.

Internal Examiner:

Dr. Ahsan ul Haq  
Assistant Professor,  
PIDE,  
Islamabad.

External Examiner:

Dr. Imtiaz Ahmad,  
Joint, Economic Advisor  
Ministry of Finance,  
Islamabad.

Head, Department of Economics and Finance:

Dr. Hasan Muhammad Mohsin  
PIDE,  
Islamabad.

## **AUTHORSHIP STATEMENT**

I Saman Azam solemnly declare and affirm on oath that I myself have authored this M Phil Thesis with my own work and means, and I have not used any further means except those I have explicitly mentioned in this document. All items copied from the internet or other written sources have been properly mentioned in quotation marks and with a reference to the source of citation.

**Saman Azam**

## **DEDICATED TO**

The Holly Prophet Mohammad (PBUH) from where all standards and principles for excellence can be downloaded unswervingly, which can be applied everywhere; from daily life to the vigorously shifting business atmosphere”.

&

My Parents and teachers whose teachings and enlightenment encouraged and facilitate me to engrave this thesis, and supported me morally at every phase of my hectic schedule during the grounding of this thesis.

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## ABBREVIATIONS

<b>CF</b>	Cash Flow
<b>CH</b>	Cash Holding
<b>DD</b>	Dividend Dummy
<b>DIV</b>	Dividend Payout Ratio
<b>FC</b>	Financial Payout Ratio
<b>FDI</b>	Foreign Direct Investment
<b>FUC</b>	Financial Unconstraint
<b>GME</b>	Generalized Maximum-Entropy
<b>GMM</b>	Generalized Method of Moment
<b>INV</b>	Net Investment
<b>KZ</b>	Kaplan and Zingales Index
<b>LEV</b>	Leverage
<b>MM</b>	Modigliani and Miller
<b>NPV</b>	Net Present Value
<b>SIZ</b>	Size
<b>SG</b>	Sales Growth
<b>US</b>	United States
<b>USA</b>	United States Amaranth
<b>TQ</b>	Tobin's Q

## ABSTRACT

The study has been carried out with the purpose to analyze the relationship between financial leverage and firm's investment, low-high growth firms and also constraint and unconstraint firms in the presence of certain explanatory variables; such as Tobin's Q, cash flow, and sale etc. To identify the financial constraint and unconstraint firms, study uses KZ index. The relationship is analyzed by implying GMM system two-step estimation technique. Data is taken from the balance sheet analysis in the annual reports of the firms listed at Pakistan Stock Exchange. Data is collected for 15 years from 2000 to 2014, but the analysis is performed for 14 years because 2000 was taken as a lag. The findings of the study suggest that financial leverage has a significant and negative impact on firms' investment. This negative effect is significantly robust for the firms with low growth opportunities than the high growth opportunities. The results support that capital structure plays a vital role in the investment decision-making by the firms. Tobin's Q has also shown a positive but slightly insignificant relationship with investment for the target samples. The relationship between cash flow and investment is positive and is highly significant. This research checks the robustness of these outcomes using alternative empirical models. In addition, the instrument variables approach is used to deal with the problem of endogeneity intrinsic in the relationship between leverage and investment.

**Keywords:** Leverage, Investment, Tobin's Q, Cash Flow, Financial Constraint, Financial Unconstraint, System GMM

## **Chapter1**

### **INTRODUCTION**

#### **1.1 Background of the study**

The effect of leverage on investment choice is a main problem in corporate finance. Modigliani and Miller (1958) revealed that when investment policy is static and capital market is perfect. This indicates that capital structure has no relevancy with its firm value.

Consequently, in literature it seems that the assumption of perfect capital market and analyzed how several market imperfections and frictions caused to the potential interaction between co-operating investment policy and financing of financial firms (Aivazian et al. (2003)).

High leveraged firms can reduce the ability of the firm to make high investment projects through a caused liquidity: firms with high debt have lesser discretionary available fund for growth. So, the firm have more reliability on the external financing to finance new projects.

Conversely, when firms face external financing costly, then they will prefer internal financing, it will cause agency problem due to more reliance on the external financing means that smaller projects will be financed. In literature it seems that the extreme or high cases, firms with high leverage cannot able to raise finance for the positive net present value projects (Myers, 1978).

Empirical literature (Mc Connell and Servaes, (1995), Avizain, (2005), Mukhtar, (2016)) shows that the worth of the firm is self-determining of its structure of capital across the world. It holds the relevancy of firm's worth or value and its capital

structure. Because government give the option to reduce the cost of interest payments through government subsidies. Thus, firms will able to enhance their market worth by taking high debts or external financing. Therefore, firms can make advantage of tax shield that will automatically raises the firm value. So, it analyzed in theoretical research that even the firm can completely rely upon external sources.

Modigliani and Miller (1963) (hereafter MM,1963) and Baxter (1967) made known the bankruptcy costs or corporate taxes to explain the firm's capital structure.

Miller (1977) extended the argument private taxes have no corporate advantage to the leverage. Myers (1977) demonstrated that this type of debt can risky for the firm's new projects because the firm managers performing the share holders interest can decline the positive net present value projects. The result is that the payment of this type projects would be as a minimum amount accumulate to the debt holders. Therefore, it's caused to the debt overhang or an underinvestment problem. Deangelo and Macules (1980) who theorized that the amount of tax shields not governs on debt for firm's optimal structure of capital. Nowa days, there is the main element of financial debt that is the reflection of agency cost has been develop away from the old tax-bankruptcy controversy. So, that is the one reason which prevents the corporations do not fully depends upon the external funds for fulfill their new projects. Through the literature it's realized that asymmetric information, agency costs and bankruptcy costs are recommended to be initial source that leads to the optimum capital structure. Modigliani and Miller argued that financial decisions of the company are independent from the investment decisions. Mackling and Jensen (1976) presented that the investment policy of a firm is not static when a firm depends upon remaining risky debt. Debt can be work as a device of a discipline in low finance firms with large free cash flows because it alarm for firms manager to the overinvestment for the risky

projects(Jensen (1986),Stulz (1990)). Such as agency models show the interest's conflicts among shareholders, debtholders and managers, when investment will over the exercise then generate the potential of overinvestment and underinvestment incentive, in this situation investment decisions and cooperate financing become not related. Myers (1977) is the first person that known the underinvestment difficulties by observing when firm's shareholders only invest on the risky new projects when they reached up the opinion at which their expected returns on investment are greater the bondholder's payments. If the expected returns are lesser than the agreement payment then the result shareholders will not invest less amount than the optimum amount on the new projects of that firm. Ultimately firm worth will reduce. Its investment pattern shows the picture how firm worth decline and how a small amount of leverage can create an issue for the firm value. An other theory that is represent the relation between investment and financial leverage which are creates from the conflict on debt interests between managers and shareholders.

Risk involves when the accrual of debt are present in the firm. When the amount of debt increase, then the borrower's capacity to refund becomes more and more sensitive and to drop in sales and income as well as an increase the amount of interest rates. And when investors stop in investment amount then ultimately investment and consumption fall. Investment choice and financial leverage theory evaluate the overinvestment and underinvestment problems with relates the sort or type of a firm through the investment opportunities. But through the finance prospects,investment is the financial asset which purchased through financial decisions and in future that assets will offer income and be traded at the high or greater price. In financial views, a investments contain the purchasing real estate assets, bonds or stocks. Cooperate sector considered as the main part of the economy. Cooperation plays a vital role

in the contributing the large part of economic growth. In business the term of investment is explained the physical good purchased by a producer, such as inventory or durable equipment, the producer expectation of improving business in future. The main role of financial investments is transfer more market liquidity. This mechanism used for estimating the value of investment which is called valuation. Nowadays firms usually face competition therefore, firms need to act in responses. The owner of the firms should make a huge amount of investments in infrastructure, technology, machinery, management quality, land, building and development products etc. These factors will support to promote the firm productivity. For these factors, firm needs money or cash. The money invest in purchasing these assets named as capital investment. Investment is assurance of funds fix time period in direction to arising future or upcoming payments or outflows that will manage the investor or stockholder for the fixed time of funds commitment (Brown, 2006),

Aivazian et al. (2005) studied the investment elements of listed companies prevailed in Canada, considering five possible factors cash flows, sales, debt, and growth opportunities used as a dummy variable which multiplied debt, assume when firms opportunities growth is low then the value will be zero. Yon (2005) found leverage is a two edge sword if used wisely and by controlling it, it will improve welfare. Firms have a variety of options regarding capital structure. For examples, firms can issue little or large long time liability or debt. Firms have diverse choices of using lease financing, issuing convertible bonds and warrants.

Previous literature shows that if asymmetric information is not exists then financing will affect the investment behaviors of firms. In the other words, we can say it's an incomplete market, because there is exist agency problem among the shareholders, debt-holders and managers, this will start debt or financing overhang problem or

overinvestment (Jensen, 1986; Myers, 1977).Aivazian (2005),Ahn et al. (2006), Servaes and McConnell (1995) and Lang et al. (1996) examine the debt disciplinary consequence by using the financial statements data of Canadian's listed firms. Firth et al. (2008) observe the impact of bank financial leverage on investment in the case of china's listed banks and found that the impact of bank financial leverage is not strongly effect on financial firms with greater state share and weak performance.

## **1.2 Identifying the Gap in the Literature**

When we review the literature on the impact of financial leverage and the investment for developing countries we find that there are only a few studies that have explained this relationship for developing countries. Yet, there is incomplete empirical evidence on the effect of leverage on low and high firm growth in case of developing country like Pakistan. Further, for a complete understanding of the impact of leverage on low and high growth firms. It is important to know the relationship between leverage and investment. Much work has been found on the financial leverage and investment but on firms' growth limited work is available. In this research study we analyze the largest shareholders' nature of Pakistan's registered firm's data, focusing on the effect of leverage and investment on low and high firm growth.

