

CHAPTER – I

INTRODUCTION

1.1 Background of the Study

Landlocked between the People's Republic of China in the North and India in the East, South and West, Nepal occupy a total geographical area of 147,181 Square km. It is an agriculture-based country. It is one of the least developed countries and more than thirty two percent people are under the poverty line even now. A lot of social, technological, economic and political infrastructures should be made for sustainable development. Financial and economic increment is superior to all of them. Poor nations are unable to exploit their natural resources. So, to get such achievement, the nation needs the investments on different sectors. Therefore, capital is needed to the country. The capital is that factor which enables the nation to go in the high speed of race of development.

The capital structure consists of two words i.e. capital and structure. It means that capital is the fund raised from different sectors to finance different assets, short-term or long -term. While the term structure is the management of capital as well as other components. Thus, capital structure is the mix of long term sources of funds, such as debentures, long-term debt, preference share capital and equity share capital including reserves and surpluses. A mix of a company's long-term debt, specific short-term debt, common equity and preferred equity is capital structure. The capital structure is how a firm finances its overall operations and growth by using different sources of funds. Debt comes in the form of bond issues or long-term notes payable, while equity is classified as common stock, preferred stock or retained earnings. A company's

proportion of short and long-term debt is considered when analyzing capital structure. When people refer to capital structure they are most likely referring to a firm's debt to-equity ratio, which provides insight into how risky a company is. Usually a company more heavily financed by debt poses greater risk, as this firm is relatively highly levered.

Capital structure is the mixture of sources of funds a firm uses (debt, preferred stock, common stock). The amount of debt that a firm uses to finance its assets is called leverage. A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered. Capital structure can be viewed as the permanent financing the firm represented primarily by long-term debt, preferred stock, and common equity but excluding all short-term credit. The proportions of debt and equity used to finance the firm's assets, has implications for stockholder value. Additionally, capital structure affects leverage, which, in turn, affects the expected return and risk facing owners and creditors of the firm. A firm's capital structure is determined by the proportion of debt and equity capital used in financing the firm's assets. A proper balance between debt and equity is necessary to ensure a trade-off between risk and return to the shareholders. A capital structure with a reasonable proportion of debt and equity capital is called optimal capital structure. Financial manager should try to construct optimal capital structure, which minimize cost of capital through risk reduction and ultimately increase value of firm. Optimal capital structure is achieved by balancing financing so as to achieve lowest average cost of long-term financing. This in turn produces maximum market value for corporate income (Guthmann and Dougall, 1966). This same optimal capital structure also minimizes firm's overall cost of capital (Brigham, 1972).

Securities market is recognized as an effective way of raising capital for commercial enterprises, and at the same time providing an investment opportunity for individuals and institutions. The activities of buying and selling securities in the securities markets are extremely important for the efficient allocation of capital within economies. The

securities market is a requisite for the sound development of an economy because it not only provides stable long - term capital for companies and an effective savings vehicle for the public, but also functions as an efficient tool for resource allocation. A developed securities market is the medium through which only productive firms that have better performance can easily raise capital. In other words, well- developed capital markets enable high quality firms to increasingly finance themselves from securities (bond and equity) rather than from bank loans. This type of behavior of developed market enhances economic growth process by productivity growth. (Shirai, 2004).

Cost of capital is significant in the capital structure decision. Each source of funds finance by companies includes implicit and explicit cost. The cost of capital refers to the discount rate that would be used in determining the present value of the estimated future cash proceeds and eventually deciding whether the project's worth undertaking or not (Barges, 1963). The cost of capital for the firm is a weighted sum of cost of equity and cost of debt. Cost of capital of the firm depends on risk free rate of that firm, business risk, and financial risk. The cost of capital helps management in moving towards its target capital structure or an optimal capital structure provided; there exists a relationship between two. Costs of capital can often reduced when two firms merge because of issuing securities are subject to economies of scale. Thus, cost of capital is weighted average cost of debt and cost of equity. The capital and cost of capital both are important in wealth maximizing of the shareholders.

All sources of capital i.e. long-term and short-term includes in the financial structure. Moreover, capital structure is permanent financing of firm, represented primarily by long-term debt, preferred stock, and common equity, but excluding all shot-term credits. Thus, capital structure is only a part of financial structure. Financing the firm's assets is a very crucial problem in every business and as a general rule there should be proper mix of debt and equity capital in financing the firm assets. Though the capital structure cannot affect the total earnings of the firm, it generally affects the earnings

available to equity shareholders. In managing the capital structure the financial manager's goal should be to maximize the value of shareholder's wealth.

It is well and commonly accepted that development of nation largely depends on human, natural, and financial resources. Capital resource is very low in our country as compared to other developed countries and not even taken seriously by the Nepalese Companies. Therefore, optimal capital structure does not exist at all. Cost of capital concept is not clear in Nepalese Companies because it is impossible to minimize the average cost of capital without proper combination of capital structure component in financing the firm. A balance capital structure is the prerequisite for successful business organization but it is lacking in almost all companies in our country. The capital structure of Nepalese companies is of diverse nature, as no company seems to have followed a particular capital structure policy. Some of the companies are using only equity capital and some are using both debt and equity capital irrespective of maximization of value of the firm.

1.2 Focus of Study

The capital is considered to be very essential factor from the beginning of a business organization. In the absence of the capital, the organization has to halt their daily operational activities. The success of the organization depends upon proper composition of debt-equity, which helps to generate high return to the firm.

Investors invest their funds either in ownership securities or debt securities of the firm with expectation of getting favorable returns in the future. In absence of proper utilization of capital it fails to meet their expectation and damages the creditworthiness of the firm and leads to fall market value of the firm.

The banks are such business organization which deals with others money and the study of capital structure incase of the banks are very crucial. This study mainly focuses on the capital structure and its impact on cost of capital of the sampled banks.

1.3 Statement of Problem

At present, commercial banks and other financial institutions are the backbone of Nepalese economy. The establishment of the joint venture in this sector has added more bricks in the construction of Nepalese economy. The establishments of joint venture banks became possible only after the introduction of the "Financial Sector Reforms" by the government in 1980. In the year 1987-88, the government adopted liberalization in interest rate structure directing only for interest spread. This led increment in commercial banks and other financial institutions.

The main objective of commercial banks is to maximize profit and reduce its cost in effective way within the constraints of limited resources. In doing so, it must take care of different factors that affect profitability and cost of capital of the firm hence, capital structure is one of the major factors. Capital structure refers to the proportion of different types of securities issued by the firm like common shares, preference share capital, long-term debt (debentures and bonds) and retained earnings. Effective capital structure is a key to successful banking. The capital structure to the firm affects the profitability position and cost of capital. So, every firm has to maintain its capital structure effectively.

The capital structure and the cost of capital help to maximize the value of the firm, the relationship between them in underdeveloped country's economy that of Nepal is not yet clearly known. There are many studies conducted in capital structure management of different companies of Nepal and most of the studies are based in financial ratio analysis. Most of the previous studies are chiefly focused either on the financial ratios or the capital structure.

To give the clear idea on capital structure and its impact on the cost of capital of firm; capital structure, cost of capital of different sources and overall cost of capital of the firm, financial ratios should be critically examined. So I think it is worthwhile to select this title "Capital Structure and Its impact on Cost of Capital" as my thesis in partial fulfillment of the requirement for Degree of Master of Business Studies.

I tried my best efforts in this thesis and include financial analysis, as well as statistical analysis (correlation, simple and multiple regression analysis) where it is applicable. The study is devoted to examine the relationship between capital structure and cost of capital of selected commercial banks; with reference to Standard Chartered Bank Nepal Limited, Himalayan Bank Limited, Nepal Investment Bank Limited, and Everest Bank Limited. This study specially deals with the following problem.

- Whether or not Nepalese commercial banks are practicing process of capital structure and to what extent?
- Whether or not the other factors affect cost of capital of the commercial banks except capital structure?
- How does leverage affects cost of equity in Nepal?
- Whether the cost of capital declines with leverage in Nepalese commercial banks?

1.4 Objective of the Study

The major objective of the study is to examine and analyze the effect of the capital structure on cost of capital in the context of Nepal. Following are some specific objective of the study.

- To analyze the capital structure of commercial banks.
- To evaluate the relationship between capital structure and average cost of capital.

- To examine the relationship between capital structures (leverage) and the cost of equity in selected commercial banks.

1.5 Significance of Study

The capital structure deeply impacts over the cost of capital and long-term financial position of the firm. The earning nature of the firms helps to adopt appropriate mix of debt and equity in the capital structure. On account of this significance, the capital structure and cost of capital of the firm is justified as specific subject matter for the study. Simple and multiple regression approaches are used to test this relationship. The findings of this study are based on the pooled data of selected banks.

The study helps the researchers, investors, creditors and other stakeholders to analyze the financial position of the firm and they also may know the impact of capital structure on cost of capital. This study is based on the annual accounting data collected, basically from the profit and loss account and balance sheet.

1.6 Limitation of the study

The main limitations of the study are as follow:

The study is based on secondary data accuracy depends upon the data available collected and provided by banks.

- The study covers the data of the five fiscal years from F.Y. 2003/04 to 2007/08.
- The data available in published annual reports by Nepal Rastra Bank, AGM Reports of commercial banks have been assumed to be authentic and reliable.
- As the study is based on only four Banks

1.7 Organization of the Study

This study has been organized into five chapters. Each is developed to some aspects of the study to the effect of capital structure on cost of capital. The title of each chapter is as follows.

Chapter One Introduction

Chapter Two Literature Review

Chapter Three Research Methodology

Chapter Four Data Analysis and Interpretation

Chapter Five Summary and Conclusion

Chapter one deals with the subject matter of the study consisting Back ground of the Study, problem of the study, scope of the study, objective of the study, limitation of the study and organization of the study.

Chapter two deals with the review of the literature, It includes a discussion on the conceptual framework i.e. cost of capital concept, financial leverage, capital structure theories and review of major empirical works relating to the capital structure and cost of capital.

Chapter three deals with research methodology, it consist of methodology adopted to achieve the objective i.e. research design, population and sample, specification of variables and data analysis method.

Chapter four deals with the analysis and interpretation of data by using different statistical and financial tools used in analysis

Chapter five deals with summary, conclusion and recommendation of the study.

CHAPTER – II

REVIEW OF LITERATURE

2.1 The Conceptual Framework

This section is devoted to discuss briefly about the theoretical concept regarding cost of capital, financial leverage and the theories of capital structure.

2.2 Concept of Capital Structure

Capital structure, known as financial plans refers to the composition of long term debt, preference share capital and equity share capital including reserves and surplus. Capital structure is concerned with the analyzing the capital composition of the company. In other words of the well known professor Weston and Brigham "capital structure is the permanent financing of the firm, representing primarily by long term debt, preferred stock and common stock, but excluding all short term credit. Thus a firm's capital structure is only a part of its financial structure" The capital structure of the firm, defined as the mix of financial instruments used to finance the firm, is simplified to include only long term interest bearing debt and common stock, including short term liabilities. Capital structure is the combination of the long-term sources of funding, i.e. preferred stock, common stock that are used to finance the firm. Similarly capital structure is the mix of long term debt and equity maintained by the firm. Optimum capital structure can be defined as that mix of debt and equity which will maximize the market value of a company, i.e. aggregate value of the claims of ownership interest represented as the credit side of the balance sheet.

In the study of capital structure, a change in one capital source due to the changing source of another capital can be studied under leverage. Similarly, in the profit

planning process, firm analyses the ways of increasing amount of profit, considerably attentions are given to different kinds of leverage. Thus, the financial leverage measures the responsiveness of EPS to change in EBIT. As the objective of the firm should be directed towards the maximization of the value of the firm, the capital structure decision should be examined from the point of view of its impact on the value of the firm. If the value of the firm be affected by capital structure, a firm should prefer a capital structure, which maximizes the value of the firm.

The value of a firm depends upon its expected earning streams and the rate used to discount this stream. The rate used to discount the earning stream is the required rate of return or cost of capital. Thus, the capital structure decision can affect the value of the firm either by changing the expected earnings or the cost of capital both. The cost of capital is the most vital concept in the financial decision making. The cost of capital is influenced by the change in capital structure. The cost of capital is also called hurdle rate or required rate of return for investors. The required rate of return of all the assets is not same because of their variability in return and attitude of investors towards them. The required rate of return of investors is made up of two components i.e. risk free rate of return and market risk premium. According to Capital Assets Pricing Model developed by William Sharp and John Litner, the required rate of return of an investor is the linear function of security market line. The risk free rate of return, which one gets by investing in the government securities, is the same for all assets but the market risk premium may be different for different assets. The market risk premium is the compensation for bearing systematic portion of total risk associated with the given assets. Thus, higher the attachment of systematic risk in the given assets higher will be the market risk premium and hence required rate of return.

From the company's point of view, the required rate of return of an investor is the cost of capital of a firm. The higher the required rate of returns to investors, the higher the cost of capital of a firm and ultimately lower the value of the firm and vice-versa. Different sources of capital require a specific cost for the use of them in the firm. Therefore, any change incurred in the source of fund of capital structure may cause

similar change in the overall cost of capital and value of the firm. Theoretically, the financial manager should plan an optimum capital structure for his company. The optimum capital structure is obtained when the market value per share is maximum or the average cost of capital is minimum. The value of the firm will be maximized or the cost will be minimized when the marginal real cost of each source fund is same. The optimal capital structure is justified by analyzing the solvency of the company. The long- term solvency is measured by various capital structure ratios. The capital structure ratios indicate whether the firm has resorted to an optimal financing mix or it is highly or lowly levered.

2.3 Determinants of the Capital Structure

Capital structure of a firm is determined by the various internal and external factors (Baral; 1996, 161). Capital structure is one of the much crucial decisions that a financial manager has to make as it affects risk, return, and cost of capital and value of firm. The optimal capital structure is one that maximizes the value of the firm or reduces the overall cost of capital. But, in practice the optimal capital structure is governed by many factors beside the cost of capital in the capital structure. The financial manager should set a target capital structure and the subsequent financing decision should be made with a view to achieve target capital structure. Every time when the funds have to be procured, the financial manager needs to weight pros and cons of various sources of finance and selects most advantageous source keeping in view the target capital structure. We may use various methods of analysis, none completely satisfactory in itself but taken collectively, they give enough information to make a rational decision.

The negative views stress that relationship between capital structure and size of the enterprises measured by the ratio of total debt to total assets, is very high cost of outside equity funds for a small enterprise. The positive views stress that relationship between size of enterprise and capital structures is sound on the theoretical ground because the larger enterprises are more diversified, has easy access of capital market,

receive higher credit ratings for their debt issues and pay lower interest rate, is less prone to bankruptcy. The agency cost is likely to be higher for enterprises in growing industries which have more flexibility in their choice of future investment. Hence, growth rate is negatively related with long term debt level, conversely, pecking order theory implies the positive relation between debt level and growth rate of the enterprise. The proportion is based on the reasoning that a higher growth rate implies a higher demand for funds and ceteris paribus, a greater reliance on external financing through the preferred source of debt.

Profitability of the firm is one of the important explanatory factors of the capital structure. The static trade-off hypothesis pleads the low level of debt capital of risky firms. The higher profitability of firms implies higher debt capacity and less risky to the debt holders. So as per this theory, capital structure and profitability are positively associated. The non-debt tax shield specially depreciation affects the capital structure of the enterprises. De Angelo and Masuli in their non-debt tax shield model argue that the presence of non-debt tax shields affects the corporate capital structure to the extent to which corporations can gain from the substitution of debt for equity. The higher debt service ratio shows the higher debt capacity of the enterprises. Hence, this theory suggests the positive relationship between the debt service capacity and capital structure of the enterprises.

Similarly, age of enterprises, business risk, collateral value of the assets and operating cash flows also determine the capital structure.

2.4 Capital Structure Theories

In respect of capital structure decision of the firm, several capital structure theories have been developed over the period. The theories introduced in early stage are based on the assumption of investor's view over the degree of leverage. These theories are as follows:

- I. Net Income Approach (NI)
- II. Net Operating Income Approach (NOI)
- III. Traditional Approach

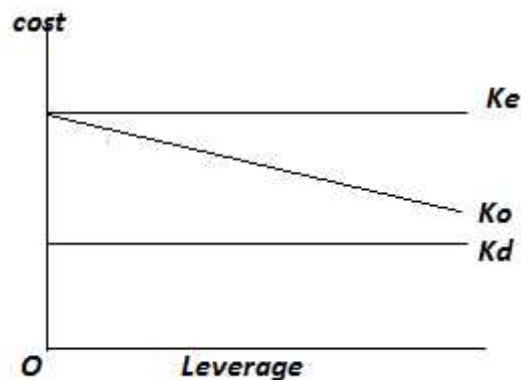
IV. Modigliani- Miller's Approach

These two divergent views are the variations of the net income approach (NI) and the net operating income approach (NOI) as originally developed by Durand (Durand, 1958). In 1958 a comprehensive analysis of capital structure by Franco Modigliani and Metro miller published an article on the issue of capital structure irrelevancy. The article is considered to be the most significant work in financial research. In this article M-M logically assert that the value of the firm or the cost of capital is independent of capital structure decision of the firm. However, two conflicting views exist in the relationship between capital structure and cost of capital or the value of the firm (Modigliani and Miller, 1958).

I Net Income Approach (NI)

The Net income approach assumes no change in the attitude of the both stockholders and debt holders regarding the required rate of return in response to a change in debt and equity ratio of the firm. Consequently the interest rate on debt (k_i) and the equity capitalization rate (k_e) remain constant regardless of the leverage. Due to limited degree of risk, the debt holder's required rate of return is relatively lower than that of equity holders: So the debt financing is relatively cheaper than equity. In addition at constant cost equity (k_e) and the cost of debt (k_i), the over all cost of capital (k_o) declines with the increased proportion of the debt in the capital structure. In other word, the increased use of debt results the lower overall cost of capital (k_o) and higher market value of shares. Thus, this approach is appeared as relevancy theory. Therefore according to this approach, the capital structure decision is relevant to the valuation of the firm and the overall cost of capital. In other words, a change in the financial leverage (proportion of debt in the capital structure) will lead to a corresponding change in the overall cost of capital as well as total value of the firm. So, if we increase the ratio of debt in the capital structure, the weighted average cost of capital will decline and the value of the firm as well as the market price of the ordinary shares will increase. In contrast, a decrease in the debt ratio will cause an

increase in the overall cost of capital and a decline in the value of the firm as well the market prices of the equity shares.



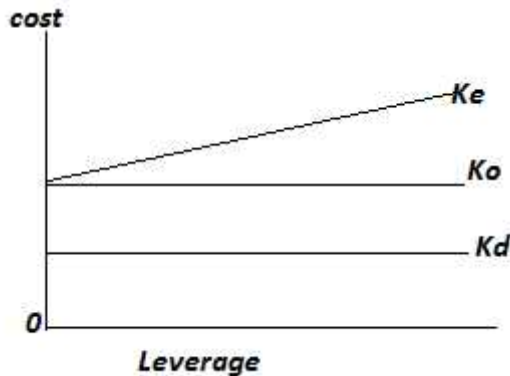
There are various assumptions of net income approach, and to calculate the value of a firm and weighted average cost of capital (WACC), these assumptions are constantly used and they are as follows:

- 1 There is no taxes.
- 2 The cost of debt is less than the equity-capitalization rate or the cost of equity.
- 3 Cost of debt and cost of equity remain constant.
- 4 The use of debt does not change the risk perception of investors.
- 5 Net operating incomes remain constant.
- 6 Overall costs of capital decreases as leverage increases.

II. Net Operating Income Approach

The net operating income approach (NOI) is slightly different from net income approach with respect to the assumption of the behavior of equity holders and debt holders. The NOI approach assumes that the equity holder feel higher degree of financial risk and demand higher rate return for higher debt equity ratio. Furthermore, this approach says that the cost of equity increases with the debt level, and the higher cost of equity offset the benefit of cheaper debt financing; consequently, no effect at all on overall cost of capital (k_o) as well as the cost of debt (k_i) remain constant regardless of the degree of the leverage. Thus, this approach argues that the capital structure decision of the firm is irrelevant because, any change in leverage will not

lead to any change in the total value of the firm and the market price of shares. This theory assumes that the capital structure (proportion of debt and equity) is irrelevant to the value of firm and the overall cost of capital. Under this approach, net operating income is capitalized as an overall capitalization rate to obtain total market value of the firm. The market value of the debt, then, is deducted from the total market value. to obtain the market value of the stock



There are various assumptions of the net operating income approach and they are as follows:

1. The overall cost of capital remains constant.
2. The cost of debt remains constant.
3. Cost of debt is less than cost of equity.
4. The required rate on equity increases linearly with an increase in debt ratio.
5. Total operating profit remains constant.

The function of "ke" under 'NOI' approach can be expressed in equation as follows.

$$K_e = K_o + (K_o - K_b)D/S \dots\dots\dots (2.1)$$

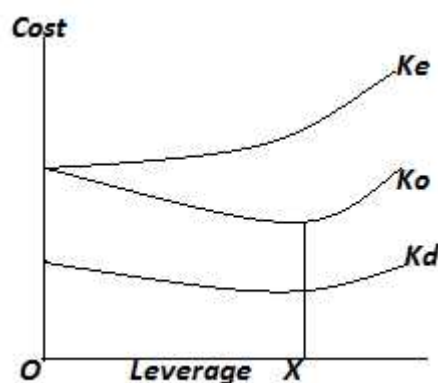
where, D/S is the debt equity ratio at market values equation (2.1) indicates that if 'ko' and 'kb' are constant 'ke' would increase linearly with debt equity ratio D/S. At the extreme degree of financial leverage, hidden cost becomes very high hence, the firms cost of capital and its market value are not influenced by the use of additional cheap debt fund (Gitman and Pincheas 1975:791).

