# MICRO AND MACROECONOMIC DETERMINANTS OF COST OF CAPITAL
# A CROSS INDUSTRY ANALYSIS OF NON-FINANCIAL FIRMS OF PAKISTAN

**By**

**Tensar Abbas**

**NATIONAL UNIVERSITY OF MODERN LANGUAGES**
**ISLAMABAD**

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FACULTY OF MANAGEMENT SCIENCES

# THESIS AND DEFENSE APPROVAL FORM

**The undersigned certify that they have read the following thesis, examined the defense, are satisfied with the overall exam performance, and recommend the thesis to the Faculty of Management Sciences.**

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Candidate of **MS** at the National University of Modern Languages do hereby declare that the thesis (Title) **Micro and Macroeconomic Determinants of Cost of Capital A Cross Industry Analysis of Non-Financial Firms of Pakistan**

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# ABSTRACT

**Thesis Title: Micro and Macroeconomic Determinants of Cost of Capital A Cross Industry Analysis of Non-Financial Firms of Pakistan**

The research on the macro and microeconomic determinants of cost of capital: A cross industry analysis of non-financial sector of listed firm in Pakistan. The main objectives of this study are to find out the impact of microeconomic determinants on capital cost and to find out the impact of macroeconomic determinants on capital cost. In this research we selected the eight growth able industries from the all industries which are listed at Pakistan stock exchange. From the chemical, energy, cement, sugar, textile, paper, motor vehicles, and food sectors 102 firms selected as sample. The proportional sampling technique is used for the selection of sample size and collected the six-year data from 2011 to 2016. In our study we use the weighted average cost of capital (WACC) as dependent variable and we considered the eight independent variables and divided into the two categories. The independent variables are the current ratio (CR), Debt-to-equity ratio (DB), earnings per share (EPS), asset turnover ratio (AT), institutional ownership (IO), firm size (SIZE), as microeconomic based determinants and interest rate (IR), industrial production index (IPI), as macroeconomic based determinants of cost of capital. In this research, used the different statistic tools such as descriptive, regression analysis, correlation analysis for the investigation of relation between independent and dependent variables. The results of this research show that the debt to equity, earning per share, interest rate and industrial production index have the positive relation with the capital cost of companies. The size of companies and institutions ownership has the negative relation with capital cost of Pakistani companies. We also find the insignificant relation of current ratio and assets turnover.

**Key words:** Macroeconomic, Determinants, Cost of capital, WACC

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God never spoils any efforts. I set my unfeigned and meek thanks before Him, who is the only supreme authority and whose presence has been figured on the two words ′Kun Faya Kun′. Every tiny or massive entity moves with His permission. Countless thanks to Him, who bestowed upon me the potential and ability to contribute a drop of material in the existing ocean of knowledge.

But the real success for any person in this world is that for which I have no words to pay in the court of Holy Prophet Muhammad (P.B.U.H) that I am in his ummah, and his moral and spiritual teachings enlightened my heart, mind and flourished my thoughts towards achieving high ideas of life. In the view of his saying,

**″He, who does not thank to people, is not thankful to Allah”**

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Now I am trying to acknowledge a tremendous debt of feelings for my parents whose prayers, sympathies stress my way towards success, whose hands always rise in prayers for me. Who always wish to see me successful in every field of life and without their moral supports, the present distinction would have merely been a dream. They always act as a light house for me in the dark oceans of life path.

**Tensar Abbas**

# DEDICATION

I dedicate this thesis to my Late Father, Muhammad Anwar, who throughout his lifetime etched in the walls of my heart the importance of education

# CHAPTER NO.1

# INTRODUCTION

## 1.1 Background of Study

Every organization requires the fund in shape of money or wealth for purchasing the assets and for the operational process of business. The wealth that is required for the producing of goods or services is called the capital. Mostly, it should be in shape of money. The business received the money through the capital formation process. The firm directly sells its securities or stock to the public or savers who have the enough money, the firm also received funds through indirect process of capital formation. The Public or Savers provide their Funds to Banks, Insurance firms or other financial institution. That financial institution purchases different security or stock of the firm. So, the capital formation process completed through direct or indirect process and firm received the wealth for the running of business formation process. The capital of the firm comes into the business from two different form, debt and equity. The debts are the loans and other different kinds of credit and the debt is mostly repaid with a fixed rate of interest. The equity dose not has any direct obligation to repay the funds, the equity holders enjoy the ownership positions in company and they earn the profit in shape of dividend. All the persons, public and institutions that provide the wealth or money to business in shape of capital they are called the capital providers or investors.

Investors provide different sources to the company for investment and they have different kinds of claims on the assets of the company. The debt holders have the right to receive the fixed rate on their investment in shape of interest rate. The equity holders have the right to receive the profit on their shares which they have hold in company or purchase the new share from company. The shareholders have the right to control the affairs of company but the bond holders have no direct control on the firm, so the public which hold the shares of companies are called the owners and bondholder are lenders of the firm. These are the two basic kinds of claimants; there are some

others such as convertible debenture, leases, preferred stock and warrants. Every firm has different types of assets that are financed by the investors. The investors required the return against their funds or wealth that they provide to the business. So, it is the main objective of the firm to operate the business in such a way to generate the profit. It is the main responsibility of management to use the assets of business in such manners to produce the profit for the satisfaction of bond and equity holders. Every kind of investor faces different types of risk and every investor expects required return against its funds provided to the business. That expected return is the opportunity for the investor. The shareholders are ones who decided to accept or reject the new project. The shareholders calculated the expected return and risk of the new project and they accept those kinds of new projects that generate the more return against the cost of funds.

The cost of funds is the minimum return that is adjusted with the risk of new project for the acceptance of shareholders. If the firm's investment expected to generate the profit below their cost, then investors reject that project and shift to another project. The investors find the new projects with the higher return but low risk or with same risk. So, the investors want to earn the more return on its funds that provided to firm. The cost of capital has an important role in the financial matters of the business. It is one of the important elements in valuation of business. A business must generate the profit more than the cost of funds provided by the investor. It is used as benchmark for the evaluation of investment decisions. It is the concept that has always financial managers considered important for creates a difference between the net income and economic profit. It is very important for the decision making. For investment, the investors need to know the cost of funds. It can be defined in different ways, commonly we can say the minimum rate of return that must be achieved by the firm. For this purpose, the experts try to decrease the cost of capital, it causes that to increase the net profit and economic profit and ultimately company's value increase.

In the current modern world, the companies face the one of main issue is to control the financing cost and make affordable for company and at the same time the experts main objective is to increase the income of stockholders. In this situation, there are different issues and matters that affect the financial condition of the business but cost of capital is the major issue for experts. A suitable cost of funds plays a major role in the selection of healthy capital structure for the firm the best use of resources to generate the profit and increase the share prices. So, it is the main

obligation of managers to select that kind of polices that can help to control the capital cost. The capital cost of any organization is very important for managers of the companies because it is minimum rate that is wanted by the investors and the investors want to earn more and more return and at the same time it increases the cost of funds for company so managers must study the cost of funds.

Future cash flows are discounted by the investors, higher cost of funds and lower present value. So, a company which have lower cost of capital will be better than which have higher cost of capital. Experts evaluate the investment projects, to evaluate the risk associated with cost of capital so it is also one reason to study the cost of capital. It is also used for capital structure, for leasing matters, management of working capital for long term bonds.

For the decision making of financial matters of the company cost of capital plays an important role. The capital providers sacrifice their resources to invest with a view to earn or receive the return on their investment in further. As a firm, which uses the money or wealth provided by the investors and pay rent to the investors for that wealth, so it is reward for investors for the use of capital. When the financial experts designing the structure for a firm, they must keep in mind that the basic objective is to increase the value of firm and at the same time they also consider, to minimize the cost of funds. The financial managers evaluate the various sources of capital and experts always select the economical financial source and then design the best structure for the company. It is also very important for the investing decisions of the company and it can be used as a tool for investors whether they invest in a project or shift to the other project for the investment. The return of the investment must be greater than the cost of funds provided by the investors. An investor cannot accept the project until the return is greater than its cost. For controlling the cost and for avoiding risk the managers must evaluate each source of funds and calculate the cost of source and select the source that has the minimum cost. The costs of funds are also used for performance of the firm the managers can calculate the firm's performance to compare the total profit of firm with the total cost of the firm. The profit of the firm must be is more than the cost of each sources then it will be a satisfactory. The finance provider better knows the required or expected income and the risk which is associated with the investment. A firm which has higher the cost of funds, it means that the firm's present earning is low and its structure of capital also imbalance and at the same time investors want more return. It is also very helpful for other financial

decision in firm such as dividend policy, capitalization and for the selection of different sources for the working capital.

The first study conducted by the Omran and Pointon (2004) that identified the determents of cost of capital at industry level in Egypt. The analysis was conducted on capital cost in Egypt by taking the 119 companies as sample size. They used the various types of methods for the calculation of equity cost and then turn into the calculation of the cost of capital. Both costs calculated at the book value and market value, they also use the two methods for the calculation of equity cost, Gordon cost model and other is earning-price ration. At the broader level the capital cost is 12%, the equity cost 12.5% were founded in this study. The stepwise regression multiple was used step wise to find out the results of the determinants but the size and growth are the important. When the analysis was conducted at the individual level, all the model's results showed that the important element was liquidity for food sector. The sector of heavy industries return shows the variation in equity cost due to the gearing income, gearing capital and firm size. The real estate and construction sectors result shows that the most important elements were the firm size, gearing income, growth in earning and backing fixed assets. In the services the one factor was found that was the tax ratio. A thing which was clear in this analysis, the cost of capital was different from one sector to another sector.

The second analysis was conducted by the Shariflou et al. (2012) in Iran, they take the five industries from the Tehran stock exchange and collected the data from 2002-2010. They used the screening method for the selection of 59 companies from the 5 industries. The correlation method was used in this analysis because the purpose of study was to check effects of different ratios on capital cost. In this study they took the capital cost as dependent variable and eight financial ratios as the independent variables. The three industries out of five have the significant relation with WACC and other two have the no significant relation with WACC. In this study the results showed that some variables such as firm size, EPS, TAT and tax to profit before tax have the direct relationship with the dependent variable. This study also shows that the variables such as age and DE ratio have the inverse relationship with the dependent variable. So, this study checks the impact of some ratios on capital cost of the company. And the results show that some variables have positive impact and some have negative impact on dependent variable of this study.

The third study was conducted by the Foong and Goh (2013) in Malaysia; they took seven industries and collected the data from 2001 to 2008. They selected the seven sectors and took 354 companies which are listed at main board of Malaysia. In the first part of this study they fixed out the very easy and relevant method for calculation of equity cost for companies of Malaysia. In the second part of the study they found the impact of market and accounting-based variables on the cost of equity. In this analysis they took the cost of equity as the dependent variable and took the six variables were the independent. They divided all the six independent variables into the market base and accounting based and all these variables were the financial ratios. The accounting-based variables were the TAT, EPS, CR, and DE ratios and the market-based variables were the SL, MB and size of the company. The results of this analysis show the positive relationship of DE and EPS with dependent variable and founded the negative relationship of TAT and size with the dependent variables. They also categorized their research at the industry level and found that the size of the firm is the only one variable that was significant for all the industries and has negative impact on the dependent variables in every sector. And all the other variables results were different from industry to industry.

### 1.1.2 The Cost of Capital

The capital cost defined into two different angles; the acquisition of capital and the application of capital. If we see the acquisition of funds view or the companies view, a borrowing rate of company which a company tries to reduce. If we see the application of resources view or investor view it is the rate that must be required by the investors. Generally, the cost of capital means the expected return rate that must be repaid to the investors for their compensation. It is very important to measure the cost of capital accurately, because its play a vital role in decision making of company's different affairs such as firm's performance, investing decision, firm valuation and capital structure.

In financial management, different ways or methods are used for the calculation of capital cost. The (WACC) is one of very famous methods used for the calculation of capital cost. The funds cost includes all types of cost such as interest expenses, return expected by the invertors, and cost of loans. The (WACC) includes the cost of equity and debt cost.

The debt cost and equity cost are two elements of cost of funds. Every kind of a business gets funds from two different ways, the one is debt and the other is equity. There are some small

companies which are only equity financed most of other companies are financed by debt and equity. The return that is provided to the shareholders for investment is called the cost of equity. The portion of funds which a business acquiring through debt, the cost of that portion must be provided to the bondholders and that cost called the cost of debt. So, the main difference between both costs is that the cost of equity received by the shareholders and the cost of debt received by the bondholders or debt holders. The WACC calculates the average of cost to giving the weight age of debt and equity portion of finance. The combination of equity and debt is also very important for every business. There is no any rule for companies that how much portion of funds should be debt and how much portion of funds should be equity. In different business sectors or industries that combination of debt and equity is different. Some industries have the higher portion of funds in shape of debt but it should be considered normal.

The business requires the money for investment and for the running operation of business and that money comes from different sources but the two major sources are the equity holders and debt holders. The funds providers provide the funds at the cost with the certain level of risk. Now the managers operate the business in such a way that they earn profit for the attraction of new investors and for the compensation of new investors and for the investors only accept the projects which increase their wealth. So, the clear understanding of the cost of funds is very important for the success of any company. It is very important element for managers when they calculate the value of a firm. It is the minimum rate of return that is adjusted with risk must be earned by a project. The two basic elements are debt and equity. The calculation of debt cost is easy but calculation of equity cost is difficult. When shareholders invest the money into business, they expect a certain level of return and expectation of return is the cost equity. So, the cost of equity is repaid to the shareholder in the shape of dividend or in the shape of capital gain.

### 1.1.3 The Importance of Cost of Capital

Every manager of the company knows the importance of the cost of funds and how to use the different sources of finance because the efficient use of sources decreases the cost of funds and increase the net income of the company which ultimately leads to increase in the value of organization. The control of financing cost in companies is one of the main purposes of the financial analysts. At the same time managers, also face the problem of repayment ability of debt to lenders and provide the long-term profit or return to the investors. A business gets the funds from different sources and that each source is called the element or the components of the capital. A company acquiring the funds through debt and equity, the cost of funds acquiring through debt is different from the equity. The cost of acquiring funds through debt and equity is called the overall cost of funds. A business must invest that funds which are acquiring from debt and equity into the different assets and into the different operation of the business, earn the return from the efficient use of these assets which must be higher than the cost of funds.

When the idea of separation of management from owners comes into the business, the managers are responsible for the running of business. The agency relationship exists between managers and owners and the managers act as an agent of the shareholders. They are very informed about the inside of the company than shareholders. So, the managers make the decision in company that protect the manager's interests and that is against the interest of the shareholders. The shareholders cannot check the continuously the work of managers and not received the all information that is available for manager. So, the lack of interest exists between the owners and managers due to the gap of information.

For the achievement of set goals, a company requires the resources, two groups provide the funds to the company that are the investors and creditors. The creditors want the real amount with the fixed rate of interest from the company. The investors want the return from the running operation of the business. For the repayment of funds to the suppliers, the accounting profit is the main element of the financial statement that must be considered. If a company's financial statements report that the accounting profit is low or lack of transparency that is very harmful for the capital providers. This uncertainty and lack of information for investor and creditors leads to create a more risk for creditors and investors. So, for this reason the creditors want the high interest rate and investors wants the high return from the company's managers. The rate that is given to the creditors

for the supply of finance is considered the cost of debt and the rate that is given to the investors for the supply of funds is considered the cost of equity. The rates of the both costs are the overall cost of the funds.

The main goal of every company or organization is to maximizing the wealth of shareholders, the cost of capital is based on that assumption. There is a big issue for the management of the company at the same time they increase the wealth of owners and repay the demanded rate of return and rate of interest to the funds suppliers. So, it is the responsibility of the management of the company to work in such a way that they achieve the acceptable profit margin for owners and control the capital cost of the company. In this study find out the impact of micro and macro-economic determinants of capital cost. In this study used the CR, DE, EPS, AT, IO, SIZE as micro economic determinates and IR and IPI as macroeconomic determinants. In the previous studies different authors used of these some variables as determinants of capital cost.

### 1.1.4 The Pakistan Stock Exchange

The funds providers channelize their finance by buying bonds or shares of company through the security market. So, for this analysis, it is very important to understand the operations of the PSE which is only one SE in Pakistan.

The Pakistan stock exchange formally, the Karachi SE was established in 1947. It starts it work in 1949, at that time the only five companies were listed and the total capital was Rs. 37 million. First index was introduced by the KSE based on 50 companies and the name of this index was KSE 50. In 1970 Govt. of Pakistan established another SE in Lahore to meet the requirements of Punjab province. It has 83 members, and is first SE in Pakistan that uses internet. Then in 1989 another SE established in the capital city of Pakistan and that was known as Islamabad stock exchange.

All these three stock exchanges have separate trading management, index and listing procedure and there was no any link between these stock exchanges. All the three exchanges ware operated as non-profit making organization and the member of stock exchange has the right of trading also the right of ownership. As a result of this structure it's create the conflict of interest and very harmful for investors. So, for this reason three SE were merged and established new SE that is the Pakistan SE and started the working from January 11, 2016. In Pakistan stock exchange the trading rights have separated from the ownership rights.

As on August, 2018 there are 574 companies listed at Pakistan stock exchange and total capital RS: 8845.755 billion. Procedure of listing based on regulations and rates which are issued by SECP and management of PSE. All 574 organizations are divided into the different sectors of the business. As on August, 2018, the 35 industries are listed at PSE.

The PSE introduced the different index which is operated in the stock exchange. In 1991, the KSE introduced the index which has the 1000 points and the name of this index was KSE 100. This index consists of 100 organizations that are selected from each sector as representative of sector and which have the highest free-float capitalization. In 1995 another index was introduced for all share indexes. And that KSE all share index is calculated using total market capitalization method. In 2005 a new index was established which has the 10000 points and that is called the KSE 30 index. Another index is introduced in September 2008 that is KMI 30. The KSE Meezan index is to serve as calculating the performance of the Islamic firm's equity investment. All shares Islamic index was started in 2015 from the effect of the PSE and MIB limited. The purpose of this index is to evaluate performance of Islamic firms. This index introduces criteria which consist on the six factors. A company which meets the criteria of the shariah complaints firm that are included in the all shares Islamic index.