## **1.3 Objective of the Study**

Given the importance of the effectiveness of the financial leverage for manufacturing firm investment decisions, this research study analyzes the association between investment and financial leverage of Pakistani firms. This relationship explored by categorizing our sample data into firm characteristics. For example what will be the approach of constraint firms for financial leverage? How unconstraint firms react when they use more and more financial leverage for investment? likewise, what will



be the effect of financial leverage on investment by providing empirical evidence low and high firm's growth? The particular objectives of our study are:

- 1: To examine the effectiveness of financial leverage for manufacturing firm investment.
- 2: To study whether the financial leverage effect on the investment differs for constraint and unconstraint firms.
- 3: To examine the influence of market value of firm on the financial leverage and investment relationship.
- 4: To investigate the differential impact of financial leverage and investment on low growth firms and high growth firms.

#### **1.4 Research Question/Hypothesis**

The major questions that have been included in our study focused on exploring the appropriate answers for the listed below questions.

- 1: Do high levered firms have high investment ratio?
- 2: What is the relationship between debt and investment?
- 3: Are constraint firms high leveraged or low leveraged?
- 4: What is the pattern of debt financing of high and low firm's growth?

#### **1.5 Significance of the Study**

Abundant work has been done on the relationship between investment and financial leverage in developed countries. We found it interesting in the area of corporate finance to measure this in developing country like Pakistan. Our contribution has two major aspects. First, empirically test the effect of financial leverage on investment on the Pakistani listed manufacturing firms for the period of 2000 to 2014. For this, we categorize our sample firms into, constrained firms and unconstraint firms, low

growth firms and high-growth firms. For categorizing firms as financially constraint and unconstraint firms, we use KZ index.

Second, our framework to examine the high and low growth opportunities of the firms. This study contributes to much the field of Pakistani industry, as it is a comprehensive analysis of financial constraint and financial unconstraint firms. Empirical results on the effect of financial leverage and investment relationship is not only important for firm managers but also for investors, researchers and academia to fully understand the links between investment and financial leverage.

### **1.6 Plan of the Study**

The research study in hand is structured as follows. In chapter 1, we have presented the study background, the gap in the existing literature, various purposes of the study, and its significance. Chapter 2 provides theoretical foundation of the investment and financial leverage. The existing empirical literature on the link between investment and leverage is reviewed in chapter 3. In chapter 4, we describe data and empirical models for the estimation of the effect of financial leverage or debt on investment. The method used to financially constraint and financially unconstraint firms are also discussed in this chapter. Chapter 5 is about data analysis and discussion whereas chapter 6 concludes the study and presents suggestions and policy implications.

## Chapter 2

### THEORETICAL FOUNDATION

#### 2.1 Introduction

Numerous researchers have studied the topic on the relationship between investment and financial leverage from a various perceptions. Each researcher's paper is founded on dissimilar period of time, distinct variables, and diverse samples and also contrasting techniques used to examine the effect of financial leverage on investment. They obtained different results by applying various models. Our experimental analysis also deliberates other reasons as recommended by the two leading opinions of the capital structure, namely pecking order and trade-off theories.

MM (1958)disputed that the policy of investment of a company originated only on those influences or factors that would rise the net worth or cash flows and productivity or profitability. Many papers' summary show that growth opportunities of the firms are affected by investments in tangible assets, mergers and acquisitions, and intangible assets. Now we discussed the relationship between growth opportunities and leverage. That how financial leverage effect on firm growth investment opportunities. Finance theory suggests that debt should have fewer effect on firms' profitability with valued opportunities of investment that identified by the capital market. If there are high  $q^1$  firms. On the other hand, that firms doing weakly because the lake of familiar opportunities of investment. Debt should have an adverse or negative impact on firm's growth. The cost of capital of this firm will be increased with their debt because divergent firms have valued opportunities of investment. It's

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<sup>1</sup> High q firms denotes the high growth firms

not clear opinion that to make or encourage profitability of a firm through external funds raise externally will be used profitably.

Leverage reduces the investment and growth irrespective of investment opportunities.

There is evidence that investment is negatively linked with firm cash flow where the chunk between the cost of internal and external funds is high(Bernanke book). This evidence, however, do not directly answer the question of how leverage effect growth?

Whereas, a liquidity theory would suggest that leverage decreases investment for all firms. But modern leverage theories imply that there should be a stronger effect for low  $q$  firms means low growth firms. As for firm investment opportunities become high, the underinvestment problems become less important for a given level of leverage.

To make the financial leverage choices, there are numerous theories that explained the performance or behavior of a firm. Each concept offerings different explanations of co-operating financing. That for instance, Majluf and Myers (1984) showed pecking order theory that states the firms desire to use their internal finance sources to finance equity. And if the internal sources not fulfill the need of the firms financing, then firms use external sources to finance shortage of funds. The firm first step towards fulfilling the shortage of fund is to apply for a bank loan, secondly prefer public debt, and the last option is finance equity. Therefore, the profitable or productive firms are very less likely to elect debt of finance for new projects because that firms have the accessible funds in the form of retained earnings.

## 2.2 Trade-Off Theory

The central theory of corporate finance is the trade-off theory. Through this theory, a company or firm finances its assets or properties by borrowings at that level where tax shield benefits on debt just offsets through the rise in the price or cost of financial distress (Myer, 2011). Myer defines the trade-off theory into two points of this definition first point is the tax shield advantage that when a firm strictly follow trade-off theory (first-time presentation Bradley et al. 1984). At that point if the firm's debt is determined on a single period then the trade-off theory working between the tax shields benefits of debt and the dead weight cost of the bankruptcy and the other is cost of financial distress. When a firm show target adjustment behavior it means a firm has a target level of leverage and changes or abnormalities in that targets are slowly detached over time. When a firm increases the amount of funds through using debt in the capital structure. Its benefit is when a firm makes the interest expense on debt that are measured as deductible expense from tax and also it known as tax shield. Though, always there are exist two sided of a picture. So, other side is that debt is cost of bankruptcy risk or financial distress. When a firm financing its assets over or through debt, it discloses itself such as risk. Such as risk arising in this case when a firm is not capable to make enough cash flows from its own operations, investing and financing activities to fulfill firm financial commitments or obligations.

Actually trade-off theory supports the capital structure and leverage concept by presumptuous leverage advantages. The optimum level of debt is attained through balancing from expense of issuing debt and interest payments. According to Modigliani and Miller(1958) in finance, debt is deliberated in finance as beneficial the reason is debt-tax-shield which support to maximize the cash flows which obtain after

tax and minimize the bills of tax. Hence the trade-off theory forecasts the benefit and cost analysis through debt financing for obtaining the optimum capital structure.

Focusing on trade-off theory cost of profit or benefits investigates through debt which expects that there is optimum debt ratio that supports to enhance the firm worth. The key advantage of leverage is to reduce the payments of interest. It's a simple effect which Miller (1977) explained difficult with the absent of debt tax shields or sometimes personal taxes. Equity issuances mean to transfer and left from optimal. Therefore this news can be deliberated as a bad or danger news. If firm's holders feel market has mispriced then they would be issued equity at the optimum level. Then investors become aware the results of issuance equity either it is mispriced or fairly price. Therefore, equity issuances lead to investors that respond undesirably and organization is not willing for further issue equity.

### **2.3 Pecking Order Theory**

Inco-operating finance the Pecking order theory considered the most influential theory of capital structure. Pecking order theory based on financing that helpful for firm operations. Its funds generate with internally sources that first source is retained earnings rather than equity and issuing debt ( financing from outside of the firm). Pecking order theory claims for minimizing the firm's outsiders or insiders issue that are related to asymmetry information by resulting a specific funding hierarchy (Majluf and Myers, 1984). Through this theory we can pick up a clear indication that first priority of firm managers is retained earnings for funding and these funds used firm operations. If the firm's manager need more finance then they pick the second option to issued debt. Lastly issued equity because there is no need for more issuing debt. Pecking order theory only support one side statement that is extraordinary profitable

firms are maximum finance their operations through internal financing and will tend to lesser the level of leverage or debt ratio.

Pecking order theory explains the decisions of financing which to take for enhancing the firm's worth. According to Myers and Shyam-Sunder(1999), throughpecking order theory clearly to explained the effects of profit. While, Fama and French (2002), Goyal and Frank (2003)emphasized that this theory has few others complications. According to Donaldson (1961) firms always prefer internal funds to pay dividend and also support investment opportunities. Myers (1984) also examined the capital structure of non-financial firms for the time period of ten years. He realized that these firms greatly depend on internal debt or funds.

Goyal (2002) examined the validity of pecking order theory for publically traded American firms. 27 years data used from 1971-1998. The consequence of his research was conflicting what he is recommended. Goyal (2002)discovered in his studythat internal funds like retained earnings is not sample that cover the investment spending on average level. External funds are generally used for debt financing and mostly governs equity financing through size. Goyal concludes that normally low growth firms do not operate according the pecking order theory. Pecking order theory estimate about debt or leverage is more complicated issue. In the simple words pecking order theory predict debt or lever a genaturallyraises when investment amount is higher then automatically retained earnings will falls and when the amount of investment is less than retained earnings the result will higher retained earnings or gain profit. Leverage or debt will less for high growth firms and given profitability. Leverage or debt is higher amount for high investment firms. The pecking order theory undertakes that there is no goal of capital structure. The firm selects capital or funds according to the following preference order: internal finance, debt, and equity.

The firm will choose retained earnings to debt, short term debt over long-term debt, and debt over equity. Majluf and Myers (1984) claimed that firm managers have more information than investors and always firm managers act in the favor of old shareholders.

## **2.4 Agency Cost Model**

Jensen and Meckling (1976) has defined agency theory. In cooperate finance, the agency theory describe the actions of several agents like shareholders, managers and debt holders that intervene in the company's funding. Agency theory analyzed the influence of these actions on the financial structure. According to agency theory, the optimum financial capital structure to conclude the results from a cooperation between several financing options like hybrid securities, equity and debt. There are many issues in financial and non-financial industries which represent agency conflicts in co-operating finance. These conflicts start to rise as the firm's owner representative's authority to them agers. When owner delegates consultant to managers it consequences in conflicts which encourage cost that is called agency cost. Here we present brief literature about agency cost from the point of view of investment and leverage.