III Traditional Approach

Traditional approach assumes the capital structure as relevant matter for the value and cost of capital of the firm. It takes some features of both net income and net operating income approach. This approach strikes a balance between the two different approaches net income and net operating income. Therefore, it is also known as the intermediate approach. It resembles the net income approach in arguing that cost of capital and total value of the firm are not independent of the capital structure. But it does not subscribe to the view of net income approach that a value of a firm will necessarily increase for all degree of leverage. In one respect it shares a feature with the NOI approach that beyond a certain degree of leverage, the overall cost increases leading to a decrease in the total value of the firm.

According to this approach, there is an optimal capital structure therefore; the firm can increase the total value of the firm through the wise use of leverage. The firm initially can lower its overall cost of capital through the use of cheapest cost debt and raise its total value through leverage. But the increase in leverage increases the risk to the debt holders and the debt holders demand high interest rate as a result the overall cost of capital also increases.

"The traditional approach assumes that there exists an optimal capital structure and that a firm can increase its total value through the judicious use of leverage." (Van Horne, 1997; 261).



According to this view, the value of the firm can be increased or the cost of capital can be reduced by the judicious mix of debt and equity capital." (Pandey, 1987; 236).

According to traditional approach, the manner in which the overall cost of capital reacts to change in capital structure can be divided into three stages. (Soloman1969; 94)

Stage 1 - Increasing value

The first stage of traditional begins with the introduction of debt in the total capital. "In this stage, the debt capitalization rate, k_d remains more or less constant upto a certain degree of leverage but rises thereafter at an increasing rate". (Prassanna Chandra, 1990; 461). It means, the equity capitalization rate, k_e remains constant or rises slightly with debt fund, but when it increases, it does not increase fast enough to offset the advantage of low cost debt. During this stage, the cost of debt (k_d) remains constant or rises negligibly since the market views the use of debt as a reasonable policy. As a result, the value of the firm (V) will increase or the overall capitalization rate (k_o) falls with increase in leverage.

Under the assumption that 'ke' remain constant with in the acceptable limit of debt, the value of the firm will be:

$$V = S + B = \frac{X - Kib}{K_e} + \frac{Kib}{K_i}$$

$$\frac{X - Kib}{K_e} + B = \frac{X}{K_e} + \frac{(K_e - K_i) B}{K_e} \dots\dots\dots(2.2)$$

Thus, so long as 'Ke' and 'Kd' are constant, the value of the firm V increases at a Constant rate $(K_e - K_i)/K_e$ as the amount of debt increase.

When equation (2.2) is solved for X/V we get

$$K_o = X/V = K_e - (K_e - K_i) B/V \dots\dots\dots (2.3)$$

This implies that with $k_e > k_i$, the average cost of capital will decline with leverage.

Stage 2- Optimum Value

In the second stage, "The cost of equity capital (K_e) remains more or less constant or raises only gradually up to a certain degree of leverage and rises sharply thereafter." (Chandra, 1990; 461).

Once the firm has reached a certain degree of leverage, further application of debt have a negligible effect on the value of the firm or the overall cost of capital to the firm. This is so because the increase in cost of equity offsets the advantage of low cost of debt. At this specific level of leverage the value of firm will be maximum or the cost of capital will be minimum.

Stage 3- Declining Value

After the acceptable range of leverage, the value of the firm decreases with leverage or the overall cost of capital increases with leverage. This happens because, the cost of both debt and equity will tend to rise as a result of increasing the degree of financial risk that will make to increase in the overall cost of capital by more than to offset the advantage of low cost debt. Thus, in third stage, the market value of the firm will show depressing tendency. In this stage the overall cost of capital K_o as a consequence of the behavior of cost of equity and cost of debt

- Decrease up to a certain point
- Remains more or less unchanged for moderate increase on leverage thereafter, and
- Rise beyond a certain point.

The overall effects of these three stages are to suggest that the cost of capital is a function of leverage. First it declines with leverage and after reaching a minimum point or range it starts rising. Under such a situation, there is a precise point at which the cost of capital would be minimized. This precise point would occur at that optimum degree of leverage, at which marginal cost of debt is equal to the average cost of capital (Soloman, 1969; 94).

IV. Modigliani - Miller Approach (M-M Approach)

M-M in their original position advocate that the relationship between leverage and the cost of capital is explained by net operating income approach. They make a formidable attack on the traditional position by offering behavioral justification for the cost of capital; K_0 remains constant throughout all degree of leverage. They argue that in the absence of taxes, total market value and the cost of capital of the firm remain invariant to the capital structure change. Simply M-M position is based on the idea that no matter how you divide up the capital structure of a firm among debt, equity and other claims, there is a conservation of investment value. In view of Srivastava, M-M contended that the cost of capital is equal to the capitalization rate of a pure equity stream of income and the market value is ascertained by capitalizing its expected income at the appropriate discount rate for its risk class. The assumption made under this approach is as follows:

- Capital market is perfect. Information is free of cost and readily available to all investors. There are no transaction costs and all securities are infinitely divisible. Investors are assumed to behave accordingly.
- The average expected future- operating earnings of a firm are represented by subjective random variables. It is assumed that the expected values of the probability distributions of expected operating earnings for all future periods are same as present operating earnings.
- Firms can be categorized into "equivalent return" classes. All firms within a class have the same degree of business risk.
- There is no income tax. This assumption is removed latter by M-M.
- Dividend payout ratio is 100%.

Proposition I

Given the above assumption, M-M argued that for firm in the same risk class, the total market value is independent of the debt equity combination and given by capitalizing the expected net operating income by the rate of appropriate to that risk class (Srivastava, 1993;268)

In equation, it can be expressed as:

$$V = (S+D) = \frac{X}{K_o} = \frac{NOI}{K_o} \dots\dots\dots (2.4)$$

Where,

V= the market value of the firm

D= the market value of the debt

S= the market value of the equity

X= the expected net operating income on the assets of the firm

Ko= the capitalization rate of overall cost of capital, X/V, appropriate to the risk classes of the firm.

This case can be expressed in term of cost of capital, X/V, which is the ratio of expected earnings to the market value of securities. That is,

$$\frac{X}{S+D} + \frac{X}{V} = K_o \dots\dots\dots (2.5)$$

If Kd is the expected return on the firm's debt and Ke is the expected return in firm's equity then

$$X = K_o/V = K_e(s) + K_d(d) \dots\dots\dots (2.6)$$

By definition

$$K_o = \frac{X}{V}$$

Therefore,

$$K_o = K_e(S/V) + K_d(D/V) \dots\dots\dots (2.7)$$

Since M-M concluded that the total market value of the firm is unaffected by the debt, equity mix, it follows that the average cost of capital to any firm is completely independent of its capital structure. Thus, two firms identical in all respect except capital structure can not command the different value of the firm of cost of capital, arbitrage will take place which will enable investors to engage in personal leverage to restore equilibrium in the market (Pandey, 1981; 37-38).

Proposition II

On the basis of proposition I, M-M formulated Proposition II which defines the cost of equity is the linear function of the leverage. The equation form of this proposition can be expressed as follows:

$$K_e = K_o - (K_o - K_d) \frac{B}{S} \dots \dots \dots (2.8)$$

Equation (2.7) is derived from the definition of average cost of capital i.e. $K_o = K_e \frac{S}{S+D} + K_d \frac{D}{S+D}$. Equation (2.8) shows that for any firm in a given risk class the cost of equity, K_e is equal to the constant average cost of capital and cost of debt times debt equity ratio i.e., premium for financial risk.

Validity of the M-M proposition II depends upon the assumption that K_d will not rise or remains constant for any degree of leverage. But in practice, K_d increases with leverage beyond a certain acceptable level of leverage. However, M-M maintain that even if K_d is a function of leverage, K_o will remain constant as K_e will increase at a decreasing rate to compensate.

2.5 Concept of Cost of Capital

"The cost of capital is an important concept in formulating a firm's capital structure. It is one of the basic corner stones of the theory of financial management".(Kuchhal,1982;367). It is a crucial part of a dynamic or ever changing financial and operational environment of the corporations. There are different types of risks associated with each investment category. Therefore, it requires certain expected rate of return in order to provide funds. This required rate of return is called the opportunity cost to the investor for investing his scarce resources elsewhere with equivalent risk. Therefore, the concept of cost of capital has been paid increasing attention in recent years, especially as it affects the proper economic choices among investment opportunities. "As we have seen a firm's cost of capital is essential choice criterion for investment decision making, accordingly, the theory of measurement of cost of capital are of fundamental importance in business finance." (Milton H.Suepcer, 1968; 395).

The cost of capital represents the overall cost of financing to the firm. In operational terms, the cost of capital refers to the discount rate that would be used in determining the present value of the estimated future cash proceeds and eventually deciding whether the project is worth undertaking or not. In this sense, it is defined as the minimum rate of return that a firm must earn on its investment for the market value of the firm to remain unchanged. Each and every corporation must be able to estimate the minimum required rate of return on the projects using the capital funds so that the decision of accepting or rejecting the investment proposal can be done. It is like a vehicle to judge the use of capital in corporation. The project's cost of capital is the minimum acceptable rate of return on funds committed to the projects. "An investment project, for its acceptance, must earn minimum rate of return equal to the cost of capital. In this sense, the cost of capital represents a standard for allocating the firm's funds in the most optimal manner. In theory, it is the rate of return on a project that will leave the market value of shares unchanged." (Van Horne,1974;101). In Nepal, majority of corporations are still not in a position to meet the minimum required rate of return. Many corporations are running at losses and corporations running at profit are also could not maintain the minimum rate of return. " The cost of capital in the minimum risk adjusted rate of return which a project must earn in order to be acceptable to shareholders". (Weston & Copeland, 1990).

In economic terms, cost of capital is the cost of acquiring funds required to finance the proposed project. That is, the cost of capital is a borrowing rate of the firm. Cost of capital in terms of lending rate refers to the opportunity cost of funds to the firm, i.e. the rate of return foregone on the next best alternative, investment opportunity of comparable risk. "The cost of capital is the rate of return required by those who supply the capital." (Soloman & Pringle, 19788; 338). Cost of capital can be understood as cut off rate concept. It is a point for the choice of investment proposals in corporations. "From the view point o the capital allocation budget as a whole, the cost of capital provides an objective cut-off point for appropriations." (Soloman, 1969; 30).

The term cost of capital can also be defined in terms of hurdle rate concept and structural concept. The hurdle rate is the target rate of return, which must be surpassed if the capital used is to be justified. Corporations while using this investment hurdle rate are communicating their expectations and assure common effort to try to fulfill those expectations. "Allowance must also be made for the risks and uncertainties surrounding the flows, since investors insist on higher expected returns when asked to assume higher level of risk." (Samuel, 1977; 157). One of the requirements of the investment appraisal system is that it prevents the investment of funds in projects where the target rate of return is less than the cost of capital. In the context of Nepalese corporations, the determination of this "hurdle rate" is not so much in practice but time and situation have already made corporate managers to be cautious and attentive in practicing this 'hurdle rate'.

The structural concept is the fundamental and mostly accepted criteria of investment appraisal system. The cost of capital according to this concept is the extent of capital fund that could be made available through combinations of ownership capital, retained earnings, depreciation funds, reserves and so on. "Funds that could be made available might be from the existing stock of funds or raised freshly from the market, or could be by way of commitment into the future". (Hingorani & Ramnathan, 1974; 460). It is, therefore, necessary that the corporations using borrowed capital should be capable of generating liquid to meet interest obligations.

2.6 Significance of Cost of Capital

The cost of capital is an important element as basic information in capital investment decisions. "The cost of capital concept is significant not only as an investment criterion but can also be used to evaluate the financial performance of top management". (Bhattacharya, 1970). The study on the cost of capital is significant for different purposes. The first one may be to determine the desirability of alternative investments and the second is to serve as a capitalization rate to establish the present

value of cash streams. The significance of the concept of cost of capital can be explained through following points.

- **Capital expenditure decision**

Capital expenditure decisions are also called capital budgeting decisions. The cost of capital, in these decisions, is often used as discount rate on the basis of which the future cash flows of the firms are discounted to find out their present values. It provides a yardstick to measure worth of investment proposals and thus, performs the role of accept -reject criterion. In fact, it provides a rational mechanism for making optimum investment decision. Thus, cost of capital forms the basis of financial appraisal of all capital expenditure proposals. Needless to mention, the decision in respect of a capital expenditure would be irrational and wrong, if the cost of capital is not correctly determined. This is because the business must earn at least at a rate, which equals to its cost of capital in order to make at least breakeven.

- **Capital structure decision**

The cost of capital is also an important consideration in capital structure decisions. The cost of capital is influenced by the capital structure changes. The finance manager must raise capital from different sources in such a way that it optimizes the risk and cost factors. The sources of funds, which have less cost, involve high risk. "In trying to achieve its target capital structure over time, a firm should aim at minimizing the cost of capital and maximizing the market value of the firm." (Pandey,1987;163). It is absolutely necessary that cost of each source of funds is carefully considered and compared with risk involved with it. Thus the significance of the concept of cost of capital can be known in designing the firm's capital structure.

2.7 Functions of Cost of Capital Consideration

The cost of capital always plays a central part in the theory of capital (Soloman, 1955; 241). Basically, it functions as a benchmark for the investment as well as financing decision of an enterprise. In investment decision this is an important element as basic input information. This is its basic function (Soloman,1969;30). Moreover, it determines the scale and capital intensity of the project. Thus, it carries out the function of decision criterion through which management can make its decision such a way that the value of enterprise is maximized. All of these functions are dealt with in some length in the ensuing part of this section.

• **Evaluation of the Project**

The primary purpose of calculating the cost of capital is its use as a financial standard for the evaluation of the investment project. It carries out this function in evaluation of investment projects in both private and public sectors. The projects are evaluated by using different criteria that lead the enterprise to their goal of wealth maximization. In NPV method, wealth of shareholders is maximized if it is positive. Cost of capital in NPV method of evaluation of investment project functions as a discount rate. In the public sector investment also, it carries out the functions of social discount rate of costs and benefits of the projects. If the investment projects are evaluated on the basis of internal rate of return, cost of capital is functions as a cut-off rate of return of the project. In this method investment project is carried out if internal rate of return is greater than the cost of capital. The rationale of this decision criterion is that the project whose internal rate of return is greater than the cost of capital, contributes to the wealth of the stockholders of the enterprises. In profitability index criterion also, it plays the role of discounting rate of costs and benefits of the investment project. Thus, cost of capital is used in evaluation of the investment projects in both private and public sectors. The rationale behind the use of the cost of capital in private and public sector is different from public sector. In private sector enterprise, it leads directly to the private sector goal of wealth maximization. But in the public sector, it should lead to a maximization of social benefits (Soloman, 1969; 30-45).

• **Rationing of the Budget**

The problem of capital rationing does not arise till the funds are available for the investment of the profitable investment opportunities. But in reality, funds might not be available as much as needed for the lucrative investment opportunities. In this case budget constraint imposes the management to shy away from desirable investment opportunities. Management resorts the capital rationing technique in such condition. Such budget constraints, which force the management to hold the capital expenditure to a fixed amount, arise because of the market conditions or self -imposed restrictions in private sector. In public sector, capital rationing arises because of the government's wish to impose either by the market or by constitutional requirements (Soloman, 1969; 175-177). In capital rationing decision also management of an enterprise tries its best to maximize the wealth of shareholders within the available budget constraints. Similarly the management of an enterprise in public sector also should emphasize to maximize the social benefits with in the available budget ceiling. In both sectors, cost of capital plays the benchmark to allocate the available budget for investment projects and rank the projects in the same way as in their evaluation. In the NPV method, management uses the cost of capital to discount the costs and benefits of the available investment projects; ranks them from higher NPV to lower NPV and select them keeping the budget constraints and their NPV. The basic goal of the management is to allocate the available budget in such a way that it could maximize the wealth of shareholders in private sector and social benefits in the case of public sector enterprises. The cost of capital plays the same role in the method of cost benefit ratio also. But in internal rate of return it does not play important role in capital rationing. Since, in this method projects are ranked as percent their rate of return and they are selected from higher rate of return to lower one keeping the budget constraints into consideration. In this method cost of capital plays as a role of cut-off rate of the project which is less important in capital rationing decision. For problems of capital rationing arise only when there are available of several independent

investment opportunities whose returns are above the cut-off rate and available funds are not enough to finance all lucrative opportunities.

- **Magnitude of the Budget**

In the case of independent projects and in the absence of budget constraints, cost of capital functions criterion role in determining the size of the budget. Soloman has explained very succinctly this function of cost of capital as follows (Soloman,1969;30- 31).

"The role of the cost of capital as a financial criterion for accepting a capital using proposal, as an integral part of selection of mechanism which choose between two or more competitive ways of doing something and as a cut-off point for determining total capital expenditure." But this function of cost of capital is realized only if there is no external and internal capital constraints and if the available investment projects are independent. In such environment management is interested to invest the capital in all projects that have the rate of return above the cost of capital or have the positive NPV in order to maximize the wealth of the shareholders. The magnitude of the capital expenditure budget is the sum of the investment to be done in all accepted projects. In reality, in both private and public sectors, such a condition rarely happens. In private sector, enterprises are subject to the capital rationing mainly because of the market imperfection, and fear of the losing control of closely held enterprises and their conservative financial policy (Pandey, 1992; 561). In public sector, government does not determine the size of its capital expenditure budget in this way because of capital constraints raised from the same reasons of the capital rationing stated earlier. Further, the capital expenditures and approval of the investment proposals in public sector are made on a purely financial criterion of maximizing the social benefits (Soloman, 1969; 148).

- **Financing Decision**

Given the investment decision of an enterprise management makes the financing decision. The financing decision also should be optimum. In other words, it should lead the enterprises to maximize the value. The value can be maximized when overall cost of capital is minimized. Thus the objective of management in making the financing decision should be to minimize the cost of capital. The minimizing the cost of capital is a legitimate conventional corporate objective.

There are controversial views on the impact of financing decision upon the value of the firm and the cost of capital. The traditional view contends the value of the enterprises can be maximized by the judicious financing decision. Hence, optimal financing decision- composition of long term debt and equity, where the value of the enterprise is maximized, can be carried out by the management. According to this approach, optimal capital structure exists where the rising marginal cost of borrowing is equal to the overall cost of capital. Thus, cost of capital plays a role of benchmark for financing decision. But MM proposition I states that financing decision is irrelevant. Since, the market value of any enterprise is independent of its capital structure. But the assumptions under which this M-M's proposition I becomes valid are never valid in reality even in the highly developed capital market. In public sector enterprises especially in developing country like Nepal, financing decision of the project is solely based on the government policy, and foreign loans and grants not on the financial goal of minimization of cost of capital (Modigliani and Miller 1958;156).

• Performance Evaluation of Top Management

The functions of cost of capital discussed so far are decision perspective. As state earlier all types of decisions- investment, financing, capital rationing, and magnitude of the budget size, should be directed towards the enterprise's goal of maximization of wealth of stockholders in the case of private sector enterprises and of social wealth in public sector's ones. But the problem arises how to evaluate whether enterprises are able to achieve their set objectives in actual operation of their business. This is done

by comparing the actual profitability of the investment project measured by return on investment is above the overall cost of capital of the project, management is able to add the additional value to the wealth of existing stockholders by carrying out the investment decision. Conversely, if overall cost of capital is in excess over the rate of return on investment, investment in the new project dilutes the value of the existing owners of enterprises. So, in this case, management's performance is considered not satisfactory. This cost of capital discharges the function of criterion for performance evaluation of top management. But in the case of public sector enterprises, management should not be evaluated only on this perspective. Government should evaluate the performance of public sector enterprise management on the light of the achievement of its goals set in the political and socio-economic framework of the concerned country. So, cost of capital as a benchmark for the evaluation of the performance of the top management of public sector enterprises should be secondary rather than primary one. But in Nepal, public enterprises are supposed to earn profit enough to sustain their own cost. Moreover, enterprises and their management are evaluated on the basis of set financial targets rather than the cost of capital.

In summary, cost of capital functions as a financial standard in investment decision, works as a benchmark to allocate the available limited resources for profitable investment projects,. Play a criterion role in determining the optimal budget magnitude, helps the management in taking the optimal financing decision and provides the basis for the evaluation of the performance of the top level management of the enterprises.

2.8 Components of Cost of Capital

It is necessary to analyze the cost of specific sources in order to show the basic inputs for determining the overall cost of capital. "The computed value for the cost of capital can be regarded as a fair approximation of the cost of capital inputs consistent with company needs, the conditions under which it is raising its capital, the level of expectations and corporate policy constraints."(Kuchhal 1982; 368). A company may

use more than one type of capital. In this situation, the company's composite cost of capital can be determined after the cost of each type of funds has been obtained. The first step, therefore, in the measurement of company's cost of capital is the calculation of each specific cost which is the minimum financial obligation that is incurred in order to secure the use of capital from a particular source. Hampton defines cost of capital as the rate of return the firm requires from an investment in order to increase the value of the firm in the market place.

The cost of capital as a rate of return or discount rate that equates the net cash proceeds, the firm receives with the present value of the capital suppliers.

Mathematically, this can be written as:

$$I = \frac{C_1}{(1+K)^1} + \frac{C_2}{(1+K)^2} + \dots + \frac{C_n}{(1+K)^n} \dots \dots \dots (2.9)$$

Where,

I = outflows of funds at period 0

C_n = cash inflow at times

n = time duration over which the funds are provided

K = cost of capital

It is evident from the above mathematical formulation that the cost of capital is the rate of cash flows of the financing opportunity (Porterfield, 1965;45). The cost of each components is the component cost and overall cost of financing of an organization, is weighted average cost of capital. Capital components are the items on the right hand side of the balance sheets; they include various types of debt, preferred stock and common equity. These are the capital structure components, thus any net increase in assets must be financed by an increase in one or more capital components.

