

# **CHAPTER I**

## **INTRODUCTION**

### **1.1 GENERAL BACKGROUND**

From the establishment of the business organization, the capital is considered as most central factor. In the absence of adequate capital, the organization has to halt their daily operational activities. Enterprises whether they are government owned or privately owned have to make pertinent capital structure decision in identifying exactly how much capital is needed to run their operation smoothly (Shrestha, 1999:4).

Generally the term capital structure is referred to represent the proportionate relationship between the different forms of financing (Weston and Brigham, 1972:249). Before knowing the term capital structure, we have to briefly describe the distinction between financial structure and capital structure. The financial structure is used to refer to the manner in which the assets of a firm are financed. Thus, it represents the intact capital and liability side of the balance sheet. On the other hand, the capital structure refers to the composition of long term source of finance, such as preference capital, debenture, long term debt and equity capital including reserves and surpluses (i.e. retained earnings), and excludes short term debts. The term capital structure means the proposition of different types of securities issued by a firm (Schall and Haley, 1983:339). It is made up of debt and equity securities, which comprises a firm's finance of its assets; it is the permanent debt plus preferred stock, plus net worth. The determination of the degree of liquidity of a firm is not a simple task. In

long term, liquidity may dependent on the profitability of a firm but together it survives to achieve long run profitability depends to some extent on its capital structure.

Capital structure analysis is the basis for analyzing the usefulness of accumulation from different sources of capital composition of capital is another factor which affects the profitability. Loan capital dominant enterprises have less chance for prosperity despite of their huge profits (Kuchhal, 1961:525).

Sound capital structure is required to operate business smoothly and achieve the business goal. Capital structure is concerned with analyzing the capital composition of the company (Weston and Brigham, 1978:555).

Capital structure is very crucial part of the financial management as the various composition of debt and equity may impact differently on risk and rate of return to equity shareholders, the funds required to business enterprises are raised either through the ownership securities (i.e. equity capital and preference share) and creditor ship securities (i.e. debenture and or bond). A business enterprise has to maintain a proper mix of both the securities in a manner that the cost and the risk perception to the shareholders are minimized. The mix of different securities is portrayed by the firm's capital structure (Koirala, 1990:105).

Capital structure decision of an enterprise affects the cost of capital through the risk complexion and ultimately the value of the enterprise. So, financial manager should try to minimize the overall cost of capital and maximize value of the firm by optimizing the capital structure.

Fundamental to a variety of corporate decision is a firm's cost of capital from determining the hurdle rate for investment project that influences the composition of the firm's capital structure i.e. the cost of capital influence the operation of the firm and its subsequent profitability cost of capital is determined, at least partially, by corporate decision unrelated to its products markets decision (Easiley and Hara, 2004).

The Nepalese enterprises should have suitable combine of debt and equity to maximize shareholders wealth and minimize overall cost of capital because capital structure may have direct relationship with cost of capital value of firm, risk and tax expenses of the company. Therefore, this study is devoted to test empirically the relationship between cost of capital and capital structure in the context of Nepalese enterprises.

## **1.2 STATEMENT OF THE PROBLEM**

The conception of capital structure has been the topic of argument since the publication of Modigliani and Miller classic paper in 1958. Many of subsequent investigate have been commence to find whether cost of capital affects capital structure or not.

Capital structure is the arrangement of financial management and cost of capital is the benchmark of the financing and investing decision. This study considers four banks namely Himalayan Bank Limited, NABIL bank Limited, Nepal Investment Bnak Limited and Standard Chartered Nepal Bank which are established in Nepal during early 90's. Various factors involved in affecting capital structure like leverage,

cash flow ability of the firm, control power of the firm, flotation cost etc., among them cost of capital also affects capital structure. This study has been conducted to find that how and why cost of capital affects capital structure of banks. Although all banks have started their banking transaction with same level of capital, the profitability of all banks among each other are different. This study is to look into how does cost of capital impact capital structure and to examine relationship between them and their role in addition to the wealth of the society.

The problems are for the study is reflected in the following research question:

- Does the capital structure have any affects on cost of capital in the banking sector?
- Does cost of capital change with the level of leverage in banking sector?
- How does capital structure and cost of capital are affected in banking sector?
- What are the relationship among leverage, cost of capital, size of capital employed, growth in total assets, dividend payout ratio and earning variability of banking sector?

### **1.3 OBJECTIVE OF THE STUDY**

The main objective of this study is to analyze the significance of capital structure on cost of capital. Besides this, the other objectives of this study are:

) To examine relationship among leverage, cost of capital, size of capital employed, growth in total assets, dividend payout ration, liquidity ratio and earning variability.

- To examine how the cost of capital changes with the capital structure.
- To examine the relationship between capital structure and cost of capital in Nepalese banks

#### **1.4 SIGNIFICANCE OF THE STUDY**

This study will help researchers, investors and financial managers. This study will help to know the significance of capital structure and cost of capital. This study will be the best source for the researchers to get proper information about the capital structure and cost of capital. This study provides information to the investors about the debt and equity ratio which can help to get information to perform securities analysis before taking investment decisions. The financial managers of also could be benefited by this study because they could get important information regarding optimum capital structure. This will help them to design the appropriate mixture of debt and equity.

#### **1.5 FOCUS OF THE STUDY**

The corporate capital structure has long been predictable as an unresolved economic puzzle, which requires coherent resolution if the prevailing economic paradigm of corporate finance is to continue. Due to complex nature of this problem, corporate capital structure has been a subject of considerable study. This research is mainly focused to Nepalese enterprises which are suffering from heavy losses due to

inappropriate mixture of debt and equity. Some industries even could not meet the interest and other expenses from the income, so they increase loan and become more levered.

The question of existence of optimum use of leverage has been arise by Solomon (1963) as is there some specific degree of financial leverage at which the marketing value of the firm's securities will be higher (or cost of capital will be lower) than at any other degree of leverage?

This research is focused on the impact of leverage on financial indicator in the Nepalese enterprises.

## **1.6 LIMITATION OF THE STUDY**

- This study is conducted using secondary data.
- The problem of non-availability of required data and adequate literature is another encumber of this study.
- This study cover data not more than 5 years
- The study has used 3 years cross sectional data.

## **1.7 ORGANIZATION OF THE STUDY**

The study has been organized into five chapters. The titles of each of the chapters are as follows:

Chapter One: Introduction

Chapter Two: Review of Literature

Chapter Three: Research Methodology

Chapter Four: Analysis and Interpretation of Data

Chapter Five: Summary, Conclusion and Recommendation

The content of each of the chapters are briefly mentioned below:

Chapter one deals with the background of the study, statement of problem, objective, scope and focus of the study, limitation of the study and organization of the study.

Chapter two contains conceptual framework and review of Nepalese studies. This chapter is fully devoted to the capital structure theories with MM hypothesis.

Chapter three comprise the research methodology which deals with research design, nature and source of data, method of data collection and specification of the variables.

Chapter four consists of presentation and analysis of data which describes empirical analysis of the study, the chapter describes the effect of capital structure on cost of capital and cost of equity and portfolios formed on leverage.

Chapter five includes the summary, conclusion and recommendation of the study. The major findings regarding this research and recommendation for Nepalese banking sector are included in this chapter.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

This chapter consider the review of available literature from selected books, text books, journal and previous dissertations and researched done in the area of capital structure and cost of capital. The review of literature has been divided into four categories. Part 1 constitutes discussion on the conceptual frame work. Part 2 presents the review of empirical works. Part 3 is devoted to the review of major studies in Nepal. Finally concluding remarks has been presented in part 4.

#### **2.1 CONCEPTUAL FRAMEWORK**

Capital structure is the mix of long term debt and equity maintained by the firm (Lawrence, 1888:422). Capital structure of a company refers to the composition or make up of its capitalization and it includes all long term capital resources viz. Loans, reserves shares and bunds (Gerstenberg, 1960:72).

The choice of amount of debt and equity is made after a comparison of certain characteristics of the each kind of security of internal factors related to the firms operation and of external factors that can affect the firm (Hampton, 1989:33). The firm should select that capital structure which helps to achieve the objective of financial management and the main objective of any firm is to maximize the value of equity share. The firm should choose that compositor of capital structure which maximizes the share holder's wealth.



Thus, the capital structure decision is important for long run profitability and solvency of the business. Generally high debt equity ratio is considered as disadvantageous from the owner's point of view especially when the firm is earning higher rate of return on the capital employed.

Capital structure can be dealt with the three different levels of complexities:

#### The static view

The static approach suggest that according to the relevant information about the firm's asset structure, the quality of expected earning and capital market condition, management should obtain that appropriate mixture of financing claims that minimizes the cost of capital. Hence according static view capital structure is the active policy variables.

#### The comparative static view

The second level views capital structure as a comparative static proposition that yields different values for the cost of capital and capital structure, as some of the underlying parameters change, thus, change in the existing asset structure, the quality of expected earning and the capital market condition generate new equilibrium solution between the financing mix and the cost of funds.

#### The Dynamic View

The third level views capital structure as a dynamic process of interdependent investment and financing decision that yield optimal values within the constraints at the time and place where the decisions were made. Hence, the existing capital structure

reflects the sequential decision variables but rather the by-product of the continual process of matching source and uses of funds.

The capital structure policy involves a trade off between risk and return: using more debt raises the risk of the firm's earning stream, but it also raises the expected rate of return on equity, higher risk tends to lower the stock's price, but a higher expected rate of return raises it. The optimal capital structure strikes that balance between risk and return which maximizes the price of stock. This same optimal capital structure also minimizes the firm's overall cost of capital (WACC) (Pandey, 1996)

The financial manager must be very sensitive in financial decision since inappropriate composition of debt equity in capital structure may lead to bankruptcy of the firm. The optimal capital structure is attained at the level where the risk perception of stakeholder is minimized and returns are maximized. Optimal capital structure can be properly defined as that combination of debt and equity that attains the stated managerial goals maximization of the firm's market value, and which minimizes the firm's cost of capital as the existence of an optimum capital structure implies the simultaneous optimization of both the cost of capital and the firm's market value, it occupies a central position in the theory of financial management (Phillipatos, 1974:237).

Capital structure, which is defined as total debt to total asset at book value, influences both the profitability and risk of the firm (Bos and Fetherston, 1993: 47). The normative objective of the firm of maximizing stockholders wealth is to reduce the cost of capital to a minimum by least "expensive ways" (Kreps and Watch, 1975:411).

The cost of capital concept occupies a pivotal place in the theory of financial management (Pandey, 1996:1). The traditional belief is that cost of capital is a function of capital structure. On the other hand, Modigliani and Miller hold the view that the cost of capital to a firm remains invariant to the capital structure changes (Modigliani and Miller, 1958:261-297).

The cost of capital is that average cost which is used as an acceptance criterion to be applied to investment projects. An investment project for its acceptance, must earn a minimum rate of return equal to the cost of capital. In the sense, the cost of capital represents a standard for allocating the firm's fund in the most optimum manner. In theory, it is the rate of return in a project that will leave the market value of the shares unchanged (Van Horne, 1974:101).