According to Ang et al. (2000) examined the excellent decisions of capital structure may support to reduce these costs. When modifications in the interest of management and ownership exist then agency costs arises. Shareholders wealth may be reduced in the form of preference for the job bonuses, fudging and self-interested decisions. When debt or leverage in the capital structure is associated with equity then debt or leverage in the capital structure is more effective to reduce the agency cost (Jenson, 1986). Many researchers stated that liabilities in capital structure support to avowing



over-investment problem. In this situation, the agency problem mitigates when the payments of interest on debt then the result will reduce the cash flows leftward to cooperate or firm managers. However, liabilities have also the adverse influence by causing underinvestment problems in the case of that companies with growth opportunities. Williams (1987) has also supported the Jensen theory that including more debt in capital structure decreases agency cost. Many researchers argued that debt increases the efficiency of firms because the manager avoided the enterprise projects with negative NPV. On the other side, the debt may also block the profitable business for investment opportunities.

## **Chapter 3**

### **EMPIRICALLY ANALYSIS**

#### **3.1 Introduction**

This chapter has included empirical literature on investment and financial leverage for low and high firm's growth opportunities. Specifically, in Section 3.2, we present the relationship between leverage and investment and while Section 3.3 contains details about empirical literature on leverage and growth. In Section 3.4 we review in detailed the evidence on the leverageinvestment relationship and growth opportunities and while Section 3.5 consists of the constraint and unconstraint firms finally we show some empirical studies on leverage and investment relationship in Pakistan.

#### **3.2 Relationship between Investment and Leverage**

The subsequent section gives a summary of latest studies regarding the effect of leverage on investment in firms. Several studies have examined the theme of the relationship between investment and financial leverage from different perceptions. Each study is founded on the different period of time, dissimilar samples and also applies in different countries.

Lang et al. (1994) are probably the first researcher to empirically observe the association between investment and leverage and also to check the regulatory growth opportunities of firms. On the initial stage used regression model of investment as the sample of USA. The result of the study reports that leverage reduce investment and not positive relationship exist between investments and leverage due to agency cost problem. Moreover, the adverse relationship between investment and leverage becomes more significant in the case of firms which have low growth opportunities.

The study employs Tobin's  $Q$  used as a proxy for measuring the growth opportunities of a firm. The study concludes that there is no positive link between investment and leverage its only applies on high growing opportunities firms.

In 1996 Lang et al. further extended their work and observe the influence of investment and leverage on firm's future growth. In this paper, they used the data of industrial firms. They investigate the link between leverage and future growth using several different estimates of short-term and long-term future growth and using 20 years of composted data. There are three measures of growth, first is capital expenditures in excess of depreciation normalization by fixed assets. Secondly, the rate of growth of capital expenditures and the third, rate of increase of employment. Further the study analyzes the long and short term effects of leverage or debt on growth or firm development. In additions, firm's growth is measured individually and with respect to their industries. Its results indicate that an adverse relationship prevails between current leverage and future firm's growth. It implies that leverage decreases the future growth of firms in long a period of time. The analysis is based on the link between investment and leverage occurs within the firms and across industries. Low  $q$  firm means low growth firm not use for high  $q$  firms and not for high  $q$  firms. It implies, leverage or debt does not decrease growth for that firms which have good opportunities in the context of investment. But leverage is not positive related to firm's growth these opportunities of growth are not documented through the markets of capital and also firms growth opportunities which are not satisfactorily appreciated overcome impact of firms debt or leverage overhang problem.

Petersen (1993) was the earliest researcher who empirically study the association between investment leverage and also to check or observe the impact of net working capital on that relationship. He found indication of firms that in the short run apply

smoothing investment is best sign with the working capital. In this paper show that it's expensive for a firm that to modify the fixed or static investment. Then firms pursue alternative technique to change investment spending through funding and only source is firm internal investment. De Gryse and De Jong (2006) supported of the above paper they found that when admittance is challenging through external market then financially constraint firms which have low opportunities for growth decrease will their working capital for fixed or static investment. This result implies the adverse link between investment and financial leverage. When investment rises in the result working capital and leverage decreases.

Carrascal and Ferrondo (2010) examine the influence of financial leverage on firm investment. Its examination for the non-financial corporation in the euro zone. In this study they investigate the sensitivity of investment which have ability to change in firms' financial position. Through using a great sample or data of non-financial companies only six main euro zone nations namely (France, Belgium, Italy, Germany, Spain and Northland). In this study, the writer uses the proxy of financial pressure using the three ratios as variables: profitability, indebtedness, and the interest rate burden. From the error-correction Model and used the GMM estimation technique the results show that the first ratio profitability indicates the relationship between profitability and investment is positive. It means firm have a tendency to more or additional invest through the available internal resource. Indebtedness ratios show the negative relationship on investment because it is more difficult for firms to assess extra credit to finance for new projects of investment. The third proportion measure firm size to meet payments of interest with retained earnings and it shows an adverse link with investment. These results indicates that firm financial size is important to describe their capital expenditures.

Chittoo and Odit (2008), Aivazian et al. (2005), showed the same exploration as Lang et al. (1996) and found that investment and leverage are not positively related with each other. The consequence is strongly significant for which firms that have little or low opportunities' growth. The researchers did not indicate that which negative relationship originates between investment and leverage does not essentially. It means that underinvestment and overinvestment problems are existing. So these research studies might be influenced or lack of specificity. Goergen and Renneboog (2001), Richardson (2006) stated that the measurement of growth opportunities used Tobin's Q that it's not a complete measurement. Only it's comprised the previous opportunities' growth and we cannot use for future ones. Aivazian et al. (2003) found the influence of financial leverage or debt on the firm investment choices. Its indications create to using the data from the Canadian publically operated companies. This study measures the leverage from the various empirical models. The fixed effect model most suitable. In this paper when running the model create the endogeneity problem with the association between investment and leverage. Here investment is dependent variable and independent variables are leverage, Tobin Q or market value, sales, total assets and cash flows. In this paper leverage measured in two alternative ways first is book value of total liabilities divided by the book value of the total asset. The second book value of the long-term debt divided by total asset. Here cash flows measured the sum of earnings before depreciation. Sales determined the net sales. This paper used dummy variable and examined that leverage or debt has a strongly negative effect on that firms which has low opportunity growth. The result of this study supports to agency theories of co-operating leverage.

Motohashi and Yuan (2012) analyzed the impacts of financial leverage or debt on firm investment through shareholders indications in the case of china. Michael et al.

(2008) investigate the link between investment and leverage in china. The result represents financial leverage and investment are not positively related each other. But that impact is weak in the case of that firms which has low growth or weak operations. Zhang (2009) similarly observe the association between investment and leverage in the context of china listed firms. Further Zhang incorporated in his research residual analysis for determining the level of irregular investment. In a paper of Yuan and Motohashi implies the technique of the financial panel data set for estimation of china listed firms. In case these effects occur in the context of different firms, with different shareholders and also differ opportunities investment. In this paper firms classified into three groups first central government own firms (CSOEs), second local government own firms (LSOEs) and the third group is non-state owned firms (NONSOEs). In this paper the consequences are Firstly, analyzed relives that financial leverage or debt does have a significantly or strongly negatively impact on NONSOE, LSOE, CSOE and investment Secondly, in NONSOEs and LSOEs financial leverage or debt has adverse effects on only that firms which has low-growth, indicating this disciplinary impact on financial leverage or debt over firm investment that found in NONSOEs and LSOEs. At the end, no as such impact observed in CSOEs. This research paper proposes that cooperate governess mechanism in the case of state own -enterprising the country of china is not unproductive or inefficient.

### **3.3 Leverage and Growth**

Wu (2013) check the impact of leverage and firms growth in the European economy. He used 13 countries data and data set consists 1990-2010. There are 523 companies and 6000 firms. Yichen used the techniques ordinary least square (OLS). He used in

this test five growth measures and to check the relationship with leverage. Net investment, employment growth rate, capital expenditure growth rate are the growth measures which used that research. He concludes from the estimation there is negative correlation leverage and firms growth.

Lang et al. (1995) examined that there is not positive connection between financial leverage and opportunities growth only those companies apply which have low value of Tobin Q. on the other side, there is not negative link between financial leverage and opportunities growth which firms has high value of Tobin Q. Karadeniz et al. (2009) show that asset tangibility and return on assets is adverse lylinked to debt ratio while growth opportunities, the size of the firm have no relate to the debt ratio.

Kim and Robert (2009) found that financial elements such as financial size and leverage, effect growth rate on new projects of firms. They used an exceptional organizational data set that considersin the financial prospects through the growing new companies in the context of Canadian manufacturing firms. Actually, this research study empirically investigate the working role of financial variables in the firm development or growth. There are results, the link between financial leverage and firm growth is positive and the sensitivity of the firm growth to leverage is highest. Financial leverage or debt has little effect on the firm age and firm growth relationship.

### **3.4 The Leverage Investment Relationship and Growth Opportunities**

Overinvestment problem is predictable to happen when the opportunities of growth are little or less. In the absences of high growth opportunities then the result might be a deficiency in net present value projects. But on the other side organization will want to rise the firm size. The firm will rise or increase (free) cash flows to operate the

firms operations or activities which need to the good interest. Although the firm interest is avoided in this situation (Jensen, 1986; Stulz, 1990). So shareholder shave financing or investing in that situation even the net present value is negative of projects. The results show there is not a negative relation between investment and leverage. The administration usages debt or leverage to retain up the position or level of firm investment. But firm's managers will try to decreasing the level of leverage or debt. Leverage or debt can also help as a safety instrument for the overinvestment problem. Limited cash have to be paid bondholders that conducting the opportunity of inefficient operations. The firm management will evaluate these operations and opportunities of the bondholders (Jensen, 1986; Aivazian et al., 2005; Zhang, 2009). Through this evaluation the results is there is not positive relation between investment and leverage. Because the firm management is unwilling to pay essential principal and interest. This attitude or behavior of firm management creates to high default. Underinvestment problem is anticipated to happen in the absence of low growth opportunities. First of all in this case you can under invest when there are occuroportunities of growth. Moreover firm management can be unwilling to pay the price or cost of outside or external capital or investment (through the asymmetry information may be or not may be affected) then the uncertainty of default increases (Myers 1977; Pawlina & Renneboog, 2005; De Gryse & De Jong, 2006). Its consequences show there is also not positive relation exist between investment and financial leverage. Because the limitations of leverage or debt on investment spending due to the required cost of capital and increasing the uncertainty of default.



