CHAPTER-1

INTRODUCTION

1.1 Background

Nepal is a developing country whose financial market is also at the developing stage. For the development of every country, the financial market as well as the capital market plays a vital role. The capital market is the place or mechanism in which various kinds of financial instruments are issued, which is transferred from one person/party to another by means of different ways of trading mechanism. Due to which, the group of people who have excess funds can utilize their funds in productive sectors and the group of people who need funds to run their enterprises can get funding. This process can help the economy of the country rise up.

"A bond is a long term contract under which a borrower aggresses to make payments of interest and principal on specific dates to the holder of bond" (Baskey and Brigham; 2002; 109). Bond securities are an important type of financial instrument of the capital market of the nation. The bonds are the promises by the issuing firm or government to pay interest and principal on the unpaid balance. The maturity of a debt instrument refers to the length of time. Generally bonds and debentures have a face value of Rs. 1000/-. The bondholders get interest on an annual or semiannual basis on their investment amount. Bondholders get interest before the stock-holders get dividends. There is no restriction to get interest by bond-holders whether the issuing agency suffers to loss. The relation between bondholders and issuing bodies is similar to the relation between creditors and debtors. "The holders of a company's long-term debt of course, are creditors. Generally they cannot exercise control over the company and do not have a voice in management. If the company violates any of the provision of the debt contract, then their bodies may be able to exert some influence on the direction of the company. Holder of long-term debt does not participate in the residual earnings of the company instead their return is fixed. Their debt instrument has a specific maturity preferred stare of common or preferred stock does not. In liquidation the claim of debt holder is before that of preferred and common stock. (Van Horne, 2002:509).

If the issuing agency cannot provide interest to the bondholders, then they can take action to liquidate the company. Generally, risk averter investors prefer to invest in bonds. The bonds are collateral or non- collateral based perpetual or redeemable, convertible or non-convertible types. The primary bond market is of government or government agencies of fully government secured bonds and debenture stand for once sold securities. The trading floor of the securities once is issued is called secondary market. Basically, the issuing agency or its manager and debt securities holders are the main parties involved in the transaction of the primary market. But the secondary transaction for the bonds and debenture is held more through the over the counter (OTC) or third or fourth market rather than the stock exchanges. In the case of Nepal, the transaction of the government bonds has not been done through Nepal stock exchange (NEPSE). The government recently announced in a budget speech of trading the government securities through stock exchange shows the prospect of growth of bonds market in Nepal.

The transaction of debentures has recently started. The market value of the bond or debenture is determined on the basis of face value of the bond, coupon rate of bond and the rate of interest in the market as well as the transaction between the bond buyer and the bond depends upon the market rate of interest if, there exist the regular transaction through the stock exchanges. While talking of the Nepalese market, though the market was re-started from the year 1962 A.D. when the government issued the bonds for the first time. After that period the government issued the debt securities regularly to meet its financial needs. Presently the Public Debt Act 2059 and its rules and by laws are active in regulating the Nepalese debt market. Yet, the bond indenture act has been enacted.

Now our concern is mainly about bond market. The term bond market simply refers to the demand and supply pattern as well as trading mechanism of bonds and debentures. Basically the issuing agencies and bonds holders are the main parties involved in this mechanism. Transaction between bondholders and bond buyers determines the market value of the bond . actual bond market value depends on the general level of interest rate. The bond market of Nepal can be classified into two parts.

1. Government bond market
2. Corporate bonds/ debenture market

1.2 Importance of Debt Market

Nepal is one of the poor nations in the world. It is popularly known as progressive economy. It is far behind in the economic progress. To progress economically, all the sections of the economy should contribute significantly to the gross domestic product (GDP). But, the nation falls under non-industrialized nation. Debt market is very much important for the developing economy because, it helps the nation to industrialize easily. It is more useful in collection of fund which otherwise remains idle with public. We can differentiate the equity market and debt market on the basis of their nature.

Usually, debt markets supply the capital for short-term purpose, and prove the liquidity of those debt securities. But, equity markets supply the capital for the lifelong of the corporation, and prove the liquidity of once issued equity shares. In regard, debt seems more appropriate to mobilize the capital which otherwise remains idle with public.

In order to channel the idle funds, a responsible debt active system is necessary. It is the debt market that could work prominently to channel small funds of people, otherwise unproductive, to productive sectors. In other words, fund could be supplied effectively to the productive peoples from the hands of people if the active debt market exists. People save money for better use in future. They are always seeking the best opportunity to put their money so that they could save and could earn more money in future. For this reason they put their money in the form of saving deposits at commercial banks because of the lack of next best alternative opportunity. If the perfect debt market is there, they will be interested to invest their money in debt securities. But due to lack of such an opportunity it is a matter of compulsion for them to put their money as deposits at banks. The debt market could be attractive for them, if it would have been working popularly and it was liquid. People prefer to put their money at commercial banks because it is more liquid. So, it needs an effort to make a strong and prominent as well as liquid debt market. It will provide beat returns to the savings of peoples. It is therefore necessary to encourage them to save by reducing their present consumption habits, collect fund that otherwise remains scattered, and mobilize in productive sector. This process will help to industrialize the nation, create more and more employment opportunities for the people, generate more significantly towards the GDP. If the debt market works properly, the fund seeker (Entrepreneur) could get more easily at lower rate of interest from the market and could utilize it in more productive sector. Debt market is important from the point of view of government and public because, it contributes significantly, to the GDP, utilize the savings of the people, which otherwise remain idle with them, activates the economy, creates the employment opportunities, help in the industrialization of the nation.

1.3 Criteria for Selecting Securities

The applicable criteria for selection among the wide range of securities available include:

Financial Risk: The greater the degree to which the price and returns of a security fluctuate, the greater is the financial risk. Many factors may influence the size and frequency of a security's price change, but the greater the fluctuation, the greater is the risk that a loss may be incurred. In the extreme, the most serious unfavorable event is that the issuer cannot meet interest payment s or principle payments- the risk of default .U.S. Government securities does not carry the risk of default and, therefore, are considered "safer" than other securities. Bonds issued securities are considered to be subject to some degree of default risk. Rating agencies such as Moody's investors' service and the Standard and poor's Corporation assign quality ratings to securities. Among the factor influencing a security's is the degree of likelihood that default may occur. These qualities assessments can and do change with time. For many years, the securities of utility companies were regarded as of the highest quality with minimum risk of default. In recent years however, some utilities have been downgraded to lower quality ratings.

Interest Rate Risk: Charges in the general level interest rates will cause the prices of securities to fluctuate. This is especially true of such securities as motes or bonds, which carry a fixed rate of interest. A partial exemption to this generalization should be noted. For bonds selling at 20 to 30 percentages below maturity value of less than 30 years, the degree of fluctuation on their prices reach a maximum around a maturity of about 15 to 18 years and then decline with longer maturity.

In general, long –term bonds are riskier than short-term securities for a firm's marketable securities portfolio. However, yield are more frequently available on long-term than on short- term securities.

Given the motives most forms have for holding marketable securities portfolios; it is generally not feasible for them to be exposed to a high degree of risk from interest rate fluctuations. Accordingly, firms usually conforms their portfolios to securities with short maturity. Only if the securities are expected to be held for a long period and not be subjected to forced liquidation on short notice will long-term securities be chosen. Additional protection from interest rate fluctuations is provided by the use of the interest rate futures markets.

Purchasing Power Risk: Changes in general price levels will affect the purchasing power of both the principal and income from investments in securities. The total return from a security is measured by the capital gain or loss plus income yield. Varied relationships have developed for different types of assets during the prolonged inflation since the late 1960s in the United States. Bonds with fixed dollar amounts of income and a fixed dollar amount at security have declined in value a inflation caused interest rate level to rose. But common stocks whose dividends theoretically are not fixed in amount have also declined in value because the underlying earning power of corporations appears to have been impaired during persistent inflation. Commodities such as gold and diamonds have value even though they pay no interest or other forms of income. Real estate is a hybrid case is that rentals have not risen as fast as the general price level, but the value of homes and commercial properties have outpaced the rise in the general price level. The 1980s combines moderate inflation with strong securities markets.

Liquidity or Marketability risk: The potential decline from a security's quoted market price when the security is sold is its liquidity or marketability risk. Liquidity risk is related to the breadth or thickness of the market for a security. US treasury bonds or AT&T securities will be more widely held and have greater liquidity than the securities of the Podunk printing Company.

Taxability: The tax position of a firm's marketable securities portfolio is influenced by the overall tax position of a firm. A firm with prior year's losses to carry forward can postpone taxability. The market yields on a security will reflect the total demand and supply of tax influences. Yet, the position of the individual firm may be different from the overall pattern of the market; it might find that taxability considerations are either favorable or unfavorable. A number of kinds of securities, such as the bonds of state and local governments, have varying degrees of tax exemption. In additional, securities that sell at a discount offer opportunities for taking returns in the form of capital gains rather than ordinary income.

Return on Securities: The higher the risk, the higher is the required return. Thus, in building a marketable securities portfolio, corporate treasurers must evaluate the risk- return trade- off. Since the motive for holding marketable securities is protection against uncertain and fluctuating inflows and outflows, the dominant policy is to choose relatively less risky alternatives at the sacrifice of some return. Accordingly, corporate treasurers will emphasize relatively short-term, highly liquid assets in constructing the marketable securities portfolio. (Weston & Copeland, 1992: 779-981)

1.4 Statement of the Problem

The efficiency of the Nepalese capital market is questionable. Most of the investors seem more interested in share market while very few are engaged in Bond market in Nepal. But , the situation in other countries are quite different, the investors there use to invest more in bond, they enquire more about this and because of it they are more secured from financial investment (even more than share).

In Nepal very few investors are interested in Bond market, and even within this large portion invest in Governmental Bonds only. Such activity of investors, they shield themselves from other information related to bond and its nature; like: Private bonds, their interest rate, maturity period and so on. The investors are even not aware of the financial indicators of the companies and bonds issued by government.

Realizing the present existing situation, this study tries to dig down the actual cause regarding the lurking behind of the bond market in Nepal. The issues like: the investor’s attitude about corporate bond and government bonds; prospects of development of bonds market in Nepal; factors that affect the corporations to take decision about issuing securities; Practices of various types of debt instrument; value and duration of Nepalese Corporate Bond; pattern of Investment in Government bond and Corporate Bond; trend of corporate and Government bonds including T-bills have been raised to address in this study.

The major problems that have been identified for the purpose of this study are:

1. What is the current situation of Bond market in Nepal?

2. What is the trend and ownership pattern of government securities?

3. What are the reasons behind investing more in Government bond than in corporate bonds by investors?

4. How Bond investment is more secured than equity investment?

1.5 Objectives of the Study

The main objective of this research is to analyze the problems and prospects of the bond market in Nepal. More especially this study concentrates into the present scenario of bond market in Nepal. To achieve the main objectives, the following specific objectives are put forth.

1. To study existing bond market in Nepal.
2. To examine the potentiality in the growth of bond market.
3. To see the trend and ownership pattern of government securities.
4. To see the weight of bonds in investment.
5. To evaluate the investor's as well as the issuing agency opinion about bonds and debenture.
6. To make investors aware about bonds and debenture for the development of securities market.
7. Forward suggestions and recommendations to foster the bond market development in Nepal and its systematic growth.

1.6 Significance of the Study

The study is concerned with the prospects of bond market growth in Nepal. This study has attempted to explain theoretical concept about bonds and debentures, its market, prospects of its growth. The output of the study will help to develop Nepalese bonds market. The investors, individuals, issuers and government will be benefited through this study. It is hoped that the study will actually highlight present Nepalese bond market.

1.7 Limitations of the Study

The study has following limitations:

- This thesis is based on secondary data collected from concerned finance companies (both business corporate and government) those issue bonds in Nepal. Thus, the result of the analysis depends on the information provided by them.
- As the samples have drawn at random for convenience there may exist some sampling errors.
- Although there is other financial companies in the Bond Market, samples cover only few finance companies because of the unavailability of the data.
- The source of data i.e. published annual report and internet web site is assumed to be correct.

1.8 Organization of the study

Chapter 1: Introduction

This chapter includes the background information of the subject matter of research undertaken to provide a general idea of its history. Likewise it also includes statement of problem, objectives of study, significance of the study, limitation and theoretical framework, formulation of hypothesis and organization of study.

Chapter 2: Review of Literature

This chapter includes the reviews of relevant previous writing and studies to find the exiting gaps. So past studies in the study of bond market was reviewed to examine what new can be contributed. Review of journal, books, thesis and newspaper was also included in this chapter.

Chapter 3: Research Methodology

This chapter includes methodology used in this study. It briefly explains about the research methodology, which has been used to evaluate the trend analysis and importance of bond market in Nepal. It consist research design, population and sample , sources of data, various tools and techniques for analysis, methods of presentation of analysis etc.

Chapter 4: Data Presentation and Analysis

Chapter four is the main part of this study; it presents the data and information collected from primary as well as secondary sources. First, the data from the secondary sources are analyzed, where in ownership pattern of government bonds and treasury bills are studied, curvilinear model has been applied to find out the trend of the development of bonds in Nepal. Similarly, it includes the analysis of corporate bonds market and trend of interest rate. The next part of the study includes analysis of primary data. In primary data, analysis of questionnaire survey is included.

Chapter V: Summary, Conclusion and Recommendation

This chapter is for major findings, summary, conclusion and recommendation.

Bibliography and appendices are incorporated at the end of the study.

CHAPTER-II

REVIEW OF LITERATURE

The study is about bond market in Nepal has already streamlined to some extent in the first chapter regarding statement of the problem, objectives and significance of study. Now, in this chapter the main focus is given on the review of literature relevant for the study. Moreover, in order to make this study more comprehensive it is important to go through the relevant literature.

This literature review section consist of two parts, firstly it has reviewed literature for theoretical framework which help to develop concept about what is the bond market along with its mechanism and what theories are developed on it. It also helps the researcher to determine the subject matter of the study. It covers the area of research work and the theoretical concept, which is important to various studies, research works; and review of journals, articles about debt market and related terms to it in the Nepalese context as well as international context also.

2.1 Conceptual Framework

2.1.1 Meaning and Definition of Bond

A bond is a written instrument acknowledges a debt and consisting a contract for the payment of the principal sum at a specified and for the payment of interest at a fixed rate. So, many scholars have explained the core concept of the bond and its mechanism, such as “A bond is simply a long term promissory note”(Weston & Copeland, 1992:955).

“ A corporate bond is a certificate indicating that a corporation has borrowed a certain amount of money from an institution or an individual and promises o reply it in future under clear definite terms. Most bonds are issued with maturity of 10-30 years and with par or face value of $1000. The coupon interest rate on bond represents the percentage of bond par value that will be paid annually, typically into two equal semi-annual instruments”(Gittman, 2000:518-582).

“The holder of a company’s long term debt, of course creditors, generally they cannot exercise control over the company and do not have a voice in management. If the company violates only of the provision of the debt contract, then these holders may be able to exert some influence on the direction of the company. Holder of the long-term debt instrument has specific maturity, whereas share of common or preferred stock does not. In liquidation, the claim of debenture holders is before on the debt instrument, however, there may be difference in the priority of claim among the various creditors of a company (Van Home, 2002:509).

Debt securities Market

Debt market may be short-term, intermediate –term and long-term, short-term and intermediate-term financing sources include trade credit, bank loan, finance company loan, commercial paper; inventory financing include the issuance of mortgages and bonds.

Capital Market

Capital market refers to the links between lenders and borrowers of fund and arranging a fund transfer process to seek each other benefit. The lenders and borrowers coming together in the capital market play effective financial intermediary role to activate both primary and secondary market through the use of various long term capital instruments like common stock, bonds, preferred stock, and convertible issues and many more like that people invest money through primary market and secondary market.

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“Capital Market is the market place through with the entrepreneurs collect the long-term capital by mobilizing the individual and institutional savings either directly or indirectly. Besides, the securities once sold through the primary market also traded in the secondary market of the capital market. From this point of view, the market can be classified into primary market and secondary market” (Bhattarai, 2002:3).

2.1.2 Classification of Debentures and Bonds

Some takes debentures and bond with same meaning. However, it is generally classified as follows:

Secured Bond

a. **Priority of claims:** The senior mortgage has prior claims on assets and earnings. Senior railroad mortgages, for example, have been called the "mortgages next to rail," implying that they have the first claim on the land and assets of the railroad corporations. A junior mortgage is a subordinate lien, such as second or third mortgage. It is a lien or claim junior to others.

b. **Right to issue additional securities:** Mortgage bond can be classified with respect to the right to issue additional obligations already encumbered issue properly. This can be classified as follows:

i. **Closed end mortgage:** In this mortgage, a company cannot sell additional bonds (beyond those already issued) secured by the property specified in the mortgage. If the mortgage is closed – end, no more bonds having first liens on this property to the bonds buyer. The ratio of the amount of the senior bonds t the value of the property is not increased by subsequent issues.

ii. **Open-end mortgage**: In this mortgage, a company can sell additional bonds (beyond those already issued) if the indenture provides to sell such additional bonds

c. **Scope of the lien:** bonds can also be classified with respect to the scope of their lien. A lien is granted on certain certified property. When a specific lien exists, the security for a first or second mortgage is a specifically designed property. On the other hand, a blanket mortgage pledges all real property currently owned by the company. Real property includes only land and those things affixed thereto: thus, a blanket mortgage is not a mortgage on cash, account receivables, or inventories, which are items of personal property. A blanket mortgage gives more protection to the bond-holder than does a specific mortgage because it provides a claim on all real property owned by the company.

Unsecured Bond

a. **Debenture** is unsecured bond and as such, provides non lien on specific property as security for the obligation. Debenture holders, there are general creditors whose claim is protected by property, not otherwise pledged. Companies in industries also issue debentures where it is not practical to provide a lien through a mortgage on fixed assets.

b. **Subordinated debentures:** subordinate means below or inferior. If there are subordinates, these debentures have right to get back their principal only after liquidation of non- subordinate debenture. The reason in the use of subordinated debenture stock is that they do not restrict the borrow ability to obtain senior debt.

c. **Income Bonds**: income bond provides interest if the earning of the firm are sufficient to meet the interest obligations. Principal is paid at the time of maturity. So that, interest is not assumed as fixed obligation. Income bonds, historically, have been issued because a firm has in financial difficulties and its history suggest that it may be unable to meet in the future payment of income bond interest obligation is similar with payment of preferred stock dividend which does not well come liquidation due to default in payment of interest. Issuing income bond is beneficial because interest is deducible while computing after tax income. The main advantages of this type of bond are that interest is payment only if the company earns a profit. Some time income bonds are also convertible.

d. **Floating Rate Note**: The floating rate note has developed to avoid the risk of interest rate volatility at high levels. The coupon rate value changes according to change in short term and long term Treasury bill.

2.1.3 Primary Market and Secondary Market

Primary market

Primary market is new issue market of securities. The primary market deals with those securities, which have been made available to the first time. “Primary Market is the market place where instead of goods and services securities are sold to mobilized the savings for the establishment and operation of the business” (Bhattarai, 2002:3).

Primary market is new issue market of securities. The primary market deals with those securities, which have been made available to the first time. The growth of primary market is encouraging since many public companies including joint venture banks have been successful to tap capital through the flotation of securities to the general people. According to Henderson, there are following important functions of primary market.

Organization

Undervaluing

Distribution

The new issues in primary market facilities of raising long-term funds and these can be classified as “initial issues” and further this vice issues offered for the first raise issues, it is called further issues. The interplay of these functions helps to transfer resources from the sources of supply to demand.