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, 1970:29). In addition the cost of capital concept helps management in moving towards its target capital structure. The cost of capital can be minimized and value of enterprises can be maximized by the use of judicious mixture of the different components of capital. For the concept of optimal capital structure, it is the most contentious issue in the finance literature since publication of the Modigliani and Miller's seminal works in 1958 till now (Baral, 1996:21).

There are some factors which affect the capital structure viz. market condition, stability of sales and growth rate, cost of capital, firm's internal condition, taxes,

profitability, interest rates, control, operating leverage, flexibility, assets structure, legal requirement nature of industry and capital requirements.

### **2.1.1 Assumptions of capital structure.**

) There are only two sources of funds which are used by any firm, they are debt and equity.

) There are no corporate and personal taxes.

) The dividend payout ratio is 100%.

) There is no return earning.

) The firm has perpetual life.

) The operating profit is not expected to grow or decline over the time.

) All the investors have the same subjective profitability distribution of the future expected EBIT for a given firm.

) The total finance is fixed. The firm can change its degree of operating leverage either by selling share and proceed to retire debt or by raising more debt and reduce the equity capital.

) The business risk is assumed to be constant and independent of capital structure and financial risk.

### **2.1.2 Determinants of capital structure**

Determining the firm's financial structure means answering two basic questions: First how should the firm's total sources of fund be divided among long term and short term financing. Second what proportion of firms should be financed by debt and equity

is made after the comparison of the certain characteristics of each kind of internal factors related to the firms operation and of external factors that can affect the firms.

The value of the firm is maximized when the cost of capital employed is minimized capital structure decision under go series of trade off between risk and returns; the optimal level depends on the risk preference of the management as well as the investors. It also depends on the specific behaviors of the firm, the industry and the market. The capital structure decision is undergoing series which has to be taken when firm need funds. The determinants of the capital structure are: Leverage, cost of capital, cash flow ability of the firm, control power of the firm and flotation cost.

### **2.1.3 Optimal Capital Structure**

The firm attains optimum capital structure at the level where it can maximize its ownership share market value. The value will be maximized when the marginal real cost of each source of funds is the same. In practice the determination of the optimal capital structure is formidable task and one has to go beyond the theory. Since a number of factors in where the capital structure decision of a company which is highly psychological ,complex and qualitative, the judgment of the person taking the capital structure decision plays a crucial past (Pandey, 1991).

The proper composition of their capital structure helps to achieve as yardstick to measure the firm's economic performance. In long run, liquidity may depend on the profitability depends to same extent on its capital structure (Kulkarni, 1981:274).

The optimal capital structure may be defined as the relationship between debt and equity securities, which maximizes the value of the firm's equity stock. It may exist under there situations (Pandey, 1995).

The total value of the firms is maximizes. When its equity stock is at maximize value. It should be same that debt and Preferred stock are not affected by fluctuations in market values because they offers a fixed return and their values, therefore fluctuate with the level of interest rate and preferred stock yield. The value of equity stock how even fluctuates with profit of the firms. Thus, in the optimal capital structure the, the total value of the firms as well as value of the equity should be maximized.

The equity stock value should be maximized on a per share basis to ensure to optimum capital structure. The issue of additional share may increase the total value of equity stock but this action may result in a decline in per share value of equity stock, and the firm may move away from its optimal capital structure. It is necessary therefore, to have a maximum value of the equity share on optimal capital structure.

The optimal capital structure occurs when the firm's overall cost of capital is at its lowest point. There is thus a link between the cost of capital and the optimum capital structure.

After analyzing various factors, the firm establishes the optimal capital structure. There are various objectives of optimal capital structure. Some of them are:

- ) To maximize return on equity capital.
- ) To minimize cost of capital.
- ) To maintain control power.
- ) To minimize risk.
- ) To increase flexibility.
- ) To employ high grade securities.

#### **2.1.4 Cost of Capital.**

The cost of capital represents a critical link between management's financial decision and the value of the firm (Keoun, et. Al. 1986:426).

It is the minimum rate of return necessary to induce the investors to put up their capital. It is expected rate of return prevailing in capital markets on irrelative investments of equivalent risk (Koble, Read and Hall, 1984:13). Therefore, the firm's cost of capital will be the overall, or average, required rate of return on the aggregate of investment projects (Pandey, 1999).

In building up capital structure over a period of time a firm will depend on that line of financing during a given time, which involves minimum cost. The capital structure and cost of capital, both are important in maximizing the wealth of shareholders. Financial manager should try his/her best to minimize the overall cost of capital by optimizing the capital structure.

The cost of each component of the capital structure is also to be said cost of capital. Capital components, which are shown in the left hand side of the balance sheet, include various types of debt, preferred stock, retained earnings and common stock. Every firm has to repay its borrowed funds with interest after certain period of time. Interest which it has to pay is called cost of capital. Cost of preference share is calculated as cost of debt because it is debt natured capital. The cost of equity capital is defined as the minimum return of return that a firm must earn on the equity financed portion of its investment in order to leave unchanged the market price of its stock (Van Horne, 1999:335).

Thus, optimum capital structure is found at the point on which firm's overall

cost of capital is minimized and its value is maximized.

### **2.1.5 Capital Structure Theories.**

The term capital structure has been always the topic of controversy. Broadly, we can divide the theories of capital structure in two theories:

- ) Relevant Theory.
- ) Irrelevant Theory.

The relevant theory defines that the capital structure affects value of the firm.

There are two approaches under relevant theory.

- ) Net Income Approach (NI)
- ) Traditional Approach.

The Irrelevant theory defines that the capital structure does not affect the value of the firm. The two approaches in favor of irrelevant theory are:

- ) Net operating Income Approach (NOI)
- ) Modigliani and Miller's Model (MM Model).

These four approaches/theories are described in this study.

#### **i) Net Income Approach.**

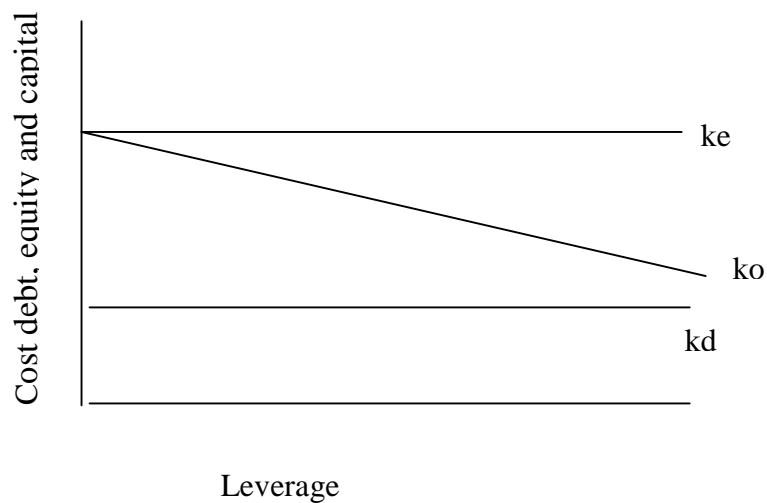
According to net Income Approach (NI), the firm can increase its value or lower the, overall cost of capital by increasing the proportion of debt in the capital structure. This is because when the cost of debt is lower than cost of equality, the



average cost of capital will be higher.

Assumptions of this approach are:

1. The cost of equity ( $k_e$ ) and the cost of debt ( $k_d$ ) remain constant with the changes in leverages as the use of debt does not change the risk position of investors.
2. The cost of debt ( $k_d$ ) is lower than the cost of equity ( $k_e$ ) (i.e  $k_d < k_e$ ).
3. Overall cost of capital ( $k_o$ ) decrease as leverage increases.
4. The corporate income tax does not exist.



The graph shows, the degree of leverage is plotted along the horizontal axis, while the percentage rate for cost of debt  $k_d$ , cost of equity,  $k_e$  and overall cost of capital  $k_o$  is on vertical axis. The critical assumption of NI is that  $k_d$  and more particularly  $k_e$  remain unchanged as the degree of leverage increase. As the proportion of cheaper debt fund in the capital structure is increased, the weighted average cost of capital ( $k_o$ ), decreases and approaches  $k_d$ . The optimal capital structure would be the one at which the total value of the firm is greatest and the cost of capital is lower. At that structure, the market price per share of stock is maximized. The overall cost of capital is measured by.

$$k_o = X \frac{NOI}{V} + X \frac{\bar{X}}{V}$$

The overall cost of capital,  $k_o$ , will be equal to  $k_e$  if the firm does not employ any debt (i.e.  $D/V=0$ ), and that  $k_o$  will approach  $k_d$  as  $D/V$  approaches one.

ii) Traditional Approach:

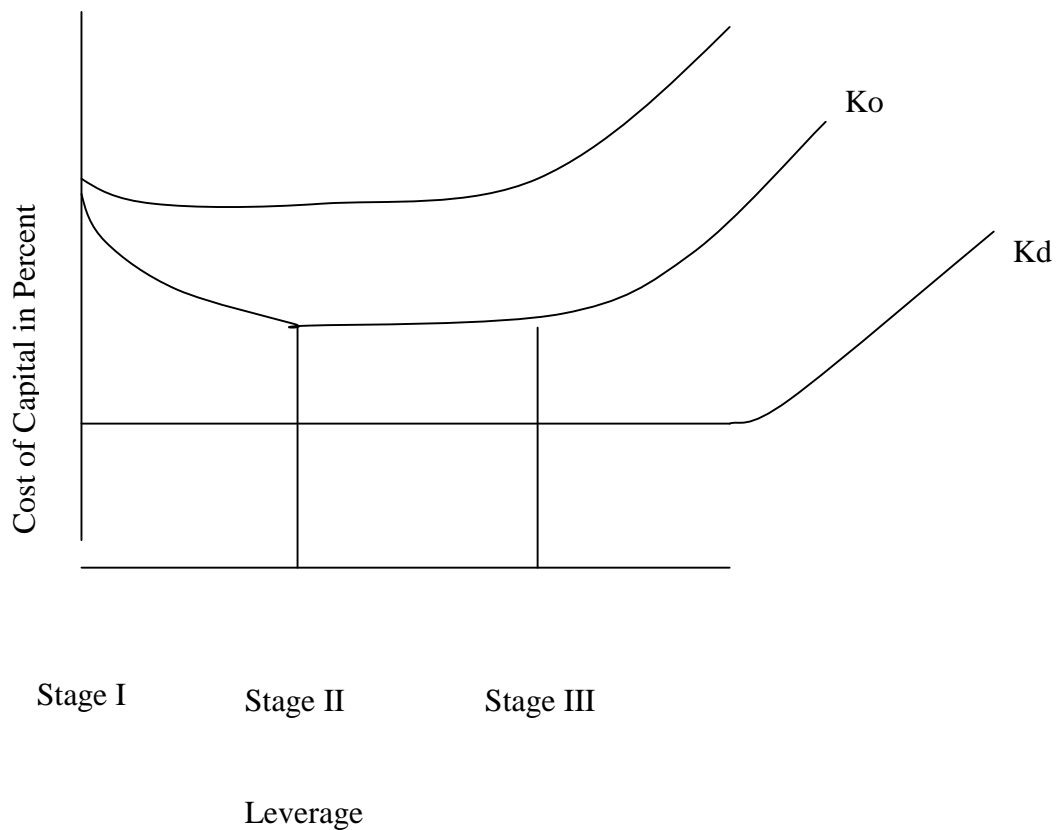
It is the more sophisticated version of net income approach (Pandey, 1981). This theory contents that cost of capital ( $k_o$ ) can be minimized and value of firm ( $v$ ) can be maximized with the judicious mixture of debt and equity. So, the optimal capital is possible for every firm. That's why it is also called relevant theory.