### **3.5 Constraint and Unconstraint Firms**

Financial constraints are funding or financing resistances that a company face although creation the investment. These can be credit constraints, dependency on the bank loan or assets liquidity, incapacity to equity issue or borrow. When companies implementing a policy of high or greater cash holding I the result there is show alleviate or less the negative impact of financial constraints firms. So we can say the constraint firms are more likely to save cash out of their cash flows (Almeida et al.(2004), Wang and Faulkender (2006)). In the absence of high cash flows, it becomes very challenging or difficult for constraint firms that low cash balances to protect or cover cash deficits or shortfalls through decreasing in reserves cash. Cash flow sensitivity of cash is significantly greater effect on high cash constraint firms than for low cash constraints firms(Denise and Sibilkov (2009)). So, constraint firms are more likely to hold cash out of their cash inflows as compared to unconstraint firms. ACW (Almeida, Campello and Weis batch, 2004) paper shows that the sensitivity estimates for constrained firms vary between 0.051 and 0.062 and are all statistically significantly better than the 1% level (excluding the KZ index). These estimations propose that for each dollar of additional cash flow a constrained firm will save around 5-6 cents, while unconstrained firms do nothing (see Table III of ACW (2004)).

### **3.6 Work in Pakistan**

Ibrahim, Fayaz (2015), and Ali, Afzal (2001) concluded the same effect of debt or financial leverage on firm investment of Pakistani companies or firms. In this research study they used annual financial reports of companies as a secondary data from (2006) to (2012). In this study, dependent variables are profitability, size, and growth

of the firms and used panel data. There are 10 firms from two sectors such as manufacturing sector and service sector and using six-year data. In this study used correlation and regression model for checking the influence on financial leverage. From this regression model, the consequences show that there is financial leverage or debt which has an adverse relationship with profitability but firm growth and firm size have no impact on the financial leverage. Moreover from this study negative impact shows that when financial leverage increased then profitability decrease but financial leverage or debt has a positive impact on the firm size.

Haque (2014) and Fiaz et al. (2011) analyzed the role of financial leverage determining to cooperate investment in Pakistan. They used secondary panel data of 400 non- financial firms from 1998 to 2011 in their paper. These firms are listed in Pakistan Stock Exchange and these are related to different sectors. In this paper, some variables are control variables which are cash flow, firm size and Tobin Q and the dependent variable are cooperate investment. For estimation apply fixed effect model and the result is financial leverage is significantly and negatively affecting cooperate investment.

Ahmed (2011) wrote a thesis to check the influence of debt or financial leverage on firm the investment through the non-financial firms of Pakistan. In this study, he used eight years (2000-2008) data which was occupied from financial statements like balance sheet analysis of the companies or firms of joint stock. The annual reports of firms also analysis for that research and the source of data collection is the business recorder and Pakistan Stock Exchange. Ahmed purposed to examine the link between investment and financial leverage under the control variables such as cash flow, Tobin Q, liquidity, net sales and return on equity. In this study different method were used like pooled regression, random and fixed effect models. The consequences found that

debt or leverage has not positive effect on firm's investment. But common effect model support that capital structure play a vital role in the choices of firms that is how to invest. When the author extended the regression model to include the individual effect and time, then there was not exist relationship. The association between investment and liquidity is positive and insignificant. The Same result showed the Tobin' Q positive but insignificant with investment. The link between investment and cash flow is adverse and significant. The results of return on equity indicate that investment and profitability of firms changes in the similar direction. The above study examined the effect of debt or financial leverage on firm investment evidence of non-financial Pakistan's firms and this study is an effort to check the effect debt or leverage on firm investment and also empirical analysis on high and low Pakistan's growth firm.

Sajid, Mahmood, and Sabir (2016) examines the effect of leverage or debt on the firm investment decision. In that study used secondary data of the firms which listed in Pakistan Stock Exchange-30 index (PSE) of Pakistan. That study is conducted on manufacturing and non-manufacturing firms which are listed in PSE over a period of five years (2009-2013). In that study main focus to examined the relationship between investment and leverage.

There are six variables which are used in that study namely, investment is used as the dependent variable and Liquidity, Financial Leverage, Profitability, Tobin's Q, Cash Flow, and Sales Growth are shown as the independent variables. The model shows that financial leverage has the negative and significant influence of the net investment. That result shows that if firm leverage ratio will be increased then net investment will be decreased. But liquidity, cash flow, and profitability have a positive impact on net investment. While liquidity and profitability have significant but cash

flow insignificant impact on net investment. Moreover, Tobin's Q and sales growth of the firm have a negative and significant impact on firm's net investment.

Zeeshan, Hashmi, and Asad explored the effect of leverage or debt on firm investment decisions to recognize the contradiction in theories like), MM irrelevance Theory (1958), Fisher Separation Theorem (1980) and Theory of Investment (1969). They also examined Are investment and financing decisions Relay Independently? In this study examined the specific chemicals sector for that research questions. They collect the data of 30 chemical companies from 2001 to 2013 for that analysis. They used the Random and Fixed effect model for that analysis. To check that panel regression effect of financial leverage, cash flow, liquidity, profitability, growth and firm size firm investment decisions. The results of this research study shows the financial leverage or debt has not positive effect on firm investment decisions. But liquidity, cash flow, profitability, firm size and growth of the firm had a positive impact on firm investment decisions.

Underinvestment hypothesis support that study and they found that financial leverage and investment are not independently but also financial leverage and investment depend on each other. Financial leverage places the negative relationship on firm managers for reducing the firm investment due to agency cost problem. They do not found personal profits in such investment. These results contradict irrelevance theory.

## **Chapter 4**

### **DATA AND METHODOLOGY**

This chapter explains the measurement of variables, resources of data collection and the methodology. It also highlights the methodology used to describe the influence of financial leverage on investment in empirical work and existing literature.

#### **4 Historical Data and Variables**

##### **4.1 Data Resources**

This research examines the effect of financial leverage on investment and analysis is based on secondary data. The sample of this study consists of all manufacturing firms listed at Pakistan Stock Exchange. A stock exchange is an organization which provides "trading" facilities for stock brokers to trade shares of the listed companies and other financial instruments such as Term Finance Certificates and Derivatives etc. for institutional and individual investors. Stock exchanges also provide facilities for the issue (listing), redemption (delisting) of securities and other capital events including further issues, the payment of income and dividends. Trades on an exchange are by members only. Stock Exchanges in Pakistan There are three Stock Exchanges in Pakistan, namely Karachi Stock Exchange; formed in 1947. Lahore Stock Exchange; formed in 1971. Islamabad Stock Exchange; formed in 1989. Out of all the three Exchanges, the Karachi Stock Exchange is the premiere Stock Exchange of the country, with approximately over 650 listed companies. It was established soon after the creation of Pakistan.

The data found from the financial statements of manufacturing firms listed at Pakistan Stock Exchange issued by SBP. This source of data is considered for analysis because it is issued by a reliable government body and the records of data are more authentic.

This study covers the period 2000 to 2014. It includes all those listed firms for which the data are accessible for minimum four following years. Moreover, the study ignores the firms belong to the financial institutions, parliamentary organizations and service organizations for analysis purpose. Because this types of organizations fundamentally change in the nature of their operations and monetary operational activities evidence are changed from non-financial data.

#### **4.2 Description of Variables**

The proposed model of the study considers net investment as the ratio of net capital expenditure (capital expenditure – depreciation) to the lagged net fixed asset. Leverage (LEV) is the lagged one time period ratio of total liabilities to the total asset. In other studies like Odit and Chittoo (2008) and Aivazian et al.'s (2005), also use the same measurement of variables for net investment and leverage. The current research uses calculated cash flow ratio as a proxy for the cash flow from financial statement of the firms. In model specification explanatory variables such as Tobin's Q and sales ratio are also included. Tobin's Q is used as the proxy for firm's growth. If the value of Tobin's Q is greater than 1 then it represents high growth opportunities and less than 1 shows the low growth opportunities. Tobin's Q is the ratio of market value of the asset to the book value of the asset. The sales ratio is measured as net sale to the lagged net fixed asset.

## **4.2.1 Dependent Variable**

### **4.2.1.1 Investment**

The dependent variable in our model is the net investment ratio which is measured as the ratio of net investment to lagged fixed assets. Net investment is calculated as capital expenditure less depreciation. The same ratio is used by Lang et al. (1995), Aivazian et al. (2003), Odit and Chittoo. (2008). and Hou and Di Sheng, (2012). Now the comprehensive measurement of net investment is given as follows:

Investment (I) = (Capital Expenditure – Depreciation)/Lagged Net Fixed Assets

## **4.2.2 Independent Variables**

In this study, we have taken the independent variables from the literature (Lang et al. 1995, Aivazian et al. 2003, Odit and Chittoo. 2008. and Hou and Di Sheng, 2012).

### **4.2.2.1 Leverage**

There are different measures for leverage, such as long-term debt to total assets, short-term debt to total assets and total liability to total assets. But in this work we have used for estimation the ratio of total liabilities to total assets for measuring the leverage. The similar ratio is used in several other studies (Pamela et al. 1983, Mehmet Umutlu 2009, Ahn et al. 2005, Sean Cleary. 1999 and Hou and Di Sheng. 2012).