## 1.2 Problem Statement

In the finance sector the capital cost is very popular topic. In developing markets, a tremendous research has been conducted on the cost of capital, but a low attention has given to determinants that drive the capital cost. Affordable cost is one of main challenges for the managers at the same time, the main obligation of managers is to increase the wealth of shareholders. So, the capital cost is the minimum return rate that a firm must achieve for the satisfaction of the funds providers or investor. A firm's managers are the agents of the shareholders, they are responsible for designing the suitable capital structure for a firm. The managers will also try to reduce the capital cost of firm and thus they increase the value of organization and wealth of owners. Every financial expert in the companies try to decrease the capital cost because it affects the value of organization. The capital cost increases, then value of organization decreases and the capital cost decreases then the value of organization increases which leads to increase the wealth of shareholders.

A very famous study conducted by the Omran and Pointon (2004) on determinants of capital cost in Egypt. In that study they found that the growth, risks and size were the main variables of capital cost and results were different from industry to industry. In this study identify the determinants of capital cost and divided into the micro and macro-economic categories. In this study, investigate the main determinants of capital cost for companies listed at Pakistan stock exchange and find out their results whether they are different from industry to industry.

So, the major objective of this study is to find out the answer of a question that whether the identified micro and macrocosmic determinants have the positive or negative effects on the cost of capital of firm's listed at Pakistan stock exchange. It will be investigated by using current ratio (CR). Debt-to-equity ratio (DB), earnings per share (EPS), total asset turnover ratio (AT), institutional ownership (IO), firm size (SIZE), as microeconomic based determinants and interest rate (IR), industrial production index (IPI), as macroeconomic based determinants of cost of capital.

## 1.3 Research Objectives

The objective of this study is investigating the micro and macroeconomic based measures as potential determinants of weighted average cost of capital of firms listed on Pakistan Stock Exchange during the period 2011-2016.

While the following are the sub-objectives of this research.

- To investigate the impact of microeconomic determinants on weighted average cost of capital of firms listed in Pakistan Stock Exchange during the period of 2011-2016.

- To investigate the impact of macroeconomic determinants on weighted average cost of capital of firms listed in Pakistan Stock Exchange during the period of 2011-2016.

## 1.4 Research Questions

- What is the impact of microeconomic determinants on weighted average cost of capital of companies listed at PSE?

- What is the impact of macroeconomic determinants on weighted average cost of capital of companies listed at PSE?

## 1.5 Significance of the Study

This research is beneficial for business organizations. This study will provide the further evidence on the factors which have the impact on the cost of capital of firms listed at Pakistan stock exchange. This research also provides the information to shareholders about the variables for the calculation of return rate, which is very important for the evaluation of the new project. It is also very helpful for the management of the company, it provides the guideline or a road map for designing their work in such a way that control the cost and maximize the wealth of shareholders. The stock analysts will also use the information from this research to evaluate the firm performance. This study explains the factors which have the effect on the capital cost of company. Every manager of the company tries to reduce the cost of capital so managers carefully examine all those factors or variables which affect the capital cost. For the management of companies, this study provides guideline for decision making process and for a suitable capital structure. This study will show its importance by analysing the effect of microeconomic variables and

macroeconomic variables on capital cost of non-financial sector of Pakistan. Furthermore, the results of this study will help the managers about the efficient process of decision-making. It is also very helpful for investors of non-financial sector to making their investment decisions.

## 1.6 Contribution to the Study

The results of this study, macro and micro determinants of cost of capital: A cross industry analysis of non-financial listed companies in Pakistan by taking the data from 2011 to 2016 will giving the help about the problems of capital cost to analyst, investors and managers. This study wills also give the important theoretical help into the financial sector of Pakistan. This study describes the relation among independent variables (CR, DE, AT, EPS, SIZE, IO, IR, IPI) and dependent variables (WACC). The independent variables are classified into the two categories as microeconomic variables (CR, DE, AT, EPS, SIZE, IO) and macroeconomic variables (IR, IPI). A very little attention was given to microeconomic variables this area of finance mostly the research work was done on the relation of capital cost and corporate governances, performance and capital cost and used the macroeconomic variables as determinants of capital cost. This study will show its importance by analysing the effect of microeconomic variables and macroeconomic variables on capital cost of non-financial sector of Pakistan. Furthermore, the results of this study will help the managers about the efficient process of decision-making and this analysis will be a very healthy contribution in the financial sector Pakistan. So, it is a very valuable contribution in the financial field of Pakistan.

## 1.7 Organization of the Study

The first chapter of this study contains the basic information of study including the background, definition and importance of dependent variable, problem statement, research objectives, questions and contribution of this study. The chapter no. 2 describes the review of related previous literature. The chapter no. 3 describes the statistical methods and tools which are used in this study that are the research methods and design, population and sample size, data collection methods, explanations of dependent and independent variables, conceptual framework, models and hypo study, software of data analysis etc. The chapter no. 4 describes the data analysis and the chapter no. 5 describes the results, summary, future recommendations, implication and limitations.

# CHAPTER NO.2

# LITERATURE REVIEW

This part of the study provides the detail about the literature that is closely related to the researches. The previous analyses provide the guideline to understand research work and methods that were used in analysis. The various factors affect the capital cost of businesses that including the current ratio, size, debt ratios, earning per share, return on assets, turnover ratios, market to book value, capital structure, firm performance, corporate governess, interest rate, inflation rate and investment etc. In this study researcher uses the current ratio (CR), Debt-to-equity ratio (DB), earnings per share (EPS), asset turnover ratio (AT), institutional ownership (IO), firm size (SIZE), as microeconomic based determinants and interest rate (IR), industrial production index (IPI), as macroeconomic based determinants of cost of capital. This part of the study describes the view of related literature.

A research was completed by Lewellen (2000) in New York on the prediction of stock returns. He collected the data and information from 1995 to 2002. This research consists on the two parts in the first part he checks the ability of the firm to predict returns with book to market ratio. In the second part of the study he finds out the effects of calculation of risk about the rules of cash flow on the variation of return and prices. He was used the CAPM for the calculation returns on stock and check out the ability of prediction of dividend, BV to MV, and benefit cost ratios. The results of this analysis describe that the dividend ratio significant for cost the return on stocks. They also showed that the other two ratios, BV to MV and cost benefit were not more powerful for the prediction of the returns on stock.

A study was completed in Iran on the size and capital cost by Nasirpour (2001). They considered the all listed companies of Iran but the data and information were only available for 300 firms so the selected the 300 firms from the 18 different sector industries. In this study the COC was the dependent and the size of the company was independent variable. For the results of this analysis

they used the different statistical methods but the regression and correlation analysis were tested. The results of this study showed that the relation between the size and COC is no significant its means that a negative relation exist between two variables. So, the results of this analysis describe that if the size is small then capital cost increase. The inverse relation exists between the COC and size if one increases then other variable decrease.

An analysis which was completed by Gode and Moharam (2001) the effects of implied equity cost in manufacturing industry. They considered the manufacturing industry for study and collected the data from 1984 to 1998. In this analysis they describe the importance of equity cost and then they discuss the different variables which have the effects on equity cost. They selected the some very important factors which were the leverage ratio, profit prediction, information and efficiency variation. So, in this research the equity cost was the dependent and leverage ratio, profit prediction, information and efficiency variation as independent variable. For obtaining the result of this analysis they considered the manufacturing sector and collected the data of is 15 years. They used the different kind of statistical tools and methods for analysis of data. They found the effect of each factor on equity cost. The results of this study showed that the first factor has the negation relation with equity cost. The first factor was the profit prediction which has the strong negative relation with the equity cost. The second factor which was the risk has positive relation with the equity cost. This study has proved the strong positive relation with equity cost it means that the increase in risk factor means that the increase in equity cost. A direct relationship was found in this analysis between equity cost and risk. The third factor in this study was leverage ratio has the positive relation with equity cost. It means that the leverage ratio and equity cost have direct relationship if one factor increase the other factor also increase. They were also found that industry type factor has the positive relation with equity cost. So, the results of this research describe that some factors have positive and other has the negative effects on the equity cost. All these factors must consider by the managers when they take the decisions about equity cost.

A research was completed by Swaminatithan et al. (2001) on the implied capital cost. In this analysis they suggested the different ways of the calculation of equity cost. For the calculation of equity cost they used the discounted income model. Then in this analysis they examined the features of firms which are related to the calculation of equity cost. They also identify the functions of the equity cost that were the variation in profit, B/M, growth rate, and industry membership.

They also discuss in this analysis the importance of this research for investment decisions, valuation process and capital budgeting. The results of this analysis showed that different features of firms have significant relation with capital cost and industry kind. It was the cross-sectional analysis, find the relation between features of firms and risks. They considered the 14 features of firms and then divided these features into the five categories as follows, price flections, information, leverage, variation in profit and liquidity. The results of this analysis showed the risk of equity cost was the different from industry to industry. The results also showed that the leverage D/M and D/B were positive relation with equity risk and the relation between market leverage was strongly significant with equity risk. It was also fund that the information and liquidity variables with high volume of transactions in security all have the lower equity cost because the large companies have enough funds for running the operations. So, the cost was low for obtaining funds. It was also proved in this analysis that the variation in profit has the positive relation with the equity cost. The investors wanted the high profit margin with the high risk. It was also proved in this analysis that the equity risk with stock less B/M and stock high with high growth was lower. They also fund that the high sale prices have the low capital cost. A weak positive relation was fund between volume of transactions and equity risk.

A study was completed in Iran on the capital cost, size, and on debt ratios that study was conducted by Osmany (2002). They considered the all firms which were listed in Iran at That time but they selected the only 86 firms the data and information was available only that firms. They check that what type of relation exist between the capital cost and debt ratio and size. For this purpose, they used the different statistical method for obtaining the result. They used in this study the WACC as independent variable and the size independent variable the debt ratio was also used as independent variable. They conducted the cross-industry analysis in this study they selected the 86 companies from different sectors. First, they calculated the capital cost for every sector and then they check the relationship between size and capital cost. The results of this paper showed that the rate of capital cost was different from industry to industry. So, the result describe that the industry kind has the effect on the firm's capital cost. They result of this analysis also showed that a direct or positive relation was exist between the size and capital cost. So, the relation was founded significant between size and capital cost.

A study was completed by the Nissim and Baruch in (2003) on the investment, capital cost and ownership of institutions. In this study they check the impact of ownership of institutions on the investment. They also check the relation of ownership of institutions and capital cost of the companies. In this study they select the different companies for the study. first, they divided the investment in three different types the first of investment they considered that is capital investment the second types were the acquisition of business and the third one was the research on development. In this study they used the ownership of institutions as independent variables. In the results of this study they proved that the ownership of institutions was a significant factor with respect to investment. They also found that the institutions ownership has significant relation with capital cost of the firms. It means that the negative relation exists between ownership of institutions and capital cost. They also proved that ownership of institutions causes to reduce the capital cost.

The analysis was completed by the Chen et al. (2003) on the corporate governance and equity cost. The considered the world-wide companies for this analysis and they selected the 559 companies from all over the Asia. They collected the information and data for this analysis from 2001 to 2002. The main objective of this study was to find out the impact of governance on the equity cost. They used the equity cost as dependent and governance as independent variable of the study. In the first part of this analysis they defined the equity cost and then they calculate the equity cost with the help of (R/V) model. They also defined the governance and then used the different proxies for the calculation the governance. For the calculation of governance, they conducted the two different Survey and from the results of these surveys they from the results of these surveys they calculate the governance of organization. The results of this study showed that the negative relation was consisting between the governance and equity cost. It means that inverse relation was proved between the both variables. If the one variable increases the other variables decrease. If the one variable decreases the other variable also increase. So, the negative significant relation was proved in this study between the equity cost and corporate governance. So, the results of this study describe that good governance has impact on equity cost. A firm with good governance leads to decrease the equity cost of the organization.

A study was completed by Francis et al. (2003) on the earning and equity cost. They considered the all listed organization and they calculated the data and information from 1975 to 2001. The main objective of this study was that to found out the impact of earning on the equity cost. They

used the equity cost as dependent variable and used the earning as independent variable of the study. In the first part of study they defined the earning and explain the different feature of the earning. The feature of the earning was the, consistency, predictability of the earning, accrual quality, stability of earning. The accrual quality was the feature that was based on the accounting information and the other three were based on the market information. They also defined the three more features that were the earning with relation of equity, earning timeliness, and earning conservation. The results of this analysis showed that organization that has the all feature of earning, their equity cost was low. The result of this analysis also showed that the organization which has not possessed the feature of earning, their equity cost was higher. So, the results of this study indicate that the earning has the significant relation with the equity cost.

The study conducted by the Omran and Pointon (2004) that identified the determents of cost of capital at industry level in Egypt. The analysis was conducted on capital cost in Egypt by taking the 119 companies as sample size. They used the various types of models for the calculation of the cost of equity and then turn into the calculation of the cost of capital. Both the costs calculated on the book value and market value they also used the two models for the calculation of the cost of equity: the one is Gordon model and the other is earning-price ration. At the broader level the cost of capital is 12% and the cost of equity is 12.5% were found in this study. The stepwise Regression multiple were used step wise to find and the results of the determinants but the size and growth are the important. When the analysis was conducted at the individual level all the model's results showed that the important elements was liquidity for food sector. The sector of heavy industries return shows the variation in cost equity due to the gearing income, gearing capital and firm size. The real estate and construction sectors result shows that the most important eliminates were the firm size gearing income, growth in earning and backing fixed assets. In the services the one factor was founded that was the tax ratio. One thing which was cleared in this analysis that the capital cost was different from one sector to another sector.

A study was completed by Ashbaugh et al. (2004) in USA on the equity cost and governance. The considered the organizations which were listed in USA but they selected the organization that have the complete information and data. They used the equity cost as dependent and governance as independent variables of the study. In the first part of this study they defined the governance and explain the factor that defined the governance in the organization. The factors which were defined

the governance were the, information stockholders right, board structure, and ownership structure. So, they calculated the governance of the organization with the help of these factors. The dependent variables, equity cost was calculated with the help of expected return of the years and with the help of P/E growth ratio. The results of this study showed that the negative relation was consisting between the governance and equity cost. It means that inverse relation was proved between the both variables. If the one variable increases the other variables decrease. If the one variable decreases the other variable also increase. So, the negative significant relation was proved in this study between the equity cost and corporate governance. So, the results of this study describe that good governance has impact on equity cost. A firm with good governance leads to decrease the equity cost of the organization.

An analysis was completed by Francis et al. (2004) on the earning features and equity cost. In this analysis they considered the different industries and selected different firms from each sector. They collected the data and information for this analysis from different sources. The equity cost was the dependent and other factors were considered the independent variable. In this analysis first define the equity cost and then explain the different factors that have the impact on equity cost. At the end they considered the earning factors that have some effect on equity cost. That earning factors were the accrual quality, earnings, smoothness, namely, earning persistence, value relevance and earning persistence. They identity the seven features and then dividend all these features divided into the market based and accounting-based variables. The first four consider the accounting based that were the earning, accrual quality, namely, and earning persistence. The reaming three were considered the market-based variables that were the value relevance, smoothness and predictability. This research was conducted on the relationship of equity cost and on specific information about the firms and that information was based on the earning. It was assumed in this analysis that the investor must consider the information which was based on earning for the prediction of future of the company. The findings of this study describe that positive relation was proved between the information and equity cost. The findings of this study also describe that thigh equity cost associated with the least value of every feature than the firms which face the most values. So, they result of this analysis proved that the all attributes have the great effect on the equity cost.

A study was completed in Korea on the equity cost and earning by the Suny et al. (2008). For this study they considered the all listed companies but they selected the 415 companies for analysis. They collected the data and information from 2001 to 2006. They collected the data from different sources. The model that was used in this analysis was earning valuation based on the different proxies of risk. They selected the seven proxies and that were the, earning predication, income variation, market beta, B/M ratio, size, and risk. They used the equity cost as dependent and other seven proxies of risk as independent variables. They calculate the size in this analysis as the equity market value. They calculate the variation in income from the measurement of S.D income of last five years by average assets of the company. The results of this analysis showed that equity cost was positive relation with beta. It means that the equity cost has the direct relation with the risk if risk increase the equity cost also increase. The results also showed that positive relation proved in this analysis between equity cost and D/M ratio. It was also fund that the variation also positive associated with equity cost. It means that the direct relation has been founded between the income variation and equity cost. The only one variable was the negatively related with the equity cost that was the size. It means that the size has the inverse relation with equity cost if size increase then equity cost decrease if size decrease then equity cost of firm increase. So, all that variables have the great impact on the equity cost.

The analysis was completed by the Byun et al. (2008) in Korea on the corporate governance and equity cost. The considered the all listed firms and they selected the 389 companies from all over the Asia. They collected the information and data for this analysis from 2001 to 2004. The main objective of this study was to find out the impact of governance on the equity cost. They used the equity cost as dependent and governance as independent variable of the study. In the first part of this analysis they defined the equity cost and then they calculate the equity cost with the help of (R/V) model. They also defined the governance and then used the different proxies for the calculation the governance. For the calculation of governance, they conducted the two different Survey and from the results of these surveys they from the results of these surveys they calculate the governance of organization. The results of this study showed that the negative relation was consisting between the governance and equity cost. It means that inverse relation was proved between the both variables. If the one variable increases the other variables decrease. If the one variable decreases the other variable also increase. So, the negative significant relation was proved in this study between the equity cost and corporate governance. So, the results of this study

describe that good governance has impact on equity cost. A firm with good governance leads to decrease the equity cost of the organization.