Secondary Market

Secondary market is that market value where there is trading of outstanding securities of private business organizations and government. Investors can purchase and sell outstanding securities in secondary market. “Secondary market is the market place where second hand securities are traded. It means securities once purchased through primary market are traded in secondary market” (Bhattarai, 2002:5).

In the growth of primary market, there is also contribution of secondary market. Secondary market accelerates the liquidity of securities. Stock is traded in to different kinds of market: Stock exchange and OTC market. New York exchange (NYSE) and NEPSE are examples of organized and secondary market. Securities trading in primary and secondary market can be divided as follows:

Ordinary Shares

Ordinary share provides possession of company to shareholders. Common share are mostly risky than both bonds and preference shares. Common shareholders have attraction in investing due to their voting right, enjoying large amount of dividend, to earn capital profit from stock price raise.

Preference Shares

Preference shares are those shares, which have fixed dividend and right of acquiring principle before ordinary share at the time of liquidation. It is hybrid between the bond and common stock because preferred stock has fixed dividend, which similar to the bond and payment of principal after bonds that like ordinary shares.

Bond

Bonds are debt instruments and issued with coupon rate. Interest is paid at coupon rate semi annually or annually. Bonds are generally issued with some certain maturity period. Principal is returned at maturity period. There is different type of bonds due to variable terms, conditions and features of bond to each other's. Bond may be distinguished according to their repayment provisions, type and security pledged, time of, maturity and technical factor.

2.2 Bond Market in International Scenario

- The **Bond Market in India** with the liberalization has been transformed completely. The opening up of the financial market at present has influenced several foreign investors holding up to 30% of the financial in form of fixed income to invest in the bond market in India.

  The bond market in India has diversified to a large extent and that is a huge contributor to the stable growth of the economy. The bond market has immense potential in raising funds to support the infrastructural development undertaken by the government and expansion plans of the companies.

  Sometimes the unavailability of funds becomes one of the major problems for the large organization. The bond market in India plays an important role in fund raising for developmental ventures. Bonds are issued and sold to the public for funds.

  Bonds are interest bearing debt certificates. Bonds under the bond market in India may be issued by the large private organizations and Government Company. The bond market in India has huge opportunities for the market is still quite shallow. The equity market is more popular than the bond market in India. At present the bond market has emerged into an important financial sector.

The different types of bond market in India

- Corporate Bond Market
- Municipal Bond Market
- Government and Agency Bond Market
- Funding Bond Market
- Mortgage Backed and Collateral Debt Obligation Bond Market

The major reforms in the bond market in India

- The system of auction introduced to sell the government securities.

- The introduction of delivery versus payment (DvP) system by the Reserve Bank of India to nullify the risk of settlement in securities and assure the smooth functioning of the securities delivery and payment.

- The computerization of the SGL.

- The launch of innovative products such as capital indexed bonds and zero coupon bonds to attract more and more investors from the wider spectrum of the populace.

- Sophistication of the markets for bonds such as inflation indexed bonds.

- The development of the more and more primary dealers as creators of the Government of India bonds market.

- The establishment of the a powerful regulatory system called the trade for trade system by the Reserve Bank of India which stated that all deals are to be settled with bonds and funds.

- A new segment called the Wholesale Debt Market (WDM) was established at the NSE to report the trading volume of the Government of India bonds market.

- Issue of ad hoc treasury bills by the Government of India as a funding instrument was abolished with the introduction of the Ways And Means agreement.

- **US Bond Market Overview**
  The US bond market is one of the largest in the world. Although the returns from the bonds available are limited, the level of risk is comparatively lower than investments made in the stock market.

US Bond Market Types

Following are various types of bond markets in the US:

- Government
- Municipal
- Asset-backed
- Financing
- Corporate

US Bond Market Size

The approximate worth of bond markets worldwide is more than $45,000 billion, of which the US bond market, comprises a significant portion of the total value.

US Bond Market Yield

The yield on treasury bonds is presently 4.80%, which is lower than most other forms of investment, stocks in particular. However, their fair value yield has a maturity period of ten years, and is expected to be between 5% and 5.50%.

US Bond Market Rates

Prices of bonds were higher last year than this year, and rates are expected remain low. The New York Stock Exchange, or the NYSE, is a core area of importance for the US bond market. The amount of bonds listed on the NYSE is more than any other exchange in the world, and authorities are presently thinking about increasing the number of bonds traded.

2.3 Bond Market in Nepalese Scenario

2.3.1 Government Bond Market in Nepal

Government bond are those securities, which are issued by the government promises to provide a certain percentage of interest at certain period of time with pre-determined maturity period. The government raises a huge amount of fund by issuing such bonds. "Developed debt market helps to increase the tendency of saving and reduce the poverty. Government relies heavily on debt financial. Revenue have seldom covered expenses, and the difference have been financial primarily by issuing debt investments, moreover new debt must be issued in order to get the necessary funds to pay off old debt that comes due". (Sharpe & Jeffery, 1989:391)

The government has ascertained various plans for the development of the country. These plans are of short term period of time. To complete these plans/projects at the pre-determined period, the government must provide the capital required for these plans. To conduct the programs determined, the government forecast the estimated expenditure and source of income before the fiscal year by means of budget. If the expenditure regarding a fiscal year and the corresponding income is equal, the income-expenditure of the government is balanced and need not exist. In the developing counties like Nepal, usually government's expenditure is greater than corresponding income.

To conduct the regular activities continuously, to conduct the development program, the government collects funds through various sources. These sources are of internal as well as external also. The external sources are in the form of loan, subsidies and other kind of cooperatives. The funds collected as internal sources are on the form of loan by means of securities. The government issues various kinds of securities to collect funds from internal sources. The government also guarantees these types of securities and the features of every security are also different.

The main purpose of issuing debt securities by the government is follows:

- The capital, which is useless and spread to various sector of the country, is utilized in the productive sector by the government.

- To collect the funds from the potential savers of the society is possible.
- To utilize the unused (i.e. liquid) capital of the organized institutions.
- To achieve the goal directed by the monetary policy.
- To avoid the lack of capital for the development projects.
- To expand the economic activities and productive activities.
- To recover the deficit financing.
- To absorb the over liquidity of the economic sector.

After the enforcement of Public Debt Act 1960, public debt for first time was issued in Nepal in 1962 through T-Bills amounting Rs. 7 millions. Nowadays five various kinds of government securities are in practices. Another instrument of government securities is developed bond was first issued in fiscal year 1963/64 amounting Rs. 131 millions. National saving certificate is being issued since January 1984, amounted Rs. 250 millions. Other are citizen saving certificate and various special bonds.

The bonds and T-bills are of regular nature. Some of them are issued with a view to depend the money market. Apart from these, different kinds of special bonds have also been issued. Most of the special bond is held by Nepal Rastra Bank.

2.3.2 Government Bonds Primary Market in Nepal

The process of selling and purchasing the government securities at first time for the collection of capital is called as first market or primary market transaction.
Publishing the notice publicly does such transactions of government securities. For selling/ distributing the securities certain institutions are specified. Only amount and time duration to which, specified in the notice are sold.
I Nepal usually Government of Nepal is the seller of the government securities in primary market(except the special bond) and the general public, commercial banks, financial institutions and other institutions are the purchaser of the primary issuance are distributed through NRB and other institutions permitted by Nepal Rastra Bank. In this process some issuance deals directly with

purchasers in this market. But many rely on investment bankers who serve as purchaser of their securities. Government gives authority to such intermediaries' for selling the securities within the certain time and price. In Nepal, all the functions about issuing, Nepal Rastra Bank performs accounting and managing of the government securities. Because of the Central Bank of Nepal, Nepal Rastra Bank Act 2058, provide such authority to NRB. Nepal Government proposed the amount of internal debt for the fiscal year in its regular budget. According to that proposed amount, which securities are to be issued, as per the terms, conditions and time that determine by NRB.

2.3.3 Government Bonds Secondary Market in Nepal

The process of selling and purchasing the securities after issuing primary market is called secondary market transaction. Before 1976, the secondary market transaction of the government securities was held by NRB in Nepal. After the establishment of securities exchange center in 1976, the Citizen Investment Fund performs this transaction.

As per the economic liberalization and open market policy adopted by the whole entire world, various economic changes are happened also in Nepal. There are tremendous increases in number of financial institution. At this situation, to make the market of the government securities easy and beneficial, Nepal Rastra Bank has provided permission paper as market maker to different Banks and Financial companies for the secondary market transactions of National Saving Certificate, Development Bonds and Citizen Saving Certificate. These permitted market makers sales the government securities at primary issue and selling and purchasing at other times. Such market makers are located at various parts of the country.

Now, Treasury bill is only the short-term government securities, which are sold on the market. It is on discounted basis according to auction sales. After the maturity period, par value is paid to the T-bills holders. This instrument is popular among commercial banks for managing their liquidity position

2.4 Corporate Bonds Market in Nepal

The history of corporate debt securities market in Nepal is very short. Only few corporations have issued debenture prior or after the enactment of securities Exchange Act 1983. Firstly Bottlers Nepal issued debenture of 5 million in fiscal year 1986/87 and was redeemed at maturity. Similarly, Shree Ram Sugar mills Ltd. Had issue debenture worth Rs. 93 million in the fiscal year 1997/98. It was convertible in mature and having 14% coupon rate and it was also redeemed at the maturity. It had provided two options to its debenture holders that they can convert their debenture into equity share or can get principle at maturity. As per these options, it had kept the provision that each debenture of par value Rs. 1000 will be converted into 10 shares of Rs 260 millions, which is launched by the name Himalayan Bond 2066. It has coupon rate 8.5% and it was listed on security board of Nepal recently. Recently Nepal Investment Bank Limited has issued bonds in the name of "Investment Bonds 2060" which worth Rs. 300 million. It has coupon rate and it has maturity period of 7 years, which mature after 7 years in 2067.

Nearly one and a half year after HBL bond another big Nepali bank, Nepal Investment Bank Ltd, has issued R. 300 million "Nepal Investment Bank Bond- 2010" with 7.5% coupon interest paid semi-annually in the FY 2003/04. Out of 300 thousands units of issue with par value Rs. 1000, 100 thousands were issued to the general public and 200 thousands units were privately placed. Though the interest rate offered by NIBL was one percent lower than that of HBL's bond (where it was 8.5% with semi-annual payment arrangement), it had good chances of being oversubscribed. Its issue manager was AFCL (Nepal Investment Bank Ltd., Debenture Prospectus, 2005). Again Nepal Investment Bank Ltd. Has issued "Nepal Investment Bank Bond-2070" with 6% coupon interest rate paid semi-annually in the FY 2005/06. Out of 250 thousands units of issue, 50 thousand units were issued to the general public and 200 thousand units were privately placed. The par value of debenture is Rs. 1000, with maturity period of 7 years. Its issue manager is AFCL (Nepal Investment Bank Ltd., Debenture Prospectus, 2006).

Everest Bank Ltd. Has issued debenture of Rs. 300 million with 6% coupon interest paid semi-annually in the FY 2004/05. The par value of debenture was Rs. 1000 with maturity period of 7 years (i.e. redeemable after 7 years). Out of 300 thousand units of issue 50 thousand units were issued to the general public and 250 thousand units were privately placed. EBL bond issue date was 2062/01/07. Its issue manager was CIT (Everest Bank Ltd., Debenture Prospectus 2005).

Bank of Kathmandu Ltd. has issued Rs. 200 million “Bank of Kathmandu bond, 2069” with 6% interest paid semi-annually in the FY 2004/05. Out of 200 thousand units of issue, 50 thousand units were issued to the general public and 150 thousand units were privately placed. The par value of debenture was Rs. 1000, with maturity period of 7 years. Its issue manager was NMB (Bank of Katmandu Ltd., Debenture Prospectus, 2005).

Nepal Industrial & Commercial Bank Ltd has issued Rs. 200 million “NIC Bond-2070” with 6% coupon interest paid semi-annually in the FY 2005/06. Out of 200 thousand units of issue (with par value Rs. 1000), 50 thousands units are issued to the general public and 150 thousand units are privately placed. Its issue manager is AFCL (Nepal Industrial and Commercial Bank Ltd., Debenture Prospectus, 2006).

Nepal SBI Bank Ltd, has issued Rs. 200 million “6% Nepal SBI Bank Debenture-2070”(with maturity period of 7 years and semi-annual coupon payment) in the FY 2005/06. Out of 200 thousand units of issue, 50 thousand units are issued to the general public and 150 thousand units are privately placed. Its issue manager is CIT (Nepal SBI Bank Ltd., Debenture Prospectus, 2006).

Nepal Investment Bank Ltd, has issued Rs. 250 million “6.25% NIB Bond 2070” (with maturity period of 7 years and semi-annual coupon payment) in the FY 2063/64. Out of 250 thousand units of issue, 50 thousand units are issued to the general public and 200 thousand units are privately placed. Its issue manager is AFC (Nepal investment Bank Ltd., Debenture Prospectus, 2006/07).

Nepal Electricity Authority has issued Rs. 1500 million "7.75% NEA Bond 2069" (with maturity period of 5 years and semi- annual coupon payment) in the FY 2064/65. Out of 1500 thousand units of issue, 150 thousands units are issued to the general public and 1250 thousand units are privately placed. Its issue manager is NMB (Nepal Electricity Authority, Debenture Prospectus, 2007/08).

Kumari Bank Limited has issued Rs. 400 million "8% KBL Bond 2070" (with maturity period of 5 years and semi-annual coupon payment) in the FY 2064/65. Out of 400 thousand units of issue, 80 thousand units are issued to the general public and 320 thousand units are privately placed. Its issue manager is ACE (Kumari Bank Limited, Debenture Prospectus, 2007/08).

Himalayan Bank Limited has issued Rs. 500 million "% HBL Bond 2070" (with maturity period of 7 years and semi-annual coupon payment) in the Fy 2064/65. Out of 500 thousand units of issue, 100 thousand units are issued to the general public and 400 thousand units are privately placed. Its issue manager is ACE (Himalayan Bank Limited, Debenture Prospectus, 2007/08).

Nepal Investment Bank Ltd. has issued Rs. 250 million "8 HBL Bond 2072" (with maturity period of 7 years and semi-annual coupon payment) in the FY 2064/65. Out of 250 thousand units of issue., 50 thousand units are issued to the general public and 250 thousand units are privately placed. Its issue manager is ACE (Nepal Investment Bank Ltd, Debenture Prospectus, 2007/08).

Nabil Bank Ltd, has issued Rs. 300 million "8.5% HBL Bond 2072" (with maturity period of 10 years and semi-annual coupon payment) in the FY 2064/65. Out of 300 thousand units of issue, 60 thousand units are issued to the general public and 240 thousand units are privately placed. Its issue manager is ACE (Nabil Bank Ltd, Debenture Prospectus, 2007/08).

2.5 Type of Government Securities

2.5.1Treasury Bill

Treasury bills are based to meet short-term financial requirement of the government. It is issued on discount basis. The government has been collecting huge amount of fund through sales of T-Bills every years. The discount rate of treasury bills percentage can be calculated as:

$$\text{Discount rate in percentage} = \frac{(100-BP) \times 365 \times 100}{BP \times T}$$

Where, BP = Bill Price or Purchase price of T-Bills
T = Maturity period of treasury Bills

The issuance of short term Government securities has following reason:

i. To fulfill deficit budgetary system in Nepal
ii. To collect scattered funds and to mobilize it in productive sector
iii. to conduct fiscal and monetary policies

2.5.2 Development Bond

It is a kind of long-term government bond. It has normally had five years maturity periods. Individuals and institutions purchase it. It can be used as collateral when taking loans. The holders normally obtain 90% amount of total value if they keeps them on collateral. It has also fixed and minimum interest rate. The interest amount will be paid on semi-annual basis. The income from these bonds is taxable.

Characteristics of development bond

1. It is a long-term bond.

2. The holders get interest in semi annual basis.

3. The holders can use it as collateral if he needs money immediately.

4. Institutional and individual buyers can purchase it

2.5.3 National Saving Bond

The issuance of National Saving Certificate was initiated in order to mobilize saving from the non-banking sectors. It is also a long-term government bond normally issued for five years maturity periods. Except commercial banks, other organizations etc. are the holders of the bond. It has fixed interest rate payable semi annually. It can be purchased as promissory note. The holders get principle after a certain maturity period. The bonds are normally tax-free bonds and having high interest rates. Therefore the national Saving Bonds have large trading in market. It is obvious that the taxable bond is a National Saving Bonds.

2.5.4 Special Bond

it is issued on special occasions when government falls sort of funds for any special project or program. The government issues special bonds to make payment, instead of paying cash, the government issues special bonds as a substitute of cash repayment. the holder of this bond can also use it as collateral.

2.5.5 Citizen Saving Bond

it is also a long-term government bond, which normally matures in five years. The characteristic of the citizen saving certificate is same as the long-term bonds. The only difference is that it cannot be used as collateral. It has also a fixed interest rate. The interest amount is paid on semi-annual basis. Individual as well as institutional buyers can purchase it is also a taxable government bond.

2.6 Securities which are in practice in U.S.A

a. US Treasury Bills

Treasury bills are issued on a discount basis, their earning is the difference between the purchase price and the face value if the bill is held to maturity and the earning is treated as interest income for tax purpose.

b. US Treasury Notes

Treasury notes are issued with maturity from one to ten years and generally make coupon payments Semi annually.

c. US Treasury Bonds

Treasury bonds have maturity greater than ten years at the time of issuance. Treasury bonds have call provision. It issued value is more than 1000.

d. US Saving Bonds

These bonds are offered only to individuals and selected organizations. The purchaser can purchase a specified amount of bonds in a single year.

e. Zero coupon Treasury security receipts

A non-callable Treasury note or bond is, in effect, a portfolio of pure discount bonds (or, equivalently, a portfolio of zero coupon bonds). That is, each coupon payment as well as the principal can be viewed as bonds unto itself, the individual who owns the bond can therefore be viewed as holding a number of individual pure discount bonds (Francis, 2000:393).

2.7 Bond Price Theorems

Theorem 1: Bond's price move inversely to bond's YTM.

Theorem 2: If all other factors are held constant, a bond's interest rate risk increase with the length of time remaining until it matures.

Theorem 3: A bond's interest rate risk increase at a diminishing rate as the time remaining with the length of time remaining until it matures.

Theorem 4: The price change s that results from an equal-sized increase or decrease in a bond, YTM is asymmetrical. More specifically, for any given maturity, a decrease in yields causes a price rise that is larger than the price loss that results from an equal increase in yields.

Theorem 5: A bond's interest rate risk varies inversely with its coupon rate. (Francis, 2000:383-385)

2.8 Bond market Terminology

The following reviews of terminologies are from the point of view of the view of bond trader:

1. Coupon: The percentage interest to be paid on a bond in the course of a year. The interest is usually payable semi-annually, although it can also be payable monthly, quarterly and annually. If a bond worth Rs. 100000 at maturity has a 6% coupon, this means Rs. 6000 in interest is payable over a year's time.

2. Maturity: The date of the bond will be redeemed or paid off. If the same Rs. 100000bond has a maturity date of June 1, 2008, then investor is due to be paid off in full at that date.

3. Price: the quoted price is usually based on the bond maturity at a price of par, or 10000. in the case of the above-mentioned bond 6% of June 1, 2008, if the price is Rs. 105.13, this means the bond is at a 5.13% premium to its maturity price (par or 100.00). An investor who pays Rs. 105.13 for bond will receive only Rs 100.00 back on maturity.

4. Yield: The term "yield" usually means, "yields to maturity". At a price of Rs.105.13 for the 6% of June 1, 2008, the yield to maturity is 5.31%. The yield to maturity takes into account the fact that the coupon payment is 6% per year, but that the bond is maturing at a different price than its current price. The calculation also assumes that the coupon payments each year is re-invested at the yield to maturity (5.31% in this case).