The traditional approach is based on the view that:

1. The cost of debt capital ( $k_d$ ) remains more or less constant up to a certain degree of leverage but rises thereafter at an increasing rate.
2. The cost of equity capital ( $k_e$ ) remains more or less constant or rises only gradually up to a certain degree of leverage and rises sharply thereafter.
3. The average cost of capital ( $k_o$ ) as a consequence of the above behavior of  $k_e$  and  $k_d$  (a) decreases up to a certain point (b) remain more or less unchanged for moderate increases in leverage thereafter and (c) rises beyond a certain point.

According to the traditional proposition, the overall cost of capital reacts in changes to capital structure can be divided into three stages which can be shown more clearly by the given graph.

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#### Stage I: Increasing Value

During this stage, the cost of debt remains constant or rises negligibly because the market views that the use of debt is a reasonable policy. On the other hand, the cost of equity ( $k_e$ ) rises slightly but when it increases, it does not increase at faster motions enough to offset the advantage of low cost debt. As a result, the overall cost of capital or the value of the firm decline with increasing leverage.

#### Stage II: Optimal Value

During this stage, increase in leverage has negligible effect on the value or the cost of capital of the firm. That is because of the increase in the cost of equity due to added financial risk offset the advantage of low cost of debt. At this stage, at a specific point the cost of capital will be minimum and the value of the firm will be maximum.

### Stage III: Declining Value

At this stage, the value of the firm declines with leverage or cost of capital will be maximum with leverage. Because the perception of the investors will be a high degree of financial risk and increase cost of equity by more than to offset the advantage of low cost debt.

These three stages show that the cost of capital is the function of leverage it declines with leverage at first and reaches at the minimum point in which the cost of capital is minimum and finally the range starts rising.

#### iii) Net operating Income Approach.

The critical assumption with this approach is that overall cost of capital ( $k_o$ ) is constant regardless of degree of leverage. An increase in use of supposedly cheaper debt funds is offset exactly by the increase in the required equity return ( $k_e$ ). Thus the cost of capital of the firm, cost of capital ( $k_o$ ) cannot be altered through leverage and there is no optimum capital structure (Van Horne, 2002). Assumptions of this approach are:

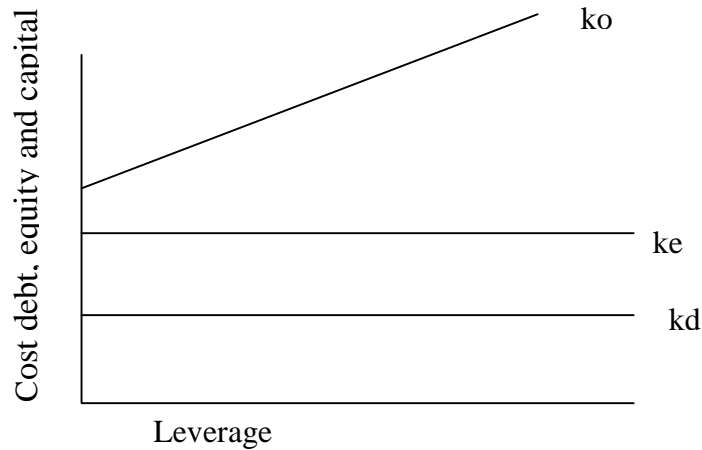
1. The market uses an overall capitalization rate ( $k_o$ ) to capitalize the net operating income, ( $k_o$ ) depends on the business risk. If the business risk is assumed to remain unchanged  $k_o$  is a constant.

2. The debt capitalization rate, ( $k_d$ ) is constant.

3. The market capitalizes the value of the firm as a whole thus, the split between debt and equity is not important.

4. The use of less costly debt funds increases the risk to share holders. This causes the equity capitalization rate to increase. Thus the advantage of debt is offset exactly by the increase in the equity capitalization rate, ( $k_e$ ).

5. The corporate income taxes do not exist.



( $K_o$ ) is the overall capitalization rate and depends on the business risk of the firm. It is independent of financial mix. If NOI and ( $k_o$ ) are independent of financial mix, Value of the firm will be constant and independent of capital structure changes (Pandey, 1972: 679).

The market value of the firm,  $V$ , is determined as:

$$V = \frac{NOI \text{ or } EBIT}{K_o}$$

Similarly, the market value of equity,  $S$  can be determined as:

$$S = V - D$$

The cost of equity ( $K_e$ ), will be measured if interest (INT) is charged as:

$$K_e = \frac{NOI - ZINT}{V - ZD} \times \frac{NI}{S}$$

or  $K_e = \frac{\bar{X} - ZKdD}{S}$

Alternatively, the cost of equity can be defined as follows:

$$K_e = K_o + (K_o - K_d) D/S$$

This equation shows that, if  $K_o$  and  $K_d$  are constant,  $K_e$  would increase linearly with debt equity ratio,  $D/S$ .

#### 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 having the cost of capital, ( $K_o$ ), remain constant throughout all degree of leverage (Van Horne, 2002: 257). 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 proposition 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.

The assumption regarding to proposition I and II, irrelevance of cost of capital or the value of the firm with the capital structure are as follows:

1. Capital markets are perfect, information are costless and readily available to all investors. All securities are perfectly divisible, no transaction costs and investors are rational and behave accordingly.

2. Firms are categorized into “equivalent returns” classes. All firms with in a class have the same degree of business risk.

3. There is no income tax. This assumption is removed later by M-M.

4. The average expected future operating earnings of a firm are represented by subjective random variables. It is assumed that expected value of the probability distribution of all investors are the same.

5. 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. In equation, it can be expressed as:

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

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

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

If  $K_d$  is the expected return on the firm’s debt and  $K_e$  is the expected return on firm’s equity then

$$K_o = K_e \left( \frac{S}{V} \right) + K_d \left( \frac{D}{V} \right)$$

By definition,

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

Therefore,

$$K_o = K_e \left( \frac{S}{V} \right) + K_d \left( \frac{D}{V} \right)$$

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 cannot command the different value of the firms or 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 formulate proposition, M-M formulated proposition II which defines the cost of equity is the lines function of the leverage. The equations form of this proposition can be expressed as follows:

$$K_e = K_o + (K_o - K_d) * \frac{B}{S}$$

This equation shows that for any firm is a given risk class the cost of equality  $k_e$  is equal to the constant average cost of capital and cost of debt times debt equality ratio i.e. premium for financial risk.



The M-M hypothesis contents that overall cost of capital as well as the value of a firm are independent of capital structure. It is also called the value of levered firm ( $V_L$ ) is equal to the value of unlevered firm ( $V_U$ ) in the same risk class. (Pradhan, 1992)

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 maintained that even if  $k_d$  is function of leverage,  $k_o$  will remain constant as  $k_e$  will increase at a decreasing rate to compensate.

## **2.2 REVIEW OF EMPIRICAL WORKS**

There are numerous studies in capital structure since 1958 till 2005. This section is fully focused to review of some empirical works concerning capital structure and cost of capital. This section is devoted to the review on the foreign studies including Indian studies. There are four sections under this review. First section focused on the review on empirical works carried out up to 1960s with their major findings. The second section is concerned to review of studies during 1970s. Third section deals with the review of the studies during 1980s and fourth section is devoted to the studies during 1990s and up to 2005.

### **i) Review of Early Empirical Works(1958 to 1970)**

This section includes early empirical works up to 1960s. These studies

were clustered around the M-M independent hypothesis and traditional theory of capital structure. Modigliani and Miller (1958), whose first study was carried out in the American electric utilities and oil companies turned out the result in support of their hypothesis that cost of capital and value of the firm is independent of the capital structure decision. This theory focuses on the linear relationship between cost of equality and leverage. MM study is not out of access of criticism .Barge (1963), criticized on the ground of the use of current earning as a reasonable approximation to the expected future warnings and use of the same variable in the denominator of the ratios on the dependent and independent variables and argued that stock value might reflect the value of oil properties and reserves ,which are not currently contributing to earnings. The exclusion of the exogenous variables like growth, payout ratio, size of the firm are important factors for the effect of capital structure on cost of capital.

Donaldson (1961), studied debt capital on 25 selected American manufacturing companies from the industries 1.machine tools2.baking and biscuits 3.rubber 4.chemicals and 5.ethical drugs , five from each industry. He found the result similar to pecking order theory.

Modigliani and Miller (1963), in correction of their original hypothesis in 1963 concluded that leverage has a tax advantage and value of the firm can be maximized when leverage is measured by  $D_1/V_1 = 1$ .In other words cost of capital can be maximized when equity financing is zero. They tested this tax advantage of leverage in 1966 with 63 samples of large electric utilities of USA for the year 1954, 1956 and1957.

Barge (1963), tested MM hypothesis with the data of 61 class-1 rail roads, 63 departmental store companies and 34 cement producers. He used two approaches – direct tests and yield tests to examine the validity of 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 same moderate debt range. This study 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 yield 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.

Weston (1963) conducted the test of MM hypothesis on 59 electric utility industrial firms in 1959. The study suggested that leverage is a negative linear function of earning growth. The absence of correlation between the cost of capital and capital structure was due to the counter balancing influence of earning growth on leverage. The study found that the regression co-efficient of leverage to be positive and significant.

Archer and Farber (1966) studied the determinants of cost of equity. They have concluded that the cost of equity is the function of the size and growth of earnings of the firms

Wippenn (1966), carried out the cross sectional analysis for the years 1956,1958,1961and 1963of 50 firms sampled from different 6 industries 1.containers-metal and glass, 2.ethical drugs, 3.food-bread, cake and biscuit bakers, 4.industrial

machinery, 5.integrates domestic oil and , 6.paper and rubber fabrications .In this test he concluded that shareholders wealth is enhanced by the firm's judicious use of fixed commitment financing. The implication of this study is the rejection of the MM hypothesis and acceptance of the traditional theory of capital structure.

Schwartz and Aronson (1967), revealed the effect of industrial classification on the capital structure of 32 firms sampled from the four broad classes of industry 1.rail roads, 2.electric and gas utility 3.mining and 4.industries in equal number.