A study was completed by the Elyasions et al. (2010) on the debt cost and the stability of intuitional ownership. They conducted that study in 2010. They also used the two groups of control variables. One group was based on the firm specific factor that are the size, leverage, change in stock returns, stock return, beta, and the second group of control variables based on the bond specific factors that are the bound age, size and maturity. In this study they considered the data from 1978 to 1998 they collected the all available information about bonds and other required data after the deep analysis they selected the data from 1990 to 1997, they selected the 796 companies and collected the 9913 observations about bonds. In this study they create the three objectives of this analysis. The first objective of study was to find the relation between the ownership of institution and debt cost. The second objective of this study was that the role of ownership of institutions in the calculations of debt cost. They considered that the ownership of institutions was important element for the calculation of debt cost. The third objective of this study was that the ownership of institution effect in great amount to the firms which have the more agency cost and asymmetry information. In the finding of this study they proved that the ownership of institutions in firms reduce the debt cost of firms they also found that the stability in ownership of institutions was the main element of debt cost. They considered that it was very important determinants of debt cost. They also found that the ownership of institutions affects in greater amount to companies which have the more agency cost and asymmetry information.

A study was completed in Bangladesh on the WACC and market performance by Hussain and Chakraborty (2010). They considered the all banks which were listed in Bangladesh and they selected the 24 banks which all information and data was available in the market. They were collected the data and all needed information from 2006 to 2008. In this study they defined the market performance and they used the stock return as proxy for market performance. They used in this study the (WACC) as independent and stock return as dependent variable of the study. The main purpose of this study was that to check the relation exists between stock return and capital cost to find the type of relation exist and how much change in capital cost will bring the change in stock return. For this reason, they use the different type of the statistical methods and they results of this paper showed that a negative relation exists between the capital cost and stock return. This

analysis proved the strong negative relation between dependent and independent variable of this study. The results also showed that mostly bank that were listed have the different capital cost and the same time they have the variation in stock return. So, the results of this study provide a guideline for the listed banks that they will try to reduce the capital cost because it affects the stock return will increase.

A study was completed by the Muhammad and Qamar (2011) on the equity cost and performance. They used the performance as independent and equity as independent variable of the study. For this study they considered the all listed organization and collected the information and data from different sources. They defend the performance of organization in the first part of the study and then they calculated the performance with the help of return on assets. Therefore, the return on assets used as proxy for the performance of organization. The results of this study showed that the insignificant relation was proved between performance and equity cost. It means that there was no any relation was found between both variables. So, the finding of this study was same as the M&M theory proved. No any association was proved in this study between the equity cost and the performance of organization.

The analysis was conducted by the Shariflou et al. (2012) in Iran, they take the five industries from the Tehran stock exchange and collected the data from 2002-2010. They were used the screening method for the selection of 59 companies from the 5 industries. The correlation method was used in this analysis because the purpose of this study was to check the effects of different ratios on the capital cost of the firms. In this study they were take the capital cost as dependent variable and take the eight financial ratios as the independent variables. In this study the multiple regressions used the method of pooled least squares as statistical method. The three industries out of five have the significant correlation with the dependent variable and the other two have the no significant correlation with dependent variable. In this study the results showed that some variables such as firm size, EPS, TAT and tax to profit before tax have the direct relationship with the dependent variable. This study also shows that the variables such as age and DE ratio have the inverse relationship with the dependent variable. So, this study checks the impact of some ratio on this capital cost of the company. And the results show that some variables have positive impact and some have negative impact on dependent variable of this study.

In the financial market of Iran, the Pouraghajan et al. (2012) was conducted the research on the performance of companies and capital cost of firms. They check in this research the impact of capital cost on the performance for this purpose they considered the 359 firms. In this study firstly, they defined the performance. They used (WACC) as independent and ROE and ROA as dependent variable. The size of company also used as a controlled variable in this study. They considered the 359 companies from the market of Iran and then selected the 70 companies for study as sample and they collected the data from 2006 to 2010. They work on these variables and find out the result that the relationship between performance and capital cost was positive. It means that there is a direct relationship between performance and capital cost if the capital cost increases the profitability also increase. So, the result was significant. They also check the relationship between the dependent and controlled variable. They find out that the positive relationship in the ROE, ROA and size of the business. It means if increase in size also increase in the profit of the business. It showed the direct relationship in independent and control variable of this study. So, they find out that if increase in capital cost it also causes to increase in profitability and the size is also significant factor in profit. They proved that the large companies earn more profit than small companies.

An analysis that was completed in Malaysia on the capital cost effects on profitability performance and firm value by Mohamad and Saad (2012). They considered the all 930 companies which were listed in Malaysia at that time and they selected the 517 companies after use the stratified technique. The data and information were available only for the 415 companies. So, for this reason they selected the 415 companies in this analysis. They collected the data of those 415 companies from 2005 to 2010 and they were calculating the 2490 observation and used in analysis. All the 415 companies which were selected as sample pick up from the 7 sectors. They used in this research (WACC), risk and (DT) as independent and Tobin Q and ROA as dependent variable, the control variable also used in this study that is the size. The value of firm that was the dependent variable in this research was calculated with the Tobin Q and the profitability that was the second independent variable calculated with the (ROA). The result of this analysis showed that the significant relationship exists between the independent and dependent variables. Its means that the capital cost has the positive effect on the profitability and the value of the firm. So, it was proved with this analysis that if capital cost increase then the profitability also increase it was also proved

that if capital cost of increase the value of the firm. The direct relationship exists between the capital cost and profitability and value of firm according to this analysis.

A study was completed in Iran on the variables that affect the capital cost by Noshin and Reza (2012). They considered the sector of food firms and considered the firms of beverages sector. So, they selected the all companies of both sectors. All listed companies of both sectors were the population of this analysis but after some procedure they selected the 22 companies from both sectors. The data and information were available only the 22 companies. They collected the data and information from 2001 to 2011of ten years. They collect the all data and information which were used in the analysis from different sources. In this analysis the capital cost was the dependent variables and the ownership, stock return and size were the independent variables. For the calculation of the ownership they used in this analysis equity ratio as proxy. The equity ratio represents the portion of capital according the assets of the company that has shareholders. So, it means that it was the portion of capital which was invested by the shareholders. For obtaining the results they used the different tools and statistical methods. They used for the analysis regression and penal data techniques the results of this study showed that the first hypothesise was accepted and the results showed that the relation between capital cost and return on stocks was negative. It means that the inverse relation proved according to this analysis between capital cost and stock returns. If the stock returns increase, the capital cost decrease and if stock returns decrease then capital cost increase. The result of second hypothesis showed that the size has negatively related with the capital cost. It means that the inverse relation proved in this analysis between the size and capital cost. If the size was large, the capital cost decrease and if the size was small then the capital cost of business increase. The results of the third independent variable were found the significant negative associated with each other. So, the results of this analysis also showed that the capital cost and equity ratio was negative relation with each other. It means that the inverse relation was proved between equity ratio and capital cost. So, the debt increases the capital cost also increase and if the equity portion increase then capital cost decrease.

A work was completed by Salteh et al. (2012) in Iran on the WACC and earning. They selected the all listed organization in Iran but the data and information were available only for 81 companies. So, for this reason they considered the 81 companies for analysis. They collected the information and data from 2003 to 2009. The main objective of this analysis was to find out the

relation between WACC and earning in companies listed Iran. In this analysis they fixed the earning and they calculate the earning with accruals. Then they divided these accruals into the two groups, non-discretionary and discretionary accruals. In this research they used the WACC as dependent and non-discretionary and discretionary accruals as independent variable. They also used the control variables in this analysis. The size and BV/MV used as control variables in this study. The independent variable of this analysis was earning that was calculated from the accruals. The accruals were further divided into the groups, the (NDAC) and (DAC). The (NDAC) means the items which cannot control by the managers. The items which were not controlled delete or ignore by the management that were the (NDAC). The (DAC) mean the items which were control by the managers. The item which was controlled delete and delay by the management were called the (DAC). The results of this analysis showed that the inverse relation was proved between WAAC and DAC. It means that the organization which have weak performance they try to increase the earning with the help of (EM) process. The companies which earn the control considered that companies because the stock prices and growth rate was also decrease. The results of this analysis also showed that the no significant relation proved between NADC and WACC. So, the results of this analysis describe about capital cost. The overall results of this analysis showed that the earning have the significant effects on the WACC.

A study that was completed in Malaysia about the firm value and profitability in 2012 the same study was conducted in Pakistan on the profitability and value of firms by Shadab and Satter (2015). They considered the all the textile sector companies that were listed at that time and they selected the only 4 firms from textile sectors and collected the data from 2004 to 2013 of ten years. The only data of 10 years was available of just 4 firms so the 4 firms were selected as sample. Firstly, the profitability and the value of firm they calculated the profitability with the help of (ROA). Its means that the ROA was used as proxy of profitability the value of firm also calculated with the help of Tobin Q. So, the Tobin Q was used as proxy of the value of company. They were used (WACC), GDP, TD, and size as independent and ROA and Tobin Q as dependent variables of the analysis. The analysis of that 4 firms result showed that if a change happened in the independent variables the change also must happened in the dependent variables. So, it means that a positive relationship exists and all independent variables were direct relation with the profitability and the value of the firm. It was also funded in that research that the size has positive relation with ROA if the size of company increases the profit margin also increase. The WACC

was the only variable which has the negative associated with profitability and value of company. It means that a company grow but maintain to capital cost.

A work was completed in Italy by Regali and Soana (2012) on the equity cost and quality of governance. For the analysis they selected the American Financial sector. They considered the all financial firms listed in American but after applying the same techniques they selected the 122 companies. They collected the information and data from 2001 to 2006. They selected the variables from each from and they selected the 316 total observations from all selected companies. They were selected the 75 observation from 2002, 122 from 2006, 119 from 2004 and remaining from 2003. In the first part of this study they defined the governance and divided into the external and internal governance. So, the equity cost was used as dependent variables and external and internal governance as independent variable of the analysis. They also used the different control variables that were the liquidity, profitability, and size and market performance. The independent variable of this study, external governance was calculated with the help of GIM index. The independent variables of this analysis internal governance were calculated with the percentage of institutional shareholders. The results of this analysis showed that the good governance has the negative relation with equity cost. It means that a company with good governance has the high equity cost. But generally, this relation was not normal because the good governance leads to increase the performance of organization. Good governance leads to the better financial results for the organization which reduce the risk and ultimately decrease the equity cost of the organization.

A work was completed by Petrova et al. (2012) on the corporate disclosures and equity cost. They selected the non-financial sector of Swiss market. From the all listed organization of no-financial sector, they selected the 121 companies for the analysis. In this analysis they used the equity cost as dependent variable and disclures were considered the independent variables. In the first part of this analysis, they defined the disclures and calculated with the help of annual reports. They also discuss the different factors which has the effects on disclures that were the according polices, Beta, Leverage and size. They used the all that factors as the independent variable in the analysis. They considered the very important to the all four factors. The results of this analysis showed that the equity cost decrease with the high level of disclures in the firm. They used the four control variables in this analysis if all these variables under the control then the high level of disclures in the organization providers the help for the reduction of equity cost.

The study was conducted by Kanarlouei et al. (2012) in Iran on the comparison between the capital cost and ownership structure. They considered the leverage and capitalized companies for this comparison. So, the main objective of this study was that to cheek the difference of capital cost and ownership structure between leverage and capitalized firms. They select the 81 listed firms of Iran market of this analysis. They collected the information and data from 2003 to 2009. They used the ownership structure as independent and capital cost as dependent variable in this analysis. In the first part of this analysis they defended the ownership structure and divided into the two sub variables, ownership type and ownership concentration. They defined the ownership type and divided into the further four elements, private ownership, individual, institutional and governance. They also used the (HHI) index for the calculation of concentration ratio of ownership. They used the capital cost as dependent variable of this analysis. The results of this analysis showed that the private and govern man institutional ownership increase the WACC of leverage firms more than the capitalized firms. And the results of this analysis also showed that the private individual ownership, decrease the WACC of leverage firms more than the capitalized firms. The results of this analysis also indicate that the in capitalized firms the concentration of ownership decrease the WACC than levered firms. The results also describe that the diffused ownership increase the WACC of capitalized firms than levered firms.

A study was completed in Pakistan on the WACC and profitability by Hussain et al. (2012). In the study of this analysis they considered the all firms of cement sector which are listed at that time. The data was available of those firms what were included in research and collected the data and information from 2003 to 2008. In this analysis firstly, they define the profitability and ROE used as a proxy for the firm's profitability. They were used the only two variables (WACC) as independent and ROE as dependent variable. They calculated the capital cost of the cement sector of Pakistan and then they find the impact of WACC on ROE. The results of this analysis showed that a negative relation exist between ROE and WACC which means that if capital cost increase the ROE decrease and if the capital cost decreases then profit margin of a company increase. They proved in their analysis that inverse relation exists between the profitability and capital cost. The results of their study provide the guideline for the investors or firms for entering in the cement sector. This research also indicates that the ROE is the main factor of the (WACC). So, the managers or the investors must consider the importance of capital cost when making the decisions.

A study was completed in Iran on the factors import on capital cost by Osyani et al. (2012). They considered the 426 companies as population other the final observation they selected the 106 companies as sample and selected the 15 sectors. They collected the data of all variables from 2004 to 2008 for the study. They used the capital cost as dependent variable and profitability, cashing, opportunities grow, risk as independent variable of the study. In the first part of this study they defined the independent variables and used the different ratios for the calculation of independent variables. For the calculation of profitability calculate the ROA and ROE and for the calculation of risk they calculated the market risk and financial risk. For the calculation of cashing they take the time of share purchase and sale of share. For the opportunities growth they calculate the market to book value ratio and growth. They used the constant impact method and multiple regressions as statistical techniques in this study. In the data analysis part of study, they concluded the results of data. In the first step they check the relation of independent variables on capital cost. The results of this study show that the ROA, ROE, market to book value, financial risk, and market risk were direct and meaningful relation with the capital cost. The direct and meaningful relation means that the ROA, ROE, market to book value, financial risk, and market risk were the positive relation with capital cost. In the second step of data analysis they considered the industry impact on capital cost. The results show that the market risk, financial risk, ROA, and ROE have the meaningful relation with capital cost. The relation of growth in sale and market value to book value were not significant. The results of this study also show that the relation between cashing or trade time and capital cost was not found the meaningful.

A study was completed in Singapore on the equity cost and disclosure by Yang and Li (2012). The main objective of this study was that, whether the disclosure minimize the equity cost or not. In this analysis they used the equity cost as dependent and disclosure as independent variables. For the analysis of this research they collected the data from 1994 to 2010. After the detail review of literature, they also selected the same control variables. The market to book value and momentum were used as control variables of the study. For the calculation of disclosure, they used the two proxies, one was based on the management for casting and the other was based on the market information but they considered the management for casting very important. They used the different statistical methods and tools for obtain the results of data. The results of this study show that relation between disclosure and cost of equity was significant. They proved that the increase in disclosure can minimize the equity cost. It means that the indirect or inverse relation was found

with dependent variable. They also check, if they make changes in disclosure that changes affect the equity cost. And they proved that a consistent relation was proved. So, the results of this study proved that the strong relation was exists between cost of equity and disclosure.

A study was completed by Alshwer (2012) on the capital cost and ownership of institution. In this study they study the role of ownership of institutions with respect to capital cost. They considered the US companies as population of the study after the deep analysis the find and calculate the 17124 observations. For the complete analysis of study, they collected the debt of companies from 1990 to 2006. In this study they used the capital cost as dependent variable and ownership of institutions as independent variable. They considered the change in ownership as independent variable. They also used the different control variable in this study that was the size, leverage, beta, sale growth, prime trade, B/M. in this study they create the two objections that the increase in ownership of dedicated institution cause to decrees in the capital cost. The second objective of the study was that the change in the ownership of transient institutions causes to reduce the capital cost of the company. In this study they find that the ownership of institutions has the significant relation with the capital cost. They proved that the capital cost as function of ownership of institutions and feature of firms. In the next finding they proved the negative relation between the capital cost and ownership of dedicated institutions they proved that if they increase in the dedicated ownership the capital cost of the company reduced. In this study they study the different types of ownership of institutions such as dedicated and transit ownership they also proved that not the all kinds of ownerships play role in the determination of capital cost. So, at the end their analysis proved that not all ownership types affect the capital cost, just the dedicated ownership has negative impact on capital cost.

A study was completed in India by Sharma (2012) on capital cost and profitability analysis. He conducted that analysis on telecommunication sector of India and found the impact of capital cost on different ratios. For this study he selected the all companies of telecommunication sectors and collected the data of six years from 2005 to 2010. He used the capital cost as independent variable and used the profitability, liquidity, dividend as depended. He used the different ratios as proxy of dependent variables, for the profitability he used the return on equity ratio, used the dividend par

out ratio as dividend policy, used current ratio as proxy of liquidity and used the return on equity, retention ratio as proxy of growth of company. In this study he creates the two objectives, to find the relation of capital cost with other variables and find the impact of capital cost on these variables. The second objective of this study was to find the relation and impact of capital cost on profitability of selected companies. He collected the all required data from different websites and used the secondary data for his analysis. In this study he used the four dependent variables and one independent variable and creates the four hypotheses the first was that the significant relation exists between capital cost and profitability. The second was that the significant relation exists between capital cost and liquidity and third hypothesis was that the significant relation exists between dividend pay-out ratio and capital cost. The last hypothesis of this study was that the significant relation exists between the company growth and capital cost. The results of this analysis show that the negative relation was proved between profitability and capital cost. He argues that the companies with high profit receive the loans at low rates. The findings of this study also show that the negative relation was proved between liquidity and capital cost and he argues that the companies with high liquidity face the low risk so investors wants to invest their funds in low risky firms and gets the loans on cheaper rates. The findings of this study show that the relation between dividend and capital cost was negative. He used the dividend pay-out ratio as proxy of dividend policy; the investors prefer the current dividend so negative relation was exists. The results of this study were shows that the positive relation was proved between company growth and capital cost. He argues that companies in growing stage required the more funds for the expansion of existing business.