5. Bid: The price the trader will pay for a bond.

6. Offer (Ask): The price at which the trader will sell a bond.

7. Bid-offer spread: The price difference between what the trader will buy a bond at, and the price at which the trader will sell a bond. The difference on highly liquid and tradable government bonds is usually only few cents. But it can be as much as Rs. 1 or more on illiquid bonds, such as some corporate bonds, which are not easily traded.

8. Basis points: A basis point is a hundredth of a percentage point. For instance, if a yield moves from 4.5% to 5%, it has moved 50 basis points.

9. Bond Auctions: Bonds are auctions on the bases of ask price and bid price. Government has given authority to trade government bond to NRB. NRB issue the new bonds in discount bases. The "Public Debt Act, 2002" has delegated authority to the NRB to arrange primary and secondary transactions of government securities. To comply with these commitments, NRB has recently decided to make auction of government securities in secondary market. Where the market price of the government is determined by the market mechanism i.e. the new provision has given to has move a system of auctions to sell their bonds to their bonds to the investors.

10. New issues: Most other government and corporations use a different system of distributing new issues, namely offering them to investors through bond dealers. The bond dealers earn a commission for distributing the bonds to investors. The offering can be on a fixed price, or on the basis of a fixed yield spread to comparable federal government bonds. There are variations is approach. Sometimes the bond dealers act merely as agents, on a best effort basis. But in recent years, the most common approach is for the issuer to sell the bonds, (still with commission attached) to the bond dealers, which then re-sell the bonds, and that they can re-sell them at the specified price. In a fast-moving bond market, where prices are changing by the second, this can be a risky approach for the bond dealers.

11. Book-base bonds: In the note to distant past, when bonds were bought and sold, they physically had to be moved from one institution or dealer to another. In financial centers, this involved dozens of messengers walking from building to building with large amounts of bonds in their briefcases. In recent years, however, bonds have gone "book-based". What that means is that the bonds are lodged with a central trustee and do not physically move from there. Instead, the dealers and institutions have accounts set up with the trustee, and when a bond trade takes place, the buyer's account is credited with the bonds, while the seller's account is debited. This all happens electronically and quickly, without the risk of the bonds physically going missing (www.bondmarket.com).

2.9 Buying and Selling Rules of Security

1. Investors typically buy or sell securities through brokers who are compensated for their services with commissions.
2. When transacting in a security, investors must specify the following: the security's name, buy or sell, order size, time limit and type of order.
3. The four standard types of orders are market, limit, stop, and stop limit. Market orders, followed by limit orders, are the most common types of orders.

4. Investors may purchase securities with cash or may borrow from brokerage firms to by securities on margin.
5. Investors must make down payments on their purchases, maintain minimum levels of collateral in their margin accounts, and pay interest on margin loans.
6. If an investor's actual margin falls below the maintenance margin requirement, the investor's account in under margined. The investor will receive a margin call and must increase the actual margin level in the account.
7. Buying on margin results in financial leverage, thereby magnifying (positively or negatively) The impact of a security's return on the investor's wealth.
8. Short sales involve the sale of securities that are not owned, but rather are borrowed by the sellers. The borrowed securities must ultimately be purchased in the market and returned to the lenders.
9. A short seller deposits the proceeds of the short sale and initial margin with his or her broker. The short seller must maintain a minimum actual margin level in his or margin account or fact a margin call.
10. For investors who purchase on margin or short sell several securities or do both, the determination of whether an account is under margined, restricted, or over margined depends on the aggregated activity in their accounts (Sharpe, 2003:40-41).

2.10 Bond Valuation Model

Value of Bond is a present values of all interest receipts and principal pay back after its maturity.

A. Basic Bond Valuation Model

Weston, Brighman and Ehehard illustration's value of Bond as:

Figure 1

0 1 2 3 N

Kd%

Bond's Value
INT INT INT INT

Where,

K_d = Appropriate interest rate on bond

N = No of years after bond is matured

INT = Dollars of Interest each year

M = Par value of face values of the bond. M refers the amount must be paid in maturity.

Valuation of bond can systematically present in equation form:

$$\text{Value of Bond (Vd)} = \frac{INT}{(1+Kd\%)^1} + \frac{INT}{(1+Kd\%)^2} + \dots + \frac{INT}{(1+Kd\%)^N} + \frac{M}{(1+Kd\%)^N}$$

Vd = INT (PVIFA@Kd%N) + M(PVIF@Kd%N)

There are following import features of bond model:

- When going rate of interest, Kd is equal to the coupon interest rate, a bond will sell at its par value
- When coupon interest rate is fixed, going rate of interest rise up, bond is valued below its par value. Such bond is sold at discount. So it is called discounted bond.
- When coupon interest rate is fixed, going rate of interest falls below and bond is valued above their par value. These bonds are sold at premium, which is called bond.
- Te market value of bond always will approach its par value as its maturity date approaches, provided the firms do not go bankrupt.

B. Finding Bond Yield to Maturity

The rate of return, which is used in discounting future cash flows, is called yield to maturity. It can calculate by using bond valuation model:

Vd = INT(PVIFA@Kd%N) + M(PVIF@Kd%N)

Putting all available values to maturity of bond (Kd)

Approximately yield to maturity:

{INT + (M-Vd)/N}/ (2Vd+M)/3

Where, M = Par value/face value/ Maturity value.

INT = Annual amount of coupon interest

Vd = Market value of bond

N = Maturity period

C. Bond valuation with semi-annual compounding

If bonds pays interest semi annually, it requires modifying bond valuation model.. We can calculate value of bond using following modified formula:

= INT/2[PVIFA@Kd/2%2N]+M[PVIF@Kd/2%2N

D. Interest Rate Risk on bond

Interest rate risk refers variability on price of bond as result of fluctuation in market interest rate. Price risk of bond tends to appear following two ways:

When interest rate increases, price of bond decreases. Price of bond declining arises losses in the value of bond and such price loss risk is interest rate price risk. However reinvestment rate of interest cash flow will increase. Like this way, If interest rate falls below, value of bond will increase.

Hence, “for bonds with similar coupon, this differential sensitivity to change in interest rate always holds true, the longer the maturity of the bond, there is greater its price changes in response to a given change in interest rate. Thus, even if the risk of default on two bonds is exactly the same, the one with the longer maturity typically is exposed to more price risk from a change in interest rate” (Bringham, Gaspenski, Ehehard, 1985: 291)

2.11 Financial Structure and Capital Structure

Financial structure refers to the composition of sources and amount of funds collected to use or invests in business. In other words, financial structure refers to 'capital and liabilities' side of balance sheet. So it includes shareholder's funds, long-term loans as well as short-term loans. It is different from capital structure includes only the long term sources of financing while financial structure includes both long-term and short-term sources of financing.

Financial structure can mainly be sub divided into ownership financing and borrowed financing. Ownership financing includes equity share capital and reserve and surplus. Joint stock Company cannot be established without equity financing. In Nepal the promoters must hold at least one share for the incorporation of joint stock Company in accordance with company act 2063. Borrowed financing includes short term debt and term loans as well as the varieties of bond and debentures. Preferred stock is neither purely a debt nor equity. Since it contains the characteristics of both debt and equity, it is called a hybrid security. So there is no unanimous practice about the treatment of preferred stock. However it is said to be equity from legal point of view since the company is not obliged to pay dividends on preference shares.

Capital Structure refers to the combination of long term sources of funds, such as debentures, long term debt, preference share and capital and equity capital including reserves and surpluses. Normally, a firm raises long term capital through the issue of shares, sometimes accompanied by preference shares. The share capital is often supplemented by debenture capital and other long term borrowed capital. In some cases, the firm accepts deposits. In a going concern, retained earnings or surpluses are also used in capital structure. Capital structure decision is one of the most important decisions that are taken by financial manager. It is because optimal capital structure maximizes shareholder's wealth and minimizes overall cost of capital. However, capital structure is taken as irrelevant factor for valuation of the firm by some theories.

2.12 Cost of Capital

Cost of Capital is premium payable for the use of capital in business organization. Cost of capital is the rate that must be earned on the company's investment in order to satisfy all the investors' requirement rate of return. It is the minimum required rate of return from the investment at which price of firm’s common stock remains unchanged. It is liability of users against suppliers of capital. Cost f capital is standard of measuring investment project profitability. Hence, project appraisal requires cost of capital.

Cost of capital is recognized rate of different names such as required rate of return, flat rate , hurdle rate, average rate of fund etc. the average return required by the firm’s investors determines how much must be paid to attract funds. It is the firms average cost of funds, which more commonly is termed the cost of capital.

There are different sources of capital, such as:

1. Debt Capital

Interest payable on debt capital is of cost of debt. Debentures or bonds may issues:

At par

At discount

At premium

Company should incur some expenditure for issuing such as preparation prospectus, advertising, brokerage, cost etc. cost of debt increase due to floatation cost.

Cost of debt is called applying formula:

Cost of debt (K_d) = I/NP

Where, K_d = Cost of debt before tax

I = Interest

NP = net processed amount actually available

Tax saves interest expenditure of issuer. So that cost of debt after tax may be:

Cost of debt after tax (K_{dt}) = k_d(I-t)

Where, t = tax rate

2.13 Review from Articles and journals

Some of the Journals, written by different authors, published from abroad are studied and reviewed to understand present debt market of Nepal as there is not sufficient publication regarding corporate bond/debenture market in Nepal. Review of different approach that can be applied in the context of Nepalese debt securities market. Comparing Nepalese corporate debenture market with respect to international debt market helps to identify issues and prospects on the one hand, and helps in recommending appropriate measures to overcome present problem on the other.

Some other relevant articles and journals found to be important and are reviewed.

Mikal Kviback (2005) present an article on ***"Issues in Local Bond Market Development (i.e. Nepal Survey)*** on Journal which concluded that there is still o position to be satisfied or pleased due to development of Nepalese financial market. Very few debenture or bond market are in operation as well as very few corporate bonds are issued by cooperation till now. Government market is more developed than corporate market but prizes are not market oriented. Furthermore, he mentioned that the capacity to develop the local cooperate bond or debenture, market of potential blue chip issues and size of the collective investors' base are not enough to create an institutionalized market and very few financial alternative instruments are available in the market for the investors to invest.

YanAlice Xie, Sheen Liu and Chunchi Wa (2005) have studied on ***"Duration, Default Risk and the Term Structure of Interest Rates."*** They examined the interactive effect of default and interest rate on duration of default able bonds. Their results suggest that the duration measures must be adjusted for the effects of default risk and stochastic interest rate to achieve an effective bond portfolio immunization. They have examined the duration of default ale bond by talking into account the interactive effects of default intensity and interest rates. Their study differed from that of previous studies in several aspects. First, instead of assuming flat yield curve, their modal incorporates the effect of term structure of interest rates on duration by adopting a stochastic mean-reverting interest rate process. Second, they have employed a reduced form approach to derive a closed-form duration modal for default able bonds by allowing for the effect of stochastic interest rate.

Elton, Grober, Agrawal and Mann (2001), in their Article ***"Explaining the rate spread between rates on corporate bonds",*** explain the spread between rate on corporate and government bonds. The purpose of this article is to examine and explain the differences in the rates offered on the corporate bonds and those offered on government bonds (spread) and in particular to examine whether there is a risk premium in particular to examine whether is a risk premium in corporate bond spreads and if so why it exist.

They have shown that the already can almost entirely be explained by three influences; the loss from expected defaults state and local taxes which must be paid on corporate bonds but not on government bonds and a premium required for bearing systematic risk.

Even they account for the impact of default and taxes, there still remains a large a part of the differential between corporate and treasuries. Making use of the Fama - French factors, they show that as much as 85 percent default can be explained as a reward for bearing systematic risk. They had been able to account for almost all of differences between corporate rates and government rates. They had provided explicit estimates of the size of these influence and had shown that both state taxes and risk premiums are more important than the financial economies has suggested.

Campbell, lusis and Viceira (2001), studied about ***"Why should Buy long term bonds?"*** According to conventional wisdom, long-term bonds are appropriate for conservation long term investors. This paper develops a model of optimal consumption and portfolio choice for infinite- lived investors with recursive utility that faces stochastic interest rates, solves the model using an approximate analytical method and evaluation conventional wisdom. In this paper they studied inter temporal portfolio choice in an environment with random real interest rates. For simplicity they assume that investor have only financial wealth and no labor income. They use an approximate problem that can be solved using the method of undermined coefficients. They use approximate solution to understand the demand for long-term bond. They had considered infinite lived investor who uses their wealth to finance stream of consumption. They had shown that such investors might hold long term bonds for two reasons. First if long- term bonds offer a term premium then investors may hold them for speculative purpose to increase their expected portfolio return even at the cost of some extra short term risk. This "Myopic demand" for long term bonds cal be large when risk aversion is small because long term investors may hold long term bonds for hedging purpose. Long term bonds can finance a stable long run consumption stream even in the face of time varying short term interest rates and this is no attractive to risk averse long term investors. In the extreme case when there is no term premium or whether investors are infinitely risk averse, the myopic demand for long term bonds is zero and hold demands is accounted for by the hedging demand.

Elton (2001) presents an article on ***“Explaining the rate spread on corporate Bond”*** explain the spread between rates on corporate and government bonds. The purpose of this article is to examine and explain the differences in the rates offered on the corporate bonds and those offered government bonds (spread) and in particular to examine whether there is a risk premium in corporate bond spreads and if so, why it exist. They have shown that the spread can almost entirely e explained by three influences: the loss from expected defaults. Stae and local taxes, which must be paid on corporate bonds but not on government bonds and premium, required for bearing systematic risk.

Even they account for the impact of default and taxes, there still remains a large part of the differential between corporate and treasuries. Making the use of the Fama-French factors, they show that as much as 85 percent of that part of the spread that is not accounted for by taxes and expected default can be explained as a reward for bearing explained risk. They had been able to account for almost all of differences between corporate rates and government rates. They had provided explicit estimates of the size of these influences and hand shown that both state taxes and risk premiums are more important than the literature of financial economics has suggested.

Khatiwada (1998) presents an article on ***“Dept trap and its management in Nepal”*** explain that when resorts to heavy borrowing from the market to finance the budget deficit, the interest rate on government securities is high, the long term interest rates are also higher. This is how excessive public borrowing results in a higher rate of interest in the money and capital markets. Imperical evidence of such a relationship is derived from the following equation

$$CLR = d_0 + d_1 \text{ TB rate} + U$$

Where, CLR = Commercial lending rate of Commercial Banks

TB rate = Treasury bill interest rate

U = Error term

The expected sign of the coefficient d_1 is positive.

William F. Maxwell (1998) presents a paper ***"The January Effect in the Corporate Bond Market"***. The purpose of this is to examine the January effect in corporate bond markets, systematically examining first its strength and then its possible cause. To empirically examine the relation between the small firm (-firm effect) and the January anomaly in the corporate bond market. He use computed data to compare firm market value to monitoring decrease there is a monotonic decreasing firm value for the chance between the AA+ and AA- categories and between AA- and A+ categories.

Brad M. Barber (1999) studied on "***Exchangeable Debt***". this study analyze the valuation effects of and motivation for the issuing exchangeable debt a hybrid form of convertible debt this research is motivated by what Miller describes as a "revolution" in financial innovation that has occurred over the last 20 years. The question addressed in this paper is whether these tax considerations are potential sources of value for issuing firms, why exchangeable debt is chosen over alternative divestment strategy. In this paper he analyzes two tax benefits posed by Jones and Mason and frequently cited in the financial press as motivating exchangeable issue.

He concluded that the price response of the convert firm is less pronounced than negative price response associated with secondary distribution.

He argue this a result of the repurchase guarantee implicit in the exchangeable debt offering the issuing firm it will keep the convert firm's stock should its value fill below the value of the straight bond component of the exchangeable debt offering. Exchangeable debt was probably originally conceived to capitalize on specific features of the tax code. However these tax motivations don't appear to be potential sources of value for firms issuing exchangeable debt.

Rameshwori Pant (1997) in her article, ***"Management of Internal Debt and Economic Stability"*** concluded that private industrialists and traders would be hesitant and discouraged if the state is also to conduct simultaneously the business and industries. This may create the unhealthy competition between the government and private imitative, government should not interfere the liquidity position exist the market. She recommends the government not to borrow the capital from the public so that private investors will not lack the capital.

Joseph P. Ogden (1987) presented a paper on ***"Determinants of the Relative Interest Rate Sensitivities of Corporate Bonds".*** This paper examines the extent to which the interest rate sensitivity of corporate bond prices is affected by various characteristics. The characteristics examined include default risk, the call option and the sinking fund.

The result of this study indicates that all three characteristic have strong negative interest rate sensitivity. This finding for the sinking fund is consistent with both that call option aspect of the sinking fund and the presence of accumulators. The result indicate that the month end corporate bond price quotations from a standard sources, Standard and Poor's bond guide, may be non synchronous with respect to true month end quotations. This highlights that importance of using the consistent estimation that is available for some such situations. The market of sinking fund bonds and perhaps by extending te entire corporate bond market is only quasi- competitive. Whether this is true and if so, what impact this would have on theories to resolve. Another implication of this that the negative relationship between quality rating and relative interest rate sensitivity may revolve of long standing empirical anomaly: the lack of a strong relationship between a bonds quality rating and its systematic.

Paul March (1982) studied on ***"The Choice between Equity and Debt: An Empirical Study"*** focusing on how companies actually select between financing instrument at a given point in time. He developed a descriptive model of the choice between equity and long term debt. The co-efficient of the model is estimated using logic analysis applied to as sample of 748 issues of the equity and debt made by U.K. Companies over the period 1960-70. The predictive ability of the model is tested on a hold out sample of 110 equity and debt issues made between 1971 and 1974.

This study throws some light on a number of interesting questions such as whether companies behave as though they target debt ratio; whether they have similar targets for the composition of their debt; whether market condition or company's historical share price performance affects their choice of instrument are influenced by other factors such as operating risk, copany size, the composition of company's assets and the rate at which retention are generated. The study assumes that a company's choice of financing instrument is a function of the difference between its current and a target debt ratio is thefoloing way:

$$P_r\ (Z_{jt} = 1) = P_r\ (D_{jt} - D_{jt} < 0)$$

Where, P_r (Z_{jt} = 1) is the probability that will issue equality at time t,

Given that it will make an issue of either equity or debt.

D_{jt} is unobservable, need to concern ourselves with its determinant's.

Therefore assume a model of the following form:

D_{jt} - D_{jt} = $B^I X_{jt}$ + U_{jt} < 0)

Where, X_{jt} is avector of explanatory variables, B^I is the corresponding vector coefficients and U_{jt} is a stochastic error term. Model then becomes

$$P_r\ (Z_{jt} = 1) = P_r\ (BIXjt + U_{jt} < 0)$$

The major findings of this study were as: companies are heavily influenced by market conditions and the past history of security prices in choosing between equity and debt. This study also provide evidence that companies do appear to make their choice of financing instrument as though they have target levels in mind for both the long term debt ratio and the ratio of short term to total debt. The target levels are themselves functions of company size, bankruptcy risk and assets composition.

Mark I. Weinsten (1978) presents a paper on ***"The seasoning process of New Corporate Bond Issues".*** This paper approaches the question of difference between new and seasoned issues by the concentrating on holding period returns (coupon plus capital gain) instead of the more usual yields to maturity. They analyses whether there are differences in holding period returns between seasoned and unseasoned bonds.

They consider this specific hypothesis concerning the seasoning process of new issues.