*Leverage (LEV) = Total Debt / Total Assets*

### **4.2.2.2 Cash Flow**

The cash flow variable is defined as the ratio of income before tax plus depreciation and amortization divided by lagged net fixed assets.

*CashFlow (CF) = (Income before tax + depreciation and amortization) / lagged net fixed assets*

#### **4.2.2.3 Sale**

Sale is measured as net sales divided by lagged net fixed assets

*Sale = NetSale / LaggedNetFixedAssets*

#### **4.2.2.4 Tobin's Q**

Tobin's Q is used to measure the high and low-growth firms and it is measured as the market value of total assets divided by the book value of total assets. The market value of the firm is the sum of the book value of total liabilities, common shares and the estimated value of the preferred shares. From the literature, it is clear that Tobin's Q has a significant effect on investment as Gomes (2001) argues that the investment of the firm is much sensitive to Tobin's q and cash flow.

*Tobin's Q (Q) = MarketValue of the total assets / BookValue of Total Assets*

### **4.3 Measure of High and Low Growth Firms**

From the existing literature it is evident that Tobin's Q is used for measuring the high and low firm growth (Ahn et al., 2006 and Aivazian, 2005). Firth et al. (2008) analyze the debt disciplinary effect by using the financial data of listed firms in the Canada and use the Tobin's Q approach for the classification of high and low-growth firms. The study under reference incorporates the same approach for the classification of high and low-growth firms through Tobin's Q variable. If the Value of Tobin's Q is greater than 1 it shows the high growth firms and if the value of Tobin's Q less than 1 it represents the low growth firms.



### 4.3.1 Empirical Framework

In this chapter, we discuss techniques which are used for estimations and testing the hypotheses for this study. The first model of this study describes the link between financial leverage and firm's investment. On the other hand the second model observes the effect of leverage on investment but in the case of high and low growth firms. Further, we estimate the effect of financial leverage on investment for constrained and unconstrained firms. This study covers the time period 2000-2014 and uses the unbalance annual panel data for estimations.

## 4.4 The Empirical Model

### 4.4.1 Model Specification

#### 4.4.1.1 Leverage and Investment

To examine the impact of leverage on investment this study develops a model based on the extensive empirical work of Aivazian et al. (2005) and Hou and Di Sheng (2012). We adopt that the strategy of investment of the company is decided at the start of each year and its show the linear or direct relationship with the ratio of debt-to-assets. Thus the model for analysis of data is specified as follows;

$$INV_{i,t} = \alpha + \lambda_t + \eta LEV_{i,t-1} + \beta CF_{i,t-1} + \varphi Sale_{i,t-1} + \delta Q_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

where  $I_{i,t}$  is the ratio of the net investment of firm  $i$  at time  $t$  to the lagged net fixed assets;  $L_{i,t-1}$  is lagged leverage;  $CF_{i,t-1}$  is cash flow of firm  $i$  at time  $t$ ;  $Sale_{i,t-1}$  is lagged net sales of firm  $i$ ;  $Q_{i,t-1}$  is lagged Tobin's Q;  $\alpha$  is unknown intercept for each firm;  $\lambda_t$  is a set of time dummy variables which control the time effects whenever unexpected variations or special events occur in the year;  $\mu_i$  is the individual effect of firm  $i$ , and  $\varepsilon_{i,t}$  is the error term.

In the Model 1LEV denotes the leverage and the measurement of the leverage variable is  $TotalDebt/TotalAsset$ (Sheng and Hou, 2014). The cash flow is measured as a sum of earnings before investment and tax and depreciation. Whereas, variable of sale is measured as net sales divided by lagged net fixed asset. Tobin's Q is measured as a market value of total assets divided by the book value of total assets.

#### 4.4.2 Growth Opportunities, Leverage and Investment

Aivazian et al. (2005) determine that there is not positive correlation between investment and financial leverage. Investment expenditure is significantly robust in low-growth firms than in high-growth firms. Wang and Mao (2008) argue that financial leverage causes under-investment for companies with high-growth opportunities while initiate over-investment for low-growth companies.

To test the differences in the role of leverage for high-growth versus low-growth firms we use the following specification:

$$INV_{i,t} = \alpha + \lambda_t + \eta LEV_{i,t-1} + \gamma D \times LEV_{i,t-1} + \beta CF_{i,t-1} + \varphi Sale_{i,t-1} + \delta Q_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

where  $D$  is a dummy variable which is equal to 1 if Tobin's  $Q > 1$ , and 0 otherwise.

#### 4.4.3 Identify the Constraint and Unconstraint Firms

Empirical work of Almida et al. (2004) also support the use of Kaplan and Zingales (KZ) index for measuring the financially constraint and unconstraint firms. There is no fix measure for financially constraint and unconstraint firms as different researchers use different schemes to measures the financially constraint and unconstraint firms. In this study we use KZ Index technique suggested by Kaplan and Zingales (1997) to measure financially constraint and unconstraint condition of the firm.

The KZ index is constructed by Lamont, Polk, and Saa-Requejo (2001) and created on the results of Kaplan and Zingales (1997).

The equation of the KZ index is as follows;

$$\text{KZ index} = -1.002 \times CF_{i,t} + 0.283 \times TQ_{i,t} + 3.139 \times Lev_{i,t} - 39.368 \times Div_{i,t} - 1.315 \times CHI_{i,t}$$

where,  $CF_{i,t}$  in the above equation denotes the firm cash flows, defined as the ratio of income before tax plus depreciation and amortization divided by book assets.  $TQ_{i,t}$  is the Tobin's Q, is calculated as the market value divided by the book value of assets.  $Lev_{i,t}$  denotes the leverage, is calculated as the ratio of total liabilities to total assets.  $Div_{i,t}$  is dividend that is measured by Total dividends plus purchase of common and preferred stock divided by book assets. Lastly,  $CHI_{i,t}$  is cash holding of firm. It is considered as the cash and marketable securities divided by total assets.

#### **4.5 Estimation Method**

In the previous literature, more than a few different estimation techniques are accessible to evaluate the effect of financial leverage on investment of manufacturing firms such as, among others; Aivazian (2005), Barclay and Peeters (2008), Ali, R., & Afzal, (2011), Di sheng, Shuy and Hou., (2014), Cleary, W.S. (2010) have used GMM estimator for their analysis. We will also use the robust two-step system-GMM estimator proposed by Arellano and Bover (1995) and later on fully developed by Blundell and Bond (1998). See, Blundell et al. (2001) for more on how system GMM estimator improves the performance (poor performance) of the standard GMM estimator.

Models, (1), (2) and (3) estimate for the whole sample using GMM to regress for possible endogeneity of the descriptive or independent variables. We adopt an instrument variable approach to deal with the endogeneity problem pertaining to the

relationship between leverage and investment. The instrumental variable for leverage that we use is the proportion of the value of tangible assets to total assets. Using tangibility as an instrumental variable can be justified on the basis of the following arguments; bankruptcy cost are an important determinants of firm leverage level and tangible assets tends to reduce bankruptcy cost and increase the use of leverage. Therefore the tangibility of assets should be highly correlated with the firm leverage level. Second tangibility of asset is not highly correlated with a firm investment opportunities. The system-GMM technique efficiently control the heteroscedasticity and endogeneity problem in the data. Furthermore, it eliminates the specific fixed effects whereas taking the variance of all essential variables. Actually, although the Arellano and Bond (1991) technique is classified over to several other panel techniques of estimations. But in this technique we faces weak instruments problem. For solving that issue for leveling equations, it ought to use the difference in first step instruments for indifference equations (Arellano and Bover, 1995). In the second step should use as the instruments lagged values that variables.

Though, it is claimed that the form of the system-GMM estimator initially proposed by Arellano & Bover (1995) and then fully established by Blundell & Bond (1998) that is well-organized as compared to the difference GMM technique. The system-GMM technique is expected to produce more effective estimates technique as compared to standard difference estimator GMM technique. This effectiveness will be further noticeable for the situation where coefficient of dependent variable lagged. Methodologies to one that also holds accurate for this situation when the variation in unobservable and time-invariant factors of firm-specific is larger as compared to the time varying variability residuals.

One more important benefit of Blundell & Bond (1998) is the system-GMM (two-step) estimator that efficiently overcomes the issue of the biased sample limitations. By using both instruments, first, using of the lags and second using of the first difference of the variables. To conclude that the system GMM technique is better as it in cooperate with the equations of first difference with the level equation in the instruction to purpose all available conditions of moment. While the system-GMM technique takes into deliberation of individual across in heterogeneity, this estimation maintains variability amongst individual firms for evaluating the model in first difference as well as in level. Although a number of advantages completed the panel data estimation. The system GMM has some problems. For the instance through the literature the researchers are disagreed on the well-established method, through this method we used the selectively instruments set. Therefore application of instruments without previous information might mreas on the issue of various instruments. This estimation is suffer in that type issues if the fundamental period is imperfect. It is normally supposed that the system-GMM (two-step Generalized Method of Movement) technique produces more well-organized results in evaluation to the system-GMM (one-step Generalized Method of Movement) technique. Yet, this advantage is not continuously certain.

The system GMM technique has the strength that suggestively depend on the superiority of instruments operated in the empirical or experimental analysis. So, it is required to check variables suitability which we used as instruments. The instruments robustness can be long-established in the situation when the expected residuals don't indication an other serial correlation. Subsequently, when the model nature is dynamic, the occurrence of residual results from first order residuals possible.

Though, it is essential to confirm whether using of instruments are effective or no of other residual of the equations or model should be uncorrelated at the next order.

In the previous literature, the researchers have verified the validity of instruments through applying the altered diagnostic tests. More, it is necessary to observe the occurrence in the residuals of second order autocorrelation. Subsequent earlier studies, in our study, therefore, we apply the Arellano & Bond (1991) proposed test for AR (2) to test the presence of serial correlation. As well as for the conformity of instruments' validity, we use the Hansen's J-test for testing the null proposition of the included instruments in the model are orthogonal to residuals.