A work was done by Taberiet al. (2013) in Iran on the market-based performance and on capital cost. For this purpose, they considered the 350 firms after a procedure they selected the 70 firms for the 350 years during the time period was 2006 to 2010. In this study they define the market base performance and they used the performance and the value of the firm. In this paper they were used the Tobin Q as value of the firm and two ratios were used as a performance measure that are the (P/E) and (M/B). So, they used (P/E) and (M/B) as proxy for the performance. They used in this study WACC as independent and Tobin Q and P/E and M/B as dependent variable. They also considered the size of the any business very important and they used the size as control variable in this study. The results of this analysis showed that the WACC was negative associated with the M/B and P/E ratios and they also found that no significant result proved with Tobin Q. So, the

results of this study describe that the negative or inverse relation exist between the performance and the capital cost which means that if the capital cost increase, a firm which face the shortage in finance their stock value decrease in market and ultimately decrease the profit margin of that firm. The results of this analysis also showed that the positive or direct relation exists between the M/B, Tobin Q, and size and the size has no significant results with the P/E. So, the second results of this analysis showed that the big companies have the enough resources and they use that resources for the better performance they make their decisions at right time so the large finance will provide the help for improved the value and increase in profit margin of the company.

A study which was completed in Malaysia on the equity cost and stock prices with inflation by khan and Rafiq (2013). For this analysis they selected the non-financial sector and they considered the 53 companies. They collected the information and data of those 53 companies from 2000to 2009. The ten years data of 53 companies was collected from different sources of stock exchange. They used the inflation in this analysis as an independent and the other two variables, COE and stock price as dependent variable. The main purpose of this study was to find out the relation of inflation and COE and the relation of inflation and stock price. The type of relation exists between these variables. For the evaluation of relation of these variables they use the panel regression and time series statistical methods. The results of this study showed that the relation between inflation and stock price is positive it means direct relationship was exists. But it was also found in this study that the change in inflation dose not brings the same change in price it changed less than the stock prices it changed less than the stock prices. The results of this study also showed that the relation between COE and inflation was negative related its means that inverse relationship exists between the COE and inflation. So according to this research it was proved that the increase the amount of inflation will cause to increase in the profit margin of the company which ultimately leads to reduce the COE.

A study was completed by the Shafaai and Masih (2013) in Malaysia on the shariah compliant companies that were listed in Malaysia. The study was the same as Foong and Goh (2013) conducted the study on equity cost the same variables were taken in study. But this analysis was completed on shariah compliant companies and time period was different in this study. They take the seven industries and collected the data from 2005 to 2012. They selected the seven sectors and take the 354 companies which are listed at main board of Malaysia. In the first part of this study

they fixed out the very easy and relevant method for the calculation of the cost of equity for the companies of the Malaysia. In the second part of the study they find out the impact of market and accounting-based variables on the cost of equity. In this analysis they take the cost of equity as the dependent variable and take the six variables were the independent. They divided the all six independent variables into the market base and accounting based and all that variables were the financial ratios. The accounting-based variables were the TAT, EPS, CR, and DE ratios and the market-based variables were the SL, MB and size of the company. The results of this analysis founded the positive relationship of DE and EPS with dependent variable and founded the negative relationship of TAT and size with the dependent variables. They also break down their research at the industry level and founded that the size of the firm is the only one variable that was significant for all the industries and the size was negative impact on the dependent variables in every sector. And all the other variables results were different from industry to industry.

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A work was completed in Iran by Pezhan and Abdoli (2014) on the earning effects. They selected the all listed organization in Iran but the data and information were available only for 51 companies. So, for this reason they considered the 51 companies for analysis. They collected the

information and data from 2006 to 2011. The main objective of this analysis was to find out the relation between WACC and earning in companies listed Iran. In this analysis they defined the earning and calculated the earning with the help of cash dividend. They used the WACC as dependent and earning as independent variables of the analysis. They also used the control variable in this analysis. The size of organization and leverage used as controlled variables. The main objective of this analysis was that to find out the impact of earning on WACC. The results of this analysis showed that inverse relation was proved between earning and WACC. It means that the earning has no significant impact on capital cost. In the second part of analysis they used the control variables in analysis and the results showed the earning with size has the positive relation with WACC. It means that when control variable size adds into the analysis the results were changed. So, the earning with the control was changed. So, the earning with the control variable has the direct relation with the WACC. The earning with other control variable, leverage has no significant relation with the WACC. So, the results of has analysis showed that when the only earning model run, it shows the no any relation exists between earning and WACC. And in the second part of analysis the earning model run with control variable the results changed. It means that the control variables of this study, size and leverage has the impact on earning and leads the earning to influence the WACC.

A study was completed in Taiwan by the Wu et al. (2014) on the capital cost and MV/BV. They considered the 484 firms which were listed in Taiwan. They collected the data from different sources for this analysis. They collected the all necessary data for this analysis from 2007 to 2010. In this analysis they used the capital cost as dependent and MV/BV as independent variable of analysis. For the calculation of capital cost, they used the WACC for every firm. So, they used the WACC as capital cost of the firm. The WACC was used as dependent variable of the analysis. They used the independent variable MV/BV as the market variable. The BV/MV was the market-based variable that checks the performance of the organization. The results of this analysis showed that the relation between capital cost and BV/MV. If was positive. It means that the direct relation was proved in this analysis between capital cost and BV/MV. If one variable increases the other variable also increase. If one variable decreases the other variable also decrease. So, the results of this study indicate that significant positive relation was proved between both variables.

A research work was completed in Indonesia by Agustini (2015) on the dependent of IFRS and the effect of inflation and size on WACC. He conducted this work on different counties companies. For this objective he selected the 31 counties and selected the 171 companies from these counties. He collects the information and data of these companies from 2007 to 2011. The main objective of this analysis was that to find out the results of inflation and size on WACC of companies they used IFRS. He also found the results of inflation and size on WACC of companies they cannot used the IFRS. So, the goal of this research was to find the difference of results between the companies which were used the IFRS and which were not used the IFRS. He selected and collected the 171 companies from the 31 counties and collected the information and data of companies that used the IFRS from 2007 to 2011. He also collated the data of companies which were not used the IFRS from 2007 to 2011. In the first part of this analysis he finds out the results of inflation and size on WACC of companies not used the IFRS. The results of this analysis show that the size has the positive associated with the capital cost. It means that the positive or direct relation was proved between the size and WACC. The results describe that the companies with large has face the less risk than small organization. So, when the risk was low the capital cost also reduces. The result of this analysis also proved that the relation between inflation and capital cost was positive. It means that when the prices increase the capital cost also increases. In the second part of this analysis he finds out the results of inflation and size on WACC of companies which were not used the IFRS. The results of this analysis showed that the organization large with adoption of IFRS has no any decrease in capital cost. It means that the adoption of IFRS has no any role in the reduction of capital cost. The results of this analysis also showed that the organization which adopt the IFRS and which face the inflation has on any decrease in capital cost. It means that the adoption of IFRS has no any role in the reduction of capital cost. So, the results of this analysis indicate that the adoption of IFRS in organization has no impact on the reduction of WACC.

A study was conducted in Nigeria on performance and capital cost by Ibrahim and Ibrahim (2015). In their study they considered the all 11 companies that were listed in Nigeria after using the technique they took only 5 companies for analysis. This analysis was conducted on the small and medium sector of Nigeria the (SMEs) are one of the main sectors of any country which has play main role for development. So, at that time the only 11 companies were listed in Nigeria, they selected the two (SMEs), companies for the analysis. Firstly, they define the performance and select the (ROA) as the proxy of performance. In this analysis they used the (ROA) as tool for the

evaluation of performance. The (WACC) used as independent and for performance, (ROA) as dependent and size also used in this study as control variable. The technique which was used in this analysis for the collection of data and for the analysis of this study showed that the insignificant relationship it means the inverse relationship exist between the capital cost and performance. So, this study proved that capital cost and (ROA) has the negative relationship. So, this analysis suggested that the (SMEs) find the other source for the financing because the long-term funds provide the help for the fast growth of the company.

A study was conducted by the Boyani in 2015 on the capital structure and capital cost. The study was completed on the companies listed in Nerobi, they selected the 53 companies as population and the data was available for all companies. So, they selected the all 53 companies as sample. They used the WACC as dependent variable and used the capital structure as independent variable of the study. They also used the size as control variable of the study. They used the leveraged ratio as proxy for the capital structure. They estimate the equity cost with CAPM and calculated the debt cost with the amount of interest to total debt. In this study they proved that the relation of capital structure and capital cost was significant. It means that a positive relation was exist between capital cost and capital structure. They also proved the positive relation between size and capital structure.

A work was completed by Patro and Kanagaraj (2016) in India on the WACC and earning. They selected the all listed organization in India but the data and information were available for companies that were included in the sample size. So, for this reason they considered the 81 companies for analysis. They collected the information and data from 2003 to 2013. The main objective of this analysis was to find out the relation between WACC and earning in companies listed Iran. In this analysis they fixed the earning and they calculate the earning with accruals. Then they divided these accruals into the two groups, non-discretionary and discretionary accruals. In this research they used the WACC as dependent and non-discretionary and discretionary accruals as independent variable. They also used the control variables in this analysis. The size and BV/MV used as control variables in this study. The independent variable of this analysis was earning that was calculated from the accruals. The accruals were further divided into the groups, the (NDAC) and (DAC). The (NDAC) means the items which cannot control by the managers. The items which were not controlled delete or ignore by the management that were the (NDAC).

The (DAC) mean the items which were control by the managers. The item which was controlled delete and delay by the management were called the (DAC). The results of this analysis showed that the inverse relation was proved between WAAC and DAC. It means that the organization which have weak performance they try to increase the earning with the help of (EM) process. The companies which earn the control considered that companies because the stock prices and growth rate was also decrease. The results of this analysis also showed that the no significant relation proved between NADC and WACC. So, the results of this analysis describe about capital cost. The overall results of this analysis showed that the earning have the significant effects on the WACC.

A study was completed by Aubert at el. In 2017 on ownership of employees and capital cost. In this study the selected the companies of France as population after the deep analysis they select the 120 companies. They selected the frame because the French companies have the great amount of employee's ownership. So, they select the 120 largest companies and collected the data from 2000 to 2011. In this study they use the WACC as dependent variables they also divide the WACC into the two another further dependent variables, the equity cost and debt cost. It means that in this study they used the three dependent variables the one was equity cost, debt cost, WACC. They used employee's ownership independent variable of the study. They also create the three objectives of the study the first one was that these was significant relation of employee's ownership and equity the second objective was to find out the relation between employees' ownership and equity cost, the third objective was to find out the relation between employees and WACC. In the results of this study they proved that these were no significant relation was existing between the employee's ownership and equity cost. They also find that the relation between debt cost and employee's ownership was negative. It means the debt cost reduce with the increase of employee's ownership. They also find out the impact of ownership on WACC. They proved the negative impact of employee's ownership on WACC. They also discuss that the risk factor shifts from employee's to owners, so this was the main reason to reduce the capital cost.

# CHAPTER NO.3

# RESEARCH METHODOLOGY

In this part of study, discuss the research methodology that includes the research techniques, methods, designs, population, sampling technique and size of sample used in this study. This part also contains the information about the data collection procedure, conceptual framework estimation models, hypothesis, and information about the variables of the study. The techniques of analysis, software's descriptive statistics, and regression analysis also includes in this portion.

The main purpose of this study to find out the impact of micro and macro-economic determinants on capital cost of companies listed at PSE. The WACC used as dependent variable and current ratio, DE, EPS, AT, SIZE, IO, IR, IPI, as independent variables in this study.

## 3.1 Research Design and Methods

This study is based on the secondary data and regression analysis on panel data used for the results. First, we used the descriptive statistics for the mean, slandered deviation, minimum and maximum value of the data and then used the regression analysis for finding the results.

## 3.2 Population of the Study

A group of objects that have the similar features are the population. The study micro and macro-economic determinants of cost of capital is conducted on the non-financial sector of Pakistan. The population of this study is the 400 firms listed at Pakistan stock exchange under non-financial sector.

## 3.3 Sampling Technique and Sample Size

In this study researcher selected the eight growth able industries from the all industries which are listed at Pakistan stock exchange. From the chemical, energy, cement, sugar, textile, paper, motor

vehicles, and food sectors, 102 firms are selected as sample. In this research we ignore the non-dividend paying firms and exclude the companies which does not pay the dividend continuously three years. The proportional sampling technique is used for the selection of sample size and collected the six-year data from 2011 to 2016. Every business units in selected sample firms are unit of analysis of the study

## 3.4 Data collection Method

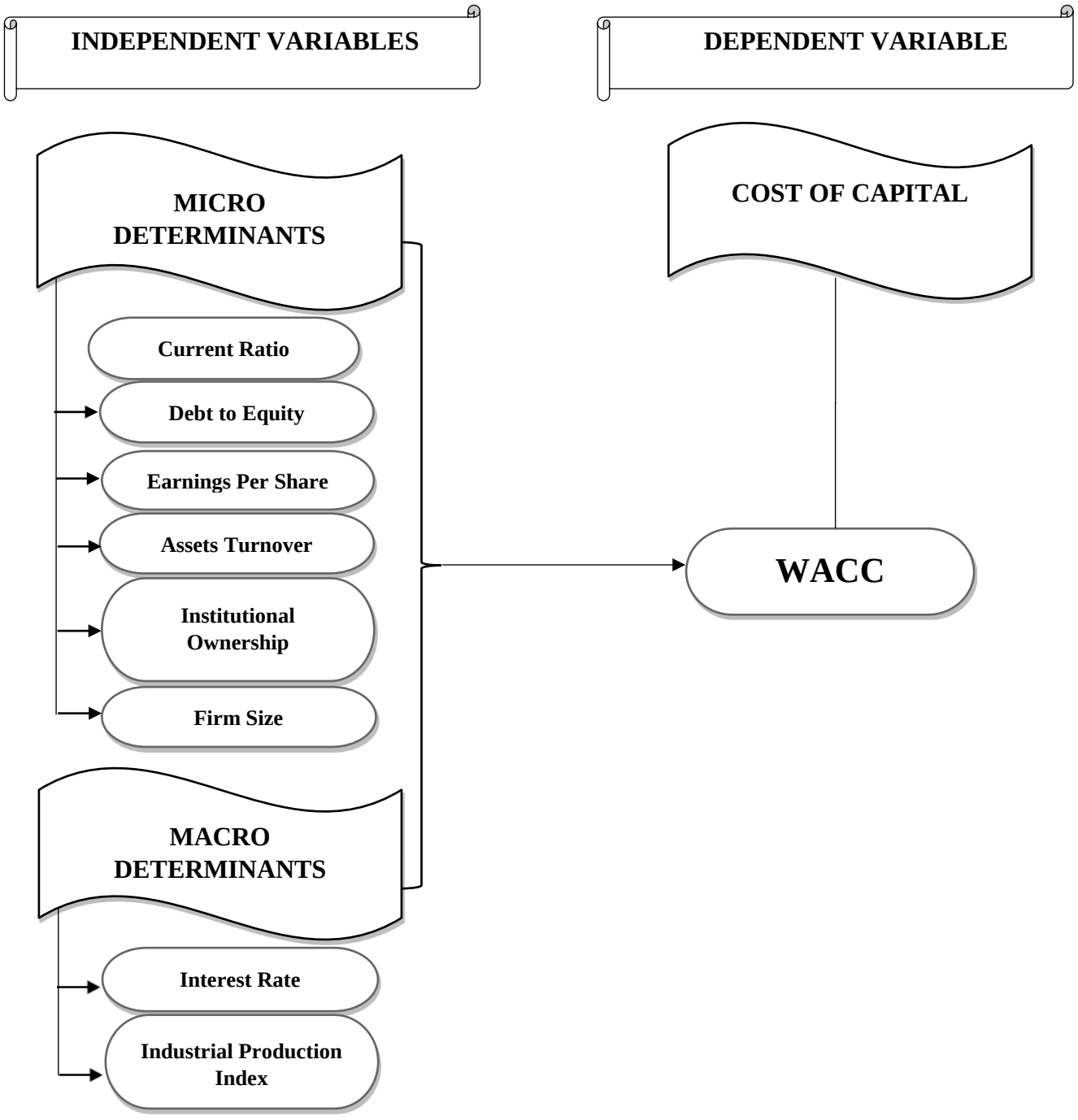
In this study, we used the secondary data for the investigation of results. The selected firm's data collected from the historical data of PSE and from the balance sheet analysis done by the State Bank of Pakistan for the firms listed in PSE for the time period of 2011 to 2016.

## 3.5 Conceptual Framework

The conceptual frame work is a concept that shows itself as a group of ideas for the help of research. It also shows the relationship among the dependent and independent variables of the study. The main goal of every company or organization is to maximizing the wealth of shareholders, the cost of capital based on that assumption. There is a big issue for the management of the company at the same time they increase the wealth of owners and repay the demanded rate of return and rate of interest to the funds suppliers. So, it is the responsibility of the management of the company to work in such a way that they achieve the acceptable profit margin for owners and control the capital cost of the company. In this study we find out the impact of micro and macro-economic determinants of capital cost. In this study we used the (CR, DE, EPS, AT, IO, SIZE) as micro economic determinants and (IR, IPI) as macroeconomic determinants. In the previous research's, different authors used some variables as determinants of capital cost.

## Figure 3.1

## Conceptual Framework



## 3.6 Identification of Variables

After the detail reviews of literature and conceptual framework, the variables that are used in this study divided into the two groups, dependent and independent variables. The independent variables further divided into categorise, micro and macroeconomic determinants.

Table 3.1 shows the detail of dependent and independent variables used in this study.

**Table 3.1 Variables used in this study**

| **Variable Name** | |
|---|---|
| **Dependent Variable** | Cost of Capital (WACC) |
| **Independent Variables** | |
| | Current Ratio (CR) |
| | Debt to Equity Ratio (DE) |
| | Earnings per Share (EPS) |
| | Assets Turnover (AT) |
| | Firm Size (SIZE) |
| | Institutional Ownership (IO) |
| | Interest Rate (IR) |
| | Industrial Production Index (IPI) |

## 3.6 Study Variables

In this study, researcher employed the capital cost as dependent variable and we considered the eight independent variables and divided into the two categories. The independent variables are the current ratio (CR), Debt-to-equity ratio (DB), earnings per share (EPS), asset turnover ratio (AT), fixed assets to total assets (IO), firm size (SIZE), as microeconomic based determinants and interest rate (IR), industrial production index (IPI), as macroeconomic based determinants of cost of capital.