H_o: There is no seasoning process whatever.

H_1: Bonds are under priced at issue but this under pricing disappears rapidly.

H_2: There is a seasoning process, which extends over a number of months.

To test their hypothesis they define the abnormal return on a bond 'j' at time't' as: $ABR_{jt} = R_{jt}-R_{pt}$

Where, R_{jt} is the return on bond j during calendar month t and R_{pt} is the return on portfolio of bonds with same rating as bond j during calendar month t. in this study they have seen the evidence that the past issue behaviors of bonds is similar to that reported by Ibbotson for common stock that is there is some evidence of initial under pricing which is estimated by the end of calendar month of issue. They are unable to find any evidence supporting the existence of a “seasoning process” beyond the calendar month of issue.

James R. Morris (1976) explored one dimension of the risk arrogated with different maturity policies the effect of bond maturity upon the variance of net income. James argued that, element of the risk of borrowing is the risk that the firm’s cash inflows will not be sufficient to cover the fixed outflows necessary to service the debt. One way in which firm’s attempts to deal with this is to follow a hedging policy where by the maturity of the debt is chosen so as to approximately equal the life of the assets.

James has explained it into both hedging and short maturity policy;

The hedging maturity policy: With the hedging policy, the debt maturity decision affects expected net income by determining I, but since interest costs are fixed over the L- period horizon, variance of net income is independent of the interest payments and independent of the proportion of the total cost of the asset financed by debt.

James Model is

$NI = E\ (NI) = (N\text{-}1)\ (1\text{-}t)$

And Variance of net income

$\sigma^2_{NI} = (1\text{-}T)^{2}\ \sigma^2_{N}$

Where, NI denotes net income and T is the tax rate.

as assets with an L- period life in expected to generating income denoted by N, each period for the L-Period s assume N ia a normally distributed random variable with mean N, and variance σ^2_{N}, N is dependent from one period to the next and identically distributed in every period. the interest cost in each period I a known equal to,

$I = r(L)B$

Where, r(L) is the rate on L period and B is the size of the debt. in each period we have expected net income.

Short-term maturity policy; In L- period interest rates vary over the time so each periods interest rate on an L- Period debt, r(L), is a normally distributed random variable with a mean r(T) and variance σ^2r(1); the distribution are independent and identical in each Periods with B dollars borrowed each period, the interest payment are independent, identically distributed random variable with mean I=Br(T) and variance $\sigma^2_I = B^2 \sigma^2 r(1)$. Expected net income and variance of net income for the L- Period maturity Policy:

Then model is

NI = N (I-T)-1(1-T)

And,

$\sigma^2 NI = E\{(N-1)(1-T)-E[(N-1)(1-T]^2\}$

$= (1-T)^2\sigma^2 N+(1-T)\sigma^2_I-2(1-T)^2 CO\text{-}V(N,I)$

Since future interest rates are unknown, one might be inclined of net income in greater with the short (1-period) maturity policy than with the longer (hedging) policy.

This study concluded that the effects of debt maturity upon variance of net income, it was shown that if interest rates are highly correlated with the firm's net operating income, than short –term borrowing interest cost take on the aspect of variable rather than fixed costs, with the highly covariance between interest rates and net operating income may tend to decrease simultaneously, so that a short maturity policy interest costs will decrease with net operating income mitigating the decline in net income.

In periods of prosperity NOI and interest rates may tend to increase together so that the increase in net income limited. The result is that, with the short term borrowing policy, the variation of net income tends to be smaller for those firms where the co-variance of NOI and interest costs is large. These same conclusions can be stated in terms of the first difference in interest rates, net operating income and net income.

Steven Bolten studies focus on Treasury bills sells to different bidders at different prices. The supply of bills offered by the treasury is cleared by accepting the highest bid first and then descending until the supply is detected at what is called the stop out price.

A competitive market on the other hand would clear the supply at one price, where the demand equaled the supply. Bidders below the clearing price would be forced out of the market. Bidders above the clearing price would have their demand satisfied at a price lower than they were willing to pay. Steven was also set the hypothesis: the discriminatory auction should be retained instead of implementing a competitive auction.

If the results reveal a discriminatory auction would generate more revenue than a competitive auction, the hypothesis is accepted. If the competitive auction generated greater revenue the hypothesis is rejected and the alternative hypothesis is accepted. Steven also developed model which is,

$D_{net}=a_{net}-b_1\ (D_{net}-1)\ +b_2\ (S_{mut})\ +b_3\ (i_{cDt}-I_{TBt})\ +b_4\ (S_{Dt})$

Where,

D_{net} = Non competitive demand in period t, in billions.

a_{net} = Constant

S_{mut} = Corporate cash balance during the quarter as represented by the difference between corporate sources and uses of funds.

I_c-Dt-I_{TBt} = Spread between the 60-80 day CD rate and the bill rate in the secondary market if $i_{CDt}<I_{TBT}$

S_{Dt} = Seasonal dummy O except 1 the week quaterly tax payment are due and in the prior and subsequent two succeeding weeks. All interest rates are in integer from e.g., 5.00%.

The demand of all competitive bidders is influenced by seasonal factors, particularly in the weeks surrounding tax payment dates when study would expect demand to decline. The study would also expect the competitive bidder’s demand would be influenced by the auctions of prior weeks, the effect of which can capture with a distributed log (Dct-1).

Then the model for De would be:

$D_{Ct}= a_{ct}+b_5(EXRS_{t-1})+b_6(S_{Dt})+b_7(D_{Ct-1})+b_8(I_{ASP})+b_9(AI_{spt})+b_{10}(I_{spt-1})$

Where,

D_{Ct} = Competitive Demand

a_{ct} = Constant Demand

$ExRS_{t-1}$ = excess reserve lagged one period

S_{Dt} = Seasonal dummy

I_{ASP} = the first difference of the stop-out yield

I_{spt-1}= the stop-out yield lagged one period

D_{Ct-1} = a distributed lag

The result of this study is that, replacing the discriminatory auction with the competitive auction would generate greater venue for the treasury, provided the non-competitive demand remains constant. Since the non-competitive demand according to the results, is not related to accept it to remain relatively constant if the treasury continued to accept this type odf bid, despite charging to a complication by accepted the alternative hypothesis is that the government treasury should attempt to replace the present discriminatory auction procedure among the competitive bidders because revenues would be higher.

2.14 Review of Earlier Studies/Thesis

Having reviewed the research reports and thesis, most of the research studies are related with public debt and very few studies are found related with overall debt securities market.

Subedi (2006) studied on ***"Problems and prospects on Bond Debt market growth in Nepal"***. *Objective* of this study is mainly concerned with the bond's investment in total securities market along with the trend analysis of government bonds. *Major findings*: He found that Nepalese investors are keen to invest in common stock rather than debentures. Tedious and lengthy process of issuing debt securities ids another problem that hinders the growth of debt securities market. He also found that inertest on deposits of commercial bank is lower than the coupon rate of debt securities, therefore he suggest all the investors instead of depositing their saving in commercial bank should invest in debt securities of Nepalese securities market so that they may earn more than debt. He concluded that government securities market is slightly at maturity stage as compared to corporate debt securities. He recommended to the government to bring new rules and regulations regarding debt securities.

Kafle (2005) studied on ***"Problems and prospects on Debt market growth in Nepal"***. A main *objective* of the research is to dig out the various problems responsible regarding the growth of Debt market in Nepal. *Major Findings*: He summarized that, capital market of Nepal is in the infant stage and debt securities market is limited in exercise. The growth debt securities market is growing but not as expected. The heavy reliance of government in foreign debt has huge problem in growth of Nepalese debt securities market. He added that, investment made on impulse rather than through market study or credit ratings in Nepalese capital Market. He pointed that Nepalese investors preferred national saving bond and development bond rather than other government bonds. He concluded that due to oversupply of deposits by customers; commercial banks do not issue debt securities. On the other hand, big corporate bodies could get loan easily from banks at lower cost so they have been facing the problem of raising the fund by issuing debt securities as well as from banks. Tedious and lengthy process of issuing debt securities is another problem that hinders tha growth of debt securities market.

Mainali (2003) conducted a study on ***"Problems and Prospects on Debenture market growth in Nepal"*** was conducted with the *objectives* of finding out the existing debentures market, potentiality in growth of debenture market and existing problems of debenture market. *Major findings:* the study concludes that Nepalese debentures market is still in initial stage and growth direction. The researcher has pointed out many problems, such as insufficient legislative provision regarding Nepalese debentures market, political instability, poor price sensitive information disclosure, investors more preference on ordinary shares. Lack of listing of debenture, people is not interested on investing in debenture. He also concluded that Nepalese debentures market is in better position than preferred stock market. If problems are cure in time, its growth prospect is widely felt by the researcher. Nepalese public debentures market is comparatively better than private sector debentures. So, emphasis should be given in the development of private sector debentures market for the growth of overall debentures market in Nepal.

Bhattarai (2002) studied on ***"Problem and prospects of debt security in Nepal".*** The *objectives* of the study are to dig out the reason behind more priority for investing on common stock and trend of interest rate on investment. *Major Findings*: By using both primary and secondary data he found that investor had always first choice to invest in common stock and then in bonds which means investors are attracted towards common stock. He also found that the existing rules and regulation for the growth of Nepalese debt market are insufficient and trend of interest rate of deposit on commercial bank is decreased every year, so he has suggested to the depositors to invest in debt so that they carried more than that of from the deposit.

Sharma (2001) inquired into on ***"Public Debt System and practice in Nepal"*** with the *objective* to overview the system and practice of public debt in Nepal; to understand the attitude of the investors towards the government securities. *Major findings*: the interest of investors on government securities and their educational back ground is completely independent to each other. Both educated and uneducated people are equally interested on government securities. The study also concluded that both poor and rich people are interested to government securities. This means that government is efficacious to draw the attention of rich and poor, educated and illiterate people whom the government sells its securities which are the means of borrowing the loan internally. The study verifies the general statement that the people whom the government sells its securities to the government securities. The study also draw the conclusions that the people who have not sufficient time to run the private enterprise and who are not dexterous grab the opportunity in the market are more interested to the government securities. He also concluded that the persons with the academic background of economics, finance and management are more aware to the government securities.

Baral (1999) studied ***all types of securities- corporate or government, debt or owner types of securities***. His study was based on the pure secondary data with the *objective* of investing all types of securities and its forms in Nepal. *Major findings*: he came to know that till 1976, companies willing to issue securities had to manage their issues themselves. NIDC and RBS had made legal mandate to manage issues, but they never performed these roles to that date. Furthermore he added that the bond market is least developed market in Nepal. Only one i.e. Shree Ram Sugar Mill listed organization that issues the debt securities in Nepalese securities Market.

Chhetri (1984) conducted a study on ***"Internal Public Debt in Nepal"***, with the *objective* of analyzing the contribution of internal borrowing to the financing of development plans and had got the *findings* that the system of internal debt has helped to mobilize the internal financial resources in the productive sector of the country in economy.

Joshi (1982) investigated on ***"Structure of Public Debt in Nepal"*** with the *objective* of finding out the role of Public debt in the Nepalese fiscal system, and under plans. He pictured the poor economic performance of the nation, which is due to nation's national topography and human behavioral limitation. *Major findings*: he found that the internal borrowing is most essential to develop the money and capital market in the nations and describe the external debt as supplementary tools for the resources gap in the country's budgetary expenditures. Mr. Joshi has recommended floating or introducing the different public borrowing scheme, which may suit the pocket of the rich as well as poor people. Financially we all are advised the public debt rose by the nation through the techniques of effective debt management system. He concluded, "A Public Debt is one of the best ways of financing developed expenditure of the government which help to control inflation in the country."

2.15 Reviews from Newspapers

The Kathmandu Post, Wednesday 15 January 2003 reported that, more than 30% of the companies listed with the NEPSE have failed to comply with the working norms of the secondary market. Knowledgeable sources revealed that most companies fall under finance, manufacturing and processing, and trading groups. They have either defaulted in clearing their registration or renewal fees or have not provided the NEPSE with the audited financial statements for over two years. Only 65% of the listed companies do not pay heed to the norms of the stock exchanges. If the companies do not pay heed to the repeated warning they can be suspended or de-listed. So companies must comply with the stock market rules. NEPSE was prompted to de-list the 25 companies in line with the budgetary announcement made by the Former Finance Minister- Ram Saran Mahat in July 2001. Former Minister Mahat then announced to de-list those companies that did not provide financial statements for more than two consecutive years. Since de-listing of shares from stock exchange would impact small investors, proper care should be taken when the process in moved ahead. This process does impact on debt market as well as equity market growth of Nepal.

In the news of Kantipur Daily of 27th Baishakh 2060, the news about the listing of Nepal's first debenture has given that, NEPSE fixed the T=O system for the bond trading in Nepalese capital market. The bond of the Himalayan Bank 'Himalayan Bond 2066' initiated this system. Up to 15 of Shrawan, 2060, only 570 shares of bond at par were traded at the floor of NEPSE. Trading was held between individual to individual. It is the first held transaction held at the NEPSE from the corporate/bank debt security.

In the news of Kantipur daily of 24th August 2002, on the topic "public issue cost high in Nepal ", it has given that, despite huge appetite of investor for investment, inadequate investment opportunities has caused a substantial raise in the cost of issue, concludes alatest study commenced by SEBO. In it the following conclusions are highlighted.

1. Necessary adjustments in laws, by-laws, and directives.
2. During share issue, financial sector is bearing the maximum brunt of investor pressure.
3. Cost ranges from 0.34% to 24.25% of total issued capital but same in non-financial sector ranges from 1.77 to 5.36%.
4. Major cause for such huge issue cost in financial sector is the increased cost of processing the huge no. of applications that companies receive during share subscription.
5. Cost of processing is high as share of total issued capital go up when a large number of investor applies for a comparatively small issue.
6. Printing and other expanses and money collection and its refund increase the cost.
7. Underwriting, commission, advertisement expenses and issue commission.
8. Issue cost for rights share is lower. Which is only 0.30% to 2.09%?
9. Lack of one window policy has caused high issue cost.

2.16 Research Gap

Since very few research work has been conducted on the bonds and debenture, as being such a major part in capital formation; the corporate society, individual and investors are not interested towards bond and debenture.

Corporate society, individual and investors are only interested in issuing and purchasing common stock but not in issuing and purchasing debenture and bond. The corporate society usually avert the bond and debenture, it is due to unawareness about its characteristic like not control in management, tax, benefit, minimum cost of capital, repayment of debt after the expiration, flexibility in capital structure management, no voting rights, no participation in company profitability distribution and other advantages.

As research, some researcher had highlighted on the problems and prospects of debt and debenture but not on its importance and prospects. The researcher is also lagging behind on the government securities, which are going to be listed on stock exchange in a recent time.

CHAPTER-III

RESEARCH METHODOLOGY

3.1 Introduction

Research Methodology is the way of carrying research to derive information about something. It deals with the situation and interpretation of data meaningful from and help to generate ideas for further investigation and research. The nature and source of the date and method of analysis used in this study are described here under:

Descriptive Research: It includes survey and fat finding inquires of different questions. The main purpose of descriptive research is the description of the status of affairs, as it exists at present.

Analytical Research: In this type of research, the researchers use the facts and information already available and analyze that data to make a critical evaluation.

3.2 Research Design

This research study attempts to analyze overall study of Bond market growth in Nepal. Hence to fulfill the objective of the study, it used both primary as well as secondary data. to fulfill the objective, the study adopts descriptive research design as well as the analytical and quantitative approach are used to examine the issue.

To examine the trend of Government bond examine ownership pattern and interest rate structure, mostly analytical research design is adopted due to which some prospect can be analyzed. Similarly to examine the various sectors views towards Nepalese bond market and to find out its advantages, descriptive research design is also done. Various statistical tools such as curvilinear Model and chi-square testing hypothesis are applied to interpret and come to conclusion.

3.3 Population and Sampling

From the title of the study, it is obviously clear that the research covers vast area. On one side, the population of this study comprised all the listed organized companies, which are the potential issuance companies of debenture. There are 142 in number at fiscal year 2007/08 likewise, all the holders of debt securities are also considering as population. This study covers the area of government bodies, concerned staff or experts, the brokerage firm and market makers are considering as the population of this study from which , a questionnaire survey is conducted. In another side there are two practices of corporate debt securities, and many government securities issuance practice are held from 1962. These practices are also taken as population of the study.

A use of 35 listed companies, 15 market and brokers, 30 individual investors and 20 experts are taken from various sectors using judgmental sampling, a list of investors included corporate debt holder as well as government securities holders are taken using random sampling. To analyze the trend of government securities a sample of issuance from 1987 to 2008 are taken as sample for study.

3.4 Source of Data

The research study is based on both primary and secondary data. the source of primary data is mainly questionnaire methods. A set of 10 questionnaires is developed for various respondents. There are allocated to them and collected after some times. The main sources of the primary data were:

- Listed companies
- Brokers and market makers
- Individual investors
- Other experts, mainly staff of SEBON and NEPSE

To examine the trend and ownership patterns and for Interest rate analysis secondary data are also used. The main sources of secondary data were:

- Various Quarterly Economic Bulletins o NRB
- Various Economic Reports
- Economic Survey
- Various budget Speeches
- Various Statistical Year Book and other publications of Department of Statistics
- Various Annual Report of Securities Board, Nepal
- Prospectus of Shree Ram Sugar Mills Ltd.
- Prospectus of Himalayan Bank Ltd.

- Prospectus of Nepal Investment Bank Ltd.
- Prospectus of Everest Bank Ltd.
- Prospectus of Nepal SBI Bank Ltd.
- Prospectus of Kumari Bank Ltd.
- Prospectus of Nabil Bank Ltd.
- Prospectus of Nepal Electricity Authority
- Various publications of NEPSE

3.5 Research Methods

A questionnaire is made and distributed to various respondents through which a field survey is conducted they are analyzed by using various statistical tools like Chi-square test of hypothesis. A descriptive analysis is also done to find out the overall view and reach to the conclusion.

3.6 Hypothesis Formulation

Based on the theoretical frame work proposed in the study, the following hypotheses have been formulated.

1. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding factor dominating the growth of Nepalese Bonds Market.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding factor dominating the growth of Nepalese Bond Market.

2. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

3. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of various sector's bond.

b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of various sector's bond.

4. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the reasons for influencing the investors to purchase debt securities.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the reasons for influencing the investors to purchase debt securities.

5. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the importance of bond in investment.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the importance of bond in investment.

6. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the use of bank loan or issuing debenture.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the use of bank loan or issuing debenture.

7. a) Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

   b) Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

3.7 Testing of Hypothesis

This study is based on both secondary as well as primary data. the primary data has been collected by questionnaire. Using computers application programs especially MS- Excel has been utilized for processing of these information. Some other statistical tools have been used for presentation and make raw data into organized forms and also for analysis and interpretation. In this research work some suggested solution called as hypothesis to suggest new observation.

The chi-square test of hypothesis is useful to examine the importance of bonds market. The samples are taken to clarify the importance of bonds in investment from various related sectors' person and organizations. Group of listed companies are selected using judgmental sampling. These companies are randomly selected according to their education, locations, position on various jobs etc. another group is Brokers and Market Makers, which are also randomly selected, and the last is staff of SEBON and NEPSE.

With the available data some hypothesis are tested and given the decision accordingly. It may not be proved absolutely but in practice it is accepted if it has stood with a critical testing.