Sharma and Rao (1967), carried out the cross sectional study for the years 1963, 1964 and 1965 and concluded that debt has non tax advantages and investors prefer corporate to personal leverage. Similarly Nadda (1961) and Malhotra (1967) also concluded that capital structure trends increased and debt has non tax advantage. So, it can be concluded that value of a firm rises up to leverage rate considered prudent. They found the co-efficient of debt variables to be more than 't' the corporate income tax rate. They used two stages least square as a method of arriving at the true expected future earnings.

Childs (1969), studied 125 industrial companies of USA and found that the dominant role of equity in long term financing.

Peterson (1969), in his study of manufacturing firms showed the evidenced contrary to the traditional view, on the relation between risk measured by the coefficient of variation of rate of return of total capital over the period of 1947 to 1956 and leverage measured by the ratio of senior to junior capital at book value, then by the

ratio of senior to junior capital at market value and finally by the ratio of fixed charges to earning power.

Gupta (1969), in his cross-sectional analysis for the year 1961-62 of manufacturing corporation of USA concludes the significant effects of the size and industrial classification of the firms on the financial structure of the manufacturing corporations and no significant effect of growth rate on leverage.

#### ii) Review of Empirical Work (1970-1980)

The decade of 1970s was marked with empirical studies mostly directed in the area of capital structure of corporate finance. Most of the previous studies were clustered around the tests of existence of an optimal capital structure.

Rao and Lintzberger (1970) were conducted the study of the effect of capital structure on the cost of capital in a less developed and less efficient capital market (India) in a highly developed and efficient capital market (USA). They found that MM 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 developing economy.

A significant contribution in the area of value implication of firm's capital structure decision has been made by Hamada, Lev and Pekelman and Kim et.al.

Hamada (1972) provided the evidences that support if the MM hypothesis. Lev

and Pekelman (1975) tested the validity of multi period adjusted model and concluded that the equity and debt effect on the current period of financial policy of the firm. Similarly, Kim et. Al. (1979) suggested that weak evidence supports to the clientele hypotheses of Miller. Remmers et. Al (1974) showed that industrial influence is not a significant determinant of financial structure in the USA, More way and Netherlands. Scott (1972) conversely provided the evidence in the support of significant industrial influence on capital structure and suggested that firm in different industries has different financial structure. Scott and Martin (1975) also came to the same type of conclusions and also bolstered evidence for the significant industrial influence on financial structure in the Japanese and French cases. Carleton and Silberman (1979) showed earning variability affect the industrial leverage

Cross – sectional analysis of generic industrial carried out by Ferri and Jones (1979) suggested only a slight statistical relation ship between relative debt structure class and generic industry class.

During the decade of 1970, most of the Indian studies done like foreign studies are concerned with the cross- sectional characteristics of individual firma capital structure and some studies are related to the general evidence of capital structure trend.

Chakraborty (1975) had concluded the effects often-different individual firms characteristics on negative association of debt equity ration with the age, retained earning, profitability scaled by capital employed, and corporate tax rate: and positive association with size, profitability scaled by sales and capital intensive ness measured by gross fixed assets to sales. Rao and Rao (1975) found the negligible positive impact

of corporate income tax on corporate debt policy of manufacturing sector in India. Agrawal (1976) found the sound long term financial strength of the aluminum industry in India and increasing trend in capital structure during the period of 1963-1973.

Madan (1978) carried out the detail study of the debt- equity ratio norms as followed by the financial institution, government agencies, industry and other and recommended the suitable norms to the Indian government. In this study he found the increasing trend of capital structure, industrial influence on capital structure, influence of individual firm's characteristics and positive correlation between debt equity ratio and size of the projects during the period of 1960-1975. Mishra (1978) showed that the evidence in favor of the tax avoidance hypothesis for sugar, tobacco, trading industries and aggregate corporate in India. Pandey (1978) study the cross- section analysis of 47 chemical 32 cotton, 32 engineering and 20 electricity industries and could not reach the conclusion on the impact of debt on cost of equity. But in 1979, he drew the conclusion that the relationship between debt equity ratio and cost of equity is adverse.

### iii) Review of Empirical Work (1980-1990)

There are many studies carried out during 1980s on general trend of capital structure industrial and firm's characteristics and impact of leverage and cost of capital. Most of the studies are related to the agency cost and asymmetric information theory of capital structure. Flath and Knoeber (1980) tested the MM hypothesis and draw conclusion that it is negligible. Pandey (1981) study the relationship between leverage and cost of capital, effect of tax deductibility on cost of equity. He found that there is negative association of leverage with cost of capital negative cost of capital

after deduction of tax effect and inclusive result on the effect of leverage on cost of equity

Matta (1984) found the negative relationship between debt, equity ratio and growth rate. Mayer (1984) pointed out that financial economist have not hesitated to give advice on capital structure, even though how firm actually chase their capital structure remains a puzzle as the theories developed did not seem to explain fully actual financing behavior.

Auerbach (1985) arguer that leverage is inversely related to the growth rate because the tax deductibility of interest payment is less valuable to fast growing firms since they usually have more non debt tax shields. Taggart (1985) highlight on the general trend of capital structure. He concluded that there was increasing trend of leverage in USA in post war period.

Kester (1986) studied in industrial influences on capital structure and found that the statistically significant industrial influence on financial structure. Kim and Sorensen (1986) found that the positive relationship between the volatility and leverage ratio.

Titman and Wessels (1988), Wedig (1988), Friend and Lang (1988) and Friend and Hasbruck (1988), concluded that the increase impact of the volatility of earnings on leverage. Similarly Masuli (1988) studied on the general trend of capital structure. He showed that distributed profit accounts for about 22 percent of total sources of funds for non-farm, non-financial corporate business in 1986 and this figure in average was about 49 percent over period of 1946-1966 in USA Garg (1988) suggested that



there existed the relationship between business risk and debt equity ratio.

A few studies have been carried out in India during 1980's

Gangadhar (1980) found the increasing trend in medium and large scale public and private limited company and in small scale PVT.LTD and decreasing trend in small scale public company from the study for 1961-76. Singh (1981) found that size of the firm is relevant to capital structure in public limited .Banerjee (1984) also show the trend of debt equity ratio o f central Government company during the period of 1960-1970was increasing trend and after 1970 was decreasing trend. Shrivastava (1984) rejected the MM hypothesis. Mall (1986) examined the trend in capital structure in medium and large scale PVT Company for the period of 1960 to 1983 and found the same trend of debt-equity ratio.

(iv) Review of Empirical works (1990 to 2005)

The empirical studies conducted by foreign and Indian researches during 1990 to 2004 are presented.

Agarwal and Nagarajun (1990) provided the evidence that all equity firms have greater family in evolvment in corporate operation those in levered firms. And managers of all equity firms have greater control of corporate voting right. This finding shows that human capital involved in the firms affects the capital structures through the agency problem. Israel et.al (1991) revealed that there was positive association of leverage with value of the firm in agreement with results of asymmetric information models.

Kale et. Al. (1991) derived the functional relationship between business risk and optimal debt level in the De-Angelo in U-shape of the empirical cross-section test for two years 1984 and 1985. Harris and Raviv (1991) pointed that numerous attempts to explain capital structure have proved to be inconclusive. Kim et.al (1991) concluded that data a financial leverage with information content, the market to changes in financial leverage and direction of the market reacts to changes in financial leverage.

Levy and Lazarovichporate (1995) suggested that the positive market reaction to the project. Barclay, Smith and Watts (1995) studied the effect of size, growth, signaling and regulation on debt levels the study reported a small economic effect of size on leverage level where results were missed when regressing the leverage on total sales as a measure of size, Rajan and Zingales (1995) reported that leverage is the function of tangibility market to book, size and profitability in the Vs companies. Hull (1995) found market reaction to leverage decrease announcements depend on how a firm's D/E changes reactive to its industry D/E norms.

Johnson (1998) conducted a study on the effect of the existence of bank debt on a firm's capital structure. His findings are consistent with the proposition that firms can have higher optimal leverage if they borrow from bank.

Booth et. Al (2001) found debt ratios in developing countries seem to be affected by the country factor such as GDP growth rates, inflation rates and development of capital market.

Chui et. Al. (2002) Studied 5551 samples firms across 22 countries and found national culture factors affects corporate capital structure and countries with high

scores on the cultural dimensions of conservatism and mastery tend to have lower corporate debt ratios, Mani and Reeb (2002) suggested that firm having the average level of international diversification have about 52 basic points lower cost of debt financing, and use approximately 30 percent debt in their capital structure.

Allayannis, Brown and Klapper (2003) observed in their study that several unique factors, as well as some common factors that determine the use of different types of debt. It depends on the ability to manage the associated currency risk with risk management's tools.

### **2.3 REVIEW OF NEPALESE STUDY**

There are some empirical studied which are conducted by Nepalese researchers. M.K. Shrestha (1985), R.D. Shrestha (1993) and Baral (1996) emphasized the capital structure of Nepalese public enterprises. Adhikari (1991), KC (1994) and Poudel (1994) worked on the corporate finance and impact of leverage on value of the firm.

M.K. Shrestha (1985) has conducted the study of "Capital structure management reflected Nepalese public enterprise". He had suggested that the equity ratio should neither be highly levered to create too much financial obligation i.e. beyond capacity to meet nor should it be much how levered to infuse operation strategy to by-pass responsibilities without performance.

R.D. Shrestha (1993) accomplished the study on the topic of focus on "Capital structure of selected public companies". She used data from 19 companies and study had covered different sectors: manufacturing, finance utility service and other allied

area, she had found that most of these companies have debt capital relatively very higher than equity capital consequently most of them are operating at losses to extent that payout of interest on loan has serious issues. She also concluded that most of public enterprises have not transparent capital structure and these companies are adhocery determined the capital structure without realistic parameter.

Adhikari (1991) tested MM hypothesis in five listed finance companies for the period of 1976-77 to 1988-89. He used to multiple regression equation and found that the result support the tradition proposition. Aryal (1991) study on “An evaluation of capital structure of bottlers Nepal’s Limited” suggested that the management must bring a satisfactory compromise among the confusion of cost, risk control and timing. He had also suggested that, in order to bring down the amount of debt capital, company should retire debt capital by issuing additional equity shares. He further suggested that the company should maintain the general norms of optimal capital structure of 2:1.

Khanal (1992) studied on “Capital structure management of Nepalese companies”. He selected samples from industrial public enterprises of Nepal and found that overall result was unsatisfactory.

KC (1994) studied on “The financing of corporate growth companies” and found that the significant positive relationship of long term debt with growth, age and tangible assets. Similarly, Pandey (1994) include 15 listed companies and 20 public enterprises covering ten year period (1982/83 to 1991/92). He concluded that size, profitability, growth, collateral value and variability of earnings have the influence on the capital structure.