### 3.6.1 Dependent Variable

The cost of capital considered as dependent variable.

#### 3.6.1.1 Weighted Average Cost of Capital (WACC)

Capital cost of any business consists the two parts, debt cost and equity cost. The debt cost and equity cost are two elements of the cost of funds. Every kind of a business gets funds from two different ways the one is debt and the other is equity. Threesome small businesses only be provided to the shareholders for investment is called the cost of capital. The portion of funds which a business acquiring through debt, the cost of that portion must be provided to the bondholders and that cost called the cost of debt. There are two values used for the calculation of (WACC), the market value and book value. In this study, the (WACC) used as depended variable at both values. The formula which is used for calculation of (WACC) at book value is as follows:

WACC = $K_i (w_i) + K_e(w_e)$

WACC = Weighted Average Cost of Capital

$K_i$ = kd(1-tc)

$W_i$ = Percentage of debts share in total capital

$W_e$ = Percentage of equity share in total capital

$K_d$ = Rate of debts cost before tax

$K_e$ = Rate of equity cost

$K_i$ = Debt cost after tax

$t_c$ = Tax rate

The formula for the calculation of tax rate (t) of every selected company is used in this study as follows:

$$t_c = \frac{\text{Paid tax}}{\text{Income Before Tax}}$$

The formula for the calculation of rate of debts cost before tax ($k_d$) is:

$$k_d = \frac{\text{Financing Costs}}{\text{Long Term Debt}}$$

The formula for the calculation of rate of equity cost (ke) at book value:

$$K_e = \frac{1}{\frac{P}{E} - \left(\frac{eo-do}{e0}\right)}$$

[Omran and Pointon (2004)]

P/E = Price Earnings Ratio

eo = Last year earnings Per Share

do = Last year dividend Per Share

Percentage share of each element, the debt cost and equity cost in total capital is calculated at book value from the following formula:

Total resources = Book value of equity + Book value of debts

Book value of debts = long term debt + current debts

Book value of equity = No of issued shares × Book value of per share

$$Wi = \frac{\text{Book value of debt}}{\text{Total resources}}$$

$$We = \frac{\text{Book value of equity}}{\text{Total resources}}$$

### 3.6.2 Independent Variables

Eight potential independent variables are identified and selected for this study, the first six variables (CR, DE, EPE, AT, IO, SIZE) are considered as microeconomic and the last three variables (IR, IPI) are consider as macroeconomic factors.

### 3.6.2.1 Microeconomic Variables

## Current Ratio (CR)

It is the liquidity ratio that is used for the calculation of an organization position to meet its short-term requirement. This ratio indicates the strength of a business to meet its obligations. The higher current ratio indicates that the organization have the more current assets, it means that the organization is more capable to meet its obligation. If the current ratio is low indicates that organization have no more current assets, it means that the organization is no capable to meet his obligations. The high current ratio also provides the chance to organization take the profitable investment if available. The high current ratio also means that the organization has the enough resources; it means that the organization has the inefficient use of resources. Therefore, it is a debatable issue whether the current ratio has the negative or positive impact on the capital cost of organization. The research was completed by Omran and Pointon (2004) in Egypt. The results of this research show that the current ratio is the important factor for the capital cost of organization. They proved in research that the relation between current ratio and capital cost is negative. It means if the current ratio is high the capital cost is low.

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

## Debt-to-Equity (DE)

It is the debt ratio that is used to calculate the amount of debt of organization relative to its equity. This ratio makes a comparison relative to its equity. The high debt ratio indicates that the organization has the more debt than equity. It means that other organization face the high risk. The low debt ratio indicates that the organization has more equity sources than debt, it means that the organization face the low risk. The research was completed by Omran and Pointon (2004) in Egypt. The results of this research show that the debt to equity ratio is the important factor for the capable cost of organization. They proved in research that the relation between debt to equity ratio and capital cost is negative. It means if the debt to equity ratio is high the capital cost is low.

$$DE = \frac{\text{Total Debt}}{\text{Common Stock Equity}}$$

## Earnings Per Share (EPS)

It is the profitability ratio that is used to calculate the amount of net income against one share. This ratio measures the net income produced with the use of total no. of outstanding shares of the time period. This ratio is used for the evaluation of the profitability of organization. The high EPS ratio indicates that the firm's profitability is well. The low EPS ratio indicates that the firm's profitability is poor. So, the management of organization or financial analysts use this ratio for the valuation of firm. The research was completed by Shafaai and Masih (2013) in Malaysia on the determinants of capital cost. The results of this research show that the EPS is a significant factor for explaining the capital cost. They proved in their research that the positive relation exists between EPS and capital cost. It means that if the EPS is higher cost of capital is also high. If the EPS ratio is low the capital cost is also low.

$$EPS = \frac{\text{Net income}}{\text{No. Of Shares}}$$

## Asset Turnover (AT)

It is the efficiency ratio that is used to calculate the efficiency of manager in the organization for the utilization of resources of the organization. The high AT ratio indicates that the organization uses its assets properly and produced the maximum benefit from the assets of the organization, it means that the management of the organization performance well. The low AT ratio indicates that the organization does not use its assets properly and getting the minimum from the assets of organization, it means that the management of the organization does not performed well. The study executed by the Sing and Nejadmalayei (2004) on the management efficiency and capital cost. The results of this study show that the AT is a significant factor for capital cost. They proved in their study that there exists a positive relation between managerial efficiency and capital cost. It means that if the AT ratio is high the capital cost also will be high, if the AT ratio is low then the capital cost of organization is also.

$$\text{AT} = \frac{\text{Total Sales}}{\text{Total Assets}}$$

## Firm Size (SIZE)

The size of any business or organization can be calculated from different methods, the natural logarithm of the common outstanding shares or the logarithm of the total assets of organization. The size of organization is one of the important elements or variables with respect to the capital cost of organization it is a common thing that large companies have the large amount of capital in shape of debt and equity, so the capital cost of companies also high the small companies have the small amount of capital in shape of debt and equity. So, the cost of capital is also low. The small companies found to earn the high return than large companies. But the large companies are less risky than the small companies, so the cost of capital is low for large companies. Therefore, it is debatable issue that the size has the positive or negative effect on capital cost. A study was conducted by the Shafai and Maasih (2013) in Malaysia on the determinants of cost of equity. The results of this analysis show that the size of organization is a significant factor for capital cost of organization. They proved in their analysis that there exists a negative relation between size and capital cost. It means that if the size of organization is large then the capital cost of organization low, if the size of organization is small then the capital cost of organization is high.

SIZE = Natural logarithm of Total Sales

## Shareholding Pattern (SP)

The shareholding pattern is also the micro-economic variable of this study. The shares holding pattern represents the number of shares held by different investors in organization. It means that a specific group of investors hold how many shares in organization. There are different types of investors in equity market like ret and foreign institutional investors, ownership of employees. Various studies are conducted on the ownership pattern and capital cost. But the most of the time in the study which were conducted on ownership and capital cost, the only two types of ownership patterns were used which were the ownership of institutions and ownership of employees. A study was completed by the Elyasiani et al. (2010) on the debt cost and the stability of intuitional ownership. In the finding of this study they proved that the ownership of institutions in firms reduce the debt cost of firms they also found that the stability in ownership of institutions was the main determinant of debt cost. So, in this study, researcher used the institutions stock ownership. The shareholding pattern of firms can be calculated from the annual reports of the organization.

### 3.6.2.2 Macroeconomic Variables

## Interest Rate (IR)

The interest rate is considered the macroeconomic variable in this analysis. The interest rates of debts are considered as moderated because the interest rate can cause to variation in risk face rate. Therefore, the interest rate affects the (WACC) because the risk-free rate is important element for the calculation of (WACC). The variations in interest rate create the problem for the investors or analysts to calculate the future capital cost of organization. As a result, the actual cost of capital of organization was high or low from the expected capital cost due to the variation in interest rate. The capital cost of any organization varies as the interest rate changes

## Industrial Production Index (IPI)

The Industrial Production Index (IPI) is also considered the macroeconomic variable of this analysis. It is an economic indicator that calculates the real production output of utilities, manufacturing, and mining. The Industrial Production Index (IPI) is published by the Federal Reserve Board of America. The production indexes are calculated with the help of fisher indexes with the weights based on yearly estimation of value added. The Fisher indexes represent the only growth information, the base year value is arbitrarily set at 100. The Industrial Production Index (IPI) along with construction and other industrial indexes accounts for the large amount of variation in national output over the time period of business cycle.

## 3.7 Hypotheses of the Study

Educated guess of research problem the possible answer of research problem, uncertain explanation of research is called the hypothecs. After the detail review of literature, conceptual, framework and study of variables we developed the hypothesis of study "Micro and Macro-economic determinants of cost of capital".

**$H_1$**: There is a significant impact of current ratio on weighted average cost of capital of companies listed at PSE.

**$H_2$**: There is a significant impact of debt to equity ratio on weighted average cost of capital of companies listed at PSE

**$H_3$**: There is a significant impact of earnings per share on weighted average cost of capital of companies listed at PSE

**$H_4$**: There is a significant impact of total assets turnover ratio on weighted average cost of capital of companies listed at PSE

**$H_5$**: There is a significant impact of firm size on weighted average cost of capital of companies listed at PSE.

**$H_6$**: There is a significant impact of institutional ownership on weighted average cost of capital of companies listed at PSE.

**$H_7$**: There is a significant impact of interest rate on weighted average cost of capital of companies listed at PSE.

**$H_8$**: There is a significant impact of industrial production index on weighted average cost of capital of companies listed at PSE.

## 3.8 Models to Be Used for Estimation

$$WACC = \beta_0 + \beta_1 CR_{it} + \beta_2 DE_{it} + \beta_3 EPS_{it} + \beta_4 AT_{it} + \beta_5 IO_{it} + \beta_6 SIZE_{it} + \beta_7 IR_{it} + \beta_8 IPI_{it} + \beta_9 D_{it} + \beta_{10} D1_{it} + \beta_{11} D2_{it} + \beta_{12} D3_{it} + \beta_{13} D4_{it} + \beta_{14} D5_{it} + \beta_{15} D6_{it} + \beta_{16} D7_{it} + \beta_{17} D8_{it} + \varepsilon_{it}$$

Where;

**Constant**

$\beta 0$

**Coefficients**

$\beta_1$to $\beta_{17}$ = coefficients of the independent variables.

| | | |
|---|---|---|
| CR | = | Current Ratio |
| DE | = | Debt to Equity Ratio |
| EPS | = | Earnings per share |
| AT | = | Assets Turnover Ratio |
| IO | = | Institutional Ownership |
| SIZE | = | Firm Size |
| IR | = | Interest Rate |
| IPI | = | Industrial production Index |

**Dummy Variables**

| | | | | | |
|---|---|---|---|---|---|
| $D_0$ | = | Paper Sector | $D_4$ | = | Chemical Sector |
| $D_1$ | = | Textile Sector | $D_5$ | = | Cement Sector |
| $D_2$ | = | Sugar Sector | $D_6$ | = | Motor Vehicles |
| $D_3$ | = | Food Sector | $D_7$ | = | Fuel sand Energy |

## 3.9 Data Analysis Software

In this study we used secondary data for finding the results. The statistical package EViews 9.0 is used to run the regression analysis on panel data for finding the impact of micro and macroeconomic determinants on the capital cost of organization. For the checking of normality of

data, we used the descriptive statistics and then we run the regression analysis. The correlation analysis is also used in this study for the checking of the strength of relationship among the variables. The unit root test and initial screening is also used for the checking, whether the time series variables are non-stationary or stationary.

## 3.10 Panel Unit Root Test

It is very important for a research to apply the unit root test for the checking, whether the data is non-stationary or stationary and then run the regression analysis. For the running of regression analysis, the data must be stationary. It is very important for research that the data should be stationary because if trends found in the data, then it is non-stationary. So, the unit root test must be used in research because the bogus and fake results are very harmful for the study.

Non-Stationary means '$H_O$' i.e. data has unit root (at level)

Stationary means '$H_I$'i.e.data does not have unit root (at level)

## Decision Criteria

1. Levin, Lin, and Chu (2002)

Null: Panel data has unit root (assume common unit root process)

Alternative: Panel data has not unit root

2. Fisher Type Test using ADF and PP test (Choi, 2001; Maddala & Wu, 1999)

(Assume individual unit root process)

Null: Panel data has unit root (assume common unit root process)

Alternative: Panel data has not unit root

## 3.11 Descriptive Analysis

In this study we used the descriptive analysis for the explanation of maximum & minimum value, standard deviation, and mean value. It is also used for the finding the no. of observations of variables of selected firms from 2011 to 2016.

## 3.12 Correlation Analysis

The correlation analysis is also used in this study that describes the relationship between independent and dependent variables. This analysis is used in research for the finding of the strength of relation between variables, whether the relation is moderate, weak or strong. The strength of relation describes the nature and direction relation among selected variables. The multicollinearity also not exist among the independent variables, it means that the value should be less than 0.8 of correlation coefficient among independent variables.

## 3.13 Regression Analysis

The regression analysis is a statistical technique that is used for finding the relation between independent and dependent variables. The panel data is a combination of time series and cross-sectional data, it means that the three models are used in this study that are the, random effect model, common effect model and fixed effect model.

### 3.13.1 Fixed Effect Model

The fixed effect model is used in study when the cases create differ but they remain (constant) in given time period and it is also used to control the misplaced variables. The purpose of this model is to find out the impact or changes of independent variables on dependent variables. It is the very common model that is used in panel data, it is fact through which the “fixed effect” model used, every individual has different kind of intercepts with one another and it does not differ over time period. It is time invariant that is the main assumption of this model.

### 3.13.2 Random Effects Model

This model is used in study when misplace variables may be (constant) over time but vary between cases, others may be fixed between cases but vary over time.

### 3.13.3 Selection criteria between Common Effects and Fixed Effects Models

Redundant Fixed Effects Test is used to choose between the common effects and fixed effects models. If p value of cross-sectional chi square is significant then fixed effects model is more appropriate otherwise common effects model is used (Torres-Reyna, 2007).

# CHAPTER NO.4

# DATA ANALYSIS

## 4.0 Introduction

In this study, the following variables are used:

i. Dependent variable is (WACC) ii. Independent variables are (CR, DE, AT, EPS, SIZE, IO, IR, IPI).

In this study inferential and descriptive statistical techniques are used to analyse the data of selected companies from2011 to 2016. The companies which are selected in this study are non-financial listed companies in Pakistan and classified all the selected companies into the eight industries. The Panel data of selected companies is analysed with the help of E-views 10. All the detail of findings with respect to the hypotheses of study is given below:

## 4.1 Descriptive Analysis

In this study we used the descriptive analysis for the explanation of maximum & minimum value, standard deviation, and mean value. It is also used for the finding of no. of observations of variables of selected firms from 2011 to 2016. In this study, one dependent variable (WACC) and eight independent variables (CR, DE, AT, EPS, SIZE, IO, IR, IPI) are used. The independent variables are classified into the two categories as microeconomic variables (CR, DE, AT, EPS, SIZE and IO) and macroeconomic variables (IR, IPI). In this study the no. of observations is 612for every variable.

## Table No.4.1

## Descriptive Statistics

| | Mean | Median | Maximum | Minimum | Std. Dev. | Observations |
|---|---|---|---|---|---|---|
| **WACC** | 0.152111 | 0.142734 | 0.489532 | 0.001617 | 0.073697 | 612 |
| **CR** | 1.780228 | 1.390689 | 7.729084 | 0.535349 | 1.127718 | 612 |
| **DB** | 1.947347 | 0.972444 | 17.97043 | 0.008623 | 2.402031 | 612 |
| **AT** | 1.409214 | 1.29 | 3.9 | 0.02 | 0.739475 | 612 |
| **IO** | 11.62988 | 10.21 | 39.34 | 0 | 9.657985 | 612 |
| **EPS** | 29.03054 | 17.23 | 153.66 | 0.07 | 27.10314 | 612 |
| **SIZE** | 15.94068 | 15.82744 | 20.89523 | 9.306832 | 1.43386 | 612 |
| **IR** | 11.8448 | 11.99 | 14.42 | 8.76 | 1.904853 | 612 |
| **IPI** | 13.24294 | 14.399 | 23.7377 | 2.7241 | 6.889811 | 612 |

In the table 4.1 the value of standard deviation is 27.10314 of earning per share value is 152. The maximum value of earning per share is 153.66 and minimum value of the earning per share is 0.007. The average value of earning per share is 17.23. It means that the large amount of diversification exists in the selected sample companies of this study. The maximum value of WACC is 0.489532 and the minimum value of the WACC is 0.00167. The average value of the WACC is 0.152111. The standard deviation of WACC is 0.073647. The maximum and minimum value of the current ratio is 7.729 and 1.39. The average value of the current ratio is 1.78. The standard deviation of the current ratio is the 1.127. The standard deviation of the debt to equity ratio is 2.4. The maximum and minimum value of the debt to equity ratio is 17.9 and 0.0008. The average value of debt to equity ratio is 1.94. The assets turnover maximum value is 3.9 and minimum value is 0.02. The standard deviation of the asset's turnover is 0.7394. The average value of assets turnover is 1.29. The maximum and minimum value of the intuitional ownership is 39.34 and 0. The standard deviation of the 10 is 9.65 which mean that the large diversification exits in the selected sample organization. The maximum and minimum value of size is 20.8 and 9.3. The average value of the size is 15.9. The standard deviation of the size is 14.3. The maximum and minimum value of the interest rate is 14.76 and 8.76. The average value of interest rate is 11.99. The standard deviation of interest rate is 1.9. The maximum value of indusial production index is

23.73 and minimum value is 2.72. The average value of industrial production index is 14.39. The standard deviation of industrial production index is 6.8.