## **Chapter 5**

### **EMPIRICAL RESULTS**

In this chapter, we start the descriptive statistics. Next, we show the correlation matrix. Then we report the results of the relationship between financial leverage and net investment. And also we present the results of high and low firm growth separately using GMM System. Further, we report the results for the model categorized firms financial constrained and financial unconstrained through KZ index. The main purpose of this chapter is to provide detail empirical evidence of this study.

#### **5. Results and Discussion**

##### **5.1 Summary Statistics and Correlation Matrix**

###### **5.1.1 Summary Statistics**

We present the summary statistics to explore the distribution characteristic of the different variables which are used in the Model. Table 5.1 shows the summary statistics for our whole sample period 2000-2014. In the Table 5.1 both the mean and standard deviations are reported. In that table, the first column shows the mean values of all variables which are used in our study. Next second column shows the standard deviations (Std. Dev.) of all variables.

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**Table 5.1 Summary Statistic**

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The descriptive statistic for net investment to lag net fixed assets and other independent variables for all firms are shown in Table 5.1. The sampled including only manufacturing firms and the time period from 2001 to 2014 are provided in this table (Table 5.1). INV symbolized the investment of the firms, is computed as the capital expenditure minus depreciation of the year divided by lagged net fixed assets. LEV denotes the leverage, is calculated as the ratio of total liabilities to total assets. CF is the cash flows of the firms is measured as the ratio of the income before tax plus depreciation and amortization to lagged net fixed assets. S indicates the sales, its defined ratio of sales to lagged net fixed assets. TQ is an abbreviation of Tobin's Q, which is calculated as the market value divided by the book value of assets. It is used as the proxy growth opportunities of a firm. The sample of this data consists of non-financial firms which are listed in Pakistan Stock Exchange. All the data collected from the balance sheet analysis of non-financial firms prepared by State Bank of Pakistan.

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Variables	Mean	Std. Dev.
INV	0.017	29.468
LEV	0.646	0.685
CF	0.019	0.674
S	14.947	255.107
TQ	1.030	1.379

---



Results of Table 5.1 show the descriptive statistics of each dependent and independent variables which are used in this study. Table 5.1 shows a descriptive statistic of variables like Mean and Standard Deviation values of the variables. The mean of the ratio of net investment to fixed assets is 0.017 while the standard deviation is 29.468. The results show that in the above inspections table reveals the high variations of investment among the Pakistani manufacturing firms. This implies that the investment of Pakistani firms moves in either direction. The mean value of leverage is 0.646 is show that on average firm's 64% of assets are in debt. The standard deviation of total debt/total assets is 0.685. This value shows that the deviation is almost 68% from its mean 68%. Finally, this spread out of the data indicates sample of this study consists both low levered and high levered firms.

The mean ratio of cash flow is 0.019 with the standard deviation of 0.674. The mean value of Tobin's Q is 1.030 which shows that there exist growth and investment opportunities for firms. At the same time, there is some variation in investment opportunities between Pakistani firms. The results indicate that opportunities for firm investment can move upward and downward with the magnitude 1.379 from the mean. Since we have taken the data from heterogeneous sectors, therefore, it displays so high variability. The sample average of Tobin's Q is 1.030 that reflects market expectations of strong growth opportunities for Pakistani firms over this sample period. The mean value of sales is 14.947 while its standard deviation is 255.107. From these results, we can say that sales of firms in Pakistan suffer from greater deviation.

On the comparison of the standard deviations of each variable, sales variable seems are more volatile as compared to all other explanatory variables. Whereas less value of standard deviation (29.46) implies that there exist low variations in the data of this

variable. The high deviations from the means indicate that Pakistani manufacturing firms suffer from great deviation.

### **Table 5.1.2 Correlation Matrix**

Correlation matrix used to explore the dependency between multiple variables at the similar time period. Table 5.2 contains the results that show the coefficient between each variable. Basically correlation analysis measure the linear association relationship between two variables. The coefficient values of correlation are always between positive 1 and negative 1.

In Table 5.2 it is clearly observed that there exist a significant correlation among the variable from the Models 1 and 2. Although correlation among some of the variables is not reported significantly in Table 5.2. But this insignificance is in line with the previous literature. In Table 5.2 shows that leverage has anegative and significant impact on net investment. These results suggest that capital structure plays an important role in the firm's investment policies. Mayers (1977) argues that if leverage has a negative effect on investment then the reason could be an agency problem between shareholders and bondholders.

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### **Table 5.2 Correlation Matrix**

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Correlation matrix table shows the pairwise (Pearson) correlation coefficients between for net investment to lag net fixed assets and other independent variables for all firms are shown in table 5.2. The value given in parentheses are p-values to test whether the correlation estimation is different from zero. The sampled including only manufacturing firms and the time period from 2001 to 2014 are provided in this table (Table 5.2). INV, symbolize the investment of the firms, is computed as the capital expenditure minus depreciation of the year divided by legged net fixed assets. LEV

denotes the leverage, is calculated as the ratio of total liabilities to total assets. CF is the cash flows of the firms is measured as the ratio of the income before tax plus depreciation and amortization to lagged net fixed assets. S indicates the sales, its defined ratio of sales to lagged net fixed assets. TQ is an abbreviation of Tobin's Q, which is calculated as the market value divided by the book value of assets. It is used as the proxy growth opportunities of a firm. The parenthesis used in this table show the p-value. The sample of this data consists of non-financial firms which are listed in Pakistan Stock Exchange. All the data collected from the balance sheet analysis of non-financial firms prepared by State Bank of Pakistan.

Variables	INV	LEV	CF	S
LEV	-0.0595 (0.0005)			
CF	-0.0002 (0.9893)	0.1963 (0.0000)		
S	0.6829 (0.0000)	-0.0094 (0.5839)	0.0417 (0.0152)	
TQ	-0.0023 (0.8928)	0.1125 (0.0000)	-0.0000 (0.9978)	-0.0054 (0.7564)

The views of Jensen (1986), Stulz (1990) and Grossman Hart (1982) also show the negative relationship between leverage and investment. But their arguments based on agency conflicts between managers and shareholders. If managers work in the interest of shareholders then may give up some positive net present value projects due to debt overhang.

The relationship between financial leverage and investment is negative, which indicates the inverse relationship between these two variables. Investment has the positive relationship with sales and negative relationship with the other independent variables such as cash flow and Tobin's Q. Leverage has a negative relationship with Sales and shows the positive relationship with Cash flow and Tobin's Q. In addition cash flow variable also shows a negative relationship with Tobin's Q while the positive relationship with sales. Tobin's Q has the positive relationship with leverage while the negative relationship with all other variables cash flow, sales, and investment.

## **5.2 Estimation Results**

For analysis, relevance and suitability of the certain model and estimation technique, this study used two-step system-GMM estimator to estimate the results for all regressions. Arellano-Bond (AR) test and Sargan test of overidentifying restrictions calculated for the data sample. The null hypothesis of AR test recommends that instrument variables are valid i.e. instruments variable are not correlated with residual, while the null hypothesis of Sargan test suggest that instruments which are used for estimation are the whole exogenous. In the given Table 5.3 the probability value (P-Value) of Sargan test is high enough (0.975), so the null hypothesis of the endogeneity of instruments variable can accept. Likewise, the P-Value Arellano-Bond test (2) is high therefore the null hypothesis about instruments validity can be accepted. Panel B of Table 5.3 shows the special effect of the J statistics, AR (2) test and F test. These tests disclose that the instruments used in this model are robust.

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**Table 5.3 Estimation results of relationship between leverage and investment**

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The specification baseline model present in this 5.3 Table. This table presents the result of all firms. For this regression, we used the two-step system GMM estimator. We estimate the following model relationship between financial leverage on investment.

$$INV_{i,t-1} = \alpha + \lambda_t + \eta LEV_{i,t-1} + \beta CF_{i,t-1} + \varphi S_{i,t-1} + \delta TQ_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

Where.  $INV_{i,t-1}$ , is the net investment that is dependent variable of firm  $i$  in period  $t - 1$ .  $INV$ . Symbolize the investment of the firms, is computed as the capital expenditure minus depreciation of the year divided by legged net fixed assets.  $LEV_{i,t-1}$ , variable is leverage, is calculated as ratio of total liabilities to total assets for firm  $i$  in period  $t - 1$ .  $CFV_{i,t-1}$ , variable is cash flow of firm  $i$  in period  $t - 1$ . It is defined as the standard deviation of the cash flow for each firm over the sample period.  $S_{i,t-1}$ , indicates the sales, its defined ratio of sales to lagged net fixed assets.  $TQ_{i,t-1}$  is Tobin Q for firm  $i$  at  $t - 1$  time, calculated as the market value divided by the book value of assets. It is used as the proxy growth opportunities of a firm.  $\varepsilon_{i,t}$  is the disturbance term. Information regarding firm-year observations, total number of instruments, diagnostic tests, and their p-values are given in Panel B of the table. F-statistics shows the fitness of model. The J-statistic is the Hansen (1982) test for testing the orthogonally condition for the instruments used in the estimation. The AR (2) is the Arellano-Bond (1991) test for testing the presence of second order autocorrelation in the residuals. This study use the annual unbalance panel data set. This data set covering the period 2000-2014. The sample consists of non-financial firms listed at Pakistan Stock Exchange. The data are collected from Balance Sheet Analysis of Non-Financial Firm.