While examining the hypothesis by chi-square test, the expected frequencies are calculated by applying the formula.

$$\mathbf{E = \frac{RT \ X \ CT}{N}}$$

Where, RT= Row Total, and calculated value of χ^2 were calculated by the following formula,

$$\chi^2 = \frac{\Sigma\ (O-E)^2}{E}$$

Where, O= Observed Frequency
E = Expected frequency

3.8 Curvilinear Model

To examine the trend of government securities by using the data of the total amount of issued on previous curvilinear model is used. With the help of this model, the forecasted amounts of total amount of government securities issuing by government and coming year are calculated.

The equation of curvilinear is as below:

$y = a + bx + cx^2$

$\Sigma y = Na + B\Sigma x + c\Sigma x^2$

$\Sigma xy = a\Sigma + b\ \Sigma x^2 + c\ \Sigma x^2$

$$\Sigma x^2 y = a\ \Sigma x^2 + b\ \Sigma x^3 + c\ \Sigma x^4$$

By solving the above equations, the value of a, b, c are calculated. The forecasted value can be calculated by using the following equation:

$$Y = a + bx + cx^2$$

Similarly, to find out the trend line of the individual government securities, a time series is used. A trend line is the diagram by taking years (i.e. time) at X- axis and the amount of issued securities at Y- axis.

3.9 Research Tools and Instruments

Mainly the following tools are used in this research study:

Chi-square (χ^2) test of hypothesis

Curvilinear Model

Chapter-IV

DATA PRESENTATION AND ANALYSIS

4.1. Introduction

This chapter is the main body part of the dissertation. The secondary data has been obtained from Quarterly Economic Bulletin, Current Macroeconomic situation, annual Report of SEBON and other related newspaper. The primary data have been obtained through field survey. The primary data has been obtained though field survey. The available data have been tabulated and presented into graphs, charts and analyzed to reach at the findings. So this dissertation has been prepared by using various available data to fulfill its objectives.

Following methods are used to analyze the data:

- Chi-Square Model of Hypothesis
- Curvilinear Model

4.2. Ownership Pattern of Government Bonds and Treasury Bills

The ownership pattern of Government Bond and Treasury Bills refers to the proportion of total government Bonds and Treasury Bills purchased by different financial institutions and individuals. The table 1 shows Ownership Pattern of Government Bonds & T-Bills

Table 1: Ownership Pattern of Government Bonds & T-Bills

Debt Holder/Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Nepal Rastra Bank	14,447 (47.16%)	16328 (50.93%)	17543 (51.23%)	18066 (50.34%)	15965 (41.57%)	22116 (44.53%)	20909 (38.47%)	17950 (29.89%)	25504 (34.64%)	26826 (33.06%)	19139 (22.22%)	17457 (19.94%)	11049 (12.28%)	15630 15.74%)	18885 (16.98%)
Commercial Banks	8886 (29.00%)	8189 (25.54%)	7540 (22.02%)	7738 (21.56%)	10281 (26.77%)	12659 (25.49%)	18177 (33.44%)	25393 (42.29%)	29361 (39.88%)	35883 (44.22%)	43796 (50.85%)	48551 (55.45%)	58861 (65.43%)	65836 (66.30%)	72141 (64.85%)
Others	7298 (23.84%)	7541 (23.53%)	9159 (26.75%)	10087 (28.10%)	12161 (31.66%)	14895 (29.98%)	15271 (28.095)	16701 (27.81%)	18756 (25.48%)	18439 (22.72%)	23199 (26.93%)	21556 (24.61%)	20045 (22.28%)	17838 (17.96%)	20213 (18.17%)
Total	**30631 (100%)**	**32058 (100%)**	**34242 (100%)**	**35891 (100%)**	**38407 (100%)**	**49670 (100%)**	**54357 (100%)**	**60044 (100%)**	**73621 (100%)**	**81148 (100%)**	**86134 (100%)**	**87564 (100%)**	**89955 (100%)**	**99304 (100%)**	**111239 (100%)**

Source: NRB, Quarterly Economic Bulletin, Volume 43, Mid July 2010, Number 4

Note: Figures in parentheses indicates percentage over total amount

The data shown in table 1 reveals the portion of Nepal Rastra Bank in total purchase of bonds and treasury bills from 1996 to 2010 i.e. 47.16%, 50.93%, 51.23%, 50.34%, 41.57%, 44.53%, 38.47%, 29.89%, 34.64%, 33.06%, 22.22%, 19.94%, 12.28%, 15.74% and 16.98%. although participation in purchasing Government Bonds and Treasury Bills by NRB in absolute terms has increased from Rs. 14.447 in 1996 to 18.885 in 2010 but the table clearly shows that NRB is losing its portion in the purchase of total Government Bonds and Treasury Bills from the year 1998 to 2008, but it increased by 3.46% and 1.24% in year 2009 and 2010 respectively.

The next substantial buyers of government bonds and treasury bills are the commercial banks whose purchase has increased from Rs. 8,886 million in the year 1996 to Rs. 72,141 million in the year 2010. It clearly shows that the participation of commercial banks in the total purchase has been increasing in absolute terms (except from 1998 to 2001, when it had a decreasing trend). It is also observed that the portion in total purchase has been in increasing trend and reached to 64.85% in 2010.

Similarly, other include the financial institutions with Insurance Corporation and provident fund along with Government Business Enterprises, Private Business Enterprises and Nonprofit organizations as well as Individuals whose purchase has increased from 7,298 million in 1996 to 20,213 in 2010. The amount invested by others were in increasing trend up to year 2000 but then after it was in decreasing trend up to year 2005 and after that amount invested was in fluctuation.

4.3. Trend and Amount of Government Securities Issued in Nepal

Since 1961, Nepal has started to borrow from the internal sources to bridge the resource gap in the budget, by means of issuing various kinds of securities. In the initial year 1961, the government issued treasury bills for internal borrowings (Budget speech 1961), but a systematic borrowings by issuing T-Bills, Development Bonds, National saving Bonds, Citizen Saving Bonds and Special Bonds.

As stated in the Table 2, substantial change occurred in the structure of government securities during the period of 1985-2005. The total amount of government securities amounted to Rs 6031.60 million in 1985, which is in increasing trend, and its growth rate is positive in every year. By the end of 2010 the total amount of it reached to 113657 millions. In every year data we can found that the portion of treasury Bills is highest out of the instrument.

Table: 2

Total Bonds and Treasury Issued by Government *Rs. In million*

Year	Total Bonds and T-Bills	Growth rate (%)
1989	8997.4	-
1990	11636	29.33
1991	12887.9	10.76
1992	14673.1	13.85

1993	20855.9	42.14
1994	23234.9	11.41
1995	25456	9.56
1996	30631.2	20.33
1997	32057.9	4.66
1998	34241.8	6.81
1999	35890.8	4.82
2000	38406.6	7.01
2001	49669.7	29.33
2002	54357	9.44
2003	60043.8	10.46
2004	73621	22.61
2005	81148.3	10.22
2006	85133.7	6.14
2007	87564.3	1.66
2008	89954.9	2.73
2009	99303.8	10.39
2010	111239.1	12.02

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2010, No.4

Figure 1: Total Bond & Treasury Bill issued by Government

The above Table 2 and Figure 2 show the total amount of debt issued by the government during the past 22 years (1989-2010), which is in increasing trend. However the growth rate shows the fluctuating trend of total debt. Here the growth rate has calculated by taking the previous year as the base year. From the growth as compared with the previous year, the minimum growth rate of debt is 1.66% in the year 2007.

4.3.1 Treasury Bills Issued by Government

The Table 3 shows the amount of Treasury Bills issued by the government to collect the fund in 22 years periods.

Table 3
Treasury Bills Issued by Government

Rs. In million

Year	Total amount of Treasury Bills	Growth rate (%)
1989	3340	-
1990	4090	18.90
1991	1171	-71.37
1992	1821	55.51
1993	2351	29.10
1994	3483.3	48.16
1995	4403.2	26.41
1996	5216.3	18.47
1997	6392.5	22.55
1998	7142.5	11.73
1999	8092.5	13.30
2000	9182.5	13.47
2001	17586.9	91.53
2002	21026.9	19.56
2003	27610.8	31.31
2004	41106.5	48.88
2005	46884.9	14.06
2006	49429.6	5.43
2007	51383.1	3.95
2008	62970.3	22.55
2009	74445.3	18.22
2010	58033.0	14.22

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2010, No. 4

Figure 2 : Treasury Bills issued by Government

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2008, No. 4

The above Table 3 and Figure shows the total amount of treasury Bills issued by the government during the past 22 years (1989-2010), which is in the increasing trend as shown in the line graph except in the year 1991 which is decreased by 71.37% as compared with the previous year amount and a fluctuation trend is observed its growth rate. The growth rate is calculated by taking the previous year's amount as base. Observing the growth rate column in year 2001 it shows maximum increase in growth rate by 91%.

4.3.2 Development Bond Issued by Government:

The Table 4 shows the amount of Development bond issued by the government to collect fund in 21 years periods.

Table 4
Development Bond Issued by the Government

Rs. in million

Year	Total amount of Development Bond	Growth rate (%)
1989	2290	-
1990	4651.7	55.58
1991	5088.6	9.39
1992	5388.6	5.90
1993	5482.3	1.74
1994	5132.2	-6.39
1995	5132.2	0.00

1996	4732.2	-7.79
1997	4122.2	-12.89
1998	3672.2	-10.92
1999	3042.2	-17.16
2000	3302.2	8.55
2001	3872.2	17.26
2002	4262.2	10.07
2003	5962.3	39.89
2004	11090.7	86.01
2005	13090.7	18.03
2006	17549.2	34.06
2007	19999.2	13.96
2008	17959.2	-10.20
2009	19177.1	6.78
2010	21735.4	13.34

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2010, No. 4

Figure 3: Development Bond Issued by Government

The table 4 and Figure 4 shows the amount of development bond issued by the government during the past 22 years (1989-2010) which is in increasing trend in the first five years and reach to Rs. 5482.30 million in 1993. But, In 1994 the amount of development bond decreases by 6.39%, however in 1995, there was no change in the amount. From the year 2000 the Development bond growth rate again shows the positive growth trend, but in 2008 again there was negative growth rate but in 2009 and 2010 again the growth rates were positive. The growth rate has been calculated by taking previous year as the base year.

4.3.3. National saving Bond Issued by Government

The Table 5 shows the amount of National saving Bond Issued by Government to collect fund in 22 years periods.

Table 5
National saving Bond Issued by Government

Rs. In million

Year	Total amount of National Saving Bond	Growth rate (%)
1989	1940	-
1990	2196.5	13.22
1991	2196.5	0.00
1992	2896.5	31.87
1993	3646.5	25.89
1994	4546.3	24.68
1995	4901.5	7.81
1996	5691.5	16.12
1997	6076.4	6.76
1998	7376.5	21.40
1999	8736.5	18.44
2000	9884.4	13.16
2001	10426.4	5.46
2002	11526.5	10.55
2003	12476.5	8.24
2004	11536.1	-7.54
2005	10659.9	-7.60
2006	9029.8	-15.29
2007	6576.8	-27.17
2008	3876.8	-41.05
2009	1516.9	-60.87
2010	1116.9	-26.37

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2010, No. 4

Figure 4: National Saving Bond Issued by Government

The Table and Figure 5 shows the amount of National saving Bond issued by the government during the past 22 years (1989-2010) which is in increasing shows the positive growth up to year 2003 but from 2004, there was negative growth rate, which means the prospects of National saving Bonds has been decreasing. The growth rate has been calculated by taking previous year as the base year.

4.3.4. Special Bond Issued by Government

The Table 6 shows the amount of special Bond issued by the government to collect the fund in 21 years period.

Table 6
Special Bond Issued by Government

Rs. In million

Year	Total amount of Special Bond	Growth rate (%)
1989	627.4	-
1990	697.8	11.22
1991	4431.8	535.11
1992	4567	3.05
1993	9376.1	105.30
1994	10073.2	7.43
1995	11019.1	9.39
1996	14991.2	36.05
1997	15466.4	3.17
1998	16050.6	3.77

1999	16019.6	-0.19
2000	16035.5	0.10
2001	17784.2	10.91
2002	17541.4	-1.37
2003	13994.3	-20.22
2004	9259.3	-33.84
2005	9621.7	3.91
2006	8946.2	-7.02
2007	8176.3	-8.61
2008	3469.8	-57.56
2008	2773.5	-20.07
2010	339.4	-87.76

Source: NRB, Quarterly Economic Bulletin, Volume 43 mid July 2010, No. 4

Figure 5: Special Bond Issued by Government

The Table and Figure 6 shows the amount of special bond issued by the government during the past 22 years (1989-2010) which shows lots of fluctuation in its growth rate. In the year 1993 it shows the maximum growth rate i.e. 535.11% as compare to the previous year amount. The first 11 years shows positive growth rate although the growth rates show large fluctuations. From the year 1999 to 2007 the growth rate decreased from 0.19% to 33.84% in various span of time except in the year 2000, 2001 and 2005. In years 2008, 2009 and 2010 the growth rate remains in negative too by 57.56%, 20.07% and 87.76% respectively which shows that the prospects of Special Bonds Market is not in a good stage.

4.4 Forecasting of Government Securities through Curvilinear Model

Table 7

Forecasted Total Amount of Debt Securities from 2011 to 2015

Rs. In Million

Year	Amount of Government Securities Issued
2011	162347.579
2012	167065.0774
2013	171765.3065
2014	176448.2662
2015	181113.9566

Figure 6: Forecasted Total Amount of Debt Securities from 2011 to 2015

The figure and Table 7 shows the increasing trend of estimated amount of government securities. The curve is upward sloping. The estimated or forecasted value is 162347579 million in 2011 and increased to 181113.9566 million in year 2015. (See ANNEX-3)

The trend of amount of government bond and T- bill issued every year is clearly curvilinear model after observing the fitted data in the figure. It shows the increasing trend of the amount of government securities. The curve is upward sloping. Hence, to find out correct result, the curvilinear model is suitable according to the nature of the past data, the model has been followed:

The equation of curvilinear model is as below:

$y = a + bx + cx^2$……………………….1

$\Sigma y = Na + b\Sigma + c\Sigma x^2$…………………….2

$\Sigma y = a\Sigma x + b\Sigma x^2 + c\Sigma x^2$……………….3

$\Sigma x^2 y = a\Sigma x^2 + b\Sigma x^3 + c\Sigma x^4$…………….4

Table 8

Growth Trend of Government Debt Securities Fitted in Curvilinear Model

(In Millions)

Year	X	Y = Amount of govt. Securities	xy	x2	x3	x4	x2y
1989	1	8,997	8,997	1	1	1	8,997
1990	2	11,363	22,726	4	8	16	45,452
1991	3	12,888	38,664	9	27	81	115,992
1992	4	14,673	58,692	16	64	256	234,768
1993	5	20,856	104,280	25	125	625	521,400
1994	6	23,235	139,410	36	216	1,296	836,460
1995	7	25,456	178,192	49	343	2,401	1,247,344
1996	8	30,631	245,048	64	512	4,096	1,960,384
1997	9	32,058	288,522	81	729	6,561	2,596,698
1998	10	32,242	322,420	100	1,000	10,000	3,224,200
1999	11	35,891	394,801	121	1,331	14,641	4,342,811
2000	12	38,407	460,884	144	1,728	20,736	5,530,608
2001	13	49,670	645,710	169	2,197	28,561	8,394,230
2002	14	54,357	760,998	196	2,744	38,416	10,653,972
2003	15	60,044	900,660	225	3,375	50,625	13,509,900
2004	16	73,621	1,177,936	256	4,096	65,536	18,846,976
2005	17	81,148	1,379,516	289	4,913	83,521	23,451,772
2006	18	86,134	1,550,412	324	5,832	104,976	27,907,416
2007	19	87,564	1,663,716	361	6,859	130,321	31,610,604
2008	20	89955	1,799,100	400	8,000	160,000	35,982,000
2009	21	99,304	2,085,384	421	9,261	194,481	41,806,984
2010	22	111,239	2,447,258	484	10,648	234,256	53,617,198
Total	**Σx=253**	**Σy=1,079,733**	**Σxy=16,673,326**	**Σx2 =3775**	**Σ x3 =64,009**	**Σ x4 =1,151,403**	**Σ x2y= 286,446,166**

4.5. Trend of Corporate Bonds

To raise capital bodies of Nepal have issued various kinds of securities, out of them is debenture vis. Bottlers Nepal Limited, Shree ram Sugar Mills, Himalayan Banks Ltd, Nepal Investment Bank, Everest Bank, Bank of Kathmandu, NIC Bank, Nepal SBI Bank. The debenture of Bottlers Nepal Limited has already been matured before the observed period here. Shree Ram Sugar Mills had issued debentures amounting Rs. 93 millions in fiscal year 1997/98 which was of 14% coupon rate and convertible in nature. Then, in the fiscal year 2001/02, Himalayan Bank Ltd. had issued " Himalayan Bond- 2066" of 8.5% coupon tare and in fiscal year 2003/04, Nepal Investment Bank had issued "Investment Bank Bond-2060" of 7.5% coupon rate and which have the maturity period of 7 years. Kumari Bank limited, Himalayan Bank Limited, Nepal Investment Bank Limited, Nabil Bank Limited and Nepal Electricity Authority (Nepal Vidhyut Pradhikaran) had issued debenture of Rs. 2950 Million in the fiscal year 2007/08 and there are lots of other organization in pipeline to issue debentures in coming days. However, the total no. of debenture issued is only 14 but the portion of debenture out of total securities is in increasing trend i.e. it is Rs. 93 millions and gradually increased to Rs. 5103 million and the portion of debenture issued to the total securities issued is increased from 4.03% to 45.07% from the year 2000 to 2010.