## 4.2 Correlation Analysis

The correlation analysis is also used in this study that describes the relationship between independent and dependent variables. This analysis is used in research for the finding the strength of relation between variables, whether the relation is moderate, weak or strong. The strength of relation describes the nature and direction relation among selected variables. The values of correlation matrix show that the dependent variable`s correlation value is not larger than the value of independent variables. The multicollinearity also not exist among the independent variables, it means that the value should be less than 0.8 of correlation coefficient among independent variables.

**Table 4.2**

**Correlation Matrix of DV i.e. WACC and IV's i.e. CR, DE, AT, IO, EPS, SZ, IR, IPI**

| | WACC | CR | DB | AT | IO | EPS | SIZE | IR | IPI |
|---|---|---|---|---|---|---|---|---|---|
| **WACC** | 1 | | | | | | | | |
| **CR** | -0.02039 | 1 | | | | | | | |
| **DB** | 0.504505 | -0.02706 | 1 | | | | | | |
| **AT** | 0.045902 | -0.0952 | 0.065443 | 1 | | | | | |
| **IO** | -0.09264 | 0.114018 | -0.00264 | 0.05421 | 1 | | | | |
| **EPS** | 0.102313 | 0.044942 | 0.04239 | 0.052737 | -0.0993 | 1 | | | |
| **SIZE** | -0.10533 | -0.19235 | -0.09559 | 0.073572 | 0.004869 | 0.021251 | 1 | | |
| **IR** | 0.001003 | -0.05718 | 0.11426 | 0.047844 | 0.007378 | 0.087765 | -0.02489 | 1 | |
| **IPI** | 0.08166 | 0.059344 | -0.15492 | -0.04658 | -0.01707 | -0.11844 | 0.01383 | -0.78654 | 1 |

In the table 4.2 the correlation of dependent variables (WACC) and independent variables (CR, DE) are calculated into the one matrix. The value of each variable is 1 and the correlation of each variable is less than 0.8 which means that there is no multicollinearity exits among the independent variables. All the variables including WACC are well correlated with each other. The correlation of current ratio with WACC is -0.02039 which means that the negative relation exits between the current ratio and WACC of the current ratio of selected firms increase then the WACC of selected

firms decrease. The correlation of debt to equity ratio with WACC is 0.50 which means that a strong positive relation exits between both variables. It shows the direct relation between the debt to equity and WACC. If increase in the debt to equity ratio which means increase in the WACC of the organization. The correlation of the debt to equity ratio is much high as compared to the other independent variable it means that the debt to equity has strong positive impact on the value of WACC. The correlation value of assets turnover is 0.45902 which shows that the positive relation exits and the increase in the assets turnover which lands to increase in the WACC of the selected organization. The correlation value of the institutional ownership is -0.0926 which indicates that the negative relation exits between the institutional ownership and WACC. It means that the increase in the stock of institutions ownership leads to reduce the capital cost of debt.

The correlation of earnings per share is 0.10 with WACC which shows that the positive relation exits between the earning per share and WACC. If earning per share increase it means the WACC of selected companies also increase. The correlation value of the size with WACC is -0.105 which means that the negative relation exits between the size of selected organization and the WACC of selected organization. So, it means that a big company has the low WACC as compared to the small company. The correlation of interest is 0.001003 with WACC. So, the relation is positive between the interest and WACC. If interest rate increases the WACC of selected organization also increase. The correlation of industrial production index is 0.08166 with the depended variable WACC. The value of correlation shows that a positive relation exits between the industrial production index and WACC of the selected organization.

## 4.3 Panel Unit Root Test for Stationarity of Variables

It is very important for a research to use the unit root test for checking, whether the data is non-stationary or stationary and then run the regression analysis. For the running of regression analysis, the data must be stationary. It is very important for research that the data should be stationary because the stationary data explains the trend in data. So, the unit root test must be used in research because the bogus and fake results are very harmful for the study.

Non-Stationary means 'Ho' i.e. data has unit root (at level)

Stationary means 'H1'i.e. datadoes not have unit root (at level)

**Decision Criteria**

**1. Levin et al. (2002)**

Null: Panel data has unit root (assume common unit root process)

Alternative: Panel data has not unit root

**2. Fisher Type Test using ADF and PP test (Choi, 2001; Maddala & Wu, 1999)**

**(Assume individual unit root process)**

Null: Panel data has unit root (assume common unit root process)

Alternative: Panel data has not unit root

# Table 4.3

## Panel Unit Root Test

| Variable | Statistics | Sig. | Stationary/ Non-Stationary | Decision |
|---|---|---|---|---|
| **WACC** | Levin, Lin & Chu t | -13.4648 0.0000 | 1(0) Stationary at level | WACC is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 442.727 0.0000 | | |
| **CR** | Levin, Lin & Chu t | -14.9733 0.0000 | 1(0) Stationary at level | CR is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 305.962 0.0000 | | |
| **DE** | Levin, Lin & Chu t | -125.737 0.0000 | 1(0) Stationary at level | DE is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 1117.81 0.0000 | | |
| **AT** | Levin, Lin & Chu t | -45.3882 0.0000 | 1(0) Stationary at level | AT is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 476.765 0.0000 | | |
| **EPS** | Levin, Lin & Chu t | -41.2596 0.0000 | 1(0) Stationary at level | EPS is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 362.033 0.0000 | | |
| **IO** | Levin, Lin & Chu t | -36.302 0.0000 | 1(0) Stationary at level | IO is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 413.769 0.0000 | | |
| **SIZE** | Levin, Lin & Chu t | -23.0696 0.0000 | 1(0) Stationary at level | SIZE is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 443.727 0.0000 | | |
| **IR** | Levin, Lin & Chu t | -5.9252 0.0000 | 1(0) Stationary at level | IR is stationary at level i.e. Panel data has no unit root at level. |

| | | | | |
|---|---|---|---|---|
| | PP - Fisher Chi-square | 186.57 0.0000 | | |
| **IPI** | Levin, Lin & Chu t | - 31.9861 0.0000 | 1(0) Stationary at level | IPI is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 505.046 0.0000 | | |

The outcomes of this test explain that all the variables including the dependent variable WACC are stationary at level. So, the alternative hypothesis accepted and the null hypothesis rejected since there is no trend exists in data. In the table, the result describes that CR, DE, AT, EPS, SIZE, IO, IR, IPI and WACC are stationary at level and the P-value of the analysis is significant (P<05). We can accept the alternative hypothesis and reject the null hypothesis which means the data is stationary.

## 4.4 Panel data regression Analysis

The panel data has featured the both types of data, the cross section and time series. It means that panel regression analysis is combination of both types of data. The three types of models can be used in panel data that are the common, random and fixed models.

### 4.4.1 Fixed Effect Model

The fixed effect model is used in study when the cases create differ but they remain (constant) in given time period and it is also used to control the misplaced variables. The purpose of this model is to find out the impact or changes of independent variables on dependent variables. It is the very common model that is used in panel data, it is fact through which the “fixed effect” model used, every individual has different kind of intercepts with one another and it does not differ over time period. It is time invariant that is the main assumption of this model.

### 4.4.2 Random effects model

This model is used in study when misplace variables may be (constant) over time but vary between cases, others may be fixed between cases but vary over time.

### 4.4.3 Selection criteria between Common Effects and Fixed Effects Models

Redundant Fixed Effects Test is used to choose between the common effects and fixed effects models. If p value of cross-sectional chi square is significant then fixed effects model is more appropriate otherwise common effects model is used (Torres-Reyna, 2007).

To select which the model is more suitable, the Hausman test is used. Hausman test use to compare either to use fixed effect model or random effect model. Through the Null Hypothesis, Hausman test estimate the coefficient result from the random effect estimator and constant fixed effect estimator. When the Hausman test is significant (Prob < Chi2 or less than 0.05), than fixed effect model will be used (Torres-Reyna, 2007)

## 4.5 Regression Analysis

The regression analysis is a statistical technique that is used for finding the relation between independent and dependent variables. The panel data is a combination of time series and cross-sectional data, it means that the three models are used in this study that are the, random effect model, common effect model and fixed effect model.

**4.5.1[Model]** $WACC = \beta_0 + \beta_1 CR_{it} + \beta_2 DE_{it} + \beta_3 EPS_{it} + \beta_4 AT_{it} + \beta_5 IO_{it} + \beta_6 SIZE_{it} + \beta_7 IR_{it} + \beta_8 IPI_{it} + \beta_9 D_{it} + \beta_{10} D1_{it} + \beta_{11} D2_{it} + \beta_{12} D3_{it} + \beta_{13} D4_{it} + \beta_{14} D5_{it} + \beta_{15} D6_{it} + \beta_{16} D7_{it} + \beta_{17} D8_{it} + \varepsilon_{it}$

## Table No. 4.4

## Redundant and Hausman Test

| Effects Test | Statistic | D.F. | Prob. |
|---|---|---|---|
| Period F | 110.830903 | (5,589) | 0.0000 |
| Period Chi-Square | 404.503599 | 5 | 0.0000 |

| Test Summary | Chi-Sq-Statistic | Chi-Sq D.F. | Prob. |
|---|---|---|---|
| Cross-Section Random | 82.638245 | 8 | 0.0000 |

## Table No. 4.5

## Regression Analysis

| Variable | Coefficient | St. Error | T-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.058418 | 0.045113 | 1.294931 | 0.1958 |
| Current Ratio | -0.000868 | 0.002379 | -0.364694 | 0.7155 |
| Debt to Equity | 0.015638 | 0.001058 | 14.77493 | 0.0000* |
| Assets Turnover | 0.000434 | 0.003824 | 0.113416 | 0.9097 |
| Institutional Ownership | -0.000563 | 0.000282 | -1.996909 | 0.0463* |
| Earnings Per Share | 0.000273 | 9.620005 | 2.835914 | 0.0047* |
| Firm Size | -0.004282 | 0.001920 | -2.229796 | 0.0261* |
| Interest Rate | 0.006420 | 0.002124 | 3.022298 | 0.0026* |
| Industrial Production Index | 0.003249 | 0.000592 | 5.484094 | 0.0000* |
| D1 | 0.019473 | 0.008409 | 2.315604 | 0.0209 |
| D2 | 0.020935 | 0.011829 | 1.769740 | 0.0773 |
| D3 | 0.004642 | 0.011426 | 0.406317 | 0.6847 |
| D4 | -0.000238 | 0.009252 | -0.025716 | 0.9795 |
| D5 | 0.015472 | 0.012326 | 1.255230 | 0.2099 |
| D6 | 0.014873 | 0.010580 | 1.405798 | 0.1603 |
| D7 | 0.022443 | 0.010616 | 2.114116 | 0.0349 |

| | | | |
|---|---|---|---|
| R-Squared | 0.328558 | F-Statistic | 19.37756 |
| Adjusted R-Squared | 0.311603 | Prob (F-Statistic) | 0.000000 |

(*) Significant Level at 5%

The table 4.4 shows the values of redundant test which is used for the selection of models which we run for regression. This test tells us that whether we use the common effect or fixed effect model. If the P-Value of this test is less than 0.05 it means that we run the fixed effect model and reject the common model. In this study the P-Value of this test is less than 0.05 which shows that we selected the fixed model. So, we use the fixed model for the results of regression. After the redundant test we run another test which tell us that we apply the random or fixed model. The name of this test is Hausman test if the P-value of this test is less than 0.05 which shows that rejection of null hypothesis is accepted and we run the model for the regression.

In the table 4.5 current ratios P-Value is 0.7155 which means that the insignificant relation exits between the current ratio of business and capital cost of company. The capital cost is the cost of acquired funds which company repay to the fund's providers. The current ratio shows the liquidity of the company there is no significant relation proved between both variables. The finding of this study also matches with the finding of Shafaai and Masih (2103) on determinants of cost of equity in Malaysia. They used the current ratio as accounting-based determinants of cost of equity. In their findings the current ratio shows the insignificant relation with cost of equity in over all models.

The results show that the P-Value of debt to equity is 0.000 which shows that the significant relation exits between the debt to equity and capital cost. The coefficient value of debt to equity is 0.015638 which shows that if 1 unit increase in the debt to equity ratio cause to increase the 0.015638 units in the capital cost of the selected firms. A strong positive relation is proved between the debt to equity ratio and capital cost. The debt to equity ratio is used as proxy of capital structure, which is one of the main factors that affect the capital cost. The results of this study match with the different authors, they also used debt to equity ratio as determinants of capital cost they also found the positive relation. The study of Omran and Pointon (2004) support our finding they also proved the positive relation between debt to equity and capital cost. The study of Foong and Goh (2013) on the determents of cost capital they used the debt to equity as independent variables they also proved the positive relation between both variables. The Boyani in (2015) conducted the study on the capital structure and capital cost in this study he used the debt to equity ratio as proxy of capital cost structure. He also proved the positive relation of debt to equity and capital cost.

In the table 4.5 the P-Value of assets turnover ratio is 0.9097 which shows that there is insignificant relation exits between the asset's turnover ratio and capital cost. The assets turnover ratio shows that how management used the resources of the business. The assets turnover ratio measures the managerial efficiency which has no direct link with the capital cost of business. The study conducted by Shafaai and Masih (2013) on the determinants of cost of equity. They conducted the research in different industries and proved that the assets turnover ratio has insignificant relation with cost of equity in four sectors out of seven sectors. In the other three sectors the results of assets turnover were mixed.

The P-Value of institutional ownership is 0.0463 which shows that the significant relation exits between the institutional ownership and capital cost. The coefficient value of institutional ownership is -0.00563 which shows that the negative relation exits, if 1 unit increase in institutional ownership the capital cost will decrease -0.00563 units. The inverse relation is proved between the both variables. The finding of different authors matches with this results study. A study was conducted by Elyaions el al. (2010) on the debt cost and institutional ownership. They proved in their study that the negative relation exits between institutional ownership and capital cost. They proved in their study that the institutional ownership has caused to reduce debt cost of business. A study was conducted by Alshwer (2012), the effect of ownership of institutions on capital cost. They also proved in their study the negative impact of institutional ownership on capital cost.

In the table 4.5 the P-value of earning per share is 0.0047 which means that significant relation exits between earning per share and capital cost. The coefficient value of earning per share is 0.000273 which shows that if 1 unit of earning per share increase it also causes to increase the 0.000273 units in capital cost. The earnings per share is the profitability ratio which measures per share earnings and that ratio is used for the valuation of companies. A company which earns the more profit that effects the capital cost of company because the shareholders demand the more return which causes to increase the cost of equity. When the cost of equity increases the capital cost also increase. The results of various studies also match with our findings.

The study was carried out by Foong and Goh (2013) on the determinants of cost of equity. The results of this study showed that the positive relation exits between earning per share and capital equity. Another study was conducted by Shafaai and Masih (2013) on the determinants of cost of

equity. They used the earning per share as determinants of cost equity and proved the positive relation between earning per share and equity cost.

The P-value of size in table 4.5 is 0.0261 which shows that the relation between the size and capital cost is significant. The coefficient value of size -0.004282 which means that the negative relation proved in this study between size and capital cost, if 1 unit increase in the size of business, it causes to 0.004282 unit decrease the capital cost. The large companies achieved the economies of scale in financing and the market risk is also low. So, the debt is available at low rates to the large companies. The different authors used the size as independent variable with WACC and different authors used as control variable of the study mostly authors found the negative relation of size with the capital cost. A study was conducted by Aghstin (2015) in Indonesia on the effect of size and inflation on capital cost. He also proved the negative relation. The research of Foong and Goh (2013) on determinates of cost of capital, in their study they proved the negative relation between size and cost of equity.

The P-value of interest rate is 0.0026 which shows that the significant relation exits between the interest rate and capital cost. The coefficient value of interest rate is 0.006420 which means that if 1 unit increase in the interest rate cause to 0.006420 unit increase in the capital cost. The interest rate is the macroeconomic variable that affects the capital cost. Interest rate has direct relation with the debt cost. Interest rate is the amount which is paid to the lenders by the company. So, if interest rate increase it means the company repays the more amounts to the lenders ultimately increase the capital cost of business.

The P-value of industrial production index is 0.000 which means that the significant relation exits between industrial production index and WACC. The value of coefficient is 0.003249 it shows that if 1 unit increase in the industrial production index causes to increase the 0.003249 units in the WACC. The industrial production index of Pakistan measures the total production of industry and measure the overall changing in production. So, it is growth rate of a specific industry, if the growth rate is high, it means the business has required more resources to expand their business. When companies receive the more funds, the capital cost of company also increases. A study was completed in India by Sharma (2012) on capital cost and profitability analysis. He conducted that analysis on telecommunication sector of India and found the impact of capital cost on different ratios. For this study he selected all the companies of telecommunication sectors and collected the

data of six years from 2005 to 2010. He used the capital cost as independent variable and used the profitability, liquidity, dividend policy, company growth as depended variable. The results of this study show the positive relation was proved between company growth and capital cost. He argues that companies in growing stage required the more funds for the expansion of existing business.

In current study, the Macro and Microeconomic determinants of cost of capital. A cross industry analysis, we selected the 102 companies as sample which is divided into the 8 sectors of non-financial companies listed in Pakistan. For cross industry analysis we use the dummy variables from D1 to D8 because 102 selected companies belong to 8 sectors so we add the 8 dummy variables. The coefficient value of D1 and D7are the 0.019473 and 0.022443. The D1 represents the textile sector and D7 represents the fuel and energy sectors. The Coefficient value of textile and fuel energy sectors shows the share of textile sector 0.019473 in the production of WACC and the share of fuel sector 0.022443 in production of WACC. The coefficient value of C in table 4.5 represents the share of paper sector.