Baral (1996) also worked on “The study of capital structure and cost of capital of Nepalese Public Enterprises” on the data of 26 enterprises during 1980/81 to 1991/92. He found that profitability, operation cash flows and debt service are positively related to capital structure. At last he added that performance of public enterprises is very poor and they are not supporting to increase the wealth of the society but diluting it and hindering the development of the country.

Singh (2001), study on “The capital structure decision and its impact on risk and return of Hulash Steel Industries Pvt. Ltd.”, he derived that the debt equity ratio was lower than standard. As the company had used more short term debt in total debt, total debt to total assets ratio was also high and the interest coverage ratio was increasing trend.

Sah (2002) conducted study in 26 listed companies, 11 finance and 15 non-finance sector enterprises. The result indicated that the cost of capital can be affected by the used of debt in capital structure. The cost of equity increases as leverage increase.

## **2.4 RESEARCH GAP**

The capital structure is the combination of long term debt and equity, it is a part of financial structure i.e. comprised to the total combination of preferred stock, common stock, long term debt and current liabilities. If current liabilities are removed from it we get capital structure. The objective of the firm is to maximize the value of equity share; the firm should select a capital structure that helps in achieving the

objective of financial management. If the capital structure decision affects the total value of the firm, a firm should select such a financial mix that will maximize the shareholder wealth.

The corporate capital structure has long been recognized as an unresolved economic puzzle, which requires rational resolution if the prevailing economic paradigm of corporate finance is to continue. The controversy centers on when there or not capital structure matters. Traditional approach suggests that there is optimal structure for each firm, which is obtainable by the trade off between the cost and benefit of using debt in capital structure. But net operating income approach and Modigliani and Miller proposition on capital structure. Many studies have been conducted over the last four decades around MM independent hypothesis. Some of them supported this result while others did not.

There are only few research accomplished to get relation of capital structure and cost of capital in banking sector. Capital structure attracted intense debt and scholarly attention in the literature of finance; however it has received a limited attention in the context of Nepal. There are rare studies conducted on capital structure and its impact in cost of capital in Nepalese banking context. Viewed in this way, there is need to carry out a study specific to the effect to the capital structure on cost of capital.

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

This chapter has been divided into six sections which are shown as below:

#### **3.1 RESEARCH DESIGN**

In order to conduct this study, descriptive and analytical research design has been adopted. Descriptive research design has been followed for conceptualization of the problem. Analytical research design has been followed to analyze the relationship among variables.

#### **3.2 NATURE AND SOURCES OF DATA**

This study is basically based on secondary data. The required data and information regarding capital structure cost of capital and other variables used in this study have been collected from various sources. To analyze the relationship among different variables, the study uses pooled cross-section data. The required data have been taken from:

- ) Annual reports of selected organization which are submitted in SEBO/N by organization.
- ) Annual reports of SEBO/N.
- ) Websites of Nepal Stock Exchange and SEBO/N.
- ) Various research studies, dissertation and articles related to study.

### 3.3 POPULATION AND SAMPLE OF THE STUDY

There are 17 commercial banks listed in Security Board of Nepal by the end of FY 2063/2064 as the website “sebonp.com”, which is regarded as size of population for the study. This study does not cover all Nepalese banks. Among 17 banks, the study has been confined to only 4 banks. 4 banks selected for the study from the top most profit earning banks which were established in early 90s and seem to have represented the Nepalese banks as a whole. The necessary data of these banks are also easily can be obtained in websites.

These selected enterprises for the study are representative of Banks.

**Table 3.1**

Number of Enterprises Selected for the Studies

Sector	N	n	n/N%
Bank	17	4	23.52

Source: website of Security Board Nepal; [www.sebonp.com/](http://www.sebonp.com/)

Note ‘N’ indicates the total number of Nepalese enterprises listed in Security Board Nepal and ‘n’ indicates the number of enterprise sampled for the study. Considering the study period from 2002 to 2006, usable data could be obtained for banks indicated in the Table 3.2



**Table 3.2**

Name of Banks and Number of Observations for the Study

S. No.	Name of the banks	years	Observation
1.	NABIL Bank Ltd	2002-2006	5
2.	Nepal Investment Bank Ltd	2002-2006	5
3.	Himalayan Bank Ltd	2002-2006	5
4.	Standard Chartered Bank Nepal	2002-2006	5

Source: website of Security Board Nepal; [www.sebonp.com](http://www.sebonp.com)

### 3.4 METHOD OF DATA ANALYSIS

Analysis is the careful study of available facts, so that one can understand and draw conclusion from them on the basis of established principles and sound logic (Cottle et, al; 1986: 29). The collected data will be classified, tabulated and analysis through models. Various statistical tools are used to confirm the relationship between capital structure and cost of capital and to test robustness of the results. The following models used in the study

#### MODEL I

This model regressed the average cost of capital ( $K_o$ ) with each of the selected explanatory variables like leverage I, Size of the firm, Growth in total asset, Dividend payout ratio, earning variability and Liquidity. The equations are as follows:

$$K_o = a + b_1 TD/CE \quad \text{-----I}$$

$$K_o = a + b_2 \log S \quad \text{-----II}$$

$$K_o = a + b_3G \quad \text{-----III}$$

$$K_o = a + b_4DPR \quad \text{-----IV}$$

$$K_o = a + b_5EV \quad \text{-----V}$$

$$K_o = a + b_6Liq \quad \text{-----VI}$$

Where,

$K_o$  = Average cost of capital

$TD/CE$  = Leverage I i.e. Total Debt/Capital Employed

$\text{Log } S$  = natural logarithm of Size of the Firm i.e. Total Assets

$G$  = Growth in Total Assets

$DPR$  = Dividend payout Ratio

$EV$  = Earning Variability

$Liq$  = Liquidity

$a$  = Regression Constant

$b_i$  = Regression Co efficient

## MODEL II

In this model, average cost of capital is taken as the function of leverage, size of the firm, growth in total assets, dividend payout ratio, earning variability and liquidity ratio which may stated as:

$$K_o = f (TD/CE, \text{Log } S, G, DPR, EV, Liq)$$

The Multiple Regression equation of the model is:

$$K_o = a + b_1TD/CE + b_2LogS + b_3G + b_4DPR + b_5EV + b_6Liq \text{ -----VII}$$

The notations are similar as Model I

### MODEL III

This model regressed the average cost of equity ( $K_e$ ) with each of the selected explanatory variables like leverage I, Size of the firm, growth in total asset, dividend payout ratio, earning variability and liquidity ratio. The equations are as follows:

$$K_e = a + b_1TD/CE \text{ -----VIII}$$

$$K_e = a + b_2 \log S \text{ -----IX}$$

$$K_e = a + b_3G \text{ -----X}$$

$$K_e = a + b_4DPR \text{ -----XI}$$

$$K_e = a + b_5EV \text{ -----XII}$$

$$K_e = a + b_6Liq \text{ -----XIII}$$

Where,

$K_e$  = Cost of equity

Other notations are same as above.

### MODEL IV

This model is described as cost of equity is the linear function of leverage. Cost of equity ( $K_e$ ) is regressed leverage together with selected explanatory variables like Leverage, Size of Firm, Growth of Assets, Dividend Payout Ratio, Earning Variability and Liquidity Ratio. The equation is:

$$K_e = a + b_1TD/CE + b_2LOS + b_3G + b_4DPR + b_5EV + b_6Liq \text{-----XIV}$$

The models are tested by using the pooled data of the selected enterprises in the Security Board Nepal.

### **3.5 STATISTICAL TOOLS**

Various statistical tools have been used in order to estimate the above models such as arithmetic mean, standard deviation, coefficient of determination ( $R^2$ ), standard error of estimates (SEE) and student t-statistics.

A brief explanation of statistical tools used in this study is as follows:

#### **i) Correlation ( r )**

For the purpose of comparison and further analysis, it is necessary to get a numerical measure for the correlation between two variables. It describes the degree to which one variable is linearly related to another. Higher the positive values mean higher the relationship between variables and vice versa.

#### **ii) Standard Deviation**

Standard Deviation is the most popular and more useful measure of dispersion and gives informed correct and stable results. It is defined as the square root of the mean of the distribution. A small value of standard deviation indicates a high degree of

uniformity of the observation as well as homogeneity of a series.

iii) Coefficient of Determination ( $R^2$ )

Coefficient of determination ( $R^2$ ) measures the percentage of total variation independent variables explained by explanatory variables. It is the measure of the degree of linear association or correlation between two variables, one of which happens to be independent and the other being dependent variables. The range for  $R^2$  is from 0 to 1. If  $R^2 = 1$ , then 100% of total variation in the dependent variables has been explained by the model. The value of  $R^2 = \text{Explained Variation} / \text{Total Variation}$ . The fit of the model is said to be better the closer the value of  $R^2 = 1$ .

iv) Regression Constant (a)

The value of the constant which is the intercept of the model indicates the average level of dependent variables when independent variable is zero. In other words, a constant indicates the means or average effect on dependent variables if all variables omitted from the model.

v) Regression Coefficients ( $b_1, b_2, b_3, \dots, b_n$ )

The regression coefficient of each dependent variable indicates the marginal relationship between that variable and holding constant the effect of all other independent variables in the regression model. It is also known that the numerical constant which determines the changes in dependent variables per unit changes independent variable. In other words, the coefficient describes how much changes in independent variables affects the value of dependent variables estimate.

vi) Standard error of Estimates (SEE)

SEE is a measure developed by statisticians for measuring the reliability of the estimating equation, indicating the variability of the observed values differs from their predicted values on the regression line. The larger SEE, the greater happens to be dispersion of given observation around the regression line. But if the SEE happens to be zero then the estimating equation is a perfect estimator of the dependent variable.

vii) Students t – statistics

For applying t – distribution, the t – values are calculated first and compared with the critical values at a certain level of freedom. If the computed value of 't' exceeds the table value say (t = 0.05) it is known that the differences is significant at 5% level of significant but if t values are less than the corresponding critical value of the t distribution the difference is not treated as significant.

### **3.6 SPECIFICATION OF VARIABLES**

The definitions of the variables used in this study are as follows:

1 . Average Cost of Capital ( $K_o$ )

The average cost of capital is the dependent variables calculated by dividing expected earnings by closing market value of the equity shares plus book value of the debt. The expected earning 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 assigns to the after tax net operating income are 3, 2 and 1 respectively for the cross section year and previous two-year.

## 2 . Leverage (L)

Leverage measures the size of debt employed in the firm. Leverage is calculated in two ways.

$$\text{Leverage-I (L}_1\text{)} = \frac{\text{Total debt}}{\text{Capital Employed}}$$

$$\text{Leverage-II (L}_2\text{)} = \frac{\text{Total Debt}}{\text{Equity Capital}}$$

Total debt includes short term debt plus long term whereas capital employed includes long term debt plus short term debt plus equity capital. Equity capital includes share capital, reserves and retained earnings (Net Worth).