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**Panel A: Estimation results of relationship between leverage and investment**

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<b>Variables</b>	<b>Coefficients</b>	<b>Standard Errors</b>	<b>P&gt; z </b>
Inv t-1	0.525	0.136	0.036
Lev t-1	-0.252	1.442	0.040
CF t-1	0.026	0.007	0.000
S t-1	0.170	0.078	0.013
TQ t-1	0.032	0.0105	0.027
Con	2.313	16.895	0.932

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**Panel: B Diagnostic tests**

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No Observation	3014	AR (2)	-1.37
No of instruments	408	Probability	0.27
F- Statistics	1750	J-Test	337.5
Probability	0.00	Probability	0.86

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In above Table, 5.3 Panel B shows the number of observations. A number of instruments and especially show the results of F statistics, J Statistics and AR (2) in this model. F statistics show the highly significant P-value for all firms. J statistics is the Hansen (1982) testing for an orthogonal condition for the instrument which is used in this model estimation. Basically, J-test provides the evidence accepting the null hypotheses that the instruments which are used in this model are statistically independent residuals. We find in J-test P-value as 0.86. This value shows that the instruments are valid for the above model which represent in Table 6.3 estimation. AR (2) value 0.27 result show that there is not major evidence autocorrelation

problem in this model. Moreover “Prob > Chi<sup>2</sup> ≡ 0.00” show that overall Model is significant.

Estimation results of Table 5.3 describe the impact of Financial Leverage on firm investment for Pakistani manufacturing firms. The estimated coefficient of leverage has a negative and significant impact on net investment. The results found that the level of debt has a significant and negative impact on firm investment. The coefficient value of leverage is -0.252. It indicates that when leverage of a firm is increased by 1 unit its investment decreased by 0.25 units. It means that leverage plays a main role in overcoming the issue of over investment (Myers, 1977). Furthermore, leverage may lead to liquidity problems and could affect the ability of the company to maintain growth. As a result debt overhang problem reduces firm investment. These results are consistent with the study of Di Sheng and Hou (2014), they also found an inverse relationship between investment and leverage. Sajid et al. (2016) also conclude that the value of Pakistanis firms is negatively correlated with financial leverage.

The regression coefficient of cash flow (0.260) is positively and significantly related with investment. Table 5.3 results show that 1 unit increase in cash flow leads to 0.260 units increase in investment. It means that both variables are moving in the same directions since cash flow of the firm positively induces the investment in firms (Jensen, 2002). The results further explain that the availability of cash flow provides more opportunities for investment in firms. The investment of firm is more sensitive to cash flow because a higher level of cash flow provides more opportunities for the firm to make the investment. This positive relation is coherent with Sajid et al. (2016); Di Sheng and Hou (2014); Odit and Chittoo (2008).

In Table 5.3 results show the coefficient of TQ is positive and significant with the investment. Results show the estimated coefficient of TQ is 0.032 for investment. It

explain that 1 unit increase in TQ then the investment will increase with 0.032 units. Finally, the result of sales show the positive and significant relationship exist between sales and investment. It means 1 unit increased in sales provides 0.174 units increase in investment. Bundala (2014); Yasemi et al. (2014) and Hassan (2011) also got the positive relation between investment and sales ratio. The results of this relationship suggest that high ratio of sale indicates the high degree of efficiency in assets utilization.

#### 5.2.4 Estimation results of Growth Opportunities, Investment and Leverage

To achieve the second objective of the study, the impact of leverage on investment for low and high-growth firms two step GMM system is applied for the analysis of data.

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#### 5.4 Estimation results of Growth Opportunities, Investment and Leverage

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The specification model for high and low growth opportunities present in Table 5.4. This table presents the result of all firms. For this regression, we used the two-step system GMM estimator. We estimate the following model relationship between financial leverage on investment.

$$INV_{i,t-1} = \alpha + \lambda_t + \eta LEV_{i,t-1} + \gamma D \times LEV_{i,t-1} + \beta CF_{i,t-1} + \varphi S_{i,t-1} + \delta TQ_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

Where.  $INV_{i,t-1}$ , is the net investment that is dependent variable of firm  $i$  in period  $t - 1$ .  $INV$  Symbolize the investment of the firms, is computed as the capital expenditure minus depreciation of the year divided by lagged net fixed assets.  $LEV_{i,t-1}$ , variable is leverage, is calculated as ratio of total liabilities to total assets for firm  $i$  in period  $t - 1$ .  $CFV_{i,t-1}$ , variable is cash flow of firm  $i$  in period  $t - 1$ . It is defined as the standard deviation of the cash flow for each firm over the sample period.  $S_{i,t-1}$ , indicates the sales, its defined ratio of sales to lagged net fixed assets.  $TQ_{i,t-1}$  is Tobin Q for firm  $i$  at  $t - 1$  time, calculated as the market value divided by the book value of assets. It is used as the proxy growth opportunities of a firm.  $\varepsilon_{it}$  is the disturbance term. Information regarding firm-year observations, total number of instruments, diagnostic tests, and their p-values are given in Panel B of the table. F-statistics shows the fitness of model. The J-statistic is the Hansen (1982) test for testing the



orthogonally condition for the instruments used in the estimation. The AR (2) is the Arellano-Bond (1991) test for testing the presence of second order autocorrelation in the residuals. This study use the annual unbalance panel data set. This data set covering the period 2000-2014. The sample consists of non-financial firms listed at Pakistan Stock Exchange. The data are collected from Balance Sheet Analysis of Non-Financial Firm.

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**Panel A: Estimation results of Growth Opportunities, Investment and Leverage**

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Variables	Coefficients	Standard Errors	P>   z
INV <sub>t-1</sub>	0.692	0.2227	0.011
LEV <sub>t-1</sub>	-1.901	1.1569	0.040
D×LEV <sub>t-1</sub>	2.650	0.6544	0.026
CF <sub>t-1</sub>	0.026	0.0042	0.030
S <sub>t-1</sub>	0.170	0.0026	0.022
TQ <sub>t-1</sub>	0.032	0.0041	0.048
Cons	2.313	4.247	0.098

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**Panel:B Diagnostic tests**

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No Observation	2737	AR (2)	-0.75
No of instruments	442	Probability	0.251
F- Statistics	2617	J-Test	329.8
Probability	0.00	Probability	0.850

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In Table5.4, Panel B shows the number of observations. A number of instruments and especially show the results of F-statistics, J-test and AR (2) in this model. F-statistics show the highly significant P-value for all firms. J-test is the Hansen (1982) testing for an orthogonal condition for the instrument which is used in this model estimation. Essentially J-test provides the indication compliant the null hypotheses that the

instruments which are used in this model are statistically autonomous residuals. We find in J-test P-value as 0.850. It value show that the instruments are valid for the above model which symbolize in Table 5.4 estimation. AR (2) the p-value is 0.251 that results show that there is not major mark autocorrelation problem in this model.

In Table 5.4 panel A explains the results of the effect of leverage on the investment of firms with high and low firm's growth opportunities. In this table we used interaction term as a dummy. D is the dummy variable. Firms has classified if Tobin's Q is greater than 1 then we assign 1 and otherwise 0. Tobin's Q used as proxy to measure the growth of the firm. In the above table, there is interaction variable  $D \times L$  means Dummy multiply by leverage.

Table 5.4 shows that one unit increase in one-period lagged investment tends to increase investment by 0.692 units. This result shows there is existence of persistency. All variables used in our model showing positive results except leverage. Leverage have a negative relationship with investment. It means that whenever company increase its leverage it tends investment to be shorter; 1 unit increase in leverage will decrease investment by 1.901 units. On the other hand, the dummy leverage have significant and positive impact on investment. Even when we calculated manually the relationship between low-growth and high-growth firms, we come to conclusion that there exists the same impact as mentioned above. The coefficient of low-growth and high-growth firms in the above Model 2 theses are  $\eta + \gamma * D$ . Now we calculate for high-growth firms the coefficient of leverage is positive i.e. ( $D_1 = -1.91 + 1(2.65) = 0.749$ ). On the other hand, for low-growth firms the coefficient of leverage is negative. It is calculated as ( $D_0 = -1.91 + 0(2.65) = -1.9$ ). The results indicate in Table 5.4 that low-growth firms have a significant negative relation between leverage and investment (Aivazian et al., 2005). It implies that capital structure play important role

in the firm investment policies. Franklin (2011) also argues that leverage of high growth firms has less effect on high growth firms due to investment opportunities and recognizing by the capital market. So high growth firms can easily obtain funds from the capital market and do not depend solely on the financial leverage to boost firm's investment.

Except leverage variable, all other variables used in our model have positive impact on investment. The regression coefficient of cash flow is positively and significantly related with investment. It result indicate that 1 unit increase in cash flow leads to 0.026 units increase in investment. The relationship between sales and investment is also positively and significantly impact on investment. 1 unit increase in sales causes 0.017 units increase in investment. Finally, the results of TQ indicates that TQ and investment moves in the same direction. When TQ increase by 1 unit, investment increases by 0.032 units.

### **5.5 Financially Constrained and Unconstrained Firms**

Table 5.5 provides the empirical results of the impact of financial leverage on investment for constraint and unconstraint firms. Results of preceding Table 5.5 shows that only effect of financial leverage on investment of all firms. Results of Table 5.5 classified firms into constrained and unconstrained through KZ index. In the previous literature measure, the constrained and unconstrained firms through WW index, KZ index, and size. We choose KZ index approach for our estimation. We offered in this study are robust. To examine the separate impact of financial leverage on investment for constrained and unconstrained firms.