# Table No 4.6

## Redundant and Hausman Test

| Sector | Textile | | | Chemical | | | Motor Vehicle | | | Fuel and Energy | | | Paper | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Effects Tests** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** |
| **Period F** | 2.148075 | (26,126) | 0.0028 | 1.386806 | (16,70) | 0.0140 | 1.353482 | (11,52) | 0.0232 | 1.827464 | (10,46) | 0.0122 | 3.219346 | (6,27) | 0.0162 |
| **Period Chi-Square** | 59.070901 | 26 | 0.0002 | 36.157717 | 16 | 0.0318 | 18.128184 | 11 | 0.0087 | 21.744046 | 10 | 0.0165 | 22.665394 | 6 | 0.0009 |
| **Test Summary** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** |
| **Cross Section Random** | 27.822252 | 8 | 0.0000 | 19.801267 | 8 | 0.0000 | 18.567123 | 8 | 0.0000 | 14.825643 | 8 | 0.0000 | | | |

# Table No. 4.7

# Regression Analysis

| Sector | Textile | | Chemical | | Motor Vehicle | | Fuel and Energy | | Paper | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** |
| **C** | 0.206105 | 0.0426 | -0.022366 | 0.7996 | 0.149633 | 0.0682 | 0.126515 | 0.2958 | 0.206314 | 0.1413 |
| **Current Ratio** | 0.002173 | 0.7479 | -0.001790 | 0.7379 | -0.002839 | 0.6370 | -0.003762 | 0.5072 | -0.007571 | 0.4653 |
| **Debt to Equity** | 0.022045 | 0.0000* | 0.007540 | 0.0026* | 0.017641 | 0.0000* | 0.020484 | 0.0000* | 0.000482 | 0.8768 |
| **Earnings Per Share** | 0.000626 | 0.0001* | -0.000220 | 0.4286 | -0.001778 | 0.0023* | -0.000847 | 0.0041* | -0.000149 | 0.8381 |
| **Assets Turnover** | -0.002940 | 0.7300 | 0.012839 | 0.1757 | 0.002113 | 0.8286 | 0.003135 | 0.7014 | 0.032846 | 0.0442* |
| **Size** | -0.017431 | 0.0016* | -0.004129 | 0.3567 | -0.004862 | 0.0449* | -0.001108 | 0.8096 | -0.020322 | 0.0077* |
| **Institutional Ownership** | -0.000497 | 0.2954 | 0.001355 | 0.0467* | -0.001585 | 0.0115* | -0.002100 | 0.0114* | -0.000468 | 0.6601 |
| **Interest Rate** | 0.006667 | 0.0449* | 0.011250 | 0.0008* | 0.005685 | 0.2228 | 0.000504 | 0.9334 | 0.016377 | 0.0074* |
| **Industrial Production Index** | 0.006849 | 0.0000* | 0.003328 | 0.0002* | 0.003234 | 0.0060* | 0.004983 | 0.0121* | 0.002717 | 0.0466* |
| **R-squared** | 0.523744 | **R-squared** | 0.359270 | **R-squared** | 0.530875 | **R-squared** | 0.502559 | **R-squared** | 0.419886 | |
| **Adjusted R-squared** | 0.498678 | **Adjusted R-squared** | 0.299667 | **Adjusted R-squared** | 0.471303 | **Adjusted R-squared** | 0.431496 | **Adjusted R-squared** | 0.279253 | |
| **F-statistic** | 20.89454 | **F-statistic** | 6.027739 | **F-statistic** | 8.911558 | **F-statistic** | 7.072023 | **F-statistic** | 2.985674 | |
| **Prob(F-statistic)** | 0.000000 | **Prob(F-statistic)** | 0.000004 | **Prob(F-statistic)** | 0.000000 | **Prob(F-statistic)** | 0.000002 | **Prob(F-statistic)** | 0.012441 | |

(*) Significant Level at 5%

The result of table no 4.7 shows the cross-industry analysis. For this purpose, select the five active and growing industries from the non-financial listed firms of Pakistan. We took the twenty-seven firms from textile sector, 17 firms from chemical sector, 12 firms from motor vehicle sectors, 11 firms from fuel and energy sector, 7 firms from paper sector.

The results of textile sector shows, the current ratio, assts turnover and institutional ownership has the insignificant relation with WACC. The coefficient values of textile sectors show that debt to equity, earning per share, interest rate, industrial production index has the positive relation with WACC. And the size has the negative relation with WACC. The P-value of current ratio is 0.7479 which means that the insignificant relationship exists between current ratio and WACC. The P-value of debt to equity is 0.0000 which means that significant relation exists between debt to equity and WACC. The coefficient value of debt to equity is 0.022045 which show that the positive relation exists and 1 unite increase cause to 0.022045 unite increase in WACC. The P-value of earning per share is 0.0001 which means that significant relation is exist between earning per share and WACC. The coefficient value of earning per share is 0.000626 which show that the positive relation exists and 1 unite increase cause to 0.000626 unite increase in WACC. The P-value of assets turnover is 0.7300 which means that the insignificant relation exists between assets turnover and WACC. The P-value of firm size is 0.0016 which means that the significant negative relation exists between firm size and WACC. The P-value of institutional ownership is 0.2954 which means that the insignificant relation exists between institutional ownership and WACC. The P-value of interest rate is 0.0449 which means that the significant positive relation exists between interest rate and WACC. The coefficient value of interest rate is 0.006667 which means that 1 unite increase in interest rate cause to 0.006667 increase in WACC. The P-value of IPI is 0.0000 which means that the significant positive relation exists between IPI and WACC. The coefficient value of IPI is 0.006849which show that the 1 unite increase in IPI cause to 0.006849 units in WACC.

The results of chemical sector shows, the P-value of current ratio is 0.7379 which means that the insignificant relationship exist between current ratio and WACC. The P-value of debt to equity is 0.0026 which means that significant positive relation exists between debt to equity and WACC. The value of coefficient of debt to equity is 0.007540 which means that if 1 unite increase in debt to equity then 0.007540 unite increase in WACC. The P-value of earning per share is 0.4286 which

means that insignificant relation is exist between earning per share and WACC. The P-value of assets turnover is 0.1757 which means that the insignificant relation exists between assets turnover and WACC. The P-value of firm size is 0.3567 which means that the insignificant relation exists between firm size and WACC. The P-value of institutional ownership is 0.0467 which means that the significant relation exists between institutional ownership and WACC. The coefficient value is 0.001355 which show that 1 unite increase in IO cause to 0.001355 unite increase in WACC. The P-value of interest rate is 0.0008 which means that the significant positive relation exists between interest rate and WACC. The coefficient value of interest rate is 0.011250 which means that 1 unite increase in interest rate cause to 0.0011250 increase in WACC. The P-value of IPI is 0.0002 which means that the significant positive relation exists between IPI and WACC. The coefficient value of IPI is 0.003328 which show that the 1 unite increase in IPI cause to 0.003328 units in WACC.

The results of motor vehicle sector show that the current ratio, assts turnover and interest rate has the insignificant relation with WACC. The coefficient value of motor vehicle sector show that the debt to equity, interest rate and industrial production index has the positive relation with WACC. And the earning per share, size and intuitional ownership has the negative relation with WACC. The P-value of current ratio is 0.6370 which means that the insignificant relationship exists between current ratio and WACC. The P-value of debt to equity is 0.0000 which means that significant positive relation exists between debt to equity and WACC. The value of coefficient of debt to equity is 0.017641 which means that if 1 unite increase in debt to equity then 0.017641 unite increase in WACC. The P-value of earning per share is 0.0023 which means that significant negative relation is exist between earning per share and WACC. The coefficient value is -0.001778 which show that 1 unite increase in EPS cause to 0.001778 unite decrease in WACC. The P-value of assets turnover is 0.8286 which means that the insignificant relation exists between assets turnover and WACC. The P-value of firm size is 0.0449 which means that the significant negative relation exists between firm size and WACC. The coefficient value of firm size is -0.004862 which show that if 1 unite increase in firm size cause to 0.004862 unite decrease in WACC. The P-value of institutional ownership is 0.0115 which means that the significant relation exists between institutional ownership and WACC. The coefficient value is -0.001585 which show that 1 unite increase in IO cause to 0.001585 unite decrease in WACC. The P-value of interest rate is 0.2228 which means that the insignificant relation exists between interest rate and WACC. The P-value

of IPI is 0.0060 which means that the significant positive relation exists between IPI and WACC. The coefficient value of IPI is 0.003234 which show that the 1 unite increase in IPI cause to 0.003234 units in WACC.

The results of fuel and energy sector show that the current ratio, assts turnover ratio, size and interest rate has the insignificant relation with WACC. The coefficient value of fuel and energy sector debt to equity and industrial production has the positive relation with WACC. And the earning per share and intuitional ownership has the negative impact on WACC. The P-value of current ratio is 0.5072 which means that the insignificant relationship exists between current ratio and WACC. The P-value of debt to equity is 0.0000 which means that significant positive relation exists between debt to equity and WACC. The value of coefficient of debt to equity is 0.020484 which means that if 1 unite increase in debt to equity then 0.020484 unite increase in WACC. The P-value of earning per share is 0.0041 which means that significant negative relation is exist between earning per share and WACC. The coefficient value is -0.000847 which show that 1 unite increase in EPS cause to 0.000847 unite decrease in WACC. The P-value of assets turnover is 0.7014 which means that the insignificant relation exists between assets turnover and WACC. The P-value of firm size is 0.8096 which means that the insignificant relation exists between firm size and WACC. The P-value of institutional ownership is 0.0114 which means that the significant relation exists between institutional ownership and WACC. The coefficient value is -0.002100 which show that 1 unite increase in IO cause to 0.002100 unite decrease in WACC. The P-value of interest rate is 0.9334 which means that the insignificant relation exists between interest rate and WACC. The P-value of IPI is 0.0121 which means that the significant positive relation exists between IPI and WACC. The coefficient value of IPI is 0.004983 which show that the 1 unite increase in IPI cause to 0.004983 units in WACC.

The results of paper sector show that current ratio, debt to equity, earning per share and intuitional ownership has the insignificant with WACC. Coefficient values of paper sector show that assets turnover, interest rate, and industrial production has the positive impact on WACC. And coefficient values of size in paper sector shows that the negative relation of size with WACC. The P-value of current ratio is 0.4653 which means that the insignificant relationship exists between

current ratio and WACC. The P-value of debt to equity is 0.8768 which means that insignificant relation exists between debt to equity and WACC. The P-value of earning per share is 0.8381 which means that insignificant relation is exist between earning per share and WACC. The P-value of assets turnover is 0.0442 which means that the significant relation exists between assets turnover and WACC. The coefficient value of assets turnover is 0.032846 which means that the positive relation exists and 1 unite increase in assets turnover cause to 0.032846 unite increase in WACC. The P-value of firm size is 0.0077 which means that the significant negative relation exists between firm size and WACC. The P-value of institutional ownership is 0.6601 which means that the insignificant relation exists between institutional ownership and WACC. The P-value of interest rate is 0.0074which means that the significant positive relation exists between interest rate and WACC. The coefficient value of interest rate is 0.016377 which means that 1 unite increase in interest rate cause to 0.016377 increase in WACC. The P-value of IPI is 0.0466 which means that the significant positive relation exists between IPI and WACC. The coefficient value of IPI is 0.002717 which show that the 1 unite increase in IPI cause to 0.02717 units in WACC.

## Table No. 4.8

## Regression Analysis

| | Fixed Effect | | Random Effect | | Common Effect | |
|---|---|---|---|---|---|---|
| Variable | Coefficient | Prob. | Coefficient | Prob. | Coefficient | Prob. |
| C | -0.385658 | 0.0139 | 0.044745 | 0.2903 | 0.044745 | 0.3118 |
| Current Ratio | -0.001568 | 0.6718 | -0.001346 | 0.5384 | -0.001346 | 0.5562 |
| Debt to Equity | 0.014442 | 0.0000* | 0.015983 | 0.0000* | 0.015983 | 0.0000* |
| Earnings Per Share | 0.000231 | 0.0421* | 0.000260 | 0.0037* | 0.000260 | 0.0055* |
| Assets Turnover | -0.006608 | 0.4025 | 0.001964 | 0.5472 | 0.001964 | 0.5648 |
| Firm Size | -0.001566 | 0.0079* | -0.000581 | 0.0207* | -0.000581 | 0.0269* |
| Institutional Ownership | 0.025627 | 0.0066* | -0.003214 | 0.0601 | -0.003214 | 0.0721 |
| Interest Rate | 0.007041 | 0.0009* | 0.006891 | 0.0007* | 0.006891 | 0.0012* |
| Industrial Production Index | 0.003122 | 0.0000* | 0.003375 | 0.0000* | 0.003375 | 0.0000* |
| | **R-squared 0.479410**<br>**Adjusted R-squared 0.363607**<br>**F-statistic 4.139889**<br>**Prob (F-statistic) 0.000000** | | **R-squared 0.313510**<br>**Adjusted R-squared 0.304387**<br>**F-statistic 34.36558**<br>**Prob (F-statistic) 0.000000** | | **R-squared 0.313510**<br>**Adjusted R-squared 0.304387**<br>**F-statistic 34.36558**<br>**Prob (F-statistic) 0.000000** | |

(*) Significant Level at 5%

In this research we additionally run the three models, fixed effect, random effect, common effect and compare the results of three models. In table No. 4.8 the results of fixed effect model show that the current ratio, assets turnover is the insignificant variables. And the debt to equity, earning per share, firm size, institutional ownership, interest rate, industrial production index are the insignificant variables of the study. The firm size and institutional ownership are the negative relation with WACC. The debt to equity, earning per share, interest rate, industrial production index is the positive relation with WACC.

In table No. 4.8 the results of random effect model show that the current ratio, assets turnover, institutional ownership is the insignificant variables. And the debt to equity, earning per share, firm size, interest rate, industrial production index are the insignificant variables of the study. The firm size and is the negative relation with WACC. The debt to equity, earning per share, interest rate, industrial production index is the positive relation with WACC.

In table No. 4.8 the results of common effect model show that the current ratio, assets turnover, institutional ownership is the insignificant variables. And the debt to equity, earning per share, firm size, interest rate, industrial production index are the insignificant variables of the study.

The firm size and is the negative relation with WACC. The debt to equity, earning per share, interest rate, industrial production index is the positive relation with WACC. The results of random and common models are all most same but the results of fixed effect model are better and the fixed effect model is more suitable for this study.

# CHAPTER NO.5

# CONCLUSION, DISCUSSION AND RECOMMENDATION

## 5.1 Introduction

This is the final part of the analysis that shows the complete and brief report of analysis. This chapter presents the finding of the study and describes the summary and conclusion of the research. This chapter also describes the limitations, managerial implications and further recommendations that are very helpful for further research.

## 5.2 Conclusion

The study on the macro and microeconomic determinants of cost of capital: A cross industry analysis of non-financial sector of listed firm in Pakistan. The results of this study show that the debt to equity, earning per share, interest rate and industrial production index have the positive relation with the capital cost of companies. The size of companies and institutions ownership has the negative relation with capital cost of Pakistani companies. We also found the insignificant relation of current ratio and assets turnover. In the connection of first hypothesis of our study show that current ratio which is the microeconomic determinant of capital cost has the insignificant relation with capital cost of Pakistani companies. Our findings are supported by the study of Shafaai and Masih (2013) which shows that current ratio has insignificant relation with capital cost. For the second hypothesis, we found the strong positive relation of debt to equity with capital cost. It means that if debt to equity ratio increase the capital cost also increase. The debt to equity ratio is used as proxy of capital structure and the capital structure is main element in the determination of capital cost. Our finding about the debt to equity and capital cost is supported by the different authors because capital structure is a main element in the determination of capital cost

so many authors used as independent variable and every one proved the positive relation. For the third hypothesis, the results of earning per share shows that the positive relation exists between the earning per share and capital cost. When the profit of a company increases the shareholders demand the high return against their investment if the rate of return increase the cost of equity also increase as a result the overall capital cost of a company also increase. The results of our study show that the assets turnover has insignificant relation with capital cost. For the fourth hypothesis, our findings about assets turnover also supported by the study of Shafaai and Masih (2013) they proved the insignificant relation in four sectors among six sectors the next two sectors show the mixed effect of assets turnover. In the connection of fifth hypothesis, the size of a company has negative relation with capital cost of Pakistani companies. The large companies achieve the economies of scale in funding and they have the low market risk so debt is easily available at low rate to the large companies. Our findings also supported by the many authors their results also show negative relation between size of companies and capital cost. The results of different authors also match with our findings. In the connection of sixth hypothesis of the study, the relationship of institutional ownership and cost of capital is found negative. For the seventh hypothesis of the study, the interest rate has also positive relation with the capital cost when the interest rate increases the company pay more amount in shape of debt cost so the overall capital cost also increases. In the connection of eighth hypothesis, the industrial production index measures the output of the industries and measures the changes in the output of industries it shows the growth rate of a specific industry. The results of our study show that the industrial production index has positive relation with capital cost because when the growth rate of specific industry increase the company required the more funds for expansion of existing business. When the business acquired the more funds the overall capital cost of company also increases.

This study will also give the important theoretical help to the financial sector of Pakistan. This study describes the relation among independent variables (CR, DE, AT, EPS, SIZE, IO, IR, PI) and dependent variables (WACC). The independent variables are classified into the two categories as microeconomic variables (CR, DE, AT, EPS, SIZE, IO) and macroeconomic variables (IR, IPI). A very little attention was given to microeconomic variables this area of finance mostly the research work was done on the relation of capital cost and corporate governances, performance and used the macroeconomic variables as determinants of capital cost. The only some studies are available in market about the and capital cost.

This study will show its importance by analysing the effect of microeconomic variables and macroeconomic variables on capital cost of non-financial sector of Pakistan. Furthermore, the results of this study will give the help to the managers about the efficient process of decision-making and this analysis will be a very healthy contribution in the financial sector Pakistan.

## 5.3 Discussion

For the achievement of set goals, a company requires the resources, two groups provide the funds to the company that are the investors and creditors. The creditors want the real amount with the fixed rate of interest from the company. The investors want the return from the running operation of the business. For the repayment of funds to the suppliers, the accounting profit is the main element of the financial statement that must be considered. If a company's financial statements report that the accounting profit is low or lack of transparency that is very harmful for the capital providers. This uncertainty and lack of information for investors and creditors leads to create a more risk for creditors and investors. So, for this reason the creditors want the high interest rate and investors wants the high return from the company's managers. The rate that is given to the creditors for the supply of finance is considered the cost of debt and the rate that is given to the investors for the supply of funds is considered the cost of equity. The rates of the both costs are the overall cost of the funds.