The component costs are identified by the following symbols in this study.

K_d = component cost of debt before tax

K_d(1-T) = component cost of debt after tax, where T is marginal tax rate.

K_b(1-T) = debt used to calculate the weighted average cost of capital.

K_{ps} = component cost of preferred stock

K_r = component cost of retained earning

K_e = component cost of equity capital

K_o = weighted/ component /overall cost of capital

2.8.1 Cost of Debt Capital

A debt is a long-term obligation and simultaneously a promise to pay the face amount or principal at a designated date of maturity and to pay interest at a specified rate periodically. It is contract made between the corporation and a third party, the trustee, to whom the reference is made in the debt contract. In general, cost of debt capital is same whether the firm uses bank loans, bonds or other sources of loans. It is more reliable to calculate the cost of debt because the amount of interest is known and fixed by the agreement between lender and the firm. Component cost of debt is calculated by dividing the amount of interest by the total amount of loan provided or it is the ratio of interest and principle i.e.

$$K_d = \frac{\text{Total amount of interest (I)}}{\text{Total amount of principle (P)}} \dots\dots\dots (2.10)$$

The above equation provides the before tax annual interest rate. The cost of debt is tax deductible. Thus, after tax cost of debt is less than before tax, it is equal to before cost of debt time's one minus corporate tax rate, i.e.

$$\text{After tax cost of debt}(K_{dt}) = K_d(1-T) \dots\dots\dots(2.11)$$

2.8.2 Cost of Preference Capital

Preferred stock is a hybrid form of capital possessing a mixture of debt and common stock characteristics. Preferred stock generally has a perpetual life, although it may have a finite life, and it may have a call price specified and even a sinking fund where the stock is to be repurchased by the firm in the open market. The holders of a corporation's preferred stock get their dividends only if declared by its board of directors. Dividend of the preferred stock is fixed and it is treated as debt. The cost of preferred stock is a discount rate, which equalizes the future expected dividends to the

present market price of share. If the preferred stock is callable then the discount rate equates the future expected dividends to the call price. The cost of preferred stock is a function of its stated dividends.

2.8.3 Cost of Equity Capital/ Common Stock

Like other sources of capital equity capital also involves certain cost to the firm. The equity shares must involve a return in terms of dividend expected by the shareholders. The cost of equity capital is defined as the minimum return of rates that a firm must earn on the equity financed portion of its investment in order to leave unchanged the market price of its stock. The cost of equity capital is the rate if discount that equates the present value of all future expected dividends per share to the present price of common stock. It is the return required by the investors. The cost of equity capital indicates the minimum rate which must be obtained on the projects before their acceptance and the raising the equity capital to finance them i.e. it should lead to an increase in the net present value of their wealth." (Kuchhal 1982; 370). The definitions of cost of equity capital are based on a few key assumptions with respect to the behavior of individuals and their ability to forecast future values (Gitman1982;456-457).

1 Share Values : - The basic assumption on which the cost of common stock is calculated is that the value of a share of stock is equal to the present value of all future dividends expected to be paid out as dividends, but it is expected that those earnings which are retained are reinvested will boost future dividends.

2 Growth Rate: - Another necessary assumption is that the rate of growth in dividends and earnings is constant over the infinite time horizon. The growth rate expected is assumed to be measurable, typically on the basis of the past growth in bearings demonstrated by the firm.

3 Risk Classes: - A fine assumption made in defining the cost of common stock concerns the risk ness of a firm as viewed by existing the prospective shareholders. It is assumed that the firms perceived by investors as being equally risky (having the

same degree of business and financial risk) would have their expected earnings discounted at the same rate.

Measurement of cost of common stock is more difficult and controversial. Common stock and the retained earnings are the parts of the equity capital. Common stock means proceeds received from the issue of new equity, but retained earnings are the retained portion of current earnings of the firm.

A. Cost of Common Stock (External Equity)

The minimum rate of return, which is required on the new investment, financed by the new issue of common shares, to keep the market value of the share unchanged is the cost of new issue of common shares. Cost of new common equity is that rate of return which is required by the stock holder. New issues of shares are influenced by floatation cost. Floatation costs may consist of under pricing and under writing fees. Due to floatation cost, the cost of common stock is greater than the cost of retained earning.

B. Cost of Retained Earnings (internal Equity)

A firm does not distribute its entire profit to the shareholders but a portion of earned profit is retained in the business for the future expansion of the business. This retained profit serves as internal source of funds for the company. The retained earnings of the corporation have also costs in the form of opportunity cost involved in the alternative investments. If the retained earning could not be utilized, the shareholders feel that the corporations cannot do anything in accelerating their rate of return. Cost of retained earnings is the opportunity cost to the shareholders because when the firm decides to retain the current earnings in the firm, then shareholders give up their cash dividends. Thus, they accept the firm should earn the same rate of return on retained earnings as it provided on common equity. That means, the cost of retained earnings (K_r) is equal to the rate of return on common stock (K_e). (Benton, 1987; 155). Thus, in the absence of floatation cost, the cost of retained earnings and the cost of common stock is same.

"The cost of retained earnings must be viewed as the opportunity cost of the foregone dividends to the existing common shareholders." (Gitman, 1982; 461).

2.9 Overall or Weighted Average Cost of Capital

Measurement of cost of capital is necessary after the calculation of various elements of costs. The composite or overall cost of capital is the weighted average cost of various sources of funds, weights, being the proportion of each source of funds in the capital structure. The cost of capital is found by weighing of the cost of each component of capital structure by their relevant proportion. The weighted average or composite cost of capital is the weighted average of the cost various sources of capital weight in the proportion of each of the sources in the capital structure. In financial decision making, the term cost of capital is used in the composite sense because a firm's decision to use debt capital to finance its project will lower its cost but also makes more risky. The increased risk to the shareholders will increase the cost of equity. "A firm's cost of capital is the weighted arithmetic average of the cost of various sources of long term financed used to it". (Prasanna Chandra,1990;448). The overall cost of capital is the average representing the expected return on all of a company's securities. Each source of capital such as stocks, bonds and other debt is weighted in the calculation according to its prominence in the company's capital Structure.

The equation form of the weighted average cost of capital is given below.

$$K_o = W_d K_d + W_{ps} K_{ps} + W_r K_r + W_e K_e \dots\dots\dots (2.12)$$

Where,

K_o = overall cost of capital

K_d = cost of debt

K_{ps} = cost of preferred stock

K_r = cost of retained earning

K_e = cost of new equity

W_d = proportion of debt to total capital

W_{ps} = proportion of preferred stock to total capital

W_r = proportion of retained earning to total capital

W_e = proportion of equity to total capital.

2.10 Financial Leverage

The term leverage refers to the use of that sources of funds in the business for which the firm has to pay fixed charges, irrespective to the earnings of the firm. There are two types of leverage in financial management, they are,

- Financial Leverage
- Operating Leverage

Leverage associated with investment activities is called operating leverage and leverage associated with financing activities is called financial leverage. Weston and Brigham viewed financial leverage as the ratio of total debt to total assets or the value of the firm (Weston and Brigham, 1981;55).According to Lawrence, "financial leverage refers to the response of the shareholders income to change in EBIT and is created by debt or preferred stock financing with fixed interest and dividend payment. The use of fixed charges sources of funds such as debt and preference capital along with the owners equity in the capital structure is described as financial leverage of "Trading on Equity".

The use of fixed income source of funds like debt and preference capital is described as financial leverage and is generally considered as synonym of the term 'trading on equity'. The basic idea in employing the financial leverage is that the owners of the firm can enjoy a higher rate of return on their capital than that earned by the firm on its total capital using fixed income source of funds provided by the rate of fixed income is less than the overall rate of return in the firm's total capital. (Pandey,1996). The use of financial leverage provides income advantage to the shareholders or it increases shareholders rate of return. But it also increases the financial risk to them. Under the favorable condition, the use of debt and preferred stock in financing provided income advantages over common stock of the firm, they increase the risk if

it does not. Thus, it is employed by a company in intending to earn more, on the fixed charges than their costs. The surplus will increase the return on equity. Due to the interest and principle payments are contractual obligation of firm, the debt financing is more risky from the view point of the shareholders. Therefore, debt offers the greatest income advantages as well as risk.

2.11 Review of Major Previous Studies and Articles

This section is devoted to review the important empirical works, concerning capital structure / leverage and cost of capital. Mainly the studies conducted by Modigliani and Miller (1958) and (1966), Barges (1963), Wippen (1966), Sharma and Rao (1969), Weston (1965), Davenport (1971) and others and some articles are reviewed here.

2.11.1 Review of International Studies and Articles Modigliani and Miller Study (1958)

In Modigliani and Miller (1958) study, they used the previous work of Allen (Allen, 1954:57-51) and Smith in support of their independence hypothesis. Allen's study was concerned with the relationship between security yield and financial structure for 43 large electric utilities, based on average figures for the year 1947 and 1948. While the Smith's study was concerned with 42 oil companies to test whether Allen's striking results would be found in an industry with very different characteristics based on only single year 1953. In the first part of their work M-M tested their proposition I, the cost of capital is irrelevant to the firm's capital structure, by correlating after tax cost of capital, X/V with leverage, D/VV . They used the following regression model to test their hypothesis (Modigliani and Miller, 1958:261-97).

$$X=a+bd$$

Where,

$$X = \frac{X}{V} = \frac{\text{Sum of interest, preferred dividend and shareholders after tax income}}{\text{Market value of all securities}}$$

$$\frac{D}{V} = \frac{\text{Market value of senior securities}}{\text{Market value of all securities}}$$

The regression were as follows:

$$\text{Electric utilities} \quad X = 5.3 + 0.006d (+0.008)(-0.008) \quad R^2 = 0.12$$

$$\text{Oil Companies} \quad X = 8.5 + 0.006d (+0.024)(-0.024) \quad R^2 = 0.04$$

These results support their hypothesis of independence or correlation co-efficient is statistically insignificant and positive in sign. The regression line does not sauciest a curvilinear, 'u' shaped cost of capital -key of traditional view, when the data are shown in scatter diagram In the second part of their study, they tested their proposition II, the expected yield on common shares, is a linear function of debt to equity ratio, D/S. They used the following models.

$$Z = a + bh$$

Where,

$$Z = \frac{\text{Shareholders net income after taxes}}{\text{Market value of common shares}}$$

$$H = \frac{\text{Market value of serious securities}}{\text{Market value of common shares}}$$

The regression results obtained were,

$$\text{Electric utilities; } Z = 6.6 + 0.051h(+0.008)(-0.008) \quad R^2=0.53$$

$$\text{Oil Companies; } Z = 8.9=0.051h(+0.012)(-0.012) \quad R^2=0.53$$

Both the correlation co-efficient are significant and positive values for h co-efficient is 425 in both the cases, which is significant at 5% level of confidence. Thus, M-M view- yield on stock is linear function of debt to equity ratio. D/S is supported. However, they admit that these findings do not contradict the traditional position. Their next step was to add the square of the leverage term to test the presence and direction of curvature. The following estimates were obtained.

Electric utilities;

$$Z = 5.6 + 0.004h - 0.007h^2$$

Oil companies:

$$Z = 8.5 + 0.072h - 0.016h^2$$

The curvature is negative for both the cases, for electric utilities the negative coefficient of square term is as significant at the 5% level. This result is consistent with their views, i.e. if the cost of borrowed fund increases, the cost of equity will decline to offset this increase; thus, these results do not support traditional position.

Barges Study (1963)

Barges conducted the empirical test of relationship between cost of capital and leverage and between stock yield and debt equity ratio with improvement on some of the limitation of the M-M's empirical work. For the study purpose, he utilized cross-section data from three different industries- railroads, departmental store and cement industries.

He used two approaches – direct tests and yield tests to examine the validity of the independent hypothesis. Direct tests were made on the relationship between the average cost of capital and the total market value. While yield test were made to determine whether yields increase from zero debt up to some moderate range. This provided the evidence of MM independent hypothesis that average cost of capital and capital structure was not tenable. But it did not conclude the derivative hypothesis that equity yields is the linear function of the leverage. In other words, direct test results supported the traditional view and yield test results neither supported nor contradicted the MM hypothesis.

Modigliani and Miller Study (1966)

Modigliani and Miller conducted the second in 1963 with correcting their original hypothesis for corporate income taxes and expected cost of capital to be affected by leverage for its tax advantages. They therefore wanted to test whether leverage had

tax advantages or not. For this purpose, they used three years data, viz. 1954-56 and 57, of 63 electric companies (Modigliani and Miller, 1966:333-391).

They conducted the mathematical analysis regarding the effect of leverage and other variables on the cost of capital. They concluded that leverage has a tax advantage and value of the firm can be maximized when leverage measured by $DL/VL = 1$. In other words, cost of capital can be maximized when equity financing is zero.

Weston Study (1965)

Weston study was also related with the cost of capital and leverage. But he made some important improvement in the cost of capital model. He included firm size (measured by assets) and growth (per share income over a ten years period) as additional explanatory variables in his model.

He found the regression co-efficient of leverage to be positive and significant, when he used M-M model for his sample of 59 utilities in 1959. The study suggested that leverage is a negative linear function of earnings growth. The absence of correlation between the cost of capital and capital structure was due to the counterbalancing influence of earnings growth on leverage. The study found that the regression coefficient of leverage to be positive and significant.

Wipperfurth Study (1966)

Wipperfurth also conducted a study to test the empirical relationship between cost of capital and leverage. He tried to eliminate principle problem of empirical study on the leverage and attempted to offer what are hoped to be more fruitful alternatives in determining the relationship between leverage and cost of capital. He argued that the leverage either the ratio of the debt to equity at book value or at the market values, both of these measures contains important conceptual basis. He therefore, use a different measures of leverage, viz. $i/E = 25$ where I is the current level of fixed charges; E is the most recent year cash flow operating income determined from a logarithmic regression of income on time over ten years period, 25 is equal to two

standard error around the regression line (Wipperfurth,1966:615-635). He has also included in certain variables in his test equation to account for inter firm difference. He therefore, has been assumed in the past investigation that homogeneity of business risk could be achieved by comparing firm in the same industry classification.

Besides these, he employed some proxy measures based on objectively determined data and argues that the capitalization rate equals future earnings to current market prices are not directly measurable. For the study purpose, he used the data of 50 firms from seven manufacturing industries. The years selected for the cross- section test were 1956,1958, 1961 and 1963.

He included that shareholder's wealth can be enhanced by judicious use of debt financing.

Sharma and Rao Study (1969)

Sharma and Rao conducted the test of M-M hypothesis on the influence of debt on the value of the firm to a non regulated industry. They argued that estimate of cost of capital arrived at through this model will be accurate only when their hypothesis on debt and dividends are correct, this is an essential condition for the employment of this model. For the study purpose, they used a sample of 30 engineering equation for the three cross- section year 1962, 1964and 1965. Calculations of variables were done in exactly the same ways that done by M-M with two exceptions. They experimented with the total assets and sales for deflecting the variables and the results were meaningful when fixed of total assets were used as the deflector. They argued that when the growth rate of total assets of fixed assets was used as the growth variable, the results were somewhat in consistent with economic reasoning (Sharma and Rao,1969:673-677). They therefore took the earnings growth rate as the growth variable because this would take into account growth of earnings due to both utilization of existing capacity and to the additional of new capacity.

They found the co-efficient of debt variables to be more than t , the corporate income tax rate; they introduced debt as a separate independent variable. They also used two-stage least square (2SLS) as a method of arriving at the true expected future earnings. He concluded that debt has non-tax advantages also. Thus, this paper supports that investors prefer corporate to personal leverage and, therefore, the value of a firm rises up to a leverage rate considered prudent.

Davenport Study (1971)

Davenport in his study used the British data of three unregulated industries: chemical, food and metal manufacturing industries. He took 59 firms in chemicals, 28 firms in food and metal manufacturing as sample. Regression was run for the three cross-section years - 1961, 1962, and 1963 (Davenport, 1971:137-162).

They had concluded that the results of his study don't support the M-M contention that the overall cost of capital structure of the firm. They supported the traditional view of cost of capital and leverage because his results show the U shape cost of capital schedule with respect to leverage. He stressed the problem of holding constant growth prospects and the future risk valuation and raised the question whether an industry was the best sample classification or whether firms might not, with advantage be classified into growth and risk classes. Another point stressed is that the choice of years over which cross-section regression are run is crucial as it is related to the problem of the growth and risk variables.

Rao and Lintzberges Study (1970)

Rao and Lintzberges were conducted the study of the effects of capital structure on the cost of capital in a less developed and less efficient capital market (India) and in a highly developed and efficient capital market (United State). They used 28 Indian utilities and 77 American utilities: They were conducted the study for the five cross-sectional years 1962-1966.

He found that the result for the American utilities are constant to the M-M proposition that except for the advantages of debt financing the cost of capital is independent of capital structure, and the result also supported that the M-M hypothesis that the investors are indifferent for the firm's dividend policy.

In case of Indian utilities, the results are inconsistent to the M-M approach support the traditional belief the judicious use of financial leverage will lower the firm's cost of capital and investors have the preference for current dividends.

In conclusion, they contended that the M-M approach after allowing for the tax advantage of debt, the firm's cost of capital is independent of capital structure does not appear to be applicable in the case of a developing economy.

Pandey Study (1981)

Pandey has tried to test the M-M approach in the developing economy with taking the sample from four different utilities, they are: cotton, chemicals, engineering, and electricity from Indian market. He made some improvement in the model derived by M-M and used multiple regression equation for the year 1968, 1969 and 1970 and for the pooled data of the three cross-section years. The improvement was made on the measurement of leverage and added earnings variability and liquidity as risk measure variable in the regression equation. Two types of leverage was used by him as follows (Pandey, 1981):

- (a) The debt to total capital ratio, D/V .
- (b) The debt to equity ratio, D/S .

The two ratios were measured with or without preference share capital in the debt portion. Both leverage were done on book value and included short term loan as part of leverage. He further tried to test the M-M hypothesis that the use of leverage can increase the market value of the firm or lower the cost of capital, due to the tax deductibility of interest charges. The tax adjusted stock yield is regressed with leverage and other explanatory variables. In this model, he used pool data of three industries – cotton, chemicals, engineering and coefficient of both measure of

leverage were significant and negative in sign. Therefore, the result supported the traditional belief.

Manohar Krishna Shrestha, in his article entitled, "Analysis of capital structure in selected Public Enterprises" has concluded that the selected public enterprises under his study have a very confusing capital structure, which can be attributed to the lack of commitment of corporation towards its objectives based on financial plans and policies. He has also found that most of them are reluctant to eliminate debt if possible to relative financial obligation. He has suggested that the debt-equity ratio should neither be highly leveraged to create too much financial obligation that lie beyond capacity to meet nor should it be much low leveraged to infuse corporation lethargy to by pass responsibilities without performance.

Ramesh Lal Shrestha in his article, "Capital adequacy of Bank; The Nepalese context" has thrown precaution over the capital base that it should neither be too much leading to inefficient allocation of scarce resources nor so weak so as to expose to extreme risk while dealing highly risk transactions to maintain strong capital base. He supports the fact that the operation and degree of risk associated with them are subject to change country wise, bank wise and time wise. He had suggested the banks of Nepal to present standard capital adequacy ratios keeping in mind various relevant factors.

2.11.2 Review of past studies

Rijal (1997) made a study on four companies, two from manufacturing and two from service industry on the capital structure and cost of capital. His specific objectives were:

1. To analyze the cost of capital.
2. To study the profitability position.
3. To assess the debt servicing capacity.

He has used financial as well as statistical tool as the methodology for this study. On the study, he found that the return on equity is constantly decreasing for all companies throughout the years, the cost of capital has not followed the capital structure theories.

Research Gap: In his study, he has not considered the multiple regression analysis.

Khatri (1998) has conducted a research on capital structure and the cost of capital of Nepalese listed companies'. His study was based on five years data of four banking and finance companies and eight manufacturing and trading companies. His main objectives were as follows:

1. To test the relationship between the cost of capital and capital structure.
2. To examine the relationship between the cost of equity and capital structure of selected listed companies.

He has used simple as well as multiple regression models as the tool of study. On the study, he found that the regression coefficient of leverage against cost of capital were negative on manufacturing and trading sector and positive on banking and finance sector. In addition, the t-value showed the beta coefficient was not statistically significant in both sectors. Finally, he concluded that there were not strong enough to establish relationship between cost of capital and capital structure and with other exploratory variables.

Research Gap: In his study, he had not done the financial analysis.

Parajuli (2001) has made a study on Capital and Ownership Structure: its impact on profitability, a case study on Nepal Lever Limited. His main objectives were as follows:

1. To study the relationship of debt and shareholders equity.
2. To study the relationship of EBIT and interest payment.
3. To analyze the return on capital in relation to capital employed.

He has used financial and statistical tools as the tool of the study. On the study he found that the degree of leverage has not brought any change in the value of the company and that the performance of Nepal Lever Limited is not satisfactory.

Research Gap: In his study, he has included nor simple regression analysis nor multiple regression analysis and he has considered only one company for his study.

Shrestha (2004) made a research on "Effect of Capital Structure on Cost of Capital" and following were the basic objectives:

1. To test whether the cost of capital fluctuates with capital structure of sample companies.
2. To evaluate whether the capital structure affects cost of equity, EPS, P.E ratio of sample companies.
3. To analyze the relationship between capital structure, cost of capital, size of capital employed of sample companies

In his study, he found that banks were highly levered and the company financial mix accounts a higher proportion of debt and it is increasing every year. He has suggested that the banks need to employ better marketing strategy on order to reap handsome benefits to sustain for long period. He has used financial and statistical tools for his study.