## 3 . Size of the Firm (Log S)

The natural logarithm of the total assets at the balance sheet is used as a measure of the firm size. This measure is preferred over the other measures of size, like capital employed, fixed assets, sales or employment, because, it represents the firms investments. And also magnitude indicates the confidence and attitude of investors towards the firm in providing financial resources. Size has been included as a control variables in the regression model used in this study.

## 4 . Growth (G)

Growth in assets should normally followed by increase in the earning capacity of the business. At least it indicates the potentiality for increase in earnings. This also determines the technology efficiency (Pandey: 1985, 80). It is considered as a sign of

managerial efficiency. Thus, it is taken as a proxy measure for expected growth, that is,

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

$A_t$

Where,

A = Total assets in cross section year

$A_t$  = total assets in one year before cross section year

#### 5 . Dividend Payout ratio (DPR)

Dividend payout ratio refers to the ratio, the proportion of earning paid to the shareholders 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,

$$DPR = \frac{\text{Dividend per share}}{\text{Earning Per share}}$$

#### 6 .Earning variability (EV)

The variability of the homogenous risk class assumption is of critical important in capital structure. In this study, earning variability include as proxy measure for business risk in the regression modes. The measure of business risk is a ratio, the numerator of which is the standard deviation of not operating income of cross section year and the denominator is a average mean of such earning in three years. Thus, this ratio is the co-efficient of variation of net operating income. A risky firm would be assumed to have high overall cost of capital and cost of equity.



#### 7 . Liquidity Ratio (Liq)

Liquidity ratio measures the short term risk of a firm. It is calculated by dividing current asset by current liability. That is,

$$\text{Liquidity ratio} = \frac{\text{Current asset}}{\text{Current liability}}$$

#### 8 . Cost of Equity ( $K_e$ )

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

## CHAPTER IV

### ANALYSIS AND INTERPRETATION OF DATA

The objective of this study is to find out empirical effect of leverage on average cost of capital and cost of equity. The study is mainly segregated into three parts. First section of this chapter analyses relationship of capital structure with cost of capital for this simple regression analysis and multiple regression analysis are followed. Second section analyses capital structure with cost of equity. For this also simple and multiple regression analysis is the base for study and last section analyses the properties of portfolio formed on leverage.

#### 4.1 ANALYSIS OF THE EFFECT OF CAPITAL STRUCTURE ON THE AVERAGE COST OF CAPITAL

**Table 4.1**

**Descriptive Statistic for Sample Means and Standard Deviation for Banks**

Variables	Means	Standard
Leverage (TD/CE)	0.1341	0.1383
Leverage (TD/EQ)	0.1899	0.2492
Growth in Total Assets(G)	0.1442	0.6618
Size of Capital Employed (Log S)	3.4330	0.4698
Dividend Payout Ratio (DPR)	0.3335	0.2249
Liquidity Ratio (Liq R)	1.0616	0.0195
Earning variability (EV)	0.1007	0.0767
Cost of Capital (Ko)	0.6311	0.2356
Cost of Equity (Ke)	0.3588	0.1787

Source: Appendix A

Table 4.1 shows the means and standard deviation of variables involved in regression analysis. The leverage (Total Debt divided Capital Employed) ratio is 13.14 percent with standard deviation of 13.83 percent which means that average total debt of Banking Sector of Nepal is 13.14 percent of total capital employed. Another leverage (Total Debt divided Equity Capital) ratio is average to 18.99 percent with standard deviation of 24.92 percent. It means equity capital is greater than debt capital. Average growth in total Asset is 14.42 percent. Size of capital employed is averaged to 3.4330 (logs in Rs million) with standard deviation of 0.4698. Average dividend payout ratio is 33.35 percent with standard deviation of 22.49 percent which shows that Banks has paid 33.35% dividend to its shareholders. Average liquidity ratio is 1.0616 times which is smaller than 2 times, it means low liquidity in banking sectors. Average cost of capital is 63.11 percent with standard deviation of 23.56 percent whereas average cost of equity is 35.88 percent with standard deviation of 17.87 percent.

#### **4.1.1 Partial Correlation Coefficient:**

The degree of correlation between any two variables is determined in the regression result. The zero order correlation coefficient is presented in Table 4.2.

**Table 4.2****Partial Correlation coefficient of Variables**

Variables	L1	L2	G	Log S	DPR	Liq	EV
L1	-	0.723**	-0.144	-0.418	-0.296	-0.553*	0.119
L2	-	-	-0.157	-0.389	-0.295	-0.513*	0.063
G	-	-	-	-.0287	0.204	-0.265	0.542*
Log S	-	-	-	-	0.722**	0.199	-0.118
DPR	-	-	-	-	-	0.026	0.180
Liq	-	-	-	-	-	-	-0.139
Ko	-0.068	0.198	0.170	0.261	0.572**	-0.258	0.341

\*\* Correlation is significant at the 0.01 level (2 tailed)

\*Correlation is significant at 0.05 levels (2 tailed)

Source: Appendix A

Table 4.2 indicates that average cost of capital is negatively correlated to leverage and liquidity ratio and size of capital employed but positively correlated to growth, dividend payout ratio and earning variability in Nepalese Banks. Leverage has positive relationship with capital employed whereas negative with growth in total assets. There is negative relationship between leverage and growth in total assets and size of capital employed. Dividend payout ratio has negative relation with leverage but positive relationship with growth in total asset and size of capital employed. Similarly liquidity ratio is positively related with dividend payout ratio and earning variability has positive relationship with leverage, growth in total asset and dividend payout ratio whereas negative with capital employed and liquidity ratio.

It is clear that two measures of leverage is highly correlated with each others from the above zero order correlation matrix. Another point is that the cost of capital (dependent variable) is negatively correlated in banking sector of Nepal which is same as the results obtained from earlier studies prepared on relationship between cost of

capital and leverage on manufacturing companies of Nepal. The overall result shows that the highly leveraged firm is able to lower their cost of capital.

#### 4.1.2 Simple Regression Analysis

The average cost of capital is dependent variables and other variables used in analysis are taken as independent variables for banking sector which is presented in Table 4.3.

**Table 4.3**  
**Simple Regression Analysis of the Selected Variables**

Cost of capital (Ko) is regressed on Leverage (L1), Size of capital employed (Log S), Growth in total asset (G), Dividend payout ratio (DPR), Earning Variability (EV) and Liquidity Ratio (Liq)

**Regression Equation:  $Ko = a + b_1$  (independent variables)**

Models	Constant (a)	Regression / Coefficient	R <sup>2</sup>	SEE
$Ko = a + b_1 L_1$	0.647	0.005 / 1.105	0.005	0.2478
$Ko = a + b_1 G$	0.602	0.32 / 1.078	0.029	0.2472
$Ko = a + b_1 \text{Logs}$	0.181	0.076 / 1.034	0.068	0.2397
$Ko = a + b_1 \text{DPR}$	0.431	0.364 / 0.746	0.328	0.2036
$Ko = a + b_1 \text{Liq}$	3.944	0.074 / 1.036	0.066	0.2399
$Ko = a + b_1 \text{EV}$	0.526	0.129 / 0.981	0.116	0.2334

Source: Appendix A

### 4.1.3 Multiple Regression Analysis

The multiple regression analysis is mainly used for testing the relationship among variables which is shown in table 4.4

**Table 4.4**

Cost of capital (Ko) is regressed on Leverage (L1), Growth in total Asset (G), Size of Capital Employed (Log S), Dividend Payout Ratio (DPR), Liquidity Ratio (Liq) and Earning Variability (EV)

**Regression Equation:  $Ko = a + b_1L_1 + b_2G + b_3LogS + b_4DPR + b_5Liq + b_6EV$**

	Regression Coefficient						R <sup>2</sup>	SEE	F
	L <sub>1</sub>	G	Log S	DPR	Liq	EV			
8.249	-0.804	-0.770	-0.351	1.058	-6.288	1.269	0.591	0.186	3.114
	(1.656)	(2.023)*	(1.804)	(2.980)	(2.118)	(1.836)			

Source: Appendix A

t statistic are in parenthesis

\* Significant at 0.05 level

The Table 4.4 shows that leverage is in negative sign which means that leverage and cost of capital has negative associates in banking sector. The growth in total asset is negative and it is significant at 0.05 level tests. Size of capital employed and liquidity ratio are negative but dividend payout ratio is positive and significant whereas liquidity ratio and earning variability both are negative. The result of F test is

significant so F static in banking sector are significant.

Similarly, T static are negative on leverage, growth in total asset, size of capital employed, dividend payout ratio, and liquidity ratio but positive in earning variability. This result is similar to MM hypothesis which is traditional view.

## **4.2 ANALYSIS OF THE EFFECT OF CAPITAL STRUCTURE ON THE AVERAGE COST OF EQUITY**

The main purpose of this section is to find out the empirical relationship between leverage and cost of capital. According to MM proposition, the cost of equity increases linearly nearer with leverage. In other side, the traditional view remarks that the cost of equity either remains constant or rises slightly with moderate level of debt and increases with leverage. This states that both views say that equity decreases or may remains constant up to a point with leverage.

### **4.2.1 Partial Correlation Coefficient**

The relation of cost of equity and other selected variables are shown as according to comparative correlation matrix in Table 4.5 for banking sectors.

**Table 4.5****Partial Correlation Coefficient of Variables**

	L1	L2	G	LOG S	DPR	LIQ	EV
L1	-	0.7230	-0.114 0.634	-0.418 0.067	-0.296 0.206	-0.553* 0.012	0.119 0.618
L2	-	-	-0.0157 0.508	-0.389 0.090	-0.295 0.207	-0.513* 0.021	0.063 0.793
G	-	-	-	-0.287 0.219	0.207 0.389	-0.263 0.263	0.542* 0.014
LOGS	-	-	-	-	0.722**	0.199 0.401	-0.118 0.622
DPR	-	-	-	-	-	0.026 0.912	0.180 0.447
LIQ	-	-	-	-	-	-	-0.139 0.558
Ke	-0.490* 0.028	-0.0360 0.119	-0.392 0.087	-0.042 0.862	0.216 0.360	-0.563** 0.010	-0.552* 0.012

\*\* Correlation is significant at the 0.01 level.

\*Correlation is significant at the 0.05 level.

The Table 4.5 indicates that average cost of equity is negatively correlated to growth in assets, size of capital employed, dividend payout ratio, liquidity ratio and earning variability and leverage. Growth in total asset is positively correlated with dividend payout ratio and earning variability, but negatively correlated with size of capital employed and liquidity ratio. Size of capital employed is positively correlated



with dividend payout ratio and liquidity ratio but have negative relationship with earning variability. Leverage is positively correlated with earning variability and negatively correlated with growth in total assets, liquidity ratio, size of capital employed and dividend payout ratio.

Thus the overall results of correlation matrix show that the cost of equity in negatively correlated to leverage which remarked that the increase in leverage ratio leads to decrease in cost of equity.