The main goal of every company or organization is to maximizing the wealth of shareholders, the cost of capital based on that assumption. There is a big issue for the management of the company at the same time they increase the wealth of owners and repay the demanded rate of return and rate of interest to the funds suppliers. So, it is the responsibility of the management of the company to work in such a way that they achieve the acceptable profit margin for owners and control the capital cost of the company. In this study we found the impact of micro and macro-economic determinants capital cost. In this study we used the (CR, DE, EPS, AT, IO, SIZE) as micro economic determinates and (IR, IPI) as macroeconomic determinants. In the previous studies various authors used these some of variables as determinants of capital cost.

This study used different statistical tools such as descriptive, regression analysis, correlation analysis for the investigation of relation between independent and dependent variables by using the data of 102 Non-financial firms from 2011 to 2016. The two main objectives of the study are that to find out the impact of macroeconomic variables on capital and to find out the impact of microeconomic variables on capital cost. In this study, researcher selected the eight growth-able industries from the all industries which are listed at Pakistan stock exchange. From the chemical, energy, cement, sugar, textile, paper, motor vehicles, and food sectors 102 firms selected as sample. The proportional sampling technique is used for the selection of sample size and collected the six-year data from 2011 to 2016. In this study we used the capital cost as dependent variable and we considered the eight independent variables and divided into the two categories. The independent variables are the current ratio (CR), Debt-to-equity ratio (DB), earnings per share (EPS), asset turnover ratio (AT), fixed assets to total assets (IO), firm size (SIZE), as microeconomic based determinants and interest rate (IR), industrial production index (IPI), as macroeconomic based determinants of cost of capital. In this study we used the eight independent variables and formulated the eight hypotheses of the study. There is a significant impact of current ratio on weighted average cost of capital of companies listed at PSE. There is a significant impact of debt to equity ratio on weighted average cost of capital of companies listed at PSE. There is a significant impact of earnings per share on weighted average cost of capital of companies listed at PSE. There is a significant impact of total assets turnover ratio on weighted average cost of capital of companies listed at PSE. There is a significant impact of firm size on weighted average cost of capital of companies listed at PSE. There is a significant impact of institutional ownership on weighted average cost of capital of companies listed at PSE. There is a significant impact of interest rate on weighted average cost of capital of companies listed at PSE. There is a significant impact of industrial production index on weighted average cost of capital of companies listed at PSE. In this study inferential and descriptive statistical techniques are used to analyse the data of selected companies from 2011 to 2016. The companies which are selected in this study are non-financial listed companies in Pakistan and classified the all selected companies into the eight industries. The Panel data of selected companies was analysed with the help of E-views 9.0.

The study on the macro and microeconomic determinants of cost of capital; A cross industry analysis of non-financial sector of listed firms in Pakistan. The results of this study show that the debt to equity, earning per share, interest rate and industrial production index have the positive

relation with the capital cost of companies. The size of companies and institutions ownership has the negative relation with capital cost of Pakistani companies. We also found the insignificant relation of current ratio and assets turnover.

## 5.4 Theoretical and Managerial Implications

The results of this study, macro and micro determinants of cost of capital: A cross industry analysis of non-financial listed companies in Pakistan by taking the data from 2011 to 2016 will giving the help about the problems of capital cost to analyst, investors and managers. This study will also give the important theoretical help into the financial sector of Pakistan. This study describes the relation among independent variables (CR, DE, AT, EPS, SIZE, IO, IR, PI) and dependent variables (WACC). The independent variables are classified into the two categories as microeconomic variables (CR, DE, AT, EPS, SIZE, IO) and macroeconomic variables (IR, IPI). A very little attention was given to microeconomic variables this area of finance mostly the research work was done on the relation of capital cost and corporate governances, performance and used the macroeconomic variables as determinants of capital cost. The only some studies are available in market about the capital cost. There was no work done in Pakistan on the determinants of capital cost.

This study will show its importance by analysing the effect of microeconomic variables and macroeconomic variables on capital cost of non-financial sector of Pakistan. Furthermore, the results of this study will give the helps to the managers about the efficient process of decision-making and this analysis will be a very healthy contribution in the financial sector Pakistan.

## 5.5 Limitations of the study

There are some important limitations of the study are the following:

- In this study investigated the relationship between the independent and dependent variables of non-financial firms of Pakistan. The financial firms of Pakistan may also consider for the further study.
- In this analysis we taking the 396 non-financial listed firms as population and after the detail screening selected the 102 firms as sample.
- In this analysis we ignore the non-dividend paying companies and excludes the companies which does not pay the dividend continuously three years.

## 5.6 Future Recommendations

In this analysis selected the potential determinants of capital cost from the detail review of literature and use the financial rations for the selection of determinants. In the determinants of capital cost selected the one ratio from each category of financial ratio such as debt, profitability liquidity and activity. We also considered the macro-economic factor such as interest rate, and industrial production index as variables of the study. it is possible that the selected variables of this analysis may not represent all the sectors at the same time. This study also be extended to the other markets to investigate the robustness of results.

This research will provide the guidelines or help to the researchers about the understanding of factors which can influence on the capital cost of companies. For further research change the model of study and adding the more variables such as earning per share market to book value, investment, corporate governess etc. in further research also considered the financial sector of Pakistan. The analysts also investigate the impact of determinants on capital cost at the both sectors, financial & non-financial and compare the results.

In this study we taking the six years data from 2011 to 2016 for further research also considered the previous data for the robustness of results. The analyst also increases the sample size of study from adding the firms which are not paying the dividends.

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# Appendix

**Table 3.1 Variables used in this study**

| Variable Name | Proxies |
|---|---|
| **Dependent Variable** | Cost of Capital (WACC) |
| **Independent Variables** | |
| | Current Ratio (CR) |
| | Debt to Equity Ratio (DE) |
| | Earnings per Share (EPS) |
| | Assets Turnover (AT) |
| | Firm Size (SZ) |
| | Institutional Ownership (IO) |
| | Interest Rate (IR) |
| | Inflation (I) |
| | Industrial Production Index (IPI) |

## Table No.4.1

## Descriptive Statistics

| | Mean | Median | Maximum | Minimum | Std. Dev. | Observations |
|---|---|---|---|---|---|---|
| **WACC** | 0.152111 | 0.142734 | 0.489532 | 0.001617 | 0.073697 | 612 |
| **CR** | 1.780228 | 1.390689 | 7.729084 | 0.535349 | 1.127718 | 612 |
| **DB** | 1.947347 | 0.972444 | 17.97043 | 0.008623 | 2.402031 | 612 |
| **AT** | 1.409214 | 1.29 | 3.9 | 0.02 | 0.739475 | 612 |
| **IO** | 11.62988 | 10.21 | 39.34 | 0 | 9.657985 | 612 |
| **EPS** | 29.03054 | 17.23 | 153.66 | 0.07 | 27.10314 | 612 |
| **SIZE** | 15.94068 | 15.82744 | 20.89523 | 9.306832 | 1.43386 | 612 |
| **IR** | 11.8448 | 11.99 | 14.42 | 8.76 | 1.904853 | 612 |
| **IPI** | 13.24294 | 14.399 | 23.7377 | 2.7241 | 6.889811 | 612 |

## Table 4.2

**Correlation Matrix of DV i.e. WACC and IV's i.e. CR, DE, AT, IO, EPS, SZ, IR. IPI**

| | WACC | CR | DB | AT | IO | EPS | SIZE | IR | IPI |
|---|---|---|---|---|---|---|---|---|---|
| **WACC** | 1 | | | | | | | | |
| **CR** | -0.02039 | 1 | | | | | | | |
| **DB** | 0.504505 | -0.02706 | 1 | | | | | | |
| **AT** | 0.045902 | -0.0952 | 0.065443 | 1 | | | | | |
| **IO** | -0.09264 | 0.114018 | -0.00264 | 0.05421 | 1 | | | | |
| **EPS** | 0.102313 | 0.044942 | 0.04239 | 0.052737 | -0.0993 | 1 | | | |
| **SIZE** | -0.10533 | -0.19235 | -0.09559 | 0.073572 | 0.004869 | 0.021251 | 1 | | |
| **IR** | 0.001003 | -0.05718 | 0.11426 | 0.047844 | 0.007378 | 0.087765 | -0.02489 | 1 | |
| **IPI** | 0.08166 | 0.059344 | -0.15492 | -0.04658 | -0.01707 | -0.11844 | 0.01383 | -0.78654 | 1 |

# Table 4.3

## Panel Unit Root Test

| Variable | Statistics | Sig. | Stationary/ Non-Stationary | Decision |
|---|---|---|---|---|
| WACC | Levin, Lin & Chu t | -13.4648 0.0000 | 1(0) Stationary at level | WACC is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 442.727 0.0000 | | |
| CR | Levin, Lin & Chu t | -14.9733 0.0000 | 1(0) Stationary at level | CR is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 305.962 0.0000 | | |
| DE | Levin, Lin & Chu t | -125.737 0.0000 | 1(0) Stationary at level | DE is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 1117.81 0.0000 | | |
| AT | Levin, Lin & Chu t | -45.3882 0.0000 | 1(0) Stationary at level | AT is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 476.765 0.0000 | | |
| EPS | Levin, Lin & Chu t | -41.2596 0.0000 | 1(0) Stationary at level | EPS is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 362.033 0.0000 | | |
| IO | Levin, Lin & Chu t | -36.302 0.0000 | 1(0) Stationary at level | IO is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 413.769 0.0000 | | |
| SIZE | Levin, Lin & Chu t | -23.0696 0.0000 | 1(0) Stationary at level | SIZE is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 443.727 0.0000 | | |
| IR | Levin, Lin & Chu t | -5.9252 0.0000 | 1(0) Stationary at level | IR is stationary at level i.e. Panel data has no unit root at level. |

| | | | | |
|---|---|---|---|---|
| | PP - Fisher Chi-square | 186.57 0.0000 | | |
| IPI | Levin, Lin & Chu t | - 31.9861 0.0000 | 1(0) Stationary at level | IPI is stationary at level i.e. Panel data has no unit root at level. |
| | PP - Fisher Chi-square | 505.046 0.0000 | | |

## Table No. 4.4

## Redundant and Hausman Test

| Effects Test | Statistic | D.F. | Prob. |
|---|---|---|---|
| Period F | 110.830903 | (5,589) | 0.0000 |
| Period Chi-Square | 404.503599 | 5 | 0.0000 |

| Test Summary | Chi-Sq-Statistic | Chi-Sq D.F. | Prob. |
|---|---|---|---|
| Cross-Section Random | 82.638245 | 8 | 0.0000 |

## Table No. 4.5

## Regression Analysis

| Variable | Coefficient | St. Error | T-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.058418 | 0.045113 | 1.294931 | 0.1958 |
| Current Ratio | -0.000868 | 0.002379 | -0.364694 | 0.7155 |
| Debt to Equity | 0.015638 | 0.001058 | 14.77493 | 0.0000 |
| Assets Turnover | 0.000434 | 0.003824 | 0.113416 | 0.9097 |
| Institutional Ownership | -0.000563 | 0.000282 | -1.996909 | 0.0463 |
| Earnings Per Share | 0.000273 | 9.62E-05 | 2.835914 | 0.0047 |
| Firm Size | -0.004282 | 0.001920 | -2.229796 | 0.0261 |
| Interest Rate | 0.006420 | 0.002124 | 3.022298 | 0.0026 |
| Industrial Production Index | 0.003249 | 0.000592 | 5.484094 | 0.0000 |
| D1 | 0.019473 | 0.008409 | 2.315604 | 0.0209 |
| D2 | 0.020935 | 0.011829 | 1.769740 | 0.0773 |
| D3 | 0.004642 | 0.011426 | 0.406317 | 0.6847 |
| D4 | -0.000238 | 0.009252 | -0.025716 | 0.9795 |
| D5 | 0.015472 | 0.012326 | 1.255230 | 0.2099 |
| D6 | 0.014873 | 0.010580 | 1.405798 | 0.1603 |
| D7 | 0.022443 | 0.010616 | 2.114116 | 0.0349 |

| | | | |
|---|---|---|---|
| R-Squared | 0.328558 | F-Statistic | 19.37756 |
| Adjusted R-Squared | 0.311603 | Prob (F-Statistic) | 0.000000 |

# Table No 4.6

## Redundant and Hausman Test

| Sector | Textile | | | Chemical | | | Motor Vehicle | | | Fuel and Energy | | | Paper | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Effects Tests** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** | **Statistic** | **D.F.** | **Prob.** |
| **Period F** | 2.148075 | (26,126) | 0.0028 | 1.386806 | (16,70) | 0.0140 | 1.353482 | (11,52) | 0.0232 | 1.827464 | (10,46) | 0.0122 | 3.219346 | (6,27) | 0.0162 |
| **Period Chi-Square** | 59.070901 | 26 | 0.0002 | 36.157717 | 16 | 0.0318 | 18.128184 | 11 | 0.0087 | 21.744046 | 10 | 0.0165 | 22.665394 | 6 | 0.0009 |
| **Test Summary** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** | **Chi-Sq-Statistic** | **Chi-Sq-D.F.** | **Prob.** |
| **Cross Section Random** | 27.822252 | 8 | 0.0000 | 19.801267 | 8 | 0.0000 | 18.567123 | 8 | 0.0000 | 14.825643 | 8 | 0.0000 | | | |

# Table No. 4.7

# Regression Analysis

| Sector | Textile | | Chemical | | Motor Vehicle | | Fuel and Energy | | Paper | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Variable** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** | **Coefficient** | **Prob.** |
| **C** | 0.206105 | 0.0426 | -0.022366 | 0.7996 | 0.149633 | 0.0682 | 0.126515 | 0.2958 | 0.206314 | 0.1413 |
| **Current Ratio** | 0.002173 | 0.7479 | -0.001790 | 0.7379 | -0.002839 | 0.6370 | -0.003762 | 0.5072 | -0.007571 | 0.4653 |
| **Debt to Equity** | 0.022045 | 0.0000 | 0.007540 | 0.0026 | 0.017641 | 0.0000 | 0.020484 | 0.0000 | 0.000482 | 0.8768 |
| **Earnings Per Share** | 0.000626 | 0.0001 | -0.000220 | 0.4286 | -0.001778 | 0.0023 | -0.000847 | 0.0041 | -0.000149 | 0.8381 |
| **Assets Turnover** | -0.002940 | 0.7300 | 0.012839 | 0.1757 | 0.002113 | 0.8286 | 0.003135 | 0.7014 | 0.032846 | 0.0442 |
| **Size** | -0.017431 | 0.0016 | -0.004129 | 0.3567 | -0.004862 | 0.0449 | -0.001108 | 0.8096 | -0.020322 | 0.0077 |
| **Institutional Ownership** | -0.000497 | 0.2954 | 0.001355 | 0.0467 | -0.001585 | 0.0115 | -0.002100 | 0.0114 | -0.000468 | 0.6601 |
| **Interest Rate** | 0.006667 | 0.0449 | 0.011250 | 0.0008 | 0.005685 | 0.2228 | 0.000504 | 0.9334 | 0.016377 | 0.0074 |
| **Industrial Production Index** | 0.006849 | 0.0000 | 0.003328 | 0.0002 | 0.003234 | 0.0060 | 0.004983 | 0.0121 | 0.002717 | 0.0466 |
| **R-squared** | 0.523744 | | 0.359270 | | 0.530875 | | 0.502559 | | 0.419886 | |
| **Adjusted R-squared** | 0.498678 | | 0.299667 | | 0.471303 | | 0.431496 | | 0.279253 | |
| **F-statistic** | 20.89454 | | 6.027739 | | 8.911558 | | 7.072023 | | 2.985674 | |
| **Prob(F-statistic)** | 0.000000 | | 0.000004 | | 0.000000 | | 0.000002 | | 0.012441 | |

## Table No. 4.8

## Regression Analysis

| | Fixed Effect | | Random Effect | | Common Effect | |
|---|---|---|---|---|---|---|
| Variable | Coefficient | Prob. | Coefficient | Prob. | Coefficient | Prob. |
| C | -0.385658 | 0.0139 | 0.044745 | 0.2903 | 0.044745 | 0.3118 |
| Current Ratio | -0.001568 | 0.6718 | -0.001346 | 0.5384 | -0.001346 | 0.5562 |
| Debt to Equity | 0.014442 | 0.0000* | 0.015983 | 0.0000* | 0.015983 | 0.0000* |
| Earnings Per Share | 0.000231 | 0.0421* | 0.000260 | 0.0037* | 0.000260 | 0.0055* |
| Assets Turnover | -0.006608 | 0.4025 | 0.001964 | 0.5472 | 0.001964 | 0.5648 |
| Firm Size | -0.001566 | 0.0079* | -0.000581 | 0.0207* | -0.000581 | 0.0269* |
| Institutional Ownership | 0.025627 | 0.0066* | -0.003214 | 0.0601 | -0.003214 | 0.0721 |
| Interest Rate | 0.007041 | 0.0009* | 0.006891 | 0.0007* | 0.006891 | 0.0012* |
| Industrial Production Index | 0.003122 | 0.0000* | 0.003375 | 0.0000* | 0.003375 | 0.0000* |
| | **R-squared** | **0.479410** | **R-squared** | **0.313510** | **R-squared** | **0.313510** |
| | **Adjusted R-squared** | **0.363607** | **Adjusted R-squared** | **0.304387** | **Adjusted R-squared** | **0.304387** |
| | **F-statistic** | **4.139889** | **F-statistic** | **34.36558** | **F-statistic** | **34.36558** |
| | **Prob (F-statistic)** | **0.000000** | **Prob (F-statistic)** | **0.000000** | **Prob (F-statistic)** | **0.000000** |