Research Gap: In his study, he has used nor simple neither multiple regression analysis to make it more clear and defined.

Sapkota (2006) made a study on Capital structure of Nabil Bank Ltd." His main objectives were as follows:

1. To examine and analyze capital structure of Nabil bank.
2. To examine the existing financial position regarding capital structure.
3. To analyze the composition of Nabil bank of mixture of debt and equity.

For his study, he used financial and statistical tools and he found that the mix of debt and equity is in average ratio and liabilities are increasing more than share capital. He concluded that Nabil bank is rated as successful bank running well among other competitors and is satisfactory symbol for all stakeholders of the bank. Reseach Gap: For his research, he has taken only one bank as a sample and he hasnot given focus on cost of capital in study of capital structure and there must be analysis of total liabilities not only deposits.

Gautam (2006) in his thesis "A study on Capital Structure Management of joint venture commercial banks" made a study of Standard Chartered Bank Ltd. and Nepal Bangladesh Bank Ltd. His main objectives were as follows:

1. To study the existing capital structure of financial position of selected joint

venture bank and to analyze its impact on profitability.

2. To access the debt servicing capacity of joint venture bank.
3. To examine correlation and the significance of their relationship between different ratios related to capital structure.

He found that the private sector banks have been successful in increasing their deposit and credit portfolio remarkable over the last one year and the banks have been cautious about loan and advance. The operating profits of all private sector commercial banks have gone up, so have the provision for loss. He has used financial as well statistical tool for his study.

Research Gap: In his study, he has considered only two commercial banks and simple and multiple regression analysis are not done.

Sharma (2006) conducted the study on Capital structure and its impact on cost of capital in manufacturing and trading companies. His study was basically focused on following aspects they are:

1. To test the relationship between leverage and cost of capital in manufacturing and trading sector enterprises.
2. To assess the relationship of leverage and cost of equity.
3. To analysis the properties of portfolio formed on leverage.

To conduct his study, he has used simple as well multiple regression analysis to accomplish the objectives. He found that the cost of capital can be affected by use of Debt in capital structure and cost of capital decline with increase in leverage. He Suggested that capital structure is not consistent so management should try to maintain their consistence capital structure. Research Gap: In his study, he has not done financial analysis which can make it more clear.

Shrestha (2006) conducted the study on the topic of focus on capital structure and its impact on value of the firm. She made her study on seven manufacturing companies and four non manufacturing companies. Her main objectives were as follows:

1. To identify effect of leverage on value of the firm.
2. To identify other variables in addition to leverage to that affects value of

the firm.

3. To test relationship between value of firm and its determining variables.

She had used simple as well as multiple regression and t-test models as the tool of study. She found that the correlation coefficient, simple and multiple regression coefficients for both tax ignoring and tax adjusted, gives the negative relation of leverage with the market value of the company in both manufacturing and non manufacturing sectors. The t-values are also statistically significant which indicates that the use of debt in capital structure minimizes the market value of the company. The result of showing negative impact of leverage in the market value of the company may be caused by the data inconsistency and poor performance of the companies.

Research Gap: On her study, she has not done any financial analysis.

2.12 Research Gap

By the revision of above mentioned studies, it is found that different studies have different area of coverage. Some researchers have not focused on financial analysis and some other have not considered statistical analysis (correlation, simple regression analysis and multiple regression analysis). Furthermore, some researchers have made their studies on one or two firms only. In this context, present study is different from these previous studies as I have used financial analysis and statistical analysis (correlation, simple regression analysis and multiple regression analysis) and this study is totally revolved around banking industry, which is the most important factor for economic development of country,

In this study the relationship between capital structure and cost of capital have computed and analyzed. SPSS program has been used to for regression analysis, which makes the study more clear and definite, and shown the effect of leverage on

cost of equity. This study has tried to analyze different aspect in order to make fruitful analysis on the capital structure and cost of capital of commercial banks.

CHAPTER- III

RESEARCH METHODOLOGY

It is the purpose of this chapter to discuss the research methodology such as research design, population and sample, data collection techniques, and analytical tools of the research study. Research methodology, as a vital part of research study, describes the various sequential steps to be adopted by researcher in studying research problem along with the logic behind them.

This study attempts to find out the relationship between cost of equity, overall cost of capital and leverage with other explanatory variables.

3.1 Research Design

This study is based on past data of banks. So, the design of this study is historical, analytical and as well as descriptive approaches and statistical and financial tools have been used to examine facts

3.2 Source of Data

This study is mainly based on secondary data. The main sources of secondary data are annual reports of commercial banks, bulletin and reports of NRB, reports of Security Board of Nepal and other reports, journals and bulletins of the commercial banks.

3.3 Population and Sample

At present, there are 28 commercial banks operating in Nepal. Among them, only four commercial banks are chosen for the study purpose among total population.

They are as follows:

- **Himalayan Bank Limited (HBL)**
- **Standard Chartered Bank Nepal Limited (SCBL)**
- **Everest Bank Limited (EBL)**
- **Nepal Investment Bank Limited (NIBL)**

For study purpose four banks are divided into two groups. The first group includes Standard Chartered Nepal Bank Limited (SCBL) and Himalayan Bank Limited (HBL) and second group includes Everest Bank Limited (EBL) and Nepal Investment Bank Limited (NIBL)

Name of company	Years	Observation Year
SCBL	2004-2008	5
HBL	2004-2008	5
EBL	2004-2008	5
NIBL	2004-2008	5

3.4 Method of Data Analysis

The available data from secondary sources are presented and analyzed as per required tables. After the data are tabulated, various statistical and financial tools are used to achieve the results.

3.4.1 Statistical Tools

Some important tools are used to achieve the objective of this study. In this study the statistical tools used are as follows:

- A. Karl Pearson's Correlation Coefficient
- B. Simple Linear Regression Analysis
- C. Multiple Regression Analysis

Above statistical tools can be used to measure relationship (interdependency) of cost of equity or overall cost of capital to various concerned variables such as leverage, size, growth, dividend payout ratio, earning variability and liquidity.

The average cost of capital is regressed with each of the explanatory variables such as leverage, size, growth, dividend payout ratio, earning variability and liquidity. Simple regression equation can be expressed by following algebraic relationship:

$$K_o = a + b_1L_1$$

$$K_o = a + b_2\text{LogS}$$

$$K_o = a + b_3G$$

$$K_o = a + b_4\text{DPR}$$

$$K_o = a + b_5 \text{ E.V}$$

$$K_o = a + b_6\text{Liq}$$

which can be expressed in multiple regression equation,

$$K_o = a + b_1L_1 + b_2\text{LogS} + b_3G + b_4\text{DPR} + b_5 \text{ E.V} + b_6\text{Liq}$$

where,

K_o = average cost of capital

L_1 = Leverage 1

S = Size

G = Growth

DPR = Dividend payout ratio

E.V = earning variability

Liq. = Liquidity

and,

$b_1, b_2, b_4, b_5, b_6 < 0$ and $b_3 > 0$, following are the reasonable prior sign of beta coefficients.

The cost of equity regressed against each of the selected variables, they are, leverage, size, growth, dividend payout ratio, earning variability and liquidity. Simple regression equation can be expressed by following algebraic relationship:

$$K_e = a + b_1L_2$$

$$K_e = a + b_2 \text{LogS}$$

$$K_e = a + b_3 G$$

$$K_e = a + b_4 \text{DPR}$$

$$K_e = a + b_5 E.V$$

$$K_e = a + b_6 \text{Liq}$$

Which can be expressed in multiple regression equation,

$$K_e = a + b_1 L_2 + b_2 \text{LogS} + b_3 G + b_4 \text{DPR} + b_5 E.V + b_6 \text{Liq}$$

where,

K_e = average cost of capital

L_2 = Leverage 2, other notations are similar as above.

3.4.2 Financial Tool

Debt-Equity Ratio

To measure the ratio of debt to equity utilized, debt equity ratio is calculated.

$$\text{Debt-Equity} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Debt equity ratio shows the leverage of the firm and higher the leverage, higher the risk, yielding higher ROE.

Total Debt to Total Assets (TD/TA)

This ratio shows those portions of the capital assets that are financed by outside funds when successfully employed. It can be calculated as:

$$\text{Total Debt to Total Assets} = \frac{\text{Total Debt}}{\text{Total Assets}} \times 100\%$$

The higher ratio indicates that the creditors claim in the total assets of the company is higher than the owner's claim.

Interest Coverage Ratio

The I/C ratio shows how many times the interest charges are covered by the funds that are ordinarily available to pay interest. It can be calculated as:

$$\text{Interest Coverage Ratio} = \frac{EBIT}{Interest} \times 100\%$$

The high I/C ratio indicates the company's strong debt servicing capacity.

Degree of Financial Leverage (DFL)

The degree of financial leverage indicates the degree of financial risk. The financial leverage exists when the company has debt capital in the composition of capital structure. It can be calculated as:

$$DFL = \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}} = \frac{EBIT}{EBT}$$

The high degree of financial leverage indicates the high degree of risk.

Return on Total Assets (ROA)

Return on total assets ratio measures the overall profitability of all working funds i.e. total assets. It is also known as return on assets (ROA).

$$ROA = \frac{\text{Earning after interest and tax}}{\text{Total assets}}$$

The ratio is the major tool to judge the operational efficiency of a firm.

Return on Shareholder's Equity (ROE)

Return on shareholder's equity (ROE) is the measure of productivity of shareholders funds. It carries the relationship of return to shareholder's equity. The shareholder's

equity includes common share capital, preference share capital and reserve and surplus.

$$ROE = \frac{\text{Net profit after tax}}{\text{Shareholder s equity}}$$

3.5 Specification of the Variables

The empirical definition of the variables used in the study is as follows:

The average cost of capital (Ko)

The average cost of capital is the dependent variable calculated by dividing the expected earnings by closing market value of equity shares plus the book value of the debt. The expected earnings are calculated by using the weighted average of three years after-tax net operating income (net income + interest) including the cross section year. The weight assign to the after-tax net operating income are 3, 2 and 1 respectively for previous two years the cross section year.

Leverage (L)

The amount of debt that a firm uses to finance its assets is called leverage. A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unleveled. Leverage used in this study is calculated in two ways:

$$L_1 = \frac{LTD + STD}{LTD + STD + ESC}$$

$$L_2 = \frac{LTD + STD}{ESC}$$

Where,

LTD = Long-term debt

STD = Short-term debt

ESC= Equity share capital

Size (Logs)

The natural logarithm of the capital employed at the balance sheet is used as a measure of the firm's size. Capital employed comprises share capital plus reserve and surplus long-term debt plus short -term debt. It has been suggested that in the empirical work, size correlated with valuation; therefore size has been included as a control variable in the regression equation.

Growth(G)

Growth in assets should normally followed by increase in the earnings capacity of the business .At least it indicates the potentiality for increase in earnings. This also determines the technological efficiency (Pandey, 1981; 80). It is considered a sign of managerial efficiency. Thus, it is taken as a proxy measure for expected growth, that is:

$$G = \frac{A - A_1}{A_1}$$

Where

A = total assets in cross section year

A1 = total assets in one year before the cross section year

Dividend Payout Ratio (DPR)

Dividend payout ratio refers to the ratio, the proportion of earnings paid to the stockholders and the total earnings available to the stockholders. It is calculated by dividing cross-sectional years ordinary share dividends by the cash flow earnings of the stockholders in cross-section year that is:

$$DPR = D/E = \frac{\text{Dividend per share}}{\text{Earnings per share}}$$

Earning Variability (E.V)

The validity of the homogeneous risk class assumption is of critical important in capital structure studies. In this study, earning variability includes as prosy measure for business risk in regression analysis. The measure of business risk is a ratio, the numerator of which is the standard deviation of net operating income or cross section year and the denominator is a average mean of such earnings. Thus, this ratio is the coefficient of variation of net operating income. The use of coefficient of variation is designed to produce a relative measure of stability uncorrected with the size of the firm. A firm with the larger coefficient of variation would be more risky than a firm with smaller coefficient of variation. Thus, a risky firm would be assumed to have a high overall cost of capital and equity cost.

Liquidity Ratio (Liq.)

To account for the short-term risk of the firms, liquidity ratio has been included in the equations. It is calculated by dividing current assets by current liabilities.

Cost of Equity (Ke)

The cost of equity, dependent variable is measured by dividing the shareholders expected earnings weighted average of three year after tax net income(NI) by the market value of the ordinary share of the cross sectional year. The weight assigned to the after tax net income are 3, 2 and 1 respectively for the previous two years the cross section year.

CHAPTER- IV

PRESENTATION AND ANALYSIS OF DATA

This chapter is concerned with financial analysis and statistical analysis that is concerned about comparative analysis and interpretation of available data. Various financial and statistical tools have been used in this part. The main purpose of this chapter is to study, evaluate and analyze those major financial performances, which are mainly related to the capital structure and cost of capital. The various data in respect of different headings are analyzed one by one.

4.1 Analysis of Debt to Equity Ratio

The relationship between borrowed funds and owner's capital is a popular measure to the long-term financial solvency of a firm. This ratio indicates that the relative proportion of debt and equity in financing the assets of a firm. This group of ratio is intended to address the firm's long run ability to meet its obligation or more generally, its financial leverage. The debt –equity ratio has been presented in the table below.

Table 4.1

Debt-equity Ratio of SCBL, HBL, EBL and NIBL

(In million)

F.Y	Total Debt	Total Equity	D/E Ratio	Change (%)
SCBL				
2003/04	17207.63	1235.49	13.93	-
2004/05	19631.59	1368.91	4.34	2.94
2005/06	22146.33	1495.74	14.81	3.28

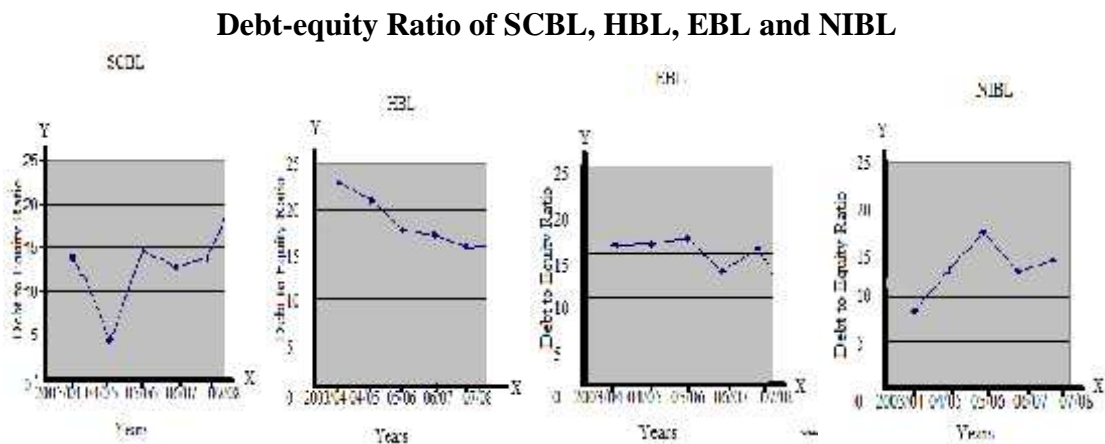
2006/07	20199.26	1582.42	12.76	-13.84
2007/08	24022.19	1754.14	13.69	7.29
Average			13.91	
HBL				
2003/04	19814.319	858.115	23.09	-
2004/05	22292.091	1063.132	20.97	-9.18
2005/06	23437.859	1324.166	17.70	-15.59
2006/07	26302.948	1541.747	17.06	-3.62
2007/08	27694.215	1766.176	15.68	-8.09
Average			18.9	
EBL				
2003/04	6216.27	390.91	15.90	-
2004/05	7579.37	472.83	16.06	1.01
2005/06	9068.24	540.33	16.78	4.48
2006/07	10899.90	832.62	13.09	-21.99
2007/08	14996.47	962.81	15.58	19.02
Average			15.48	
NIBL				
2003/04	4450.43	523.46	8.50	-
2004/05	8375.71	638.53	13.12	54.35
2005/06	12526.44	729.04	17.18	30.95
2006/07	15093.89	1180.17	12.79	25.55
2007/08	19914.72	1415.42	14.07	10.01
Average			13.13	

Source: AGM Reports

The average debt equity ratio of SCBL is 13.91 percent and the debt-equity ratio during these five years has fluctuating trend. Similarly, the debt equity ratio of HBL has decreasing trend and the average debt-equity ratio is 18.90 percent. The debt equity ratio of EBL has increased from fiscal year 2003/04 to 2005/06 and then it decreases to 13.09 percent in fiscal year 2006/07 and again it rises to 15.58 percent in fiscal year 2007/08. The average debt to equity ratio of EBL is 15.48 percent. In the same way, the debt to equity ratio of NIBL is also fluctuated, firstly it increased from

8.50 percent to 17.18 percent from the fiscal year 2003/04 to 2005/06 and it has decreased to 12.79 percent in the fiscal year 2006/07 and again it increased. The average debt to equity ratio of NIBL is 13.13 percent. The highest average debt to equity ratio is 18.9 percent, which is of HBL bank. The Debt-equity ratio of SCBL, HBL, EBL&NIBL can be presented in following graph.

Figure- 4.1



4.2 Analysis of Total Debt to Total Assets

Another approach to calculating the debt to capital ratio is to relate the total debt to total assets of the firm. The higher ratio indicates that the creditors claim in the total assets of the company is higher than the owners claim. The calculated total debt to total asset ratio of SCBL, HBL, EBL and NIBL is presented in the table below.

Table 4.2

Total Debt to Total Assets Ratio of SCBL, HBL, EBL and NIBL

(In million)

F.Y	Total Debt	Total Asset	TD/TA	Change (%)
SCBL				
2003/04	17207.63	18443.07	0.93	-
2004/05	19631.59	21000.5	0.93	0
2005/06	22146.33	23642.06	0.94	1.08

2006/07	20199.26	21781.68	0.93	-1.07
2007/08	24022.19	25776.33	0.93	0
Average			0.93	
HBL				
2003/04	19814.319	20672.45	0.96	-
2004/05	22292.091	23355.23	0.95	-1.04
2005/06	23437.859	24762.04	0.95	0
2006/07	26302.948	27844.70	0.94	-1.05
2007/08	27694.215	29460.39	0.94	0
Average			0.95	
EBL				
2003/04	6216.27	6607.18	0.94	-
2004/05	7579.37	8052.20	0.94	0
2005/06	9068.24	9608.56	0.94	0
2006/07	10899.90	11732.52	0.93	-1.06
2007/08	14996.47	15959.28	0.94	1.07
Average			0.94	
NIBL				
2003/04	4450.43	4973.9	0.89	-
2004/05	8375.71	9014.24	0.93	4.49
2005/06	12526.44	13255.50	0.94	1.08
2006/07	15093.89	16063.54	0.94	0
2007/08	19914.72	16274.06	0.93	-1.06
Average			0.93	

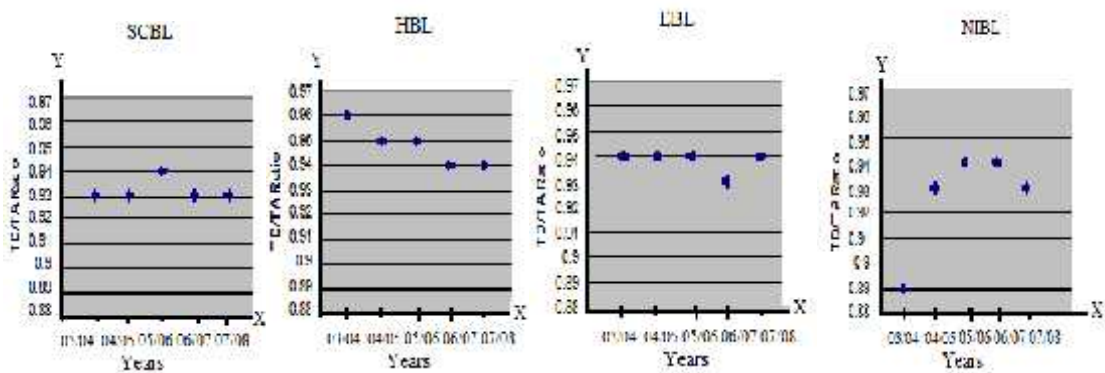
Source: AGM Reports

The calculation shows that the share of the total assets financed by outsiders funds. The total debt to total asset ratio of SCBL is 0.94 in the F.Y 2005/06 and 0.93 in the F.Y 2003/04 to 2007/08 and the average total debt to total asset is 0.93. Comparing the individual ratio with its average, the ratio in F.Y 2003/04, 2004/05, 2006/07 and 2007/08 is equal to its average and in the F.Y 2005/06, it is more than average. In case of HBL bank, the total debt to total asset ratio is in decreasing trend and the average total debt to total asset ratio is 0.95. In F.Y 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08 the 0.96, 0.95, 0.95, 0.94 and 0.94 times of total asset is financed through outsiders fund respectively. In the same way, the total debt to total asset ratio of EBL is same in the F.Y 2003/04 to 2007/08, that is 0.94 times and in the F.Y 2006/07 it is

0.93 times. In average the total debt to total asset ratio is 0.94 times and comparing this to individual trend in the F.Y2006/07 the ratio is less than average ratio. The total debt to total asset ratio of NIBL increases from the F.Y 2003/04 to 2005/06 and it is constant in the F.Y2006/07 and decreases to 0.93 times in the F.Y 2007/08. The average total debt to total asset ratio is 0.93. The Total Debt to Total Assets Ratio of SCBL, HBL, EBL&NIBL can be presented in following graph.