Table 9
Portion of Debenture Out of Total amount of Securities Till FY 2009/10
(In Millions)

Year	Total No. of Issue		Total Approved amount		Total Cumulative Amount		Debenture & total Securities (%)
	Securities	Debenture	Securities	Debenture	Securities	Debenture	
1996/97	17	-	244.40	-	244.40	-	-
1997/98	12	-	974.00	-	1218.40	-	-
1998/99	12	-	293.70	-	1512.10	-	-
1999/00	5	-	332.20	-	18844.30	-	-
2000/01	12	1	462.40	93	2306.70	93	4.03
2001/02	5	-	258.00	-	2564.70	93	3.63
2002/03	9	-	326.90	-	2891.60	93	3.22
2003/04	9	1	410.50	360	3302.10	453	13.72
2004/05	16	-	1441.40	-	4743.50	453	9.55
2005/06	17	-	556.50	-	5300.00	453	8.55
2006/07	16	1	1027.50	300	6327.50	753	11.90
2007/08	14	1	1626.80	300	7954.30	1053	13.24
2008/09	29	5	2443.30	1100	10397.60	2153	20.71
2009/10	16	5	924.80	2950	11322.40	5103	45.07
Total	**189**	**14**	**11322.40**	**5103**	**61929.6**	**10700**	

Source: Annual Report of SEBON 2009/10

Table10: CORPORATE BOND ISSUED IN NEPAL

S.N	ISSUING COMPANY	ISSUING AMOUNT (In Millions)		Total	Approval Date	Issue Date	Maturity Period	Coupon Rate	Issue Manager	Remarks
		Public Offering	Private Placement							
1	Shree Ram Sugar Mill Limited	93.00	0.00	93.00	1997/07/07	1997/11/20	4 years	14%	NCML	
2	Himalayan Bank Limited	100.00	260.00	360.00	2002/06/04	2002/06/18	7 years	8.50%	NMB	
3	Nepal Investment Bank Limited	100.00	200.00	300.00	2003/10/14	2003/11/03	7 years	7.50%	AFC	
4	Everest Bank Limited	50.00	250.00	300.00	2005/3/30	2005/04/20	7 years	6%	CIT	
5	Bank of Kathmandu Limited	50.00	150.00	200.00	2005/09/07	2005/09/07	7 years	6%	NMB	
6	Nepal Investment Bank	80.00	170.00	250.00	2006/05/30	2006/06/09	7 years	6%	AFC	
7	Nepal Industrial and commercial Bank limited	50.00	150.00	200.00	2006/05/31	2006/06/12	7 years	6%	AFC	
8	Nepal SBI Bank Limited	50.00	150.00	200.00	2006/06/25	2006/07/04	7 years	6%	CIT	
9	Nepal Investment Bank Limited	50.00	200.00	250.00	2007/05/30	2007/06/12	7 years	6.25%	AFC	NIB BOND 2070
10	Nepal electricity Authority	150.00	1350.00	1500.00	2008/01/25	2008/02/14	5 years	7.75%	NMB	NEA BOND 2069
11	Kumari Bank Limited	80.00	320.00	400.00	2008/04/24	2008/05/15	5 years	8%	ACE	KBL BOND 2070
12	Himalayan Bank Limited	100.00	400.00	500.00	2008/06/01	2008/06/22	7 years	8%	ACE	HBL BOND 2072
13	Nepal Investment Bank Limited	50.00	200.00	250.00	2008/06/16	2008/06/26	7 years	8%	ACE	NIB BOND 2072
14	Nabil Bank Limited	60.00	240.00	300.00	2008/06/29	2008/07/13	10 years	8.5%	NCML	NBL BOND 2075
	Total	1063.00	4040.00	5103.00						

Source: Unpublished report of SEBON

4.6. Comparison of corporate Bond and Government Bond Flotation

Government Bond and corporate Bond together make the total bond market. Government Bonds is issued by NRB and corporate Bond is equally issued by Corporate Sectors. The Comparative position of Government and Corporate bond is shown below:

Table 11

Floatation of Corporate Bonds and Government Bonds (In Millions)

Years	2003	2004	2005	2006	2007	2008	2009	2010
Government Bonds	60044	73621	81148	86138	87564	89955	99304	111239
Corporate Bonds	93	453	753	1053	1253	1903	2153	5130
Total bonds	60137	74074	81901	86891	88817	91858	101457	116369
% of Government Bonds	99.85	99.39	99.08	99.13	98.59	97.79	97.88	95.60
% of Corporate Bonds	0.15	0.61	0.92	0.87	1.41	2.07	2.12	4.40

Source: Quarterly economic Bulletin, NRB and Annual Report SEBON 2007/08

According to Table 11, the percentage of Government Bonds to Total Bonds is about 99.85% where as the percentage of Corporate Bonds to Total Bonds is amount 0.15% in the year 2003. Likewise in the year 2010 the percentage of government Bonds to Total Bonds is about 95.60% and the percentage of Corporate Bonds to total bonds is about 4.40%. This table reveals that the percentage of Government Bonds to Total Bonds is in decreasing trend where as the percentage of Corporate Bonds is increasing slowly that means Nepalese Bond Market has greater prospects in coming days.

4.6.1 Bond Duration:

The duration is the measure of average maturity of the stream of payments associated with a bond. Bond Duration is concerned to be an appropriate measure of its term structure than its year to maturity as it reflects the amount and time of every cash flow rather than merely the length of time until the final payment occur. This study has been used the model development by F.R.Macaulay (1938) for calculating the weighted average time of Nepalese Corporate Bonds.

The sensitivity (Duration) of bond price is important in the portfolio management. Therefore various determinants should be considered while determining durations. These determinants are expressed as rules in the following sections:

RULE 1: Duration of Zero Coupon (Discount) Bond equals its time to maturity.

MD = n (maturity period)

RULE 2: Holding maturity period constant, a bond's duration is higher when the coupon rate is lower.

RULE 3: Holding the coupon rate constant, a bond's duration generally increases with its time to maturity.

RULE 4: Holding other factors constant, the duration of a coupon bond is higher when bond's yield to maturity is lower.

The duration of bonds can be calculated by using following formula:

$$MD = \frac{1+Y}{Y} - \frac{(1+Y) - T(C-Y)}{C[(1+Y)^{T}-1]+Y}$$

The durations of 5 corporate bonds have been taken as sample and the result can be generalized to other issuance too. The duration of 5 different Corporate Bonds are calculated and presented in the following table:

Table 12

Duration of Nepalese Corporate Bonds

S.N.	Issuance Company	Duration	Maturity Period
1	Shree Ram Sugar Mills Limited	3.22 years	4 years
2	Himalayan Bank Limited	5.67 years	7 years
3	Nepal investment Bank Limited	5.79 years	7 years
4	Everest Bank Limited	5.95 years	7 years
5	Bank of Kathmandu Limited	5.95 years	7 years

Source: ANNEX 6

The result presented in the table 12 indicates that the durations of Nepal Corporate Bonds are lesser than their respective years to maturity years. And so is the case with other bond issuances. It is because when the market rate of interest is lesser than the coupon rate of the bonds, the duration is lesser than its maturity period. Therefore, the investors receive their income prior to the maturity period, which indicates the higher prospects of Nepalese Bond Market. Also duration and price volatility are directly related and the bonds with the longer duration have more price risk than short duration bonds. Therefore, Nepalese Corporate Bonds face less price risk because of less duration than their terms to maturities. However the result deficit an increasing trend of durations of Nepalese Corporate Bonds as well as increase in risks. The same result can be applied to other bond issuances. Though the terms to maturities of HBL, NIBL, EBL and BOK has same maturity period i.e. 7 years, the maturity is in a rising pattern due to increased price risks.

4.7. Valuation of Nepalese Corporate Bonds

The value of bonds can be determined by using following formula:

Value of Bond = I [PVIFA kd%, n] + M [PVIF kd%, n]

Table 13
Valuation of Nepalese corporate Bonds in 2008

S.N.	Issuance Company	Market Value of Bond (Rs.)	Face value of Bond (Rs.)
1	Shree Ram Sugar Mills Limited	1105.49	1000
2	Himalayan Bank Limited	1172.33	1000
3	Nepal investment Bank Limited	1142.43	1000
4	Everest Bank Limited	1064.29	1000
5	Bank of Kathmandu Limited	1064.29	1000

Source: ANNEX 5

The Table 13 shows that HBL bonds had the highest value among all. However, all the bonds price are under priced due to the higher value in comparison with the market price per bond i.e. Rs. 1000. The table below depicts the bond valuation rules as well as buying and selling decisions.

Bond Valuation Rules

S.N	Conditions	Pricing	Decisions
1	Market Interest Rate> Coupon rate	Overpriced	Sell
2	Market Interest Rate< Coupon rate	Under Priced	Buy
3	Market Interest Rate = Coupon rate	Fairly Priced	No Trading

If a bond is priced below its intrinsic value, the bond is under price and is a good investment opportunity. Similarly if bond price is equals to the value of bond, then it is said to be in equilibrium and if the bond price is lesser than the market price, the bond is said to be overpriced and should be sold to avoid losses. Therefore under price bonds always attract rational investors for investment and encourage the holding position to profit from price gains that should occur from price rises in future.

The bonds in Nepal are usually found to be under priced and deemed good and profitable investment. The calculations proved that the coupon rates were always higher than the market rates for the above analyzed bonds. Therefore, the under price bonds reflect good prospects of Corporate Bond Market in Nepal.

4.7.1 Interest Rate Analysis

Normally the government issues four types of securities. The interest rates are different in these securities depending upon the nature of securities. The bond with short maturity period has less interest rate than the securities with long maturity periods.

Table: 14: Structure of Interest Rate

Percent per Annum	Mid Jul 2001	Mid Jul 2002	Mid Jul 2003	Mid Jul 2004	Mid Jul 2005	Mid Jul 2006	Mid Jul 2007	Mid Oct 2007	Mid Jan 2008	Mid Apr 2008	Mid Jul 2008	Mid Oct 2008	Mid Oct 2009	Mid Jul 2010
A. Government Securities														
Treasury Bill for 28 Days	-	-	-	-	-	1.82	-	2.62	1.59	2.54	2.40	2.01	2.97	5.16
Treasury Bill for 91 Days	3.32	5.36	4.94	3.78	2.98	1.47	3.94	3.10	2.46	2.89	3.25	2.54	2.16	5.13
Treasury Bill for 182 Days	-	-	-	-	-	-	4.42	3.70	2.57	3.77	3.86	2.78	2.66	5.16
Treasury Bill for 364 Days	-	-	-	-	4.93	3.81	4.79	3.87	3.42	4.13	4.04	3.78	3.04	6.47
National Saving Certificate	8.5-13.25	8.5-13.25	8.5-13.25	8.0-13.25	7.0-13.0	6.5-13.0	6.5-13.0	6.5-13.0	6.5-13.0	6.5-13.0	6.0-8.5	6.0-8.5	6.0-8.0	6.0-7.75
Development Bonds	3-12	3.0-8.5	3.0-8.0	3.0-8.0	3.0-8.0	3.0-8.0	3.0-8.0	3.0-8.0	3.0-8.0	3.0-6.75	3.0-6.75	3.0-6.75	3.0-6.75	5.0-8.0
Refinance Rate (Against foreign currency loan)	5.5	5.5	5.5	2	2	2	2	3.25	3.25	3.25	3.25	3.25	3.25	3.25
B. Commercial Banks 1. Deposit Rates														
Saving Deposits	5.75-8.0	4.0-6.5	3.5-6.5	2.5-6.25	2.5-6.0	2.0-5.0	1.75-5.0	2.0-5.0	2.0-5.0	2.0-5.0	2.0-5.0	2.0-5.0	2.0-5.0	2.0-6.5
2.Time Deposits														
3 months	4.0-7.5	4.0-6.0	2.5-6.0	2.5-5.25	2.0-5.0	2.0-4.0	1.5-4.0	1.5-3.5	1.5-4.0	1.5-4.0	1.5-4.0	1.5-4.0	1.5-4.0	1.5-6.75
6 months	6.0-8.0	5.0-6.75	3.5-6.75	2.5-6.0	2.5-6.0	2.0-4.5	2.5-4.5	1.75-4.5	1.75-4.5	1.75-4.5	1.75-4.5	1.75-4.5	1.75-4.5	1.75-6.75
1 Year	7.25-9.5	6.0-7.75	4.5-7.75	3.5-7.0	3.0-7.0	2.75-5.75	2.25-5.00	2.25-5.00	2.25-5.00	2.25-5.00	2.25-5.00	2.25-5.00	2.25-5.00	2.5-6.0
2 Years and above	7.75-10.25	5.75-8.5	4.25-8.5	3.25-8.0	3.25-7.5	3.0-6.0	2.5-6.05	2.5-6.05	2.5-6.05	2.5-6.05	2.5-6.05	2.5-6.05	2.5-5.5	2.75-6.75

Source: NRB Quarterly Economic Bulletin

The table 14 reveals that the highest interest rate on T- Bills for 28 days was 3.17% on Mid July 2010 and lowest 1.59% on Mid Jan 2008. Like was highest interest rate on T-bills for 91 days was 5.13% on Mid-July 2010 and lowest was 1.47% on Mid July 2006. For T-Bills for 182 days the highest interest rate was 4.42% on Mid-July 2007 and the lowest interest was 2.57% on Mid-Jan 2008 and the T-Bills for 364 days the highest interest rate was 4.93% on Mid-July 2005 and the lowest rate was 3.04% on Mid Oct 2009.

The interest rate on National Saving Certificate was an average of (3.0-12.0) on mid Jul 2001 and remains the interest rate on National Saving Certificate was an average of (8.5-13.25) from 2002 to 2003 and then after it remains on average to (7.0-13.0) till the end of Mid April 2006 and decrease and remain on average to (6.5-13.0) till the end of Mid April 2008 and again decrease on average to (6.5-8.5) on Mid July 2007 but it decrease on average to (6.0-7.75) on July 2010.

The interest rate on development bond was 3-10.5% on Mid July 2003 and decrease to 9-8.5% on Mid-July 2004 and again decreased and reached to 3.0-8.0% on Mid July 2005 and remains constant till Mid Jan 2008 latter on it decreased to 3.0-6.75 till Mid Oct 2009 and increased to 5.0-8.0 in July 2010.
The refinancing rate against foreign currencies loans was 5.5 till Mid July 2003 then it decreased to 2 till Mid July 2007 and it increased up to 3.25 till Mid July 2010.

The interest rate on saving deposit of commercial banks was on average 3.5-6.5% on Mid July 2001 and continuously decreased every year by fluctuating in various span of time and reached 2.0-5.0 on Mid Jan 2008 and remains constant till Mid Oct 2009 and reached 2.0-6.5 on Mid July 2010.

The interest rate on time deposit of 3 months period of commercial banks was on average 2.5-6.0% on Mid July 2003 and it gradually decreased every year in various span of time and reached 1.5-4.0 on Mid Jan 2008 and remain constant till Mid Oct 2009 and reached 1.50-6.75 on Mid July 2010.

The interest rate on time deposit of 6 months period of commercial banks was on average 3.5-6.75 percent on Mid July 2003 and gradually decreased every year in various span of time and reached 2.25-5.0 on Mid July 2007 and remains constant till Mid Oct 2009 and reached 2.5-6.0 on Mid July 2010.

The interest rate o time deposit for 2 years and above deposit was 7.25-10.25% on Mid July 2001 and gradually decreased every year in various span of time and reached 2.5-6.4 on Mid Jan 2008 and remains constant till Mid Oct 2008 then it again decreased to 2.5-5.5 on Mid Oct 2009 and reached 2.75-6.75 on mid July 2010.

4.8. Analysis of Questionnaire

Questions	Respondents Answers (%)				Total (%)
	(a)	(b)	(c)	(d)	
1.Existing Legal Provisions Regarding Debt Securities Market	26	74	-	-	100
2.Problems Regarding Secondary and Primary Market	92	8	-	-	100
3.Choice of Various Sectors Debentures	59	12	15	14	100
4.Dominant Prospect of Debenture Issue	59	41	-	-	100
5.Choice of Securities	29	51	10	10	100
6.Preference of bank Loan Instead of Issuing Debenture	35	26	30	9	100
7.Easier in Issuing of Debenture	62	38	-	-	100
8.Reasons for Influencing the Investors to Purchase Debt Securities	41	26	22	11	100
9.Factors Dominating the Growth of Nepalese Bond Market	39	35	26	-	100
10.Preference Between government bonds and corporate Bonds	56	44	-	-	100

Source: ANNEX-2

- **Existing Legal Provisions Regarding Debt Securities Market**

Out of total 100 respondents, 26% of them believe that the existing legal provisions regarding debt securities market is sufficient where as 74% of them believe that the existing legal provision is not sufficient and that laws needs to be rectify soon.

- **Problems Regarding Secondary and Primary Market**

Out of 100 respondents, 92% responded that there are many problems although government has taken some steps to solve the problem. But 85 respondents said that there is no any problem in primary and secondary market.

) **Choice of Various Sectors Debentures**

Out of the 100 respondents, 59% of them give their opinion that Nepalese investors mostly like to invest on banking sector's debenture. While 12% give their opinion in favor of manufacturing sector's debenture. 15% of the respondents give their opinion that Hotel sector's debenture is mostly like by Nepalese investor's and 14% of them give their opinion that Nepalese investors mostly like to invest on other sector's debenture.

) **Dominant Prospect of Debenture Issue**

Out of 100 respondents, 59% respondent their opinions towards additional capital supply, where as 41%responded their opinions toward tax advantage. Most of them have responded additional capital supply as chief prospect of debentures.

) **Choice of Securitie**s

Out of the total 100 respondents, 29% of them give their opinion that Nepalese investors most like to invest on debt securities, while 51% agree that Nepalese investors most like to invest on common stock Equity share, 10% choose the preference share and rest 10% of the respondents said that Nepalese investors mostly like to invest on Mutual funds.

) **Preference of bank Loan Instead of Issuing Debenture**

Out of 100 respondents, 35% responded their opinions bank loan is easily available, 26% responded as issuing debenture is difficultly process, 30% responded as cost of bank loan is less than issuance debenture, and 9% responded other.

) **Easier in Issuing of Debenture**

Out of 100 respondents, 62% agreed that issuing stock is easier than issuing debenture and 38% disagreed that issuing stock is easier than debenture.

) **Reasons for Influencing the Investors to Purchase Debt Securities**

Out of the total respondents, 41% of the respondents give their opinion that because of liquid assets it is important and influence the investors to purchase debt securities while 26% of them give their opinion that because of lack of appropriate investment opportunity. Investors are influenced to purchase debt securities. 22% of the respondents give their opinion that due to less risk on investment they prefer debenture and also the fixed income securities influenced the investors to purchase debt securities where as 11% of the respondents believe that due to other reason they purchase debenture.

- **Factors Dominating the Growth of Nepalese Bond Market**

Out of total 100 respondents, 39% of them agree that the major factor is lack of investor's awareness towards debt securities; 35% of the respondents agree with the factor that limited supply of quality bonds is main cause and 26% of their respondents say the lack of capital gain opportunity to the investors is main cause. Most of the company's view is lack of investor's awareness; while most of the individual's investor's view is limited supply of quality bonds is the main problems of the debt market of Nepal.

- **Preference Between government bonds and corporate Bonds**

Out of the total 100 respondents, 56% of them give their opinion that Nepalese investors mostly like to invest on Government bonds where as 44% of them prefers corporate bonds.

4.9. Testing of Hypothesis

The chi-square test of hypothesis is useful to examine the Importance of bonds market. The sample is taken to clarify the importance of bonds in investment from various related sectors' persons and organizations. Group of listed companies are selected using judgmental sampling according to their education, locations, position on various jobs etc. Another group is Brokers and Market markers, which are also randomly selected, and the last group is stuff of SEBON and NEPSE.

Hypothesis-1

In 100 random samples of respondents, it contains the following distribution, which was noted the basis of related fields. The test is to draw the factors due to which Nepalese bond market cannot grow smoothly. (See. ANNEX-4)

Table: 15

Survey Results Regarding Factor Dominating the Growth of Nepalese Bonds Market

Factors	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Lack of investor's awareness	14	7	10	8	39
Limited supply of quality bonds	11	5	11	8	35
Lack of Capital gain opportunity	10	3	9	4	26
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the drawbacks of bond market of Nepal.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the drawbacks of bond market of Nepal.

Interpretation: As per table 15, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 5d.f. is 0.793302 and tabulated value of $\chi 2$ is 9.49. Since tabulated value of $\chi 2$ at 5% level of significance for 4 d.f. is greater than the calculated value (i.e.9.49> 0.793302), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding factor dominates the growth of Nepalese Bonds market.

Hypothesis-2

In 100 random samples of respondents, it contains the following distribution which was noted the basis of related fields. The test is to draw the choice of securities by Nepalese investors. (See. ANNEX-4)

Table: 16

Survey results on regarding Choice of Securities

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Debenture	10	5	8	6	29
Common Stock	20	7	16	8	51
Preference	3	2	4	1	10
Mutual Fund	2	1	2	5	10
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

Interpretation: As per table 16, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 2d.f. is 0.98329 and tabulated value of $\chi 2$ is 5.99. Since tabulated value of $\chi 2$ at 5% level of significance for 2 d.f. is greater than the calculated value (i.e.5.99> 0.98329), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

Hypothesis-3

In 100 random samples of respondents, it contains the following distribution which was noted the basis of related fields. The test is to draw the choice of various sector's bonds. (See. ANNEX-4)

Table: 17
Survey Results on Regarding to Choice of Various Sectors' Bonds

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Banking	21	9	15	14	59
Manufacturing	3	3	4	2	12
Hotel Sector	5	2	6	2	15
Others	6	1	5	2	14
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Interpretation: As per table 17, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 1d.f. is 0.6237 and tabulated value of $\chi 2$ is 3.84. Since tabulated value of $\chi 2$ at 5% level of significance for 1 d.f. is greater than the calculated value (i.e.3.84> 0.6237), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Hypothesis-4

In 100 random samples of respondents, it contains the following distribution which was noted the basis of related fields. The test is to draw the reasons that the investors are influenced to purchase debt securities. (See. ANNEX-4)

Table: 18

Survey Results on Regarding to the Reason for Influencing to Purchase Debt Securities

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Liquid Assets	12	8	11	10	41
Lack of Investment opportunity	8	4	9	5	26
Declining interest rate of deposit	10	1	8	3	22
Others	5	2	2	2	11
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the reasons influencing the investors for purchasing debt securities.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the reasons influencing the investors for purchasing debt securities.