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**Table 5.5: Estimation Results of Financial Constraint and Financial Unconstrained Firms**

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Table 6.5 present the result of the impact of financial leverage on investment financially constraint and financially unconstraint firms separately. For this regression, we used the two-step system GMM estimator. We estimate the following model relationship between financial leverage on investment.

$$INV_{i,t-1} = \alpha + \lambda_t + \eta LEV_{i,t-1} + \beta CF_{i,t-1} + \varphi S_{i,t-1} + \delta Q_{i,t-1} + \mu_i + \varepsilon_{i,t}$$

where.  $INV_{i,t-1}$ , is the net investment that is dependent variable of firm  $i$  in period  $t - 1$ .  $INV$ . Symbolize the investment of the firms, is computed as the capital expenditure minus depreciation of the year divided by legged net fixed assets.  $LEV_{i,t-1}$ , variable is leverage, is calculated as ratio of total liabilities to total assets for firm  $i$  in period  $t - 1$ .  $CFV_{i,t-1}$ , variable is cash flow of firm  $i$  in period  $t - 1$ . It is defined as the standard deviation of the cash flow for each firm over the sample period.  $S_{i,t-1}$ , indicates the sales, its defined ratio of sales to lagged net fixed assets.  $TQ_{i,t-1}$  is Tobin Q for firm  $i$  at  $t - 1$  time, calculated as the market value divided by the book value of assets. It is used as the proxy growth opportunities of a firm.  $\varepsilon_{it}$  is the disturbance term. Information regarding firm-year observations, total number of instruments, diagnostic tests, and their p-values are given in Panel B of the table. F-statistics shows the fitness of model. The J-statistic is the Hansen (1982) test for testing the orthogonally condition for the instruments used in the estimation. The AR (2) is the Arellano-Bond (1991) test for testing the presence of second order autocorrelation in the residuals. This study use the annual unbalance panel data set. This data set covering the period 2000-2014. The sample consists of non-financial firms listed at Pakistan Stock Exchange. The data are collected from Balance Sheet Analysis of Non-Financial Firm. P-value of t-statistics are provided in parentheses

below the coefficient estimates. The parentheses used in table shows the standard error. \*\*\*, \*\* and the \* denote the significance at the 1%, 5% and 10% level of significance respective.

Panel A: Estimation Results of Financial Constraint and Financial Unconstrained Firms			
KZ INDEX			
Variables	Financial Constrained	Financial Unconstrained	
<b>INV<sub>t-1</sub></b>	0.574** (0.069)	0.656** (0.385)	
<b>LEV<sub>t-1</sub></b>	-1.918* (0.195)	0.348** (0.173)	
<b>CF<sub>t-1</sub></b>	1.225** (0.186)	0.263** (0.053)	
<b>S<sub>t-1</sub></b>	0.552* (0.052)	0.281* (0.061)	
<b>TQ<sub>t-1</sub></b>	0.062** (0.007)	0.229* (0.054)	
<b>Cons</b>	2.453	0.251	

Panel:B Diagnostic tests

No Observation	1644	No Observation	1639
No of instruments	305	No of instruments	65
F- Statistics	450	F- Statistics	489
Probability	0.000	Probability	0.000
AR (2)	-1.30	AR (2)	-0.65
Probability	0.391	Probability	0.515
J Test	241.8J-Test64.49		
Probability	0.793	Probability	0.291

To assess the results' robustness, we estimated the equation 3 by GMM, grouping firms by financially constraint and unconstraint, according to the KZ index. The regression results with the GMM method are presented in the above 5.5 Table.

The results presented in Table 5.5 the estimated coefficient of leverage suggests that the total debt to total assets of firm is negative and statistically significant related to investment for financially constraint firms. Conversely, the estimated coefficient of leverage suggests that the debt to total assets is positive and statistically significant related to investment for financially unconstraint firms. In case of financially unconstraint firms, the leverage ratio weakened the impact on investment, but it is highly significant at 1% level. That is, by 1 unit increase in leverage then investment increase by 0.348 units. Likewise, financially constraint firms show the estimated coefficient of -1.91. It shows the negative relation exists between financial leverage and net investment (Klatzis and D Castro, 2010). When we inspect the impact of financial leverage on investment, we come to the point that the effect of leverage on firm investment is positive for unconstrained firms and negative for constrained firms and that results are statistical significance for both categories (FC and FUC firms). The estimated coefficients of FC and FUC show that the persistent of the FC firms is higher for the effect of financial leverage on investment as compared to FUC firms.

Financially unconstraint firm behavior of our study explains, as far as, the leverage ratio increase, it will strengthen the relationship between leverage and investment. Since financially unconstraint firm has the ability of debt from external sources without occurring high borrowing costs. But in the case of constraint firms, its impact is negative for the investment because leverage is costly for constraint firms.

The estimated coefficient of sale suggests that the sale of the firms is statistically significant and related to the positive impact on the investment whether the firms are

financially constraint or financially unconstraint. This implies that for the both, financially constraint and unconstraint firms the impact sale on investment is positive but their level of magnetite is different. Our study shows 0.552 and 0.281, respectively for financially constraint and unconstraint firms.

Cash flow has significant and positive relation with investment for the both constraint and unconstraint firms(Myers, 2001). A firm operational cash flow significantly exceeds than its profitable investment opportunities will increased. This results similar to that found by Whited (1992) the result was that sensitivity of investment is less to cash flow for low growth firms than the high growth firms. The Tobin's Q variable of firm is positive and statistically significant related to the investment for both financially constraint and unconstraint firms.

In Table 5.5 panel B represent Specifically, J-test estimations provide the evidence of accepting the null hypothesis that the instruments are statistically independent of residuals. Specifically, we find J tests p-values as 0.793 and 0.291 for the constraint and unconstraint firms. Similarly, we find AR (2) that p-value of 0.391 and 0.515 for the constraint and unconstraint firms respectively. These results did not show any major indications of the accordance of autocorrelation in tested models. These diagnostic tests deliver the resistant that the instruments are valid enough. Similarly, F-Statistics in our model also shows highly significance of p-values for both types of firms. We conclude that the diagnostic test as, it approves the validity of our instruments and it also provides the evidence of the robustness of our estimation.

## Chapter 6

### CONCLUSION

#### 6.1 Introduction

The current study represents the financial conditions of non-financial manufacturing firms in the context of Pakistan. Further the study under reference classified the firms listed at Pakistan Stock Exchange on the basis of Tobin's Q by distinguishing between two groups of firms: high growth versus low growth firms and constraint versus unconstraint firms. We sort out firm-year observations as a financially constraint and financially unconstraint firms based on the Kaplan and Zingales (KZ) index.

First of all, the study examines the effect of financial leverage on investment this regression result express that financially leverage has a negative and significantly influence on net investment in case of Pakistan. Secondly, the present study verifies the impact on high-low growth firms that regression result found a significantly stronger negative effect for low growth opportunities firms than the impact those with high growth opportunities. Our consequences sustenance to agency cost theories of co-operating leverage particularly to the theory that leverage has a disciplining character for which firms that have low growth opportunities. In the last, we examined this impact on unconstrained and constrained firms. We found that constrained firms (CF) leverage is a negative impact but on the other side for unconstraint firm's leverage is a positive impact for that firms.

In order to alleviate the problem of endogeneity and to take into aversion of the dynamic nature of the panel dataset, we used the robust two-step GMM system



technique for this estimation. We use unbalanced annual panel dataset covering the period 2000-2014.

## **6.2 Key Findings**

This dissertation creates the associations between finance theory and observed investigation all over the Pakistani manufacturing firms. In the previous literature it has been explained by McConnell (1995), Myers (1977) and Stutz (1990, 1988) that there is a negative or positive impacts caused by financial leverage because of underinvestment or over investment propositions, respectively. Although, problem of agency can arise and it reduces investment; this research supports the hypotheses of underinvestment that financial managers are compelled to invest less, as a result individual benefit towards managers reduced in such type of investments. The current study found a negative impact of financial leverage on investment. This finding supports the earlier research (Jahanzaib and Naeem, 2015, Odit and Chottoo, 2008, and Aivazian et al., 2005)

Further results of this study suggest that leverage and investment relationship varies between low and high growth firms.

In addition results of the present study indicates that negative and significant relationship exists between investment and leverage in low growth firms. On the contrary, the relationship of leverage and investment is reported positive in the high growth firms. Several studies (Aivazian et al., 2005; Franklin, 2011) have also found the same results of the significant negative relation between leverage and investment in low growth firms in comparison with the high growth firms. There are several possible reasons attributed to the negative relationship between investment and leverage. Initially, it has been observe that in the developing countries the structure of

capital markets are immature. As a result, firms depend on internal generated cash and amount of profit which has been set aside for investment. Therefore, various problems that must be solved, for instance the constraint of financing channels, insufficient legal system, and unclear property rights, etc. Furthermore, firms may use the leverage amount for an investment purpose as a working capital. Additionally, the preference of banks is usually public firms as compare to private firms to lend their money. Lastly, managers also underinvest and do not take positive net present value projects when they observe that benefits from such investment would flow out towards lenders due to financial leverage.

Cash flows and sale ratio of the firms have a positive effect on their investment. These important factors are supposed to take into constriction by managers while making investment decisions. The outflow of cash causes the decisions regarding investment as well as it has cost effectiveness because of imperfect capital market. This postulate is supported by the Pecking Order Theory. Another important finding of this study specifies that the high growth firms have tendency to make higher investment as compared to the counterpart firms. Consequently, the more profit tends to the more investment as it incurred less cost.

### **6.3 Limitations**

There are various methods for calculating financial leverage but this study employed only one method; that is total long-term liability under total assets, so future research may be conducted by employing different methodologies, such as total liability by total book assets as well also ng-term liability by total assets. This study is only limited to the non-financial sector of Pakistan and uses book value of debts for financial leverage.

#### **6.4 Policy Recommendations**

Our results have suggesting a crucial part of capital structure for the investment choices. This research has suggestions for investors, managers, shareholders and supervisory authorities to deliberate the making a policy decision. Firm managers can able to enhance the growth of their diverse projects. Board of directors ought to encourage the managers to decrease the asset replacement or the problem of underinvestment by connecting their performance and reward. They could also enforce the consequences for taking wrong decisions of investment in the situation of the over-investment proposition.

#### **6.5 Future Directions**

The empirical or observed model for this research study can be prolonged which could create or generate more information. This model we can extended through several ways; by extending the sample of panel data and including more variables in observation. In future we will expanding the data set to increase the applicability of research work. Furthermore, research may also be made on the sector-wise comparison in non-financial sectors. In this research study, for measuring the debt we used book value but market value is also one of the better measurement.

It is suggested that for future research for the measurement of debt, market value can be better option. Lastly, we can also classify the variable of debt in the form of long term debt and short term debt to how debt structure affects the firm investment for future research.

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