Figure- 4. 2

Total Debt to Total Assets Ratio of SCBL, HBL, EBL and NIBL



4.3 Analysis of Interest Coverage Ratio

In order to analyze the capacity of the company, it is necessary to analyze EBIT and interest which can be analyzed through the interest coverage ratio. This ratio measures the debt servicing capacity of the firm. This is a common measure of long term solvency. It indicates the extent to which a fall in EBIT is tolerable in the sense that the ability of the firm to service its debt would not be adversely affected. The calculated interest coverage ratio of the sample banks are presented in the Table 4.3.

Table 4.3

Interest Coverage Ratio of SCBL, HBL, EBL and NIBL

(In million)

F.Y	EBIT	Interest	I/C Ratio	Change (%)
SCBL				
2003/04	1441.72	962.51	1.50	-
2004/05	1499.21	992.26	1.51	0.67
2005/06	1578.35	840.76	1.96	29.80
2006/07	1539.67	659.37	2.34	19.39

2007/08	1721.39	692.46	2.48	5.98
Average			1.96	
HBL				
2003/04	1387.34	1038.29	1.34	-
2004/05	1443.54	1083.51	1.33	-5.76
2005/06	1516.32	1095.75	1.38	4.05
2006/07	1757.89	1235.35	1.42	3.12
2007/08	2042.38	1369.99	1.49	4.99
Average			1.39	
EBL				
2003/04	539.78	412.41	1.31	--
2004/05	634.08	498.2	1.27	-2.84
2005/06	783.19	572.07	1.36	7.09
2006/07	855.98	489.22	1.74	28.65
2007/08	1063.55	615.88	1.73	-5.75
Average			1.48	
NIBL				
2003/04	415.68	337.58	1.23	--
2004/05	577.44	407.34	1.42	15.45
2005/06	911.95	680.48	1.34	-6.34
2006/07	1108.44	634.46	1.75	30.59
2007/08	1450.33	802.21	1.81	3.43
Average			1.51	

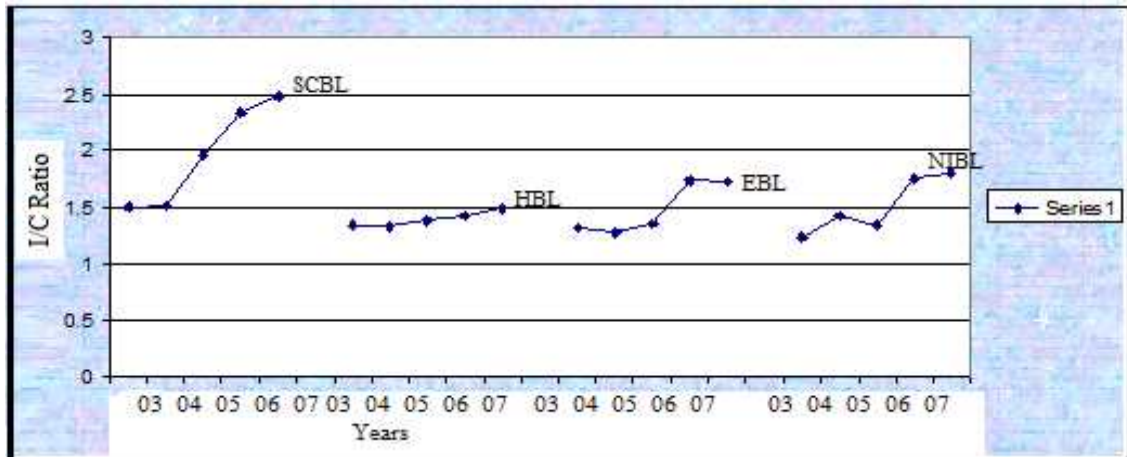
Source: AGM Reports

In case of SCBL I/C ratios are 1.5, 1.51, 1.96, 2.34 and 2.48 times in the fiscal year 2003/04, 2004/05, 2005/06, 2006/07 and 2007/08 respectively. The average I/C ratio is 1.96 times and the I/C ratio is highest in F/Y 2007/08 lowest in F/Y 2003/04. Similarly, the average I/C ratio of HBL is 1.39 times and the highest I/C ratio is 1.49 times in the F/Y 2007/08 and lowest is 1.33 in F/Y 2004/05 and the ratio is in year 2004 after increasing trend. The average I/C ratio of EBL is 1.48 times and the ratio is in fluctuating trend. The highest I/C ratio is 1.74 times in F/Y 2006/07 and the lowest is 1.27 times in F/Y 2004/05. And the average I/C ratio of NIBL is 1.51 times and the

ratio is decreasing in 2005/06 and it is increased. The Interest Coverage Ratio of SCBL, HBL, EBL&NIBL can be presented in following graph.

Figure-4.3

Interest Coverage Ratio of SCBL, HBL, EBL and NIBL



4.4 Analysis of Degree of Financial Leverage

The degree of financial leverage indicated the degree of financial risk i.e. higher the value of degree of financial leverage higher will be the degree of financial risk and lower the value of degree of financial leverage lower will be the degree of financial risk. The degree of financial leverage can be calculated as:

$$DFL = \frac{\% \text{Change in EBT}}{\% \text{Change in EBIT}} = \frac{EBIT}{EBT}$$

The degree of financial leverage employed by four banks has been shown in Table 4.4

Table 4.4

Degree of Financial Leverage of SCBL, HBL, EBL and NIBL

(In million)

F.Y	EBIT	EBT	DFL	Change (%)
SCBL				
2003/04	1441.72	663.44	2.71	-
2004/05	1499.21	715.17	2.10	-22.51
2005/06	1578.35	773.59	2.04	-2.86

2006/07	1539.67	880.30	1.75	-14.22
2007/08	1721.39	1028.93	1.67	-4.57
Average			1.946	
HBL				
2003/04	1387.34	349.05	3.97	-
2004/05	1443.54	360.03	4.01	1.01
2005/06	1516.32	420.57	3.61	-9.98
2006/07	1757.89	522.54	3.36	-6.93
2007/08	2042.38	672.39	3.01	-10.42
Average			3.592	
EBL				
2003/04	539.78	127.37	4.24	-
2004/05	634.08	135.88	4.67	10.14
2005/06	783.19	211.12	3.71	-20.56
2006/07	855.98	366.76	2.33	-37.19
2007/08	1063.55	447.67	2.38	2.15
Average			3.466	
NIBL				
2003/04	415.68	78.10	5.32	-
2004/05	577.44	17.01	3.39	-36.28
2005/06	911.95	231.47	3.94	16.22
2006/07	1108.44	473.98	2.34	-40.60
2007/08	1450.33	648.12	2.24	-4.27
Average			3.446	

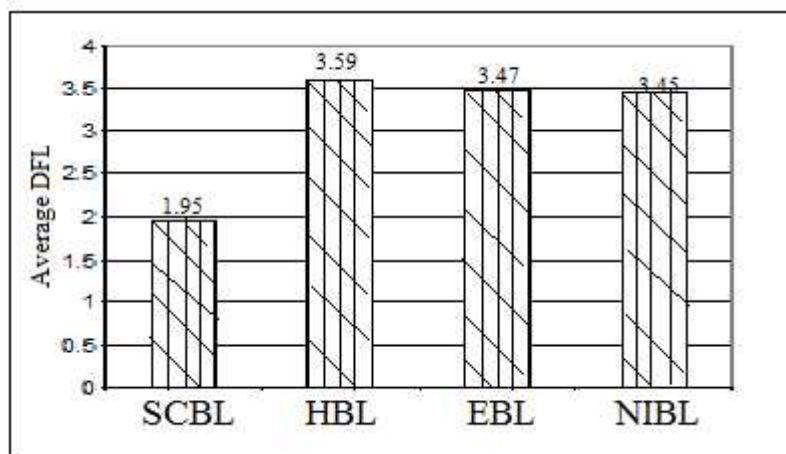
Source: AGM Reports

The calculation shows the degree of financial leverage of four sample banks. In case of SCBL the average degree of financial leverage is 1.946 times and the highest degree of financial leverage is 2.17 in the F.Y 2003/04, it means in this year SCBL had higher level of financial risk than the rest four years and the lowest degree of financial risk is 1.67 times in the F.Y 2007/08. Similarly, the average degree of financial leverage of HBL is 3.592 times and the highest value of degree of financial leverage is 4.01 in the F.Y 2005/06 and the lowest is 3.01 times in F.Y 2007/08. On an average the degree of financial leverage of EBL is 3.466 times and the highest

degree of financial leverage is 4.67 times in the F.Y 2004/05 and the lowest is 2.33 in F.Y 2006/07. The average degree of financial leverage of NIBL is 3.446 times and the highest degree of financial leverage is 5.32 times and lowest is 2.24 in the F.Y 2003/04 and 2007/0 respectively. EBL has the highest degree on financial leverage on an average among sampled banks and SCBL has the lowest degree on financial. The average Degree of financial leverage of SCBL, HBL, EBL&NIBL can be presented in following graph. leverage.

Figure-4.4

Degree of Financial Leverage



4.5 Return on Total Assets

Return on total assets ratio measures the profitability of bank that explains a firm to earn satisfactory return on all financial resources invested in the bank assets; otherwise its survival is threatened. The ratio explains net income for each unit of assets. Rate of return on total assets is major tool to judge the operational efficiency of bank. The return on total assets ratio of selected banks is given in Table 4.5 & Figure-4 As shown in Table 4.5, the average return on assets of SCBL is 2.46 percent. The

highest return on assets is in the F/Y 2004/05 and the lowest is in the F/Y 2005/06. In case of HBL, the average return on total assets is 1.15 percent and the highest return on total asset is 1.55 percent in the F/Y 2007/08 and the lowest is 0.90 percent in F/Y 2004/05. The average return on assets of EBL is 1.38 percent and of NIBL is 1.33 percent. Average return on assets of SCBL is highest among the four sample banks i.e. 2.46 percent. Hence, SCBL performed better than HBL, EBL, and NIBL. It has been able to utilize its resources in most profitable projects than that of other three sample banks. According to the table. The Return on total assets of SCBL, HBL, EBL & NIBL can be presented in Pie diagrams.

Figure- 4.5

Return on Total Asset of SCBL, HBL, EBL and NIBL

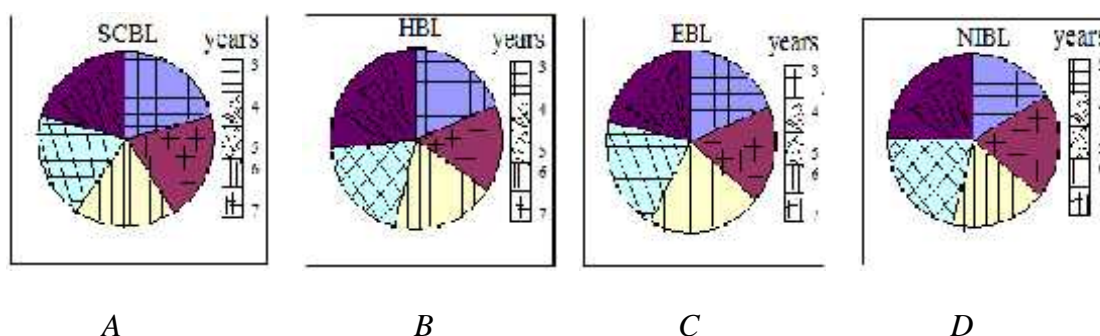


Table 4.5

Return on Total Asset of SCBL, HBL, EBL and NIBL

(In million)

F.Y	EAIT	Total Assets	Return on Total Assets%	Change (%)
SCBL				
2003/04	479.21	18443.07	2.59	-

2004/05	506.95	21000.5	2.41	-6.95
2005/06	537.80	23642.06	2.27	-5.81
2006/07	536.24	21781.68	2.46	8.37
2007/08	658.76	25776.33	2.55	3.66
Average			2.46	
HBL				
2003/04	235.02	20672.45	1.10	-
2004/05	212.12	23355.23	0.90	-18.18
2005/06	263.05	24762.04	1.10	22.22
2006/07	308.28	27844.70	1.10	0
2007/08	457.46	29460.39	1.55	40.90
Average			1.15	
EBL				
2003/04	85.33	6607.18	1.30	-
2004/05	94.17	8052.20	1.20	-7.69
2005/06	143.57	9608.56	1.50	25
2006/07	168.21	11732.52	1.43	-4.67
2007/08	237.29	15959.28	1.49	4.20
Average			1.38	
NIBL				
2003/04	57.09	4973.9	1.10	-
2004/05	116.82	9014.24	1.30	18.18
2005/06	152.67	13255.50	1.15	-11.54
2006/07	232.15	16063.54	1.44	25.22
2007/08	350.54	16274.06	1.64	13.89
Average			1.33	

Source: AGM Report

4.6 Analysis of return of Shareholder's Equity

Return on shareholder's equity is the measure of productivity of shareholders funds. It carries the relationship of return to shareholder's equity. Management's objective is to generate the maximum return on shareholder's investment in the firm. ROE is therefore the best single measure of the company's success in fulfilling its goal. Thus, this ratio is of great interest and value to the present as well as the perspective

shareholders and also of great concern to management which has the responsibility of maximizing the owner's welfare. The ratio equals the net profit after taxes divide by the common stockholder's equity.

$$\text{Return on Shareholder's Equity} = \frac{\text{Net profit after tax}}{\text{Shareholders Equity}}$$

The return on shareholders equity ratio is given in Table 4.6

Table 4.6 shows the analysis of return on shareholders equity of four banks over five years of time period. On an average, the return on shareholders equity is 36.34 percent of SCBL. The ratio of return on shareholders equity is decreasing till the F/Y 2006/07 and in the F/Y 2007/08 it has increased for SCBL. Similarly, the average return on shareholders equity of HBL is 22.64 percent. And the highest return on shareholders equity is 27.40 percent in F/Y 2003/04 and the lowest is 19.90 in F/Y 2005/06. The average return on shareholders equity is 22.63 percent of EBL and ratio is in fluctuating trend. NIBL has 18.90 percent of return on shareholders on an average. Among the four sample banks, SCBL has the highest return on shareholders equity i.e. 36.34 percent and NIBL has the lowest return on shareholders equity i.e. 18.90 percent.

Table 4.6

Return on Shareholder's Equity of SCBL, HBL, EBL and NIBL

(In million)				
F.Y	EAT	Shareholder's Equity	Return on Shareholder's Equity (%)	Change (%)
SCBL				
2003/04	479.21	1235.49	38.80	-

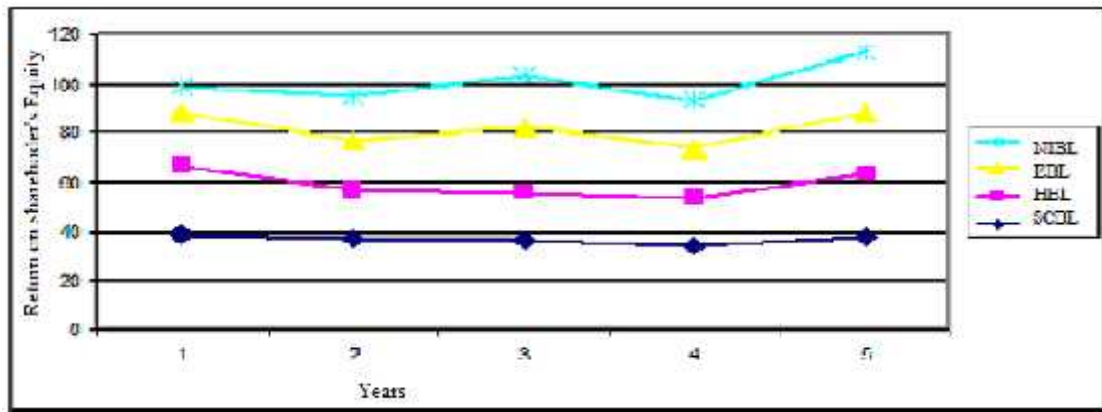
2004/05	506.95	1368.91	37	-4.64
2005/06	537.80	1495.74	36	-2.70
2006/07	536.24	1582.42	33.85	-5.97
2007/08	658.76	1754.14	37.55	10.93
Average			36.34	
HBL				
2003/04	235.02	858.115	27.40	-
2004/05	212.12	1063.132	20	-27.00
2005/06	263.05	1324.166	19.90	-0.5
2006/07	308.28	1541.747	19.99	0.45
2007/08	457.46	1766.176	25.90	29.56
Average			22.64	
EBL				
2003/04	85.33	390.91	21.82	-
2004/05	94.17	472.83	19.90	-8.80
2005/06	143.57	540.33	26.60	33.66
2006/07	168.21	832.62	20.20	-24.06
2007/08	237.29	962.81	24.65	22.03
Average			22.63	
NIBL				
2003/04	57.09	523.46	10.90	-
2004/05	116.82	638.53	18.30	67.88
2005/06	152.67	729.04	20.90	14.21
2006/07	232.15	1180.17	19.67	-5.89
2007/08	350.54	1415.42	24.75	25.83
Average			18.90	

Source: AGM Reports

According to the table. The Return on shareholders equity of SCBL, HBL, EBL &NIBL can be presented in following graphs.

Figure- 4.6

Return on Shareholder's Equity



4.7 Analysis of Degree of Financial Leverage

The analysis of capital structure is a concept of vital importance for this study. Here, both NI and NOI approach are considered to analyze the capital structure of the overall capitalization.

4.7.1 Net Income (NI) Approach

The total market value of firm is simply obtained by adding the market value of debt to the market value of equity.

$$K_o = \frac{EBIT}{V}$$

The overall capitalization rate of selected banks under NI approach was as shown in Table 4.7.

Table 4.7

Overall Capitalization Rate under NI Approach of SCBL, HBL, EBL, NIBL
(In million)

F.Y	EBIT	V	Ko
SCBL			
2003/04	1441.72	18443.07	7.81
2004/05	1499.21	21000.5	7.13

2005/06	1578.35	23642.06	6.67
2006/07	1539.67	21781.68	7.07
2007/08	1721.39	25776.33	6.68
Average			7.07
HBL			
2003/04	1387.34	20672.45	6.71
2004/05	1443.54	23355.23	6.18
2005/06	1516.32	24762.04	6.12
2006/07	1757.89	27844.70	6.30
2007/08	2042.38	29460.39	6.93
Average			6.45
EBL			
2003/04	539.78	6607.18	8.16
2004/05	634.08	8052.20	7.87
2005/06	783.19	9608.56	8.15
2006/07	855.98	11732.52	7.30
2007/08	1063.55	15959.28	6.66
Average			7.63
NIBL			
2003/04	415.68	4973.9	8.35
2004/05	577.44	9014.24	6.40
2005/06	911.95	13255.50	6.87
2006/07	1108.44	16063.54	6.90
2007/08	1450.33	16274.06	6.80
Average			7.06

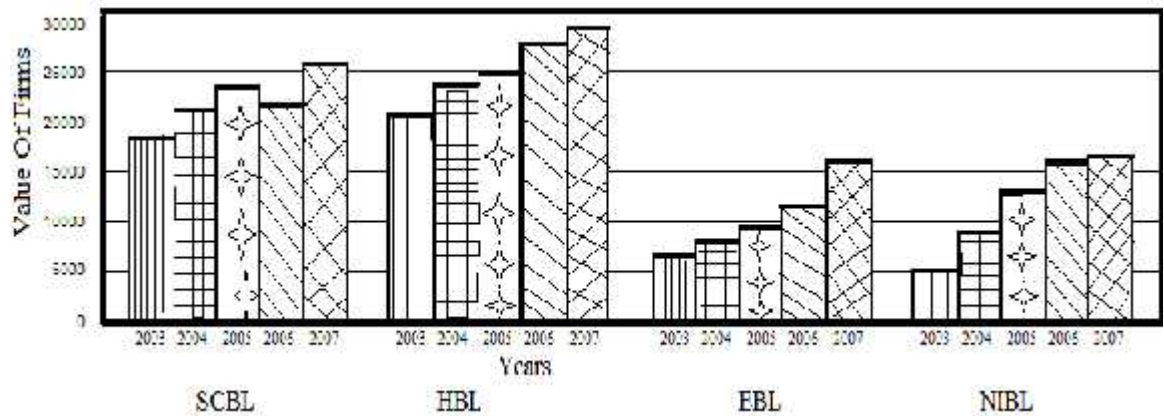
Source: AGM Reports

Over viewing the calculated overall capitalization rate in Table 4.6 EBL has the highest rate on average i.e. 7.63 percent and HBL has the lowest rate on average i.e. 6.45 percent. In case of SCBL, the average rate 7.07 percent and the highest rate is 7.81 percent in the F/Y 2003/4 and the lowest rate is 6.67 percent in F/Y 2005/6 in F/Y 2005/06. The average rate of NIBL is 7.06 percent and the highest rate is 8.35 percent in F/Y 2003/04 and the lowest rate is 6.40 percent in F/Y 2004/05. The

highest overall capitalization rate of HBL is 6.93 percent in F/Y 2007/08 and the lowest rate is 6.12 in F/Y 2005/06. And, the highest rate for EBL is 8.16 percent in F/Y 2003/04 and the lowest rate is 6.66 percent in F/Y 2007/08. According to the table. The Value of firms of SCBL, HBL, EBL & NIBL can be presented in bar diagrams.

Figure-4. 7

Overall Capitalization



4.7.2 Net Operating Income (NOI) Approach

The net operating income approach focus in the equity capitalization rate and appears as irrelevancy theory of capital structure. Equity capitalization rate is obtained simply dividing earning after tax by market value of the equity. Thus, under net operating income approach the equity capitalization is as follows:

$$K_e = \frac{EAT}{E}$$

The equity capitalization rate of selected banks under NOI approach is shown in Table 4.8.