Interpretation: As per table 18, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 3d.f. is 1.743098 and tabulated value of $\chi 2$ is 3.841. Since tabulated value of $\chi 2$ at 5% level of significance for 3 d.f. is greater than the calculated value (i.e.3.841> 1.743098), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the reasons influencing the investors for purchasing debt securities.

Hypothesis-5

In 100 random samples of respondents, it contains the following distribution which was noted on the basis of related fields. The test is to draw the importance of bonds in investment. (See. ANNEX-4)

Table: 19

Survey Results on Regarding importance of bond in investment

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Additional capital supply	28	8	16	7	59
Tax Advantage	7	7	14	13	41
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the importance of bond in investment.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the importance of bond in investment.

Interpretation: As per table 19, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 2d.f. is 11.74039 and tabulated value of $\chi 2$ is 5.99. Since tabulated value of $\chi 2$ at 5% level of significance for 2 d.f. is greater than the calculated value (i.e.5.99> 11.74039), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the importance of bond in investment.

Hypothesis-6

In 100 random samples of respondents, it contains the following distribution which was noted on the basis of related fields. The test is to draw the use of bank loan instead of issuing debenture or bonds. (See. ANNEX-4)

Table: 20
Survey Results on Regarding to use of Bank loan Instead of Issuing Debenture

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Bank loan is easily available	13	5	10	7	35
Issuing debenture is difficult process	7	6	8	5	26
Cost of bank loan is less than issuance debenture	12	3	10	5	30
Other	3	1	2	3	9
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Interpretation: As per table 20, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 4 d.f. is 1.887616 and tabulated value of $\chi 2$ is 9.49. Since tabulated value of $\chi 2$ at 5% level of significance for 4 d.f. is greater than the calculated value (i.e.4.49> 1.887616), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Hypothesis-7

In 100 random samples of respondents, it contains the following distribution which was noted on the basis of related fields. The test is to draw the preference given by the Nepalese investor between government bonds and corporate bonds. (See. ANNEX-4)

Table: 21

Survey Results on Regarding Preference between Government Bonds and Corporate Bonds

Feature	Listed Companies	Broker Market Maker	Individual Investors	Other Experts	Total
Government bonds	15	8	21	12	56
Corporate bonds	20	7	9	8	44
Total	35	15	30	20	100

Source: Field survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

Interpretation: As per table 21, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 5 d.f. is 5.013412 and tabulated value of $\chi 2$ is 11.070. Since tabulated value of $\chi 2$ at 5% level of significance for 4 d.f. is greater than the calculated value (i.e.11.070> 5.013142), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

4.10. Major Findings of the Study:

4.10.1. Finding from the Analysis of Ownership Pattern of Government Securities

While analyzing the ownership pattern of government securities it is found that the major holder of T-Bills in the previous years of observation was Nepal Rastra Bank and in the recent years commercial Banks are the Major holders of it and also the other holder's portion is increased, which indicate that the range of T-Bills in the recent years becomes wide and the researcher expect it will cover further wide-range in future. It indicates as well prospect of T-bills market.

Similarly, the major portion of government securities holders in the previous years of observation was covered by NRB and in the recent years of observation its range has also become wide and the major portion of these bonds are hold by government.

4.10.2 Findings through Trend Analysis of Government Securities and T-Bills

The trend of T-Bills as a whole seems to be in increasing trend. Its trend in previous years was slightly increased but in recent years it increased rapidly. It is a prospect to the debt securities market. It indicates that this amount will further increase in coming year due to which the debt securities market will also be of wide range.

The trend of development bond was in increasing trend in starting period of observation, decreased in the middle period of observation and again increased in the recent years of the observation and we can expect that it will further increase in coming years. The trend of National saving bond is also increasing the observation periods, which indicated its wide range in the coming years.

The trend of special bond is increased in the previous years but slightly decreased in recent years. The government's budget for the development of various specified sector is also decreased due to which the amount of this bond is decreased.

As a whole, by observing the trend of government bonds, the amount of government securities is increased every year. The size of deficit budget is also increased and the present trend is to reduce the external debt. So we can be expected that it will further be increased. By using the curvilinear Model, the forecasted amount in the coming years also show the increasing trend of amount of government securities every year. It is the sign of a good prospect of government debt securities market. We can estimate that more and more persons and institutions will be involved to invest in government securities in future.

4.10.3 Findings through Trend Analysis of Corporate Debt Securities

The corporate firm issues various kinds of securities to collect funds. During the observation period from the F.Y. 1996/97 to 2009/10, a total of 189 securities were issued. Out of them, only 14 were debentures. The percentages of debentures on total issued of securities were zero at the first four year. It is 4.03% of total issued after the issuance of debenture by Shree Ram Sugar Mills and reached 45.07% in F/Y 2007/08. From this, it is clear that in the recent year, the issuance of debenture is increased and from this trend we can expect that it will increase in coming years. Thus it also indicates the bright prospects of the corporate debt market of Nepal. The findings are as follows:

- The total volume of bond securities issues is in increasing trend but the issue of the bond was not regular.

- After enactment of Securities Exchange Act 1983, the first issuance of debenture has been made by Shree Ram Sugar Mills Limited in the Fiscal Year 1997/98 and the issuance of debenture was followed by other 14 corporate sectors till the fiscal year 2009/10.

- The percentage coverage of Government Bonds is much more than Corporate Bonds. Government Bonds covers nearly 95.60% of the total bond issued in Nepalese Market where as Corporate Bond covers only 4.40 %.

- The history of Government Bonds in Nepal started with the issue of Treasury Bills in 1962 A.D. Since then the volume of Government Bonds have been growing and the amount outstanding of Government Bonds reached to Rs. 111239 million till 2010 year.

- The prime characters of Nepalese Corporate Bonds were 1000 par value, long term maturity generally 7 years, unsecured etc. However the bonds from the corporate sectors can be judged as a good quality bonds with brighter prospects.

- With respect to the present pace of corporate sector's equity securities, the corporate bond market is very weak. The few issuances of bonds from the Corporate Sector have proved it.

- Investors reflect deep preference for the bonds issued from the Banking and Sector in comparison to other sectors, so issuance of debenture by banking sector indicates the prospects of Bond Market in Nepal.

- The Nepalese Corporate Bonds were under priced. As stated by Francis, if the price of bond is below its intrinsic value, it is under priced and hence it is a good investment opportunity.

- The durations of Nepalese Corporate Bonds were less than their maturity periods. As stated by McCauley, less duration are more attractive due to less price risk. Thus due to less duration to maturity period the prospects of Nepalese Bond Market is high.

- Many weakness of Nepalese Bond Market were found during the research period some of them are: weak governance, fiscal deficit, lack of central market infrastructure, lack of credit rating agencies, lack of trained professionals etc.

4.10.4 Findings from the Analysis of Interest Structure

The Interest rate on government bonds are different depend upon the nature of the bonds. The securities with lower maturity period have higher interest rate. During the observed periods, the interest rate on government securities is slightly changed but not substantial change. While the interest rate on deposit of commercial banks is in decreasing trend and substantial rate during this period. Similarly, the refinance rate of NRB also decreasing this structure of interest rate indicates that by investing on government securities investors can get higher return than deposit on commercial banks. So most of the deposit holders will attract towards government securities, which is a bright prospect of debenture securities market.

4.10.5 Findings of the Questionnaire Survey

The majority of the respondent's opinion is that lack of investor's awareness towards debt securities is the main factor that the Nepalese debt market cannot growth smoothly. Also a major portion of them give their opinion that limited supply of quality bonds is also the factor due to which Nepalese debt market cannot growth smoothly.

The common stock is highly popular among the Nepalese investors in comparison to other types of securities. It is a problem of debt securities market and is necessary to change the concept of public.

The banking sector's debenture is mostly liked by Nepalese investors in comparison to other sector's debenture. So issuance of debenture by banking sector indicates the prospects of Nepalese debt market.

Most of the respondents give their opinion that because of liquid assets, investors are influenced for purchasing debt securities it shows that most of the investors want to invest on liquid assets. So it seems that investor's attraction towards debt securities is increased, while indicates the well growth prospects of Nepalese debt market.

Most of the respondents give their opinion that because of additional supply of capital, the companies issue debentures. This shows the importance of debenture in capital formation and also shows the prospects of bonds market.

Most of the respondents agree that Nepalese debt market is dominated by the credit-oriented transaction.

Most of the respondents give their opinion that they prefer government securities because of risk associated of not payment of interest and principal by the corporate society.

Most of the respondents agree that there are lots of problems while issuing and while liquidating the bonds in security market.

Most of the respondents that stock issue is easier than debenture issue because investor are not interested and have less knowledge about bonds.

Most of the respondents disagree on issuing debenture when the survey conducted but the view that after certain period they may issue bonds. This shows the importance and prospects of bonds Market growth in Nepal.

CHAPTER- V

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1. Summary

In the growth of economic development of a country capital market is extremely necessary and lack of proper development of capital market cannot pump necessary fund to industrialization process. Since, debentures market is being significant contribution in capital market development. The researcher has paid his all attention and efforts to prioritize the bonds as one of the strong part of capital formation and its prospects in Nepal, bonds market is an important part of capital market of the nation. Development of capital market is essential to develop the national economy and to develop the capital it is also essential to develop the bonds and debenture market.

While conducting this research, the researcher analyzed various issue related to the debt securities. From the ownership pattern of government securities and T-Bills it is clearly show that the major portion of government securities is held by NRB, commercial banks and financial institution. The portion of individual on it is not at satisfactory level. The trend of issuing government securities is increasing in nature. Every year the size of deficit budget of government is huge and to fulfill this deficit, government issues various kinds of securities. It is seemed that it will also increase in coming year. On the other hand the trend of issuing corporate bonds is also increasing in nature. The issuance of Himalayan bond 2066, Investment bond 2060, bank of Kathmandu bond 2069, NIC Bond 2070 and Nepal SBI Bond Debenture 2070, NEA Bond 2069, KBL bond 2070, HBL Bond 2072 and Nabil Bond 2075. Because of increasing public concern towards banking sector's debenture, it can be expected to increase in future. While analyzing the interest rate structure, the interest rate on deposit of commercial banks for various schemes are decreasing but the coupon rate on debt securities is not so decreased, which shows the attraction of general investors towards debt securities.

This research study is also based on the field survey. It takes total 100 samples of respondents of various categories using random sampling and judgmental observe their opinion about the various issue of the Nepalese bond market. The questionnaires were distributed to the members of bonds market society such as brokers; issue manager, NEPSE and SEBON officers, listed companies and individual investors. The personal interviews were also conducted to support the date. The data obtained from questionnaires were analyzed using percentage method, ratio and Chi Square. Like this way, other important statistical analysis such as curvilinear analysis was also made. From this research study, the researcher found lot of prospects of the bonds market of Nepal. Most of the Nepalese investors want to invest in liquid assets and so it can be expected that its market will grow in future. If there is any issuance of debenture, Nepalese investors seem to accept it, which encourage the companies to issue debenture.

The trend of issuance of governmental securities is rapidly increased in the recent year and the forecasted amount of the debt market of Nepal. Likewise, the trend of issuance of corporate debt securities is also positive and it also shows the growth prospects of Nepalese debt market.

From the opinion of these respondents, it can be summarizing that investors are gradually interested in bonds and number of debenture issuance is also increasing and on the other hand, programs for the trading of government securities in the stock exchange in the major prospects of Nepalese bonds market in Nepal and Nepalese capital market.

5.2 Conclusions

Nepalese bond market is still at under developed stage. Government bond market is slightly at higher stage as compare with corporate debt securities market. In the recent year, many factors show that it starts to take speed to grow. From this research study the researcher come into conclusion that there are number of advantages. We can classify these advantages as: advantages from the view points of issuers like less costly, flexibility in financial structure, having no interference in management and control, facility of trading on the equity i.e. the interest paid on debt can be deduced as tax expenditure, on the other hand, from the view points of investors advantages like bonds and debentures are liquid, security of investment, having fixed maturity period, priority of income. In the same way, number of debentures and the issuers are increasing and government have also decided to trade its bonds through stock exchange shows importance of bonds in capital and prospects of growth of bonds market in Nepal.

The researcher has also concluded that there are also some prospects exist, which indicate the growth future of Nepalese debt market. The main factors which indicate the prospects are as investor's attraction to wards liquid assets like bonds and debentures, desire to invest on debenture of any potential issuance, declining interest rate on deposit of commercial banks, increasing trend amount of government securities and the increasing trend of issuance of corporate debenture. The view of implement program for the trading of government securities in the stock exchange as announced in the budget speech for the fiscal year 2006/07, a high level committee has been formed under the convener ship of ministry of finance with representation from SEBON, NEPSE and NRB. The 'Public Debt Act, 2002' has delegated authority to the NRB for necessary arrangement of primary and secondary transactions of government securities. In this context, SEBO has been assisting NRB in drafting the necessary regulation. Besides, SEBO has also started to draft a "Government securities trading by laws" based on the draft regulation proposed by NRB. These factors indicate the growth prospect of Nepalese bond debenture Market.

5.3 Recommendations

The researcher desires to give some recommendations, which are drawn through this study, which can be addressed as the importance and prospects of bind market growth in Nepal.

- From the field survey, the researcher found that investors are attracted towards bonds and debentures. On the other hand, the government needs huge amount of money for development proposes. So for the government to utilize internal source of funds. Nepal Government used to give tax exemption in debentures income. It should provide tax rebates more on individual and institutional investor on debentures interest income to promote debenture and bond market.
- From the fired survey, most of the related parties to the bonds market of Nepal give their opinion that the existing rules and regulations for the growth of bonds market are insufficient. So researcher would like to recommend to the government to implement the "Public Debt Act 2002" with the amendment of trading government securities on stock exchange as soon as possible in order to fulfill this gap.
- From the analysis of ownership pattern of government securities, most of the government securities holders are institutional investors. Ownership part of individual investors in very small. To grow the debt market of Nepal, this limitation should be

broadening. Government should encourage individual to invest on government securities.

- From the analysis of interest rate it is found that deposit on commercial bank is decreasing every year. But the interest rate on bonds and debentures is higher to some extent than bank's deposit rate. On the other hand, investor's fund is utilized with better way while investing in government bonds, due to which it helps to raise the national economy upwards, so researcher would like to recommend to those depositors to invest their funds on government bonds.
- Most of the respondents of questionnaire agree that the major factor due to which Nepalese bond market cannot grow smoothly is lack of public awareness towards debt securities. So the researcher would like to recommend to the investors to change in existing perception and attitude on debenture and bond. Investors should extend their present investment by properly analyzing risk and return on debentures and bonds. Investors should call investors protection act and should enforce debentures and bonds issuing companies to enlist debentures and bonds in NEPSE or any other securities exchange companies. They also should make investment decision analyzing profitability of company, return, risk, liquidity of security. All manufacturing and trading companies may not be weak. So investors should identify strong companies and their debentures issue should be taken positively.
- Researcher would like to recommend the brokers and securities dealers to do more efforts to make a smooth transaction of debt securities in the secondary market and to create positive concept to the investors about debenture and bonds.
- Since it is observed from the survey the researcher wants to recommend that Security Board (SEBON) should co-operate NEPSE. SEBON should organize conference to discuss about importance and prospects of debentures and market. Research and development activities should be conducted to improve bonds and debentures market.
- SRBON should co-operate NEPSE. Procedures of reviewing debenture prospect and issue approval should be quick. SEBON should add additional provisions that help to protect investor's interest. SEBON should timely disclose price sensitivity information.

- Company Registrar Office should be transparent and open with modern technology. Bureaucratic procedures must be quick and prospectus should be approved strictly reviewing all economic and technical aspect of organization.
- Bonds Market is more complicated than Equity market. Therefore, some efforts need to be taken to distinguish it from Equity Market.
- Legislation and control mechanism should be made more effective and adequate to provide safety of investment to the investors and hence promote the Nepalese Bond Market.
- The Government should enlist the government bonds on NEPSE and allow all non-banking financial institution to participate in the secondary market transactions.
- Security and credit rating Agencies should be established.
- Finally, the researcher would like to recommend all the concerned persons, agencies and parties to undertake more and strong efforts for the adequate and profitable development of the Nepalese Bond Market.

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ANNEX-1

Questionnaire

Dear Respondents.

I have been writing thesis on TREND OF BOND MARKET IN NEPAL in partial fulfillment of the requirements of Master of Business Studies (M.B.S.). I have needed your response on questions asked you. I have sent you some questions regarding debentures market hoping your timely response. Your cooperation has great value for me.

Thanking you,

Researcher, Shankar Dev Campus

Instructions: Please tick (√) in an appropriate place and put your view in open end question.