#### 4.2.2 Simple Regression Analysis

The simple regression results of banking sector for polled data are shown in Table 4.6 which indicates that regression results of banking sector by using cost of equity as dependent variables and other independent variables.

**Table 4.6**

Cost of Equity is regressed on leverage, size of capital employed, growth in total asset, dividend payout ratio, liquidity ratio and earning variability

$$Ke = a + b_1 (\text{independent})$$

Models	Constant (a)	Regression /Coefficient	R <sup>2</sup>	SEE
Ke=a+b <sub>1</sub> L <sub>1</sub>	0.274	-0.153 / (0.486)	0.240	0.1642
Ke=a+b <sub>1</sub> G	0.410	0.098 / (0.541)	0.154	0.1734
Ke=a+b <sub>1</sub> Logs	0.413	0.001 / (0.638)	0.002	0.1883
Ke=a+b <sub>1</sub> DPR	0.416	0.030 / (0.069)	0.047	0.1840
Ke=a+b <sub>1</sub> Liq	5.854	0.203 / (0.436)	0.317	0.1557
Ke=a+b <sub>1</sub> EV	0.488	0.195 / (0.444)	0.305	0.1571

Source: Appendix A , T static's are in parenthesis

The regression coefficient of cost of equity on leverage indicates that using the higher degree of leverage decrease the cost of equity. Coefficient of determinants is 24 percent and t static is statistically insignificant. The relationship of cost of equity is positive with growth in total assets, size of capital employed, dividend payout ratio, liquidity ratio and earning variability. T static is not significant with all variables. From the above result, it can be concluded that cost of equity decreases (but not so fast decrease) of banks with leverage increase which means cost of equity is constant.

### 4.2.3 Multiple Regression Analysis

In simple regression only one variable used to analyze the relationship with other, so multiple regression analysis is used to avoid the bias and weakness of simple regression. The multiple regression result of banks using cost of capital as the dependent variable and other as independent variables is shown on Table 4.7

**Table 4.7**

Multiple regression of cost of equity on leverage (L1), growth in total asset (G), size of capital employed (LOG S), dividend payout ratio (DPR), liquidity ratio(Liq), earning variability(EV)

$$K_e = a + b_1L_1 + b_2G + b_3\text{Log S} + b_4\text{DPR} + b_5\text{Liq} + b_6\text{EV}$$

Constant	Regression equation						R <sup>2</sup>	SEE	F
a	L <sub>1</sub>	G	Log S	DPR	Liq	EV			
5.845	0.324	-0.146	0.050	-0.072	-5.208	-1.261	0.819	.0943	9.812
	(0.250)	(-0.163)	(0.131)	(-0.091)	(-0.567)	(-0.541)			

Source: Appendix A, The t statistic are in parenthesis

The Table 4.7 shows the result of regression models of cost of equity on selected variables. The result indicates that leverage and size of capital employed have positive impact on cost of equity whereas growth in total assets, dividend payout ratio, liquidity ration and earning variability have negative impact.

According to Table 4.7, one percent increase in leverage on an average in cost of equity for banks holding other variables constant. On the other hand, the variation is noticed that 0.32 percent decrease in growth in total asset leads to about .14 percent decrease in cost of equity. With respect to dividend payout ratio liquidity ratio and earning variability is negative in banking sector but the size of capital employed is positive.

The coefficient of multiple determinations ( $R^2$ ) is .81. It means that 81 percent of total variation in cost of equity has been explained by the regression model for banking sector. The 't' values of the coefficient of all variables are statistically insignificant. One of the important points to be noticed is that 'f' statistics measure the relevancy and goodness of fit of the regression model indicating statistically significant explanation of variation in dependent variables. In this study 'f' statistic is not significant.

### **4.3 ANALYSIS OF PROPERTIES OF PORTFOLIO FORMED ON LEVERAGE AND COST OF CAPITAL**

The properties of portfolio are used to examine the relationship of leverage and cost of capital with various measures of selected variables of Nepalese banks. This

section is based on pooled cross-sectional data analysis of 4 banks with 20 observations. This study sort out all sampled observations into three portfolios based on leverage (total debt to capital employed). The smallest, intermediate and largest leverage are contained in portfolio 1, 2, 3 respectively. For each portfolio mean and standard deviations are computed for the variables used in the study.

### 4.3.1 Properties of portfolio formed on Leverage (TD/CE)

The properties of portfolio formed on leverage and its relationship with various measures of average cost of capital, size of capital employed, growth in total assets, dividend payout ratio, earning variability, and liquidity ratio. The various ratios are classified according to the portfolio formed on the basis of leverage are presented in Table 4.8

**Table 4.8**

Properties of portfolio formed on leverage (TD/CE) of 4 banks for the period of 2001 to 2006 with 20 observations

Base of portfolio	Smallest	Intermediate	Largest
	5	6 to 50	50
No of observation	4	10	6
Panel A: Means			
Leverage (TD/CE)	0.9494	0.3797	0.6329
Average cost of capital (Ko)	3.1555	1.2622	2.1036
Growth in total asset (G)	0.72061	0.2882	0.4804
Size of capital employed (Log S)	17.1652	6.8660	11.4434
Dividend payout ratio (DRP)	1.6674	0.6669	1.1116
Liquidity ratio (Liq)	5.30772	2.1230	3.5384
Earning Variabilty (EV)	0.5036	0.2014	0.3357

Panel B : Standard Deviation			
Leverage (TD/CE)	0.9744	0.6162	0.7955
Average cost of capital (Ko)	1.7763	1.1234	1.4504
Growth in total asset (G)	0.8489	.5368	0.6931
Size of capital employed (Log S)	4.1431	2.6203	3.3828
Dividend payout ratio (DRP)	1.2913	.8166	1.0543
Liquidity ratio (Liq)	2.3038	1.4571	1.8810
Earning Variability (EV)	0.7096	0.4487	0.5793

Source: Appendix A

Higher leverage having represented lower cost of capital. The average cost of capital decrease from 3.15 percent for the smallest to 1.26 percent for the largest portfolios. The average cost of capital of the smallest portfolio is more variable as compare to the largest portfolios. The average cost of capital of the smallest portfolio is more variable as compare to the largest portfolio. The smallest portfolio has highest variation that is 1.77 percent, largest portfolio has lowest variation that is 1.12 percent and intermediate portfolio has intermediate variation i.e. 1.45 percent standard deviation.

The portfolio having higher leverage has lower growth in total assets. The growth in total asset is decreasing with increasing portfolio. It is 72.06 percent in smallest while it is 48.04 percent in intermediate portfolio and 28.82 percent in largest portfolio. The variation in growth in total assets is decreasing with increasing portfolio. It is 84.89 percent in smallest while 69.31 percent and 53.68 percent in intermediate

and largest portfolio respectively.

The portfolio with larger leverage has higher size of capital employed which is 17.16 million where for the smallest leverage to 6.86 million. Variation in size of capital employed is increased with increasing leverage. It is 4.14 million in smallest portfolio while it is 2.62 million and 3.38 million in larger and intermediate portfolio. The average size of capital employed of the larger portfolio is more variable than smaller portfolio.

The stock having higher leverage have paid higher dividend. The average dividend payout ratio is 1.66 percent for the smaller portfolio while it is 1.11 percent and 0.66 percent for intermediate and largest portfolio respectively. The variation in the dividend payout ratio is 1.29 percent in smallest portfolio; it is 1.05 percent and 0.80 percent in intermediate and largest portfolio respectively.

The stock having higher leverage have higher liquidity ratio. It is 5.30 times in lower port folio which is 3.52 times in intermediate portfolio and 2.12 times in highest portfolio. Similarly, the stock having highest portfolio have lowest variation. It is 1.45 times, 1.88 times and 2.30 times in largest, intermediate and smallest portfolio respectively.

Average earning variability is highest for the largest leverage and lowest for smallest leverage. It is 50.36 percent for lowest portfolio and 20.14 percent for highest portfolio and 33.57 for intermediate. Variation in earning variability is increasing with decreasing leverage. The variation in average earning variability is highest in smallest

leverage and lowest in largest leverage. It is 7096 percent in smallest portfolio while 57.93 percent and 44.87 percent in intermediate and largest portfolio respectively.

### 4.3.2 Average slopes from pooled cross section linear regression of leverage:

**Table No 4.10**

Average Slopes (T statistics) from pooled cross sectional linear regression of leverage(TD/CE) on average cost of capital, growth rate, size of capital employed, dividend payout ratio, liquidity ratio, earning variability and cost of equity

portfolio	Smallest			Intermediate			Largest		
	n = 4			n = 10			n = 6		
	1	2	3	1	2	3	1	2	3
ko	0.035 (0.678)			0.652 (1.298)			0.410 (0.201)		0.345 (0.675)
G	0.042 (2.96*)		0.020 (0.347)	0.153 (1.442)		0.067 (0.668)	0.072 (0.118)		0.01 (0.18)
Log S		1.06 (4.20*)			-2.28 (1.22)			3.58 (0.33)	
DPR		0.203 (2.24*)			0.031 (0.265)		0.325 (0.235)	0.255 (0.028)	
LIQ	-0.048 (-0.448)		-0.568 (-0.897)			-0.005 (-1.058)		-0.98 (-1.12)	
EV	-0.258 (2.498)	-0.228 (0.886)		-0.687 (0.568)		-0.052 (2.66)		-1.28 (1.458)	-1.335 (1.58)
Ke			0.1578 (1.448)		-0.022 (0.589)		-0.589 (0.569)	-0.115 (2.65)	
Adj R <sup>2</sup>	0.035	0.058	0.010	0.0355	0.030	0.012	0.0558	0.254	0.268

Source: Appendix A

T static's are in parenthesis

\* And \*\* represent that the results are significant at 1 and 5 percent level of significance

Table 4.10 present the average slopes from pooled cross section linear regression of leverage ( i.e. total debt to capital employed) on various measures of arrange cost of capital, growth of total assets, size of capital employed, dividend payout ratio, earning variability, liquidity ratio and cost of equity. Among others it shows that leverage is positively related with cost of capital, growth in total asset, size of capital employed and dividend payout ratio and negatively related with liquidity ratio, earning variability and cost of equity.

#### **4.4 MAJOR FINDING**

Simple and multiple regression analysis are used to accomplish the objective of the study. To examine the relationship of cost of capital with each selected variables, simple regression equations are used and multiple regression equations are used to examine the relationship of cost of capital with leverage and cost of equity with leverage together with selected variables.

1. Leverage i.e. total debt to capital employed of banking sector is 13.14 percent and its standard deviation is 13.83 percent and leverage i.e. total debt to equity capital is 18.99 percent and its variability is 24.92 percent. Average cost of capital is 63.11 percent and standard deviation of the same is 23.56 percent. In the same way, cost of equity is 35.88 percent and its variability is 17.87 percent.