Table 4.8

Equity Capitalization Rate under NOI Approach of SCBL, HBL, EBL and NIBL

(In million)

F.Y	EAT	Equity	Ke
SCBL			
2003/04	479.21	1235.49	38.8

2004/05	506.95	1368.91	37.0
2005/06	537.80	1495.74	36
2006/07	536.24	1582.42	33.9
2007/08	658.76	1754.14	37.6
Average			36.66
HBL			
2003/04	235.02	858.115	27.4
2004/05	212.12	1063.132	20
2005/06	263.05	1324.166	19.9
2006/07	308.28	1541.747	19.9
2007/08	457.46	1766.176	25.9
Average			22.62
EBL			
2003/04	85.33	390.91	21.83
2004/05	94.17	472.83	19.9
2005/06	143.57	540.33	26.6
2006/07	168.21	832.62	20.2
2007/08	237.29	962.81	24.64
Average			22.63
NIBL			
2003/04	57.09	523.46	10.9
2004/05	116.82	638.53	18.3
2005/06	152.67	729.04	20.94
2006/07	232.15	1180.17	19.67
2007/08	350.54	1415.42	24.77
Average			18.92

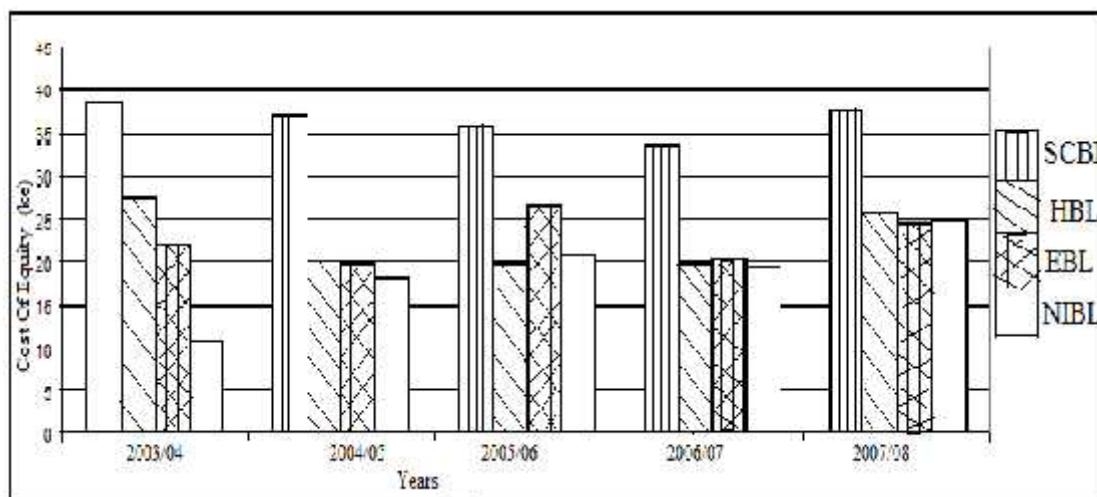
Source: AGM Reports

The average equity capitalization rate of SCBL is 36.66 percent and the highest rate is 38.80 percent in the F.Y 2003/04 and the lowest rate is 33.9 percent in the F.Y 2006/07 and it is in decreasing trend till F.Y 2004/07 and increased in F.Y 2007/08. In the same way, an average equity capitalization rate of HBL is 22.62 percent and the highest rate is 27.4 percent in the F.Y 2003/04 and the lowest rate is 19.9 percent in F.Y 2005/06 and 2006/07 each. The average equity capitalization rate of EBL is 22.62 percent and the average rate of equity capitalization rate of NIBL is 18.92 percent.

Among the four banks, the highest equity capitalization rate is 36.66 percent and it is of SCBL and the lowest rate is 18.92 percent which of NIBL. According to the table. The Return on total assets of SCBL, HBL, EBL & NIBL can be presented in multiple bar diagrams.

Figure- 4.8

Equity Capitalization of SCBL, HBL, EBL and NIBL



4.8 Correlation Analysis

4.8.1 Coefficient of Correlation between EBIT and Interest Payment

The relationship between EBIT and Interest Payment is evaluated in order to measure debt servicing capacity of the banks. It is assumed that there is a significant relationship between EBIT and Interest Payment. Here EBIT is (X) and interest payment is (Y). The following result is obtained for sample banks.

Table 4.9

Correlation between EBIT and Interest Payment of Sample Banks

Banks	r	r ²	P.E	Relationship	Significance/Insignificance
SCBL	-0.7012	0.4917	0.1533	Negative	Significance
HBL	0.9826	0.9655	0.1041	Positive	Significance

EBL	0.8425	0.7098	0.088	Positive	Significance
NIBL	0.9576	0.917	0.025	Positive	Significance

Source: Appendix B-E

From the above analysis, it is clear that the correlation between EBIT and interest charges in case of SCBL is -0.7012 which showed negative relationship. It infers that increase in EBIT is due to decrease in interest charge. In case of HBL bank, the correlation is positive, that is 0.9826 and it infers that increase in EBIT is due to increase in interest charge. Similarly, the correlation of EBL and NIBL is 0.8425 and 0.9576 respectively which showed the high positive relationship. There is significant relationship between EBIT and interest charges in all three banks. The value of 'r²' is 0.4917, 0.9655, 0.7098, 0.917 for SCBL, HBL, EBL and NIBL respectively, which depict that change in EBIT is explained by 49.17% due to increase in interest charges in case of SCBL, 96.55% in case of HBL, 70.98% in case of EBL and 91.7% in case of NIBL.

4.8.2 Coefficient of Correlation between Overall Capitalization Rate and Debt- Equity Ratio

Correlation coefficient between overall capitalization rate and debt- equity ratio is calculated to measure whether increase in the debt-equity ratio decrease overall capitalization rate of the sample banks. Correlation coefficient between Ko and D/E ratio of sample banks are given below in Table 4.10.

Table 4.10

Correlation between Overall Capitalization Rate and Debt- Equity Ratio

Banks	r	r²	P.E	Relationship	Significance/Insignificance
SCBL	-0.16	0.03	0.313	Negative	Insignificance
HBL	-0.50	0.25	0.227	Negative	Insignificance
EBL	0.48	0.23	0.23	positive	Significance
NIBL	-0.75	0.56	0.132	Negative	Insignificance

Source: Appendix F-I

From the above analysis, correlation between overall capitalization rate and debt equity ratio of SCBL is -0.16 , which indicate negative relationship. In case of HBL, correlation is -0.50 that showed the medium negative relationship. Similarly, the correlation of EBL is 0.48 , which showed the positive relationship, and the correlation of NIBL is -0.75 that indicate the negative relationship of overall capitalization rate and debt- equity ratio. The P.E of SCBL, HBL, NIBL is 0.313 , 0.227 , 0.132 respectively, which clarified that the relationship between overall capitalization rate and debt- equity ratio is insignificant because 'r' is less than P.E. But in case of EBL 'r' is greater than P.E, which implied that relationship between overall capitalization rate and debt- equity ratio is significant. The value of 'r²' is 0.03 , 0.25 , 0.23 , 0.56 for SCBL, HBL, EBL and NIBL respectively which depict that change in overall capitalization rate is explained by 3% due to change in debt- equity ratio in case of SCBL, 25% in case of HBL, 23% in case of EBL and 56% in case of NIBL.

4.9 Cost of Capital and Leverage

4.9.1 Descriptive Statistics of the Variables

Before reporting the main results, it is useful to determine to mean and standard deviation of the variables used in the regression analysis.

Table 4.11

Mean and Standard Deviation of the Variables of SCBL and HBL

Variables	No. of Observation	Mean	Standard Deviation
Average Cost of Capital (Ko)	10	0.068	0.005
Leverage1(L1)	10	0.94	0.001
Size(LogS)	10	10.162	0.223
Growth(G)	10	0.073	0.075

Dividend Payout Ratio(DPR)	10	0.486	0.291
Earning Variability (E,V)	10	3.596	8.103
Liquidity(Liq)	10	0.091	0.021

Source: Appendix J

It is clear from the table 4.11 and 4.12 that the average cost of capital of SCBL and HBL is less than that of EBL and NIBL and the variability in the average cost of capital is also lesser in SCBL and HBL that is 0.005 in SCBL and HBL but in case of EBL and NIBL it is 0.007. Size of firm in EBL and NIBL is lesser than SCBL and HBL and the growth of the firm is also less in EBL and NIBL than SCBL and HBL. Regarding dividend payout ratio, SCBL and HBL has paid more dividend than EBL and NIBL. Earning variability of SCBL and HBL is more than EBL and NIBL but Liquidity is more in EBL and NIBL than SCBL and HBL.

Table 4.12

Mean and Standard Deviation of the Variables of EBL and NIBL

Variables	No. of Observation	Mean	Standard Deviation
Average Cost of Capital (Ko)	10	0.073	0.007
Leverage1(L1)	10	0.932	0.015
Size(LogS)	10	10.026	0.184
Growth(G)	10	0.303	0.209

Dividend Payout Ratio(DPR)	10	0.387	0.124
Earning Variability (E,V)	10	0.646	0.451
Liquidity(Liq)	10	0.215	0.130

Source: Appendix K

4.9.2 Correlation Coefficient between Variables:

Table 4.13 and 4.14 indicate the correlation between the variables in SCBL and HBL and EBL and NIBL respectively.

Table 4.13

Correlation Matrix of the Variables of the SCBL and HBL

Variables	Ko	L1	LogS	G	DPR	E.V	Liquidity
Ko		-0.643	-0.365	-0.513	0.789	-0.508	-0.773
L1			-0.206	0.142	-0.738	0.311	0.753
LogS				0.199	-0.003	0.062	-0.087
G					-0.233	-0.043	0.410
DPR						-0.586	-0.854
E.V							0.452
Liquidity							

Source: Appendix L

In SCBL and HBL, the cost of capital is negatively correlated with leverage. This indicates that the cost of debt financing is lesser than the cost of internal source funds. Similarly, it has negative relationship with size, growth, earning variability and liquidity and positively correlated with dividend payout ratio. Size has negative correlation with dividend payout ratio and liquidity and positively correlated with growth and earning variability. Growth has positive relationship with liquidity and

negative relationship with Dividend payout ratio and earning variability. Dividend payout ratio is negatively correlated with earning variability and liquidity. There is positive relationship between earning variability and liquidity.

Table 4.14
Correlation Matrix of the Variables of the EBL and NIBL

Variables	Ko	L1	LogS	G	DPR	E.V	Liquidity
Ko		-0.405	-0.689	-0.748	-0.030	-0.782	0.617
L1			0.591	0.325	0.544	0.539	-0.837
LogS				0.277	0.009	0.647	-0.718
G					0.379	0.650	-0.566
DPR						-0.336	-0.461
E.V							-0.682
Liquidity							

Source: Appendix M

In EBL and NIBL, the cost of capital is negatively correlated with leverage, size, growth, dividend payout ratio and earning variability and positively correlated with liquidity. The negative sign of correlation coefficient between average cost of capital and growth indicates that the increasing growth of the firm leads decrease in average cost of capital and negative relationship of cost of capital with size indicates the bigger size of lower is the cost of capital. The positive relationship between cost of capital and liquidity shows that increasing liquidity of the firm bring the higher cost of capital. Leverage has the positive relationship to all variables except liquidity. Size is positively correlated with growth, dividend payout ratio and earning variability and negatively correlated with liquidity. There is positive relationship of growth with dividend payout ratio and earning variability but it has negative relation with liquidity. Dividend payout ratio is negatively correlated with earning variability and liquidity and there is negative relationship between earning variability and liquidity.

The important point to be noted here is that the relation of cost of capital to the leverage, other being constant, clearly shows that it has negative co- relationship in all sample banks.

4.9.3 Simple Regression Analysis of the Variables

In order to validate relationship between cost of capital and other explanatory variables the simple regression equations are estimated. The result for the pooled data of the sample banks SCBL and HBL, one group and another group of two banks i.e. EBL and NIBL are presented in the Table 4.15 and 4.16 which gives us valuable information.

Table 4.15

Simple Regression Results with Average Cost of Capital as Dependent Variable of the SCBL and HBL

Equation	No. of Observation	Constant (a)	Regression Co-efficient	R2	S.E of Beta Coefficient	t-value
$ko=a+b1L1$	10	0.39	-0.320	0.414	0.135	-2.375
$ko=a+b2LogS$	10	0.151	-0.008	0.134	0.007	-1.111
$ko=a+b2G$	10	0.070	-0.034	0.264	0.020	-1.692
$Ko=a+b2DPR$	10	0.061	0.013	0.624	0.004	3.644
$ko=a+b2E.V$	10	0.069	0	0.258	0	-1.669
$ko=a+b2Liq$	10	0.083	-0.717	0.598	0.049	-3.448

Source: Appendix N

In SCBL and HBL as far as regression of average cost of capital is concerned, regression coefficient is negative, which indicates that among others average cost of capital decreases as the leverage increases. However, t value is not statically significant and value of R2 is moderate and this indicates that 41.4% of variation in cost of capital is explained by leverage variable. With respect to the regression of average cost of capital on size, the result concluded that as the size of the firm decreases, the cost of capital increases since regression coefficient is negative and the value of R2 is 0.134 which indicates that the relationship is not that good because

when value of R2 is closer to 1, then only relation is good and t- value is insignificant. The regression of average cot of capital on growth of firm indicates that increasing growth can lead to decrease in cost of capital and coefficient of multiple determinant can not considered as significant. The regression of average cot of capital and payout ratio indicates that cost of capital increases when firm pays higher dividends or shareholders prefer current dividends and the value of R2 is moderately high. The regression coefficient of average cost of capital and earning variability is zero, which indicates these two variables are uncorrelated. And t- value is statistically insignificant. The negative sign of regression coefficient of cost of capital on liquidity suggests that cost of capital decreases as liquidity increases and coefficient of multiple determinant can be considered as significant since its value is 0.598.

Table 4.16

Simple Regression Results with Average Cost of Capital as Dependent Variable Of the EBL and NIBL

<i>Equation</i>	No. of Observation	Constant (a)	Regression Co-efficient	R2	S.E of Beta efficient	t-value
$ko=a+b1L1$	10	0.225	-0.162	0.165	0.129	-1.255
$ko=a+b2LogS$	10	0.350	-0.028	0.479	0.010	-2.693
$ko=a+b2G$	10	0.081	-0.025	0.561	0.008	-3.197
$ko=a+b2DPR$	10	0.074	-0.001	0.001	0.014	-0.086
$ko=a+b2E.V$	10	0.082	-0.013	0.613	0.004	-3.556
$ko=a+b2Liq$	10	0.067	0.033	0.381	0.015	2.220

Source: Appendix N

The regression results of cost of capital on leverage in EBL and NIBL suggests that the cost of capital on leverage increases as leverage decreases because the regression coefficient is negative. The value of R2 is 0.165 which indicates which indicates that their relation is not so correlated and t-value is also insignificant. With respect to the regression of average cot of capital on size, the result concluded that as the size of the firm decreases, the cost of capital increases since the regression co-efficient is

negative. However, the coefficient of multiple determinants can be considered as good but t- value is not statically significant. The regression of average cost of capital on growth of the firm indicates that increasing growth can lead to decrease in cost of capital. The value of R2 is 0.561 which shows that their relation is good but t- value is insignificant. The negative sign of regression coefficient of cost of capital on dividend payout ratio suggests that cost of capital decreases as dividend payout ratio increases and value of R2 is very small. The regression coefficient of average cost of capital on earning variability indicates that cost of capital increases as the risk decreases. The positive regression coefficient of cost of capital on liquidity indicates that increasing idle funds can lead to higher cost of capital. The main concern of this study is with the performance of the leverage variables. The coefficient of leverage in sample banks is negative. However, the co-efficient are not statistically significant. Thus, the results neither clearly support the traditional view or the Modigliani and millers view nor reject them. But the result is closer to the traditional approach.

4.9.4 Multiple Regression Analysis

To make more reliability in the analysis, multiple regression analysis is done and the result is presented in the Table 4.17 and 4.18 for both groups SCBL & HBL and EBL& NIBL.

Table 4.17

Multiple Regression Results with Average Cost of Capital as Dependent Variable of the SCBL and HBL
($k_o = a + b_1L_1 + b_2LogS + b_3G + b_4DPR + b_5E.V + b_6Liq$)

	Constant	Leverage e1	Logs	Growth	DPR	E.V	Liquidity	R2	F

Value	0.3 12	-0.165	-0.008	-0.018	0.004	0	-0.034	0.89 7	4.36 3
t-value		-1.04	-1.870	-1.206	0.559	-0.752	-0.352		
S.E of beta coefficient		0.158	0.005	0.015	0.007	0	0.097		

Source: Appendix O

From the table, it is clear that the cost of capital increases as the leverage decreases because the regression coefficient is negative but t-value is statistically insignificant. With respect to the size of the firm, the co-efficient is negative that suggests that cost of capital increases as the size decreases and t-value is not significant. The coefficient of determination i.e. $R^2=0.897$ which indicates that it is highly correlated. The negative sign of cost of capital on growth of the firm suggests that cost of capital decreases as the growth increases and t-value is also statistically insignificant. . The negative sign of regression coefficient of cost of capital on dividend payout ratio suggests that cost of capital decreases as dividend payout ratio increases. The regression coefficient of average cost of capital and earning variability is zero which indicates these two variables are uncorrelated. And t- value is statistically insignificant. The negative sign of regression coefficient of cost of capital on liquidity suggests that cost of capital decreases as liquidity increases.

Table 4.18

Multiple Regression Results with Average Cost of Capital as Dependent Variable of EBL and NIBL

($k_o = a + b_1L_1 + b_2LogS + b_3G + b_4DPR + b_5E.V + b_6Liq$)

	Constant	Leverage	Logs	Growth	DPR	E.V	Liquidity	R2	F
Value	0.374	-0.074	-0.023	-0.027	0.011	0.001	-0.012	0.870	3.36
t-value		-0.358	-1.553	-1.874	0.638	0.105	-0.418		
S.E of beta coefficient		0.207	0.015	0.014	0.017	0.008	0.030		

Source: Appendix O

From the table, it is clear that the cost of capital increases as the leverage decreases because the regression coefficient is negative but t-value is statistically insignificant. . The co-efficient of determination i.e.R²=0.870 which indicates that it is highly correlated. The negative sign of cost of capital on size suggests that cost of capital decreases as the size increases and t-value is statistically insignificant. The regression of average cost of capital on growth of the firm indicates that increasing growth can lead to decrease in cost of capital. The regression of cost of capital and dividend payout ratio indicates that the cost of capital increases when firm pays higher dividends or shareholders prefer current dividends. The regression coefficient is positive for earning variability and statistically significant. The negative sign of regression coefficient of cost of capital on liquidity suggests that cost of capital decreases as liquidity increases.

4.10 Cost of Equity and Leverage

4.10.1 Correlation Analysis

Table 4.19 and 4.20 indicate the correlation between the variables in SCBL and HBL and EBL and NIBL respectively.

Table 4.19

Correlation Matrix of the Variables of the SCBL and HBL

Variables	Ke	L2	LogS	G	DPR	E.V	Liquidity
Ke		-0.682	-0.270	-0.149	0.928	-0.507	-0.814
L2			-0.243	0.226	-0.726	0.12	0.714
LogS				0.199	-0.003	0.063	-0.088
G					-0.233	-0.043	0.410
DPR						-0.586	-0.854
E.V							0.452
Liquidity							

Source: Appendix P

In SCBL and HBL, the cost of equity is negatively correlated with leverage, size, growth, earning variability, and liquidity and positively with dividend payout ratio. The leverage has positive correlation with growth of the firm, earning variability and liquidity and it has negative relationship with size and dividend payout ratio. The negative correlation between leverage and size indicates that decrease in firm's size is due to increase in debt financing. Size is negatively correlated with dividend payout ratio and liquidity and positively correlated with growth and earning variability. Growth of the firm has positive relationship with liquidity and negative relationship with dividend payout ratio and earning variability. Payout ratio is negatively related with earning variability and liquidity and there is positive relationship between earning variability and liquidity.

Table 4.20

Correlation Matrix of the Variables of the EBL and NIBL

Variables	Ke	L2	LogS	G	DPR	E.V	Liquidity
Ke		-0.151	0.178	0.039	0.068	0.189	-0.319
L2			0.214	0.266	-0.185	0.668	-0.195
LogS				0.277	0.009	0.647	-0.718
G					0.379	0.650	-0.566
DPR						-0.033	-0.461
E.V							0.682
Liquidity							

Source: Appendix Q

In EBL and NIBL, cost of equity is negatively correlated with leverage and liquidity but positively correlated with size, growth, dividend payout ratio and earning variability. In the same way, leverage is negatively correlated with dividend payout ratio and liquidity and positively correlated with size, growth and earning variability. There is positive relationship of size with growth, dividend payout ratio and earning variability and negative relationship with liquidity. Growth of the firm is positively correlated with dividend payout ratio and earning variability on the other hand, negatively correlated with liquidity. There is negative relationship of dividend payout ratio with earning variability and liquidity and earning variability is positively correlated with liquidity. Thus, above correlation matrixes clearly show that the cost of equity is negatively correlated with leverage in both group of banks, that is, SCBL&HBL and another EBL and NIBL, which suggests that the cost of equity decreases as the leverage increases.

4.10.2 Simple Regression Analysis as Cost of Equity Dependent Variable

In order to validate relationship between cost of equity and other explanatory variables, the simple regression equations are estimated. The results of these equations are presented in Table 4.21 and 4.22 for both group SCBL & HBL and EBL& NIBL respectively.

Table 4.21

Simple Regression Results with Cost of Equity as Dependent Variable of the SCBL and HBL

Equation	No. of Observation	Constant (a)	Regression Co-efficient	R2	S.E of beta Coefficient	t- value
$ke=a+b_1L_1$	10	0.55	-0.016	0.465	0.006	-2.637
$ke=a+b_2\text{LogS}$	10	1.219	-0.091	0.073	0.114	-0.794
$ke=a+b_2G$	10	0.307	-0.149	0.022	0.348	-0.428
$ke=a+b_2\text{DPR}$	10	0.180	0.239	0.861	0.034	7.048
$ke=a+b_2E.V$	10	0.314	-0.005	0.257	0.003	-1.664
$ke=a+b_2\text{Liq}$	10	0.542	-2.704	0.663	0.682	-3.964

Source: Appendix R

In SCBL and HBL as far as regression of cost of equity on leverage is concerned, regression coefficient is negative, which indicates that cost of equity decreases as leverage increases. The coefficient of determination is moderately high and the t value is insignificant. With respect to the regression of cost of equity on size, the result leads to the conclusion that cost of equity decreases as size increases but coefficient of determination can be considered as highly correlated and t-value is statistically insignificant. The negative sign of cost of equity on growth suggests that cost of equity increases as the firm's growth declines, on the other hand, coefficient of determination can not be considered as satisfactory and t-value is not significant. The regression coefficient is positive with respect to dividend payout ratio which indicates that the cost of equity increases when firm pays higher dividends or shareholders prefer current dividend and t-value is significant. The negative sign of regression coefficient of cost of equity on earning variability suggests that cost of

equity decreases as operating risk increases. The regression result of cost of equity on liquidity shows that as the liquidity increases cost of equity declines, however the coefficient of determination is significant.

Table 4.22

Simple Regression Results with Cost of Equity as Dependent Variable of the EBL and NIBL

Equation	No. of Observation	Constant (a)	Regression Co-efficient	R2	S.E of beta Coefficient	t- value
$ke=a+b_1L_1$	10	0.058	0.018	0.037	0.032	0.556
$ke=a+b_2\text{LogS}$	10	-1.999	0.231	0.032	0.450	0.513
$ke=a+b_2G$	10	0.299	0.042	0.002	0.381	0.11
$ke=a+b_2\text{DPR}$	10	0.277	0.088	0.005	0.457	0.193
$ke=a+b_2E.V$	10	0.247	0.099	0.036	0.183	0.544
$ke=a+b_2\text{Liq}$	10	0.430	-0.546	0.105	0.574	-0.952

Source: Appendix R

In case of EBL and NIBL, the positive sign of regression coefficient of cost of equity on leverage suggests that cost of equity increases as leverage increases, on the other hand, coefficient of determination is not highly correlated but t-value is statistically significant. The regression of equity on size reveals that increasing size leads to increase in cost of equity and t-value is significant. The regression coefficient is positive with respect to the growth, which suggests that the cost of equity increases as firm achieve growth and t-value is significant. The regression coefficient of dividend payout ratio is positive and t-value is statistically significant. The positive sign of regression coefficient of cost of capital on earning variability suggests that as the risk increases, cost of equity also increases and coefficient of determination is highly correlated so satisfactory and t-value is statistically significant. The regression coefficient of is negative with respect to liquidity, which indicates that cost of equity increases as liquidity decreases and t-value is also statistically insignificant. From the

analysis of above results it may be concluded that cost of equity, in some cases decreases with leverage and in some cases increases with leverage.

4.10.3 Multiple Regression Analysis as Cost of Equity Dependent Variable

To make more reliability in this analysis, multiple regression analysis is done and the result is presented in the Table 4.23 and 4.24 for both group SCBL& HBL and EBL & NIBL.

Table 4.23

Multiple Regression Results with Cost of Equity as Dependent Variable of the SCBL and HBL

$$(k_e = a + b_1L_2 + b_2\text{LogS} + b_3G + b_4\text{DPR} + b_5E.V + b_6\text{Liq})$$

	Constant	Leverage ²	Logs	Growth	DPR	E.V	Liquidity	R ²	F
Value	1.66	-0.003	-0.129	0.249	0.164	0.001	-1.143	0.99	59.79
T-value		-1.299	-6.434	3.880	4.566	0.912	-2.894		
S.E of beta Co-efficient		0.002	0.020	0.064	0.036	0.001	0.395		

Source: Appendix S

It can be observed from the table that the regression coefficient of leverage is negative which indicates that the cost of equity increases as the leverage decreases on the other hand, t- value is statistically insignificant. The co-efficient of determination i.e.R²=0.992 which indicates that it is highly correlated. The negative sign of cost of equity on size suggests that cost of equity decreases as the size increases and t-value

is statistically insignificant. The regression coefficient is positive with respect to the growth, which suggests that the cost of equity increase as firm achieve growth and t-value is statistically significant. The regression coefficient of cost of equity on dividend payout ratio is positive which supports the contentions that investors prefer current dividend. The positive sign of regression coefficient of cost of equity on earning variability suggests that cost of equity increases as the risk rise and t-value is significant. The negative sign of regression coefficient of cost of capital on liquidity suggests that cost of capital decreases as liquidity increases and t-value is statistically insignificant.

Table 4.24

Multiple Regression Results with Cost of Equity as Dependent Variable of the EBL and NIBL

$$(k_e = a + b_1L_2 + b_2\text{LogS} + b_3G + b_4\text{DPR} + b_5E.V + b_6\text{Liq})$$

	Constant	Leverage²	Logs	Growth	DPR	E.V	Liquidity	R²	F
Value	4.988	-0.010	-0.417	-0.353	-0.083	0.080	-1.252	.17	0.1
t-value		-0.091	-0.337	-0.292	-0.048	0.101	-0.583		
S.E of Beta coefficient		-0.107	1.237	1.209	1.717	0.794	2.150		

Source: Appendix S

It is clearly seen from the table that, the negative sign of regression coefficient of cost of equity on leverage suggests that as the leverage increases, cost of equity decrease and t-value is statistically insignificant. The regression of equity on size reveals that increase in size leads to decrease in cost of equity; on the other hand, t-value is insignificant. With respect to the regression of cost of equity on growth, the result leads to the conclusion that cost of equity increase as the firm's growth falls and t-

value is insignificant. The negative sign of regression coefficient of cost of equity on dividend payout ratio suggests that cost of capital decreases as dividend payout ratio increases and t-value is insignificant. The regression coefficient of equity on earning variability reveals that cost of equity increases as the risk rises. The t-value is statistically significant. The regression coefficient of equity on liquidity is negative and t-value is also not significant.

On the basis of the regression results described above, no clear-cut generalization can be made regarding the role of corporate debt influencing the cost of equity. Only it can be stated that in certain cases, the cost of equity will decrease up to a point. The use of debt may increase the cost of equity and yet in some cases, the use of debt may not have any impact on the cost of equity up to a point. This inconsistent role of debt is not unexpected. Firstly, because the firms may widely differ with respect to their economic characteristics and as results, they are exposed to different degrees of riskiest, which may unassociate with the level of debt. Secondly, investors may show different preferences for the different equities traded by them. So it is clear from the above presentation that the capital structure composition of Nepalese firm is determined with considering the capital structure theories.

4.11 Major Findings of the Study

This study deals with the capital structure of commercial banks and used simple as well as multiple regression equations to accomplish the objectives. It employed the simple regression equation to examine the relationship of cost of capital with each of the selected explanatory variables and multiple regression equations is used to examine the relationship between cost of capital and leverage and cost of equity and debt equity ratio together with other explanatory variables. The major findings of the study are described in the following.

- The average D/E ratio of SCBL is 13.91 times that mean the debt capital financing is more than about 14 times higher than shareholders equity. HBL has D/E ratio of

18.90 times on an average. The average ratio D/E ratio of EBL is 15.48 times that means debt financing is more than 15 times higher than shareholders equity with the bank. NIBL's D/E ratio is 5.80 times in F.Y 03/04, which is the lowest in comparison with other banks. NIBL has D/E ratio of 13.13 times on an average.

- The total debt to total asset ratio reveals that the commercial banks are highly levered on five years time horizon. It means the assets of selected banks have been financed more by funds collected from creditors. SCBL has the average ratio of 93 percent, in other words, creditors finance 93 percent of bank fund and remaining 7 percent is shareholders claim. HBL has average ratio of 95 percent and total debt to total assets ratio is in decreasing trend. The average ratio of EBL is 94 percent and NIBL has 93 percent. The creditor's margin of safety is very low; this means they have high risk.

- SCBL and NIBL have higher I/C ratio and EBL and HBL have lower average I/C ratio. SCBL has a very high interest coverage ratio on an average. 1.96 times. The lowest I/C ratio 1.39 times on an average and this is of HBL. The computed I/C ratio of banks in above analysis shows how many times the interest charges are covered by funds that are ordinarily available to pay the interest.

- SCBL and HBL have 2.46 and 1.15 percent average return on assets respectively. Similarly, average return on assets of EBL and NIBL is 1.38 and 1.33 percent respectively. Return on assets of SCBL, EBL and NIBL are higher than HBL. Hence, these three banks performed better than HBL and have been able to utilize its resources in most profitable projects than HBL.

- Return on shareholder's equity of SCBL has the highest ratio among the selected banks. On an average, it has 36.34 percent which is highest ROE income par is on with other banks. The average ratio of HBL, EBL, and NIBL are 22.64, 22.63, and 18.90 percent respectively.

- EBL has the highest overall capitalization rate on average i.e. 7.63 percent and HBL has the lowest rate on average i.e. 6.45 percent. The overall capitalization rate of EBL and SCBL is higher than that of HBL and NIBL

- Over viewing the above computed equity capitalization rate, equity cost of banks are fluctuating in nature. The average equity capitalization rate of SCBL is 36.66 percent and this is the highest rate among banks. The equity capitalization rate of SCBL and HBL is higher than EBL and NIBL
- The correlation between EBIT and interest charges in case of HBL is 0.9826, which showed the positive relationship, it infers that increase in EBIT is due to increase in interest charges. In case of SCBL the correlation between EBIT and interest charges is -0.7012 which shows negative relationship. Similarly, correlation between EBIT and interest charges of EBL and NIBL is 0.8425 and 0.9576 respectively, which shows high positive relationship. Therefore, it is depicted that the value of 'r' in these banks are significant.
- The correlation between overall capitalization rate and debt-equity ratio of SCBL is -0.16, which indicates negative relationship. Similarly, correlation between overall capitalization rate and debt-equity of HBL and NIBL is -0.50 and -0.75 respectively, which shows negative relationship. Hence it can be concluded that the value of 'r' is insignificant and there is no proper relationship between overall capitalization rate and debt-equity ratio of SCBL, EBL and NIBL. There is positive relation between overall capitalization rate and debt-equity ratio of HBL.
- It was found that average cost of capital of SCBL and HBL is less than EBL and NIBL. The variability in the average cost of capital is also lesser in SCBL and HBL. Size of the firm in EBL and NIBL is lesser than SCBL and HBL. The growth is more in EBL and NIBL than SCBL and HBL. Regarding the dividend payout ratio, SCBL and HBL has paid more dividends than EBL and NIBL. SCBL and HBL have more risk than NIBL and EBL. Liquidity is high in EBL and NIBL than SCBL and HBL.
- In EBL and NIBL, the average cost of capital is negatively correlated with leverage, size, growth, dividend payout ratio and earning variability and positively correlated with liquidity only. The negative sign indicates that if one variable increases another variable decreases, on the other hand, positive sign when one variable increases another variable also increases.

- Leverage has the positive relationship with all the variables except liquidity. The size of the firm is positively correlated with growth, dividend payout ratio and earning variability but negatively correlated with liquidity. There is positive relation of growth with earning variability and liquidity and negative relation with liquidity. Earning variability is negatively correlated with liquidity.
- In case of SCBL and HBL, the average cost of capital is negatively correlated with leverage, size and growth, earning variability and positively correlated with dividend payout ratio. In the same way, size has positive relationship with dividend payout ratio and liquidity and has negative relationship with growth and earning variability. Growth of the firm is positively correlated with dividend payout ratio and earning variability and negatively correlated with liquidity. There is positive relationship between earning variability and liquidity.
- In case of HBL and EBL, with respect to the regression of average cost of capital on leverage, the result concluded that cost of capital increases as the leverage decreases and coefficient of determination is satisfactory but t-value statistically insignificant. The regression coefficient of cost of capital on size, growth and liquidity is negative; on the other hand t- value is statistically in significant. The regression coefficient of average cost of capital and earning variability is zero that indicates these two variables are uncorrelated. And t-value is statistically insignificant.
- Similarly, in case of EBL and NIBL, the regression coefficient of average cost of capital on leverage is negative which, suggests that cost of capital increases as the leverage decreases. There is negative relation of cost of capital with size, growth, dividend payout ratio and earning variability and t-value is insignificant and positive relationship with liquidity where t- value is also significant.
- The main concern of this study is with the performance of the leverage variables. The coefficient of leverage in sample banks is negative. However, the co-efficient are not statistically significant. Thus, the results neither clearly support the traditional view or the Modigliani and millers view nor reject them. But the result is closer to the traditional approach.

- It is clear from the study that coefficient of average cost of capital for leverage, size, growth, liquidity and earning variability is negative and positive for dividend payout ratio in SCBL and HBL. The coefficient of determination is highly correlated. In case of EBL and NIBL, the regression coefficient of average cost of capital for leverage, size, growth and liquidity is negative and for dividend payout ratio and earning variability. The coefficient of determination is highly correlated. The value of coefficient of determination is satisfactory in EBL and NIBL too, but it is greater in SCBL and HBL
- From the study it was found that in SCBL and HBL, the cost of equity is negatively correlated with leverage, size growth, earning variability, and liquidity and positively correlated with dividend payout ratio. The leverage has positive correlation with size and dividend payout ratio and negative correlation with growth, earning variability, and liquidity. Size is negatively correlated with dividend payout ratio and liquidity. There is positive relationship between earning variability and liquidity.
- In EBL and NIBL, cost of equity is positively correlated with size, growth, dividend payout ratio and earning variability and negatively correlated with leverage and liquidity. Leverage has positive relationship with size, growth and earning variability and negative relationship with dividend payout ratio and liquidity. Size is positively correlated with growth, earning variability and dividend payout ratio but negatively correlated with liquidity.
- In SCBL and HBL, as far as, regression of cost of equity on leverage is concerned, regression coefficient is negative which indicates that cost of equity decreases as leverage increases. However, the coefficient of determination is moderately high and t-value is insignificant. The regression coefficient of cost of equity on size, growth, earning variability and liquidity is negative and positive on dividend payout ratio.
- Similarly, in EBL and NIBL, regression result of cost of equity on leverage suggests that cost of equity on leverage increases as leverage increases. The regression coefficient of cost of equity on size, growth, dividend payout ratio and earning variability is positive.

- It is found that the regression coefficient of leverage is negative in both groups, which indicates that the cost of equity increases as leverage decreases. The regression coefficient of both groups is positive which suggests that as the risk increases the cost of equity increases. The coefficient of determination of SCBL and HBL can be considered as highly correlated as the value of R^2 is 0.992; on the other hand, the coefficient of determination is not satisfactory as its value is small.
- As the coefficient of leverage variable is insignificant in both groups, in general, the traditional view, the cost of equity remains horizontal over a wide range of leverage is supported. From the results described above, no clear generalization can be made regarding the role of corporate debt influencing the cost of equity. Only it can be stated that in certain cases, the cost of equity will decrease up to a point, in other words, the use of debt may increase the cost of equity.

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APPENDIX- A

Data Sheet of Sample Banks

1. Standard Chartered Bank Nepal Limited

2. Himalayan Bank Limited

3. Everest Bank Limited

4. Nepal Investment Bank Limited

Standard Chartered Bank Nepal Limited

F.Y	Total debt	Total equity	Total assets	EBIT	Interest	EBT	EAT	DPS	EPS
2003/04	17207.63	1235.49	18443.07	1441.72	962.51	663.44	479.21	100	141.13
2004/05	19631.59	1368.91	21000.5	1499.21	992.26	715.17	506.95	110	149.30
2005/06	22146.33	1495.74	23642.06	1578.35	840.76	773.59	537.80	110	143.55
2006/07	20199.26	1582.42	21781.68	1539.67	659.37	880.30	536.24	120	143.14
2007/08	24022.19	1754.14	25776.33	1721.39	4111.36	1028.93	658.76	130	175.84

Himalayan Bank Limited

F.Y	Total debt	Total equity	Total Assets	EBIT	Interest	EBT	EAT	DPS	EPS
2003/04	235.02	858.115	20672.45	1387.34	1038.29	349.05	235.02	25.00	60.26
2004/05	212.12	1063.13	23355.23	1443.54	1083.51	360.03	212.12	1.31	49.45
2005/06	263.05	1324.16	24762.04	1516.32	1095.75	420.57	263.05	0.00	49.50
2006/07	308.28	1541.74	27844.70	1757.89	1235.35	522.54	308.28	11.58	47.91
2007/08	457.46	1766.17	29460.39	2042.38	5822.89	672.39	457.46	30.00	59.24

Everest Bank Limited

F.Y	Total debt	Total equity	Total Assets	EBIT	Interest	EBT	EAT	DPS	EPS
2003/04	6216.27	390.91	6607.18	539.78	412.41	127.37	85.33	20.00	32.91
2004/05	7579.37	472.83	8052.20	634.08	498.2	135.88	94.17	20.00	29.90
2005/06	9068.24	540.33	9608.56	783.19	572.07	211.12	143.57	20.00	45.58
2006/07	10899.90	832.62	11732.52	855.98	489.22	366.76	168.21	20.00	54.22
2007/08	14996.47	962.81	15959.28	1063.55	2587.78	447.67	237.29	25.00	62.78

Nepal Investment Bank Limited

F.Y	Total debt	Total equity	Total Assets	EBIT	Interest	EBT	EAT	DPS	EPS
2003/04	4450.43	523.46	4973.9	415.68	337.58	78.10	57.09	0.00	33.59
2004/05	8375.71	638.53	9014.24	577.44	407.34	17.015	116.82	20.00	39.56
2005/06	12526.44	729.04	13255.50	911.95	680.48	231.47	152.67	15.00	51.70
2006/07	15093.89	1180.17	16063.54	1108.44	634.46	473.98	232.15	12.50	39.50
2007/08	19914.72	1415.42	16274.06	1450.33	2862.07	648.12	350.54	20.00	59.35

APPENDIX-B

Calculation of Coefficient of Correlation between EBIT and Interest Charges of SCBL bank

Year	EBIT(X)	Interest (Y)	dx (X-1556.07)	dy (Y-822.27)	dx × dy	(dx) ²	(dy) ²
2003/04	1441.72	962.51	-114.35	140.24	-16036.44	13075.92	19667.26
2004/05	1499.21	992.26	-56.86	169.99	-9665.63	3233.06	28896.6
2005/06	1578.35	840.76	22.28	-17.51	-390.12	496.40	306.60
2006/07	1539.67	659.37	-16.4	-162.9	2671.56	268.96	26534.41
2007/08	1721.39	692.46	165.32	-129.8	-21460.19	27330.70	16850.64
Total	7780.34	4111.36	0	0	-44880.82	44405.04	92255.51

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum(dx)^2 \times \sum(dy)^2}}$$

Where,

N =No. of observation of two variables

dx =Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)² =Sum of the square of the deviation of X series from mean

(dy)² =Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{-44880.82}{\sqrt{44405.04 \times 92255.51}} \\ &= \frac{-44880.82}{64004.76} \\ &= -0.7012 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ \text{P.E} &= 0.6145 \frac{1-(-0.7012)^2}{\sqrt{5}} \\ &= 0.1533 \end{aligned}$$

APPENDIX-C

Calculation of Coefficient of Correlation between EBIT and Interest Charges of HBL bank

Year	EBIT (X)	Interest (Y)	dx (X-1629.4)	dy (Y-1164.58)	dx × dy	(dx) ²	(dy) ²
2003/04	1387.34	1038.29	-242.15	-126.29	30581.12	58636.62	15949.16
2004/05	1443.54	1083.51	-185.95	-81.07	15074.97	34577.40	6572.34
2005/06	1516.32	1095.75	-113.17	-68.83	7789.49	21807.45	4737.57
2006/07	1757.89	1235.35	128.4	70.77	9086.87	16486.56	5008.39
2007/08	2042.38	1369.99	412.89	205.41	84811.73	170478.15	42193.27
Total	8147.47	5822.89	0	0	147344.81	301986.18	744607.4

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx \cdot dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N = No. of observation of two variables

dx = Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)² = Sum of the square of the deviation of X series from mean

(dy)² = Sum of the square of the deviation of Y series from mean

dx · dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{147344.81}{\sqrt{301986.18 \times 744607.4}} \\ &= \frac{147344.18}{149953.71} \\ &= 0.9826 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\text{Probable error} = 0.6745 \frac{1-r^2}{\sqrt{n}}$$

$$\begin{aligned} \text{PE} &= 0.6745 \frac{1-(0.9826)^2}{\sqrt{5}} \\ &= 0.1040 \end{aligned}$$

APPENDIX-D

Calculation of Coefficient of Correlation between EBIT and Interest Charges of EBL bank

Year	EBIT (X)	Interest (Y)	dx (X-75.32)	dy (Y-517.56)	dx × dy	(dx)²	(dy)²
2003/04	539.78	412.41	-235.54	-105.15	24767.03	55479.09	11056.52
2004/05	634.08	498.2	-141.24	-19.36	2734.41	19948.74	374.81
2005/06	783.19	572.07	7.87	54.51	424.09	61.94	2971.34
2006/07	855.98	489.22	80.66	-28.34	-2285.90	6506.04	803.16
2007/08	1063.55	615.88	288.23	98.32	28347.62	83076.53	9666.82
Total	3876.58	2587.78	0	0	53987.25	165072.34	24872.65