2. Dividend payout ratio, size of capital employed, growth in total asset and liquidity ratio are negatively correlated with both leverages where earning variability has positive relation with both leverage. Total debt to capital employed and total debt to equity capital are significant at 5 percent level test and both are positively correlated with total debt to equity capital, growth in total asset, size of capital employed, dividend payout ratio and earning variability but negatively correlated with total debt to capital employed and liquidity ratio.

3. According to simple regression coefficient, cost of capital has positive relation with all variables. However, 't' static is statistically insignificant at 5 percent level and  $R^2$  is 0.005 i.e. only 0.5 percent of variation of cost of capital is explained by the leverage.

4. In case of multiple regressions, cost of capital is negatively related to leverage, growth in total assets, size of capital employed and liquidity ratio and positively related with dividend payout ratio and earning variability. Multiple regression coefficient of cost of capital on growth in total asset is negative but 't' static is significant at 5 percent level. The F static is 3.114. The negative relationship of cost of capital indicates that the result support the traditional propositions.

5. Cost of equity is negatively correlated with both leverages for significant at 1 percent with leverage first i.e. total debt to capital employed. Both leverages are negatively correlated with all variables except earning variability. Cost of equity is significantly correlated at 5 percent level with liquidity ratio.

6. The simple regression coefficient of cost of equity is negatively related with leverage. But positively regressed with other variables and 't' static is insignificant to all variables  $R^2$  is 0.24. The regression results don't support MM hypothesis.

7. The multiple regression results of cost of equity and leverage has positive relation and statistically insignificant at 5 percent level. The regression coefficient of cost of equity on growth in total assets, dividend payout ratio, liquidity ratio and earning variability are negative and statistically not significant. Size of capital employed and leverage have positive relation with cost of equity.

The major finding from the study of properties of portfolios formed on leverage and cost of capital with various measures of size of capital employed, growth in total assets, dividend payout ratio, earning variables and liquidity ratio is summarized as follows:

The enterprises with larger leverage have lower cost of capital. The portfolio results shows that stocks having higher portfolio have lower growth in total asset, size of capital employed, dividend payout ratio, liquidity and earning variability.

The variation i.e. standard deviation of leverage is lowest in highest portfolio. Similarly in cost of capital also standard deviation is decreasing in increasing portfolio.

Average slopes pooled linear regression of leverage indicates the positive relation with cost of capital, growth in total asset and dividend payout ratio and

negatively related to size of capital employed, liquidity ratio, earning variability and cost of equity.

Lastly summarizes the overall main findings, the study support the traditional approach and rejected MM proposition. The results show that the cost of capita and cost of equity can be affected by using debt in capital structure. Cost of capital and cost of equity decline with increase in leverage.

## **CHAPTER V**

### **SUMMARY, CONCLUSION AND RECOMMENDATION**

#### **5.1 SUMMARY**

Sound capital structure is required to operate business smoothly and achieve business goal. Capital is blood or root of business. Capital structure is concerned with analyzing the capital composition of the company (Weston and Brigham: 1978). A proper balance between debt and equity is necessary to ensure a trade off between risk and return to the shareholders. Sound capital structure of debt equity is called optimal capital structure. The capital structure and cost of capital both are important in maximizing the wealth of shareholders. The capital structure is the combination of long term debt and equity; it is a part of financial structure i.e. comprised to the total combination of preferred stock, common stock, long term debt, current liabilities: if current liabilities are removed from it, we get capital structure (Mathur, 1997). An ideal capital structure should be determination of a proper balance between borrower's funds, i.e. equity, which maximize the shareholder wealth and minimize the composite cost of capital. Cost of capital is the cost of firm of obtaining funds. i.e., capital or equivalently as the average rate of return that investment or in firm, would expect for supplying capital.

The main aim of this study is to examine the impact of capital structure on cost of capital, to analyze the relationship among capital structure and cost of capital and other variables in the context of Nepalese banks. The specific objective of this study is

as follows:

- To examine the relationship between capital structure and cost of capital in banking sector.
- To evaluate relationship of capital structure and cost of capital in banking sector.
- To analyze the properties of portfolio formed on leverage and cost of capital in banking sector.

The study is based on secondary data only. For the purpose of study, the four banks out of fifteen banks listed in Nepal Security Board of Nepal. The sample of banks covers 26.67 percent of total listed Nepalese Bank. This study used simple as well as multiple regression analysis. It employed simple and multiple regression analysis to relationship among cost of capital and cost of equity with leverage, growth in total assets, size of capital employed, dividend payout ratio, liquidity ratio and earning variability

The study has been conducted at a portfolio level based on pooled banks to examine the roles and impact of selected in variables of capital structure. The properties of portfolios formed on leverage and cost of capital are used in analyze the relationship between capital structure and cost of capital. All the selected variables ratios are examine through the regression analysis by using pooled cross section data. All the regression obtained through SPSS software. The results are tested at 1 percent and 5 percent level of significance.

### **5.3 CONCLUSIONS**

On the basis of the revise of information and statistics collected from banks the following culmination has been made: There is negative relation of leverage and cost of capital, so the overall results support traditional proposition and rejected MM hypothesis. The cost of equity is negatively interrelated to leverage which means increasing leverage moves towards the decrease in cost of equity. Corporate debt negatively manipulates cost of equity. Nominal levered firm paid high dividend and liquidity position is considerable. Leverage is positively related to cost of capital. Growth in total asset and dividend payout ratio are negatively related to size of capital employed, liquidity ratio, earning variability and cost of equity. The study illustrate that cost of equity also decline with increase in leverage.

### **5.4 RECOMMENDATIONS**

In the perspective of Nepal, capital structure conception has not taken much consideration while taking decision about capital structure. Sound capital structure management definitely supplements the company enlargement and also designates ideal overall financial position. Thus, the following recommendation and suggestion are presented, based on foremost findings:

- The companies should pay attention to formulate the optimal capital structure which will provide appropriate return as well as enhance shareholders equity.

- The Nepalese banks don't appear to sustain appropriate liquidity standard. It is indispensable to maintain liquidity standard to compensate the short term risk.
- There is need of the regular analysis and assessment of capital structure. This will help to probable substitute and opportunity offered reaps return.
- The banks should pay proper concentration on cost of capital to obtain benefits by using leverage funds.
- Apart from the marketing and of organization means, the appropriate financial management including designing appropriate capital structure may help to accomplish the goal.

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**APPENDIX A**

Bank	YEAR	L1	L2	G	Log S	DPR	Liq Ratio	EV	Ko	Ke
HBL	2002	0.3836	0.5223	0.0955	3.1437	0.4149	1.0272	0.01198	0.9918	0.8113
HBL	2003	0.3779	0.06074	0.1298	3.2327	0.0266	1.0374	0.0701	0.08768	0.7175
HBL	2004	0.03323	0.4977	0.0602	3.2974	0	1.0437	0.0312	0.7133	0.5498
HBL	2005	0.2623	0.3556	0.01245	3.2854	0.2417	1.0474	0.0802	0.7335	0.4902
HBL	2006	0.2222	0.3442	0.058	3.3562	0.5064	1.0442	0.1239	0.8826	0.5079
NIBL	2002	0.1584	0.1882	-0.0358	2.7938	0	1.1096	0.0769	0.5734	0.1199
NIBL	2003	0.0106	0.017	0.8123	2.8098	0.5056	1.0534	0.1407	0.6619	0.1172
NIBL	2004	0.3315	0.4959	0.4705	3.0376	0.2901	1.0383	0.3012	0.7759	0.1559
NIBL	2005	0.2287	0.2966	0.2277	3.1847	0.3165	1.057	0.2707	0.8174	0.195
NIBL	2006	0	0	0.317	3.2935	0.347	1.0608	0.214	0.8278	0.2134
NABIL	2002	0.0333	0.0344	0.0489	4.098	0.543	1.0551	0.0405	0.9204	0.2975
NABIL	2003	0.0616	0.0656	0.0605	4.1726	0.5906	1.0697	0.1101	0.6241	0.2638
NABIL	2004	0.0143	0.0145	0.011	4.2051	0.7019	1.0749	0.0942	0.7558	0.2785
NABIL	2005	0.0096	0.0096	0.0263	4.2494	0.6635	1.085	0.1081	0.7014	0.3127
NABIL	2006	0.0085	0.0086	0.2992	4.3076	0.6578	1.0728	0.0993	0.7721	0.3153
STD.CHD	2002	0.3521	0.6437	-0.064	3.2888	0.2087	1.0599	0.0595	0.3474	0.3932
STD.CHD	2003	0.1112	0.1482	0.1387	3.2072	0.217	1.0602	0.0335	0.3158	0.3778
STD.CHD	2004	0.049	0.0575	0.1258	3.2037	0.2045	1.0909	0.0442	0.3352	0.3629
STD.CHD	2005	0.0332	0.0374	0.0529	3.2269	0.2143	1.0746	0.029	0.3859	0.3496
STD.CHD	2006	0	0	0.0355	3.2667	0.0197	1.0688	0.0752	0.3988	0.3465

## APPENDIX B

Sn	Name of Bank	Establish yr	Profit in million	Establish by
1	• Nepal Investment Bank Ltd.	1886	350.53	French Partner + public
2	• Rastriya Banijya Bank	1966	1618.65	government
3	• Agriculture Development Bank Ltd.	1968	1058.44	government + public
4	• NABIL Bank Ltd.	1984	635.26	bank of punjab + public
5	• Standard Chartered Bank Nepal Ltd.	1987	658.76	std chartered group + public
6	• Himalayan Bank Ltd.	1993	467.46	habib bank of pakistan + public
7	• Nepal SBI Bank Ltd.	1993	254.91	state bank of India + public
8	• Nepal Bank Limited	1994	249.64	government and public
9	• Nepal Bangladesh Bank Ltd.	1994	129.71	IFIC Bank of Bangladesh + public
10	• Everest Bank Ltd.	1994	237.38	Punjab National Bank + public
11	• Bank of Kathmandu Ltd.	1995	202.44	Nepalese public
12	• Nepal Credit and Commerce Bank Ltd.	1996	495.56	Bank of Ceylon, Sri Lanka + public
13	• Lumbini Bank Ltd.	1998	192.4	promoters share + public
14	• Nepal Industrial & Commercial Bank Ltd.	1998	158.47	promoters share + public
15	• Machhapuchhre Bank Ltd.	1998	133.99	promoters share + public
16	• Kumari Bank Ltd.	2002	170.26	promoters share + public
17	• Laxmi Bank Ltd.	2002	65.57	promoters share + public
18	• Siddhartha Bank Ltd.	2002	95.3	promoters share
19	• Global Bank Ltd.	2007	-40.51	promoters share
20	• Citizens Bank International Ltd.	2007	n/a	promoters share
21	• Prime Commercial Bank Ltd.	2007	n/a	promoters share
22	• Bank of Asia Nepal Ltd.	2007	n/a	promoters share
23	• Sunrise Bank Ltd.	2007	-14.17	promoters share
24	• Development Credit Bank Ltd.	2008	n/a	promoters share
25	• NMB Bank Ltd.	2008	n/a	promoters share