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx \cdot dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N = No. of observation of two variables

dx = Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)² = Sum of the square of the deviation of X series from mean

(dy)² = Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{53987.25}{\sqrt{165072.34 \times 24872.65}} \\ &= \frac{53987.25}{64076.41} \\ &= 0.8425 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ \text{P.E} &= 0.6745 \frac{1-(0.8425)^2}{\sqrt{5}} \\ &= 0.875 \end{aligned}$$

APPENDIX-E

Calculation of Coefficient of Correlation between EBIT and Interest Charges of NIBL bank

Year	EBIT (X)	Interest (Y)	dx (X-892.77)	dy (Y-572.414)	dx × dy	(dx)2	(dy)2
2003/04	415.68	337.58	-477.09	-234.83	112035.04	227614.87	55145.13
2004/05	577.44	407.34	-315.33	-165.07	52051.52	99433.01	27248.10
2005/06	911.95	680.48	19.18	108.07	2072.78	367.87	11679.12
2006/07	1108.44	634.46	215.67	62.05	13382.32	46513.55	3850.20
2007/08	1450.33	802.21	57.56	229.80	128127.29	310873.15	52808.04
Total	4463.84	2862.07	0	0	307668.95	684802.45	150720.60

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N = No. of observation of two variables

dx = Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)2 = Sum of the square of the deviation of X series from mean

(dy)2 = Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{307668.95}{\sqrt{684802.45 \times 150730.60}} \\ &= \frac{307668.95}{321279.76} \\ &= 0.9576 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ \text{P.E} &= 0.6745 \frac{1-(0.9576)^2}{\sqrt{5}} \\ &= 0.025 \end{aligned}$$

APPENDIX-F

Calculation of Coefficient of Correlation between Overall Capitalizations Rate and Debt-Equity Ratio of SCBL Bank

Year	Ko(X)	D/E(Y)	dx (X-7.07)	dy (Y-13.39)	dx × dy	(dx) ²	(dy) ²
2003/04	7.80	13.90	0.73	0	0	0.5329	0
2004/05	7.10	14.35	0.03	0.45	0.0135	0.0009	0.2025
2005/06	6.65	14.80	-0.42	0.90	-0.378	0.1764	0.81
2006/07	7.10	12.75	0.03	-1.15	-0.0345	0.0009	1.3225
2007/08	6.70	13.70	-0.37	-0.2	0.074	0.1369	0.04
Total	35.35	69.50	0	0	-0.325	0.848	2.375

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N = No. of observation of two variables

dx = Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)² = Sum of the square of the deviation of X series from mean

(dy)² = Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{-0.325}{\sqrt{0.848 \times 2.375}} \\ &= \frac{-0.325}{2.014} \\ &= -0.16 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error(r)} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ &= 0.6745 \frac{1-(-0.16)^2}{\sqrt{5}} \\ &= 0.313 \end{aligned}$$

APPENDIX-G

Calculation of Coefficient of Correlation between Overall Capitalization Rate and Debt-Equity Ratio of HBL Bank

Year	Ko(X)	D/E(Y)	dx (X-5.22)	dy (Y-18.9)	dx × dy	(dx)2	(dy)2
2003/04	6.70	23.09	1.48	4.19	6.2012	2.1904	17.5561
2004/05	6.20	20.97	0.98	2.07	2.0286	0.9604	4.2849
2005/06	6.10	17.70	0.88	-1.2	-1.056	0.7744	1.44
2006/07	6.30	17.06	11.84	-1.84	-21.7856	140.186	3.3856
2007/08	6.90	15.68	10.46	-3.22	-33.6812	109.116	10.3684
Total	26.19	4.5	0	0	-48.293	253.2092	37.035

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N =No. of observation of two variables

dx =Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)2 =Sum of the square of the deviation of X series from mean

(dy)2 =Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{-48.293}{\sqrt{253.2092 \times 37.035}} \\ &= \frac{-48.293}{96.838} \\ &= -0.50 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ &= 0.6745 \frac{1-(-0.50)^2}{\sqrt{5}} \\ &= 0.225 \end{aligned}$$

APPENDIX-H

Calculation of Coefficient of Correlation between Overall Capitalizations Rate and Debt-Equity Ratio of EBL Bank

Year	Ko(X)	D/E(Y)	dx (X-7.63)	dy(Y- 15.48)	dx × dy	(dx)2	(dy)2
2003/04	8.15	15.90	0.52	0.42	0.2148	0.2704	0.1764
2004/05	7.90	16.03	0.27	0.55	0.1485	0.0729	0.3025
2005/06	8.15	16.78	0.52	1.3	0.676	0.2704	1.69
2006/07	7.30	13.09	-0.33	-2.39	0.7887	0.1089	5.7121
2007/08	6.65	15.58	-0.98	0.1	-0.098	0.9604	0.01
Total	38.15	77.38	0	0	1.73	1.683	7.891

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N =No. of observation of two variables

dx =Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)2 =Sum of the square of the deviation of X series from mean

(dy)2 =Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{1.73}{\sqrt{1.683 \times 7.891}} \\ &= \frac{1.73}{3.644} \\ &= 0.48 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ &= 0.6745 \frac{1-(-0.48)^2}{\sqrt{5}} \\ &= 0.23 \end{aligned}$$

APPENDIX-I

Calculation of Coefficient of Correlation between Overall Capitalization Rate and Debt-Equity Ratio of NIBL Bank

Year	Ko(X)	D/E(Y)	dx (X-7.06)	dy (Y13.13)	dx × dy	(dx)2	(dy)2
2003/04	8.35	8.50	1.29	-4.63	-5.9727	1.6641	21.4369
2004/05	6.40	13.12	-0.66	-0.01	0.0066	0.4356	0.0001
2005/06	6.87	17.18	-0.19	4.05	-0.7695	0.0361	16.4025
2006/07	6.90	12.80	-0.16	-0.33	0.0528	0.0256	0.1089
2007/08	6.80	14.07	-0.26	0.94	-0.2444	0.0676	0.8836
Total	35.32	65.67	0	0	-6.9272	2.229	38.832

We know,

$$\text{Coefficient of correlation (r)} = \frac{\sum dx.dy}{\sqrt{\sum (dx)^2 \times \sum (dy)^2}}$$

Where,

N =No. of observation of two variables

dx =Sum of the deviations of the X series from mean

dy = Sum of the deviations of the Y series from mean

(dx)2 =Sum of the square of the deviation of X series from mean

(dy)2 =Sum of the square of the deviation of Y series from mean

dx.dy = Sum of the product of the deviation of x and y series from the mean.

$$\begin{aligned} r &= \frac{\sum -6.9272}{\sqrt{\sum 2.229 \times 38.832}} \\ &= \frac{-6.9272}{9.3036} \\ &= 0.75 \end{aligned}$$

Computation of Probable Error of SCBL Bank,

$$\begin{aligned} \text{Probable error} &= 0.6745 \frac{1-r^2}{\sqrt{n}} \\ \text{P.E} &= \frac{0.6745 - (-0.75)^2}{\sqrt{5}} \\ &= 0.132 \end{aligned}$$

Appendix-J

List of Variables Used in Regression Analysis of SCBL and HBL

Name of the company	Year	Ko	L1	L2	LogS	Growth	DPR	E.V	Liquidity	Ke
SCBL	2004	0.078	0.93	13.39	9.82	-0.047	0.70	0	0.06	0.388
SCBL	2005	0.073	0.93	14.34	9.95	0.13	0.73	0.311	0.09	0.370
SCBL	2006	0.067	0.94	14.81	10.07	0.12	0.70	0.327	0.10	0.360
SCBL	2007	0.071	0.93	12.76	10.34	-0.07	0.83	1.528	0.06	0.339
SCBL	2008	0.067	0.93	13.69	10.41	0.18	0.73	0.849	0.06	0.376
HBL	2004	0.067	0.96	23.09	9.94	0.06	0.41	0	0.10	0.274
HBL	2005	0.062	0.95	20.97	10.06	0.12	0.02	0.254	0.12	0.200
HBL	2006	0.061	0.95	17.70	10.12	0.06	0	26.328	0.12	0.199
HBL	2007	0.063	0.94	17.06	10.44	0.12	0.24	4.517	0.11	0.199
HBL	2008	0.069	0.94	15.68	10.47	0.06	0.50	1.848	0.09	0.259

Appendix- K

List of Variables Used in Regression Analysis of EBL and NIBL

Name of the Company	Year	Ko	L1	L2	LogS	Growth	DPR	E.V	Liquidity	Ke
EBL	2004	0.082	0.94	15.90	9.82	0.26	0.60	0	0.24	0.218
EBL	2005	0.079	0.94	16.03	9.91	0.21	0.66	0.366	0.30	0.199
EBL	2006	0.082	0.94	16.78	9.98	0.9	0.43	0.623	0.13	0.266
EBL	2007	0.073	0.93	13.09	10.06	0.22	0.36	0.628	0.16	0.628
EBL	2008	0.067	0.94	15.56	10.02	0.36	0.39	0.859	0.17	0.859
NIBL	2004	0.084	0.89	8.50	9.69	-0.029	0	0	0.58	0.109
NIBL	2005	0.064	0.93	13.12	9.95	0.81	0.50	0.977	0.15	0.183
NIBL	2006	0.069	0.95	17.018	10.12	0.47	0.29	1.505	0.14	0.209
NIBL	2007	0.069	0.96	12.79	10.21	0.21	0.31	0.80	10.12	0.196
NIBL	2008	0.068	0.93	14.07	10.32	0.33	0.33	0.705	0.18	0.248

Appendix –L

Calculation of Correlation Coefficient of SCBL and HBL

Variables	Ko	L1	LogS	G	DPR	E.V	Liquidity
Ko	1	-0.643	-0.365	-0.513	0.789	-0.508	-0.773
L1		1	-0.206	0.142	-0.738	0.311	0.753
LogS			1	0.199	-0.003	0.062	-0.087
G				1	-0.233	-0.043	0.410
DPR					1	-0.586	-0.854
E.V						1	0.452
Liquidity							1

Appendix –M

Calculation of Correlation Coefficient of EBL and NIBL

Variables	Ko	L1	LogS	G	DPR	E.V	Liquidity
Ko	1	-0.405	-0.689	-0.748	-0.030	-0.782	0.617
L1		1	0.591	0.325	0.544	0.539	-0.837
LogS			1	0.277	0.009	0.647	-0.718
G				1	0.379	0.650	-0.566
DPR					1	-0.336	-0.461
E.V						1	-0.682
Liquidity							1

Appendix -N

Calculation of Simple Regression Coefficient with Average Cost of Capital Of SCBL and HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.643(a)	0.414	0.340	0.004260

Predictors: (Constant), L1 of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.369	0.127		2.910	0.020
L1	-0.320	-0.135	-0.643	-2.375	0.45

Dependent Variable: KO of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.366(a)	0.134	0.025	0.005178

Predictors: (Constant), LogS of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.515	0.075		2.019	0.078
LogS	-0.008	0.007	-0.366	-1.111	0.299

Dependent Variable: KO of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.513(a)	0.264	0.172	0.004774

Predictors: (Constant), G

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.070	0.002		33.358	0.000
G	-0.034	0.020	-0.513	-1.692	0.129

Dependent Variable: KO

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.790(a)	0.624	0.577	0.003411

Predictors: (Constant), DPR

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.061	0.002		29.190	0.000
DPR	0.13	0.040	0.790	3.644	0.007

Dependent Variable: KO

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.508(a)	0.258	0.166	0.004791

Predictors: (Constant), E.V

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.069	0.002		41.240	0.000
E.V	0.00	0.000	0.508	-1.669	0.134

Dependent Variable: KO

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.773(a)	0.598	0.548	0.003528

Predictors: (Constant), LIQ

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.083	0.005		17.971	0.000
LIQ	0.171	0.049	0.773	-3.448	0.009

Dependent Variable: KO

Calculation of Simple Regression Coefficient with Average Cost of Capital of EBL and NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.406(a)	0.165	0.060	0.007139

Predictors: (Constant), L1 of EBL/NIBAL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.225	0.121		1.865	0.099
L1	-0.162	0.129	0.406	-1.255	0.245

Dependent Variable: KO of EBL/NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.690(a)	0.475	0.410	0.005657

Predictors: (Constant), L1 of EBL/NIBAL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.350	0.103		3.410	0.009
LOGS	-0.028	0.010	-0.690	-2.693	0.027

Dependent Variable: KO of EBL/NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.749(a)	0.561	0.506	0.005175

Predictors: (Constant), GROWTH of EBL/NIBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.081	0.003		28.217	0.000
GROWTH	-0.025	0.008	-0.749	-3.197	0.013

Dependent Variable: KO of EBL/NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.030(a)	0.001	-0.124	0.007807

Predictors: (Constant), DPR of EBL/NIBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.074	0.006		12.333	0.000
DPR	-0.001	0.014	-0.030	-0.086	0.934

Dependent Variable: KO of EBL/NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.783(a)	0.613	-0.564	0.004862

Predictors: (Constant), EV of EBL/NIBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.082	0.003		29.440	0.000
EV	-0.013	0.004	-0.783	-3.556	0.007

Dependent Variable: KO of EBL/NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.617(a)	0.381	-0.304	0.006144

Predictors: (Constant), LIQ of EBL/NIBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	0.067	0.004		17.781	0.000
LIQ	0.033	0.015	0.617	2.220	0.057

Dependent Variable: KO of EBL/NIBL

Appendix O

Calculation of Multiple Regression Coefficients with Average Cost of Capital of SCBL and HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.947(a)	0.897	-0.692	0.002913

Predictors: (Constant), LIQ, LOGS, E.V, GROWTH, L1, DPR of SCBL/HBL

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.000	6	0.000	4.363	0.127(a)
	Residual	0.000	3	0.000		
	total	0.000	9			

Predictors: (Constant), LIQ, LOGS, E.V, GROWTH, L1, DPR of SCBL/HBL

Dependent Variable: KO of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.312	0.163		1.916	0.151
L1	-0165	0.158	-0.331	-1.047	0.372
LOGS	-0.008	0.005	-0.380	-1.870	0.158
GROWTH	-0.018	0.015	-0.279	-1.2.6	0.314
DPR	0.004	0.007	0.240	0.559	0.615
E.V	0.000	0.000	-0.183	-0.752	0.507
LIQ	-0.034	0.097	-0.155	-0.351	0.749

Dependent Variable: KO of SCBL/HBL

Calculation of Multiple Regression Coefficients with Average Cost of Capital of EBL and NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.933(a)	0.870	-0.611	0.004594

Predictors: (Constant), LIQ, DPR, G, LOGS, E.V, L1 of EBL/NIBL

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.000	6	0.000	3.355	0.174(a)
	Residual	0.000	3	0.000		
	total	0.000	9			

Predictors: (Constant), LIQ, DPR, G, LOGS, E.V, L1 of EBL/NIBL
 Dependent Variable: KO of EBL/NIBL

Coefficients

Model		Unstandardized Coefficients		standardized Coefficients	t	Sig
		B	Std. Error	Beta		
1	Constant)	0.374	0.242		1.1916	0.219
	L1	-0.074	0.207	-0.186	-1.047	0.744
	LOGS	-0.023	0.015	-0.562	-1.870	0.218
	GROWTH	-0.27	0.014	-0.804	-1.206	0.158
	DPR	0.011	0.017	0.275	0.559	0.569
	E.V	0.001	0.008	0.054	-0.752	0.923
	LIQ	-0.012	0.030	-0.233	-0.351	0.704

Dependent Variable: KO of EBL/NIBL

Appendix P

Calculation of Correlation Coefficient of Cost of Equity and Leverage of SCBL and HBL

Variables	Ke	L2	LogS	G	DPR	E.V	Liquidity
Ke	1	-0.682	-0.270	-0.149	0.928	-0.507	-0.814
L2		1	-0.243	0.226	-0.726	0.12	0.714
LogS			1	0.199	-0.003	0.063	-0.088
G				1	-0.233	-0.043	0.410
DPR					1	-0.586	-0.854
E.V						1	0.452
Liquidity							1

Appendix Q

Calculation of Correlation Coefficient of Cost of Equity and Leverage of EBL and NIBL

variables	Ke	L2	LogS	G	DPR	E.V	Liquidity
Ke	1	-0.151	0.178	0.039	0.068	0.189	-0.319
L2		1	0.214	0.266	-0.185	0.668	-0.195
LogS			1	0.277	0.009	0.647	-0.718
G				1	0.379	0.650	-0.566
DPR					1	-0.033	-0.461
E.V						1	0.682
Liquidity							1

Appendix R

Calculation of Simple Regression Coefficient with Cost of Equity of SCBL And HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.682(a)	0.465	0.398	0.061288

Predictors: (Constant), L2 of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.555	0.100		5.556	0.001
L2	-0.016	0.006	-0.682	-2.637	0.030

Dependent Variable: KE of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.270(a)	0.073	-0.043	0.080676

Predictors: (Constant), LOGS of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.219	1.163		1.049	0.325
LOGS	-0.091	0.114	-0.270	-0.794	0.450

Dependent Variable: KE of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.150(a)	0.022	-0.100	0.082849

Predictors: (Constant), G of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.307	0.037		8.405	0.000
G	-0.149	0.348	-0.150	-0.428	0.680

Dependent Variable: KE of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.928(a)	0.861	0.844	0.031209

Predictors: (Constant), DPR of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.180	0.019		9.397	0.000
DPR	0.239	0.034	0.928	7.048	0.000

Dependent Variable: KE of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.507(a)	0.257	0.164	0.072221

Predictors: (Constant), E.V of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.314	0.025		12.461	0.000
E.V	-0.005	0.003	-0.507	-1.664	0.135

a Dependent Variable: KE of SCBL/HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.814(a)	0.663	0.620	0.048671

Predictors: (Constant), LIQ of SCBL/HBL

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.542	0.064		8.482	0.000
LIQ	-2.704	0.682	-0.814	-3.964	0.004

Dependent Variable: KE of SCBL/HBL

Calculation of Simple Regression Coefficient with Cost of Equity of EBL And NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.193(a)	0.037	-0.083	0.247450

Predictors: (Constant), L2

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.058	0.462		0.126	0.903
L2	0.018	0.032	0.193	0.556	0.593

Dependent Variable: KE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.178(a)	0.032	-0.089	0.248144

Predictors: (Constant), LOGS

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	-1.999	4.507		-0.444	0.669
LOGS	0.231	0.450	0.178	0.513	0.622

Dependent Variable: KE

Model Summary

Model	R	Adjusted R Square	Std. Error of the Estimate
1	0.039(a)	-0.123	0.251994

Predictors: (Constant), G

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.299	0.140		2.129	0.066
G	0.042	0.381	0.039	0.111	0.914

Dependent Variable: KE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.068(a)	0.005	-0.120	0.251601

Predictors: (Constant), DPR

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.277	0.194		1.431	0.190
DPR	0.088	0.457	0.068	0.193	0.851

Dependent Variable: KE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.189(a)	0.036	-0.085	0.247650

Predictors: (Constant), E.V

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.247	0.142		1.743	0.119
E.V	0.099	0.183	0.189	0.544	0.601

Dependent Variable: KE

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.316(a)	0.102	-0.011	0.239013

Predictors: (Constant), LIQ

Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	0.430	0.146		2.952	0.018
LIQ	-0.546	0.574	-0.319	-0.952	0.369

Dependent Variable: KE

Appendix-S

Calculation of Multiple Regression Coefficients with Cost of Equity of SCBL and HBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.996(a)	0.992	0.975	0.012461

Predictors: (Constant), LIQ, LOGS, E.V, GROWTH, L2, DPR of SCBL/ HBL

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.056	6	0.009	59.792	0.003(a)
	Residual	0.000	3	0.000		
	total	0.056	9			

Predictors: (Constant), LIQ, LOGS, E.V, GROWTH, L2, DPR of SCBL/HBL

Dependent Variable: KE

Coefficients

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 Constant)	1.663	0.235		7.061	0.006
L2	-0.003	0.002	-0.131	-1.299	0.285
LOGS	-0.129	0.20	-0.85	-6.434	0.008
GROWTH	0.249	0.064	0.250	3.880	0.030
DPR	0.164	0.036	0.639	4.566	0.020
E.V	0.001	0.001	0.073	0.912	0.429
LIQ	-1.143	0.395	-0.344	-2.894	0.063

Dependent Variable: KE of SCBL/HBL

Calculation of Multiple Regression Coefficients with Cost of Equity of EBL and NIBL

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.408(a)	0.167	-1.500	0.375926

Predictors: (Constant), LIQ, DPR, G, L2, LOGS, EV

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.085	6	0.014	0.100	0.991(a)
	Residual	0.424	3	0.141		
	total	0.509	9			

Predictors: (Constant), LIQ, DPR, G, L2, LOGS, EV

Dependent Variable: KE

Coefficients

Model	Unstandardized Coefficients		standardized Coefficients	t	Sig
	B	Std. Error	Beta		
1 Constant)	4.988	13.107		0.381	0.729
L2	-0.010	0.107	-0.107	-0.091	0.933
LOGS	-0.417	1.237	-0.323	-0.337	0.758
GROWTH	-0.353	1.209	-0.327	-0.292	0.790
DPR	-0.083	1.717	-0.64	-0.048	0.965
E.V	0.080	0.794	0.153	0.101	0.926
LIQ	-1.252	2.150	-0.731	-0.583	0.601

Dependent Variable: KE