1. Do you think existing legal provisions regarding debt securities market is?

    (a) Sufficient ( )

    (b) Insufficient ( )

2. Are there problems in primary and secondary market of bonds?

    (a) Yes ( )

    (b) No ( )

3. In which sector's debenture would you like to invest?

    (a) Banks ( )

    (b) Manufacturing ( )

    (c) Hotel ( )

    (d) Others ( )

4. Which is most dominant prospect of debenture issue?

    (a) Additional Capital Supply ( )

    (b) Tax Advantage ( )

5. Which security issue do you prefer most?

(a) Debenture ( )

(b) Common Stock ( )

(c) Preference Share ( )

(d) Mutual Fund ( )

6. Why you prefer to bank loan instead of issuing debenture?

(a) Bank loan is easily available ( )

(b) Issuing debenture is difficult process ( )

(c) Cost of bank loan is less than issuance debenture ( )

(d) Others ( )

7. Is stock issue than debenture issue?

(a) Yes ( )

(b) No ( )

8. What is the reason that influences you to purchase debenture?

(a) Liquid assets ( )

(b) lack of investment opportunity ( )

(c) Declining interest rate of deposit ( )

(d) Other ( )

9. Which factor dominates the growth of Nepalese bonds market?

(a) Lack of investor's awareness ( )

(b) Limited supply of quality bonds ( )

(c) Lack of capital gain opportunity ( )

10. Which type of bond do you prefer?

(a) Government Bonds ( )

(b) Corporate Bonds ( )

ANNEX 2

Tabulation of Responses to Field Survey Based on Questionnaire

S.N.		Listed Companies	Broker & Market Maker	Individual Investors	Others Expert	Total
1	a	8	2	10	6	26
	b	27	13	20	14	74
		35	**15**	**30**	**20**	**100**
2	a	33	12	28	19	92
	b	2	3	2	1	8
		35	**15**	**30**	**20**	**100**
3	a	21	9	15	14	59
	b	3	3	4	2	12
	c	5	2	6	2	15
	d	6	1	5	2	14
		35	**15**	**30**	**20**	**100**
4	a	28	8	16	7	59
	b	7	7	14	12	41
		35	**15**	**30**	**20**	**100**
5	a	10	5	8	6	29
	b	20	7	16	8	51
	c	3	2	4	1	10
	d	2	1	2	5	10
		35	**35**	**30**	**20**	**100**
6	a	13	5	10	7	35
	b	7	6	8	5	26
	c	12	3	10	5	30
	d	3	1	2	3	9
		35	**15**	**30**	**20**	**100**
7	a	25	8	22	7	62
	b	10	7	8	13	38
		35	**15**	**30**	**20**	**100**
8	a	12	8	11	10	41
	b	8	4	9	5	26
	c	10	1	8	3	22
	d	5	2	2	2	11
		35	**15**	**30**	**20**	**100**
9	a	14	7	10	8	39
	b	11	5	11	8	35
	c	10	3	9	4	26
		35	**15**	**30**	**20**	**100**
10	a	15	8	21	12	56
	b	20	7	9	8	44
		35	**15**	**30**	**20**	**100**

Source: Field Survey

ANNEX-3

Growth Trend of Government Debt Securities Fitted in Curvilinear Model

In Million

Year	X	Y = Amount of govt. Securities	xy	x2	x3	x4	x2y
1989	1	8,997	8,997	1	1	1	8,997
1990	2	11,363	22,726	4	8	16	45,452
1991	3	12,888	38,664	9	27	81	115,992
1992	4	14,673	58,692	16	64	256	234,768
1993	5	20,856	104,280	25	125	625	521,400
1994	6	23,235	139,410	36	216	1,296	836,460
1995	7	25,456	178,192	49	343	2,401	1,247,344
1996	8	30,631	245,048	64	512	4,096	1,960,384
1997	9	32,058	288,522	81	729	6,561	2,596,698
1998	10	32,242	322,420	100	1,000	10,000	3,224,200
1999	11	35,891	394,801	121	1,331	14,641	4,342,811
2000	12	38,407	460,884	144	1,728	20,736	5,530,608
2001	13	49,670	645,710	169	2,197	28,561	8,394,230
2002	14	54,357	760,998	196	2,744	38,416	10,653,972
2003	15	60,044	900,660	225	3,375	50,625	13,509,900
2004	16	73,621	1,177,936	256	4,096	65,536	18,846,976
2005	17	81,148	1,379,516	289	4,913	83,521	23,451,772
2006	18	86,134	1,550,412	324	5,832	104,976	27,907,416
2007	19	87,564	1,663,716	361	6,859	130,321	31,610,604
2008	20	89955	1,799,100	400	8,000	160,000	35,982,000
2009	21	99,304	2,085,384	421	9,261	194,481	41,806,984
2010	22	111,239	2,447,258	484	10,648	234,256	53,617,198
Total	**Σx=253**	**Σy=1,079,733**	**Σxy=16,673,326**	**Σx2 =3775**	**Σ x3 =64,009**	**Σ x4 =1,151,403**	**Σ x2y= 286,446,166**

The equation of curvilinear model is as below:

$y = a + bx + cx^2$.................................1

$\Sigma y = Na + b\Sigma x + c\Sigma x^2$ 2

$\Sigma xy = a\Sigma x + b\Sigma x^2 + c\Sigma x^3$ 3

$\Sigma x^2y = a\Sigma x^2 + b\Sigma x^3 + c\Sigma x^4$.............................4

Where

$\Sigma y = 1,079,733$

$\Sigma x = 253$

$\Sigma\ x^2 = 3,775$

$\Sigma\ xy = 16,673,326$

$\Sigma\ x^3 = 64,009$

$\Sigma\ x^2y = 286,446,166$

$\Sigma\ x^4 = 1,151,403$

Substituting the value in equation 2, 3 and 4 equations we get,

1,079,733= 22a + 253b +3,775c …………………….. 5

16,673,326= 253a+ 3,775b +64,009c ……………………..6

286,446,166= 3,775a +64,009b + 1,151,403c…………………… 7

Solving equation 5 and 6, multiplying equation 5 by 253 and equation by 22, we get

$$
\begin{array}{rcl}
5566a+64009b+955075c & = & 273172449 \\
5566a+83050b+1408198c & = & 10341574 \\
\hline
-19041b-453123c & = & -93640723
\end{array}
$$

Taking (-) as common, so we get

19041b+453123c = 93640723……………. 8

Solving equation 6 and 7, multiplying equation 6 by 3775 and equation 7 by 253, we get

$$
\begin{array}{rcl}
955075a +14250625b +241633975c & = & 62941805650 \\
955075a +16194277b + 291304959c & = & 72470879998 \\
\hline
-1943652b - 49670984c & = & -9529074348
\end{array}
$$

Taking (-) as common, so we get

1943652b +49670984c = 9529074348……**9**

Solving equation 8 and 9, multiplying equation 8 by 1943652 and equation 9 by 19041, we get

$$37009077732b+880713425196c = 182004978540396$$

$$37009077732b+945785206344c = 181443104660268$$

$$\underline{\ -\qquad\qquad -\qquad\qquad\qquad -\qquad\qquad\qquad .}$$

$$-65071781148c = 561873880128$$

$$c = -561873880128/65071781148$$

$$c = -8.634678047$$

Now, substituting the value of C in equation (9)

$$1943652b +49670984c = 9529074348 \text{ ....9}$$

$$1943652b+49670984*-8.634678047=9529074348$$
$$1943652b = 9529074348 +428892955$$

$$b= 9957967303/1943652$$

$$b = 5123.328303$$

Now putting the value of b, and c in equation (5), we get

$$1,079,733= 22a + 253b +3,775c \text{ .... 5}$$

$$22a+ 253* 5123.328303 + 3775* -8.634678047 = 1,079,733$$

$$a = 1079733/22$$

$$a = 49078.77273$$

Therefore the value of **a = 49078.77273**

b =5123.328303

c =-8.634678047

Now, substituting the value of a, b, and c in the equation (1), the curvilinear model will be,

$y = \mathbf{49078.77273 + 5123.328303}x\mathbf{-8.634678047x2}$

Forecast of total bonds

The above equation is to forecast the amount of government bonds and T-Bills for the year, 2009, 2010, 2011, 2012 and 2013. Here the amount of securities issued by government has been estimated below using curvilinear model.

For

Year 2009, x = 23

Year 2010, x = 24

Year 2011, x = 25

Year 2012, x = 26

Year 2013, x = 27

The forecasted amount of government securities issued for 2009:

$\tilde{y}$ = 49078.77273+ 5123.328303x-8.634678047x2

= 49078.77273+ 5123.328303*23+-8.634678047*529

= Rs. 162,347.579 (In Millions)

The forecasted amount of government securities issued for 2010:

$\tilde{y}$ = 49078.77273+ 5123.328303x-8.634678047x2

= 2282.592436 + 3026.8563 * 24 + 67.26094 *576

= Rs167065.0774 (In Millions)

The forecasted amount of government securities issued for 2011:

$\tilde{y}$ = 49078.77273+ 5123.328303x-8.634678047x2

= 2282.592436 + 72644.5512*25 +38742.30144*625

= Rs. 171765.3065 (In Millions)

The forecasted amount of government securities issued for 2012:

$\tilde{y}$ = 49078.77273+ 5123.328303x-8.634678047x2

=49078.77273+ 5123.328303*26-8.634678047*676

= Rs. 176448.2662 (In Millions)

The forecasted amount of government securities issued for 2013:

$\tilde{y}$ = 49078.77273+ 5123.328303x-8.634678047x2

=49078.77273+ 5123.328303*27-8.634678047*729

=Rs. 181113.9566 (In Millions)

ANNEX -4

Testing of hypothesis

Hypothesis – 1

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the factors due to which Nepalese bond market cannot grow smoothly.

Table -22

Hypothesis Test Regarding Factor Dominating the Growth of Nepalese Bonds Market

	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Lack of investor's awareness	14	7	10	8	39
Limited supply of quality bonds	11	5	11	8	35
Lack of capital gain opportunity	10	3	9	4	26
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

<u>Hypothesis Testing:</u>

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the drawbacks of bond market of Nepal.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the drawbacks of bond market of Nepal.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	13.65	**R2C3**	10.5
R1C2	5.85	**R2C4**	7
R1C3	11.7	**R3C1**	9.1
R1C4	7.8	**R3C2**	3.9
R2C1	12.25	**R3C3**	7.8
R2C2	5.25	**R3C4**	5.2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
14	13.65	0.35	0.1225	0.008974
7	5.85	1.15	1.3225	0.226068
10	11.7	-1.7	2.89	0.247009
8	7.8	0.2	0.04	0.005128
11	12.25	-1.25	1.5625	0.127551
5	5.25	-0.25	0.0625	0.011905
11	10.5	0.5	0.25	0.02381
8	7	1	1	0.142857
10	9.1	0	0	0
3 13	3.9 13			
9 13	7.8 13	0	0	0
4	5.2			**0.793302**

Calculation of χ2

Hence, χ2 tabulated at 5% level of significant for (R – 1) (C – 1) – 2

i.e. (3 – 1)(4 – 1) – 2

i.e. 4 d.f is 9.49

Interpretation: As per table no. 15, it can be clearly seen that the calculated value of χ2 at 5% level of significance for 5 d.f. is 0.793302 and tabulated value of χ2 is 9.49. Since tabulated value of χ2 at 5% level of significance for 4 d.f. is greater than the calculated value (i.e. 9.49> .793302) , the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the drawbacks of bond market of Nepal.

Hypothesis – 2

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the choice of securities by Nepalese investors.

Table- 23

Hypothesis Test Regarding Choice of Securities

	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Debenture	10	5	8	6	29
Common Stock	20	7	16	8	51
Preference	3	2	4	1	10
Mutual fund	2	1	2	5	10
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investor.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	10.15	**R3C1**	3.5
R1C2	4.35	**R3C2**	1.5
R1C3	8.7	**R3C3**	3
R1C4	5.8	**R3C4**	2
R2C1	17.85	**R4C1**	3.5
R2C2	7.65	**R4C2**	1.5
R2C3	15.3	**R4C3**	3
R2C4	10.2	**R4C4**	2

Calculation of χ2

Observer Frequency (O)	Expected Frequency (E)	(O-E)	(O-E)2	(O-E)2/E
10	10.15	-0.15	0.0225	0.002217
5	4.35	0.65	0.4225	0.097126
8	8.7	-0.7	0.49	0.056322

6	5.8	0.2	0.04	0.006897
20	17.85	2.15	4.6225	0.258964
7	7.65	-0.65	0.4225	0.055229
16	15.3	0.7	0.49	0.032026
8	10.2	-2.7	7.29	0.714706
3 2 4 1 2 20 1 2 5	3.5 1.5 3 2 3.5 20 1.5 3 2	0	0	0
				0.98329

Hence, χ2 tabulated at 5% level of significant for (R – 1) (C – 1) – 7

i.e. (4 – 1)(4 – 1) – 7

i.e. 2 d.f. is 5.99

Interpretation: As per Table 16, it can be clearly seen that the calculated value of χ2 at 5% level of significance for 2 d.f. is 0.98329 and tabulated value of χ2 is 5.99**:** Since tabulated value of χ2 at 5% level of significance for 2 d.f. is greater than the calculated value (i.e. 5.99>0.98329), the null hypothesis is accepted i.e. there is no significant relationship between observed and expected opinion regarding the choice of securities by Nepalese investors.

Hypothesis – 3

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the choice of various sector's bonds.

Table – 24
Hypothesis Test Regarding to Choice of Various Sector's Bonds

	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Banking	21	9	15	14	59
Manufacturing	3	3	4	2	12
Hotel Sector	5	2	6	2	15
Others	6	1	5	2	14
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	20.65	**R2C4**	2.4
R1C2	8.85	**R3C1**	5.25
R1C3	17.7	**R3C2**	2.25
R1C4	11.8	**R3C3**	4.5
R2C1	4.2	**R3C4**	3
R2C2	1.8	**R4C1**	4.9
R2C3	3.6	**R4C2**	2.1

Calculation of χ2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
21	20.65	0.35	0.1225	0.005932
9	8.85	0.15	0.0225	0.002542
15	17.7	-2.7	7.29	0.411864
14 26	11.8 23.8	2.2	4.84	0.203361
3	4.2			
3	1.8			
4	3.6			
2	2.4			
5 29	5.25 29	0	0	0
2	2.25			

6	4.5			
2	3			
6	4.9			
1	2.1			
5	4.2			
2	2.8			
				0.6237

Hence, χ2tabulated at 5% level of significant for (R – 1) (C – 1) – 8

i.e. (4 – 1)(4 – 1) – 8

i.e. 1 d.f. is 3.84

Interpretation: As per Table 17, it can be clearly seen that the calculated value of χ2 at 5% level of significance for 1 d.f. is 0.6237 and tabulated value of χ2 is 3.84. Since tabulated value of χ2 at 5% level of significance for 1 d.f. is greater than the calculated value (i.e. 3.84> 0.6237), the null hypothesis is accepted. Therefore we can conclude that there is no significant relationship between observed and expected opinion regarding the choice of various sector's bond.

Hypothesis – 4

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the reasons that the investors are influenced to purchase debt securities.

Table - 25

Hypothesis Test regarding to the Reasons for the Influencing the investors to Purchase Debt Securities

	Listed Companies	Broker Market Makers	Individual Investor	Other Experts	Total

			s		
Liquid Assets	12	8	11	10	41
Lack of investment opportunity	8	4	9	5	26
Declining interest rate of deposit	10	1	8	3	22
Other	5	2	2	2	11
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the reasons for the influencing the investors to purchasing debt securities.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the reasons for the influencing the investors to purchasing debt securities.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	14.35	**R3C1**	7.7
R1C2	6.15	**R3C2**	3.3
R1C3	12.3	**R3C3**	6.6
R1C4	8.2	**R3C4**	4.4

R2C1	9.1	**R4C1**	3.85
R2C2	3.9	**R4C2**	1.65
R2C3	7.8	**R4C3**	3.3
R2C4	5.2	**R4C4**	2.2

Calculation of χ2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
12	14.35	-2.35	5.5225	0.384843
8	6.15	1.85	3.4225	0.556504
11	12.3	-1.3	1.69	0.137398
10	8.2	1.8	3.24	0.395122
8 12	9.1 13	-1	1	0.076923
4	3.9			
9	7.8	1.2	1.44	0.184615
5	5.2	-0.2	0.04	0.007692
10 11	7.7 11	0	0	0
1	3.3			
8 11	6.6 11	0	0	0
3	4.4			
5 11	3.85 11	0	0	0
2	1.65			
2	3.3			
2	2.2			

				1.743098

Hence, $\chi 2$tabulated at 5% level of significant for (R – 1) (C – 1) – 6

i.e. (4 – 1)(4 – 1) – 6

i.e. 3 d.f. is 3.841

Interpretation: As per Table 18, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 3 d.f. is 1.743098 and tabulated value of $\chi 2$ is 3.841. Since tabulated value of $\chi 2$ at 5% level of significance for 3 d.f. is greater than the calculated value (i.e. 3.841>1.743098), the null hypothesis is accepted. Therefore we can conclude that there is no significant relationship between observed and expected opinion regarding the reasons influenced to investors for purchasing debt.

Hypothesis – 5

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the importance of bonds in investment.

Table - 26
Hypothesis Test Regarding Importance of Bond in Investment

	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Additional capital supply	28	8	16	7	59
Tax advantage	7	7	14	13	41
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho): There is no significant relationship between observed and expected opinion regarding the importance of bond in investment.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the importance of bond in investment.

Test statistic: $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	20.65	**R2C1**	14.35
R1C2	8.85	**R2C2**	6.15
R1C3	17.7	**R2C3**	12.3
R1C4	11.8	**R2C4**	8.2

Calculation of χ2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
28	20.65	7.35	54.0225	2.616102
8	8.85	-0.85	0.7225	0.081638
16	17.7	-1.7	2.89	0.163277
7	11.8	-4.8	23.04	1.952542
7	14.35	-7.35	54.0225	3.764634
7	6.15	0.85	0.7225	0.11748
14	12.3	1.7	2.89	0.234959

13	8.2	4.8	23.04	2.809756
				11.74039

Hence, χ2 tabulated at 5% level of significant for (R – 1) (C – 1) – 1

i.e. (2 – 1)(4 – 1) – 1

i.e. 2 d.f. is 5.99

Interpretation: As per Table 19, it can be clearly seen that the calculated value of χ2 at 5% level of significance for 2 d.f. is 11.74039 and tabulated value of χ2 is 5.99 Since tabulated value of χ2 at 5% level of significance for 2 d.f. is less than the calculated value (i.e. 5.99 < 11.74039), the alternative hypothesis is accepted. Therefore we can conclude that there is significant relationship between observed and expected opinion regarding the importance of bond in investment

Hypothesis – 6

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the use of bank loan instead of issuing debenture or bonds.

Table - 27

Hypothesis Test Regarding Use of Bank Loan Instead of Issuing Debenture

	Listed Companies	Broker Market Makers	Individual Investors	Other Experts	Total
Bank loan is easily available	13	5	10	7	35
Issuing debenture is difficult process	7	6	8	5	26
Cost of bank loan is less than issuance debenture	12	3	10	5	30

Other	3	1	2	3	9
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho) : There is no significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	12.25	**R3C1**	10.5
R1C2	5.25	**R3C2**	4.5
R1C3	10.5	**R3C3**	9
R1C4	7	**R3C4**	6
R2C1	9.1	**R4C1**	3.15
R2C2	3.9	**R4C2**	1.35
R2C3	7.8	**R4C3**	2.7
R2C4	5.2	**R4C4**	1.8

Calculation of χ2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
13	12.25	0.75	0.5625	0.045918
5	5.25	-0.25	0.0625	0.011905
10	10.5	-0.5	0.25	0.02381
7	7	0	0	0
7	9.1	-2.1	4.41	0.484615
6	3.9	2.1	4.41	1.130769
8	7.8	0.2	0.04	0.005128
5	5.2	-0.2	0.04	0.007692
12 15	10.5 15		0	0
3	4.5			
10	9	1	1	0.111111
5 14	6 15	-1	1	0.066667
3	3.15			
1	1.35			
2	2.7			
3	1.8			
				1.887616

Hence, χ2 tabulated at 5% level of significant for (4 – 1) (4 – 1) – 5

i.e. (4 – 1)(4 – 1) – 5

i.e. 4 d.f. is 9.49

Interpretation: As per Table 20, it can be clearly seen that the calculated value of χ2 at 5% level of significance for 4 d.f. is 1.887616 and tabulated value of χ2 is 9.49. Since tabulated value of χ2 at 5% level of significance for 4 d.f. is greater than the calculated value (i.e. 9.49> 1.887616), the null hypothesis is accepted. Therefore we can conclude that there is no significant relationship between observed and expected opinion regarding to the use of bank loan or issuing of debenture.

Hypothesis – 7

In 100 random samples of respondents it, contains the following distribution, which was noted the basis of related fields. The test is to draw the preference given by the Nepalese investor between Government bonds and corporate bonds.

Table- 28

Hypothesis Test Regarding Preference between Government Bonds and Corporate Bonds

	Listed Companie s	Broker Market Makers	Individual Investors	Other Experts	Total
Government bonds	15	8	21	12	56
Corporate bonds	20	7	9	8	44
Total	35	15	30	20	100

Source: Field Survey conducted by researcher

Hypothesis Testing:

Null Hypothesis (Ho) : There is no significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

Alternative Hypothesis (H_1): There is significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

Test statistic: under Ho, the test statistic is $\chi 2 = \Sigma \frac{(O - E)^2}{E}$

Calculation of expected frequencies

Expected frequency of R1C1 = $\frac{\text{Row Total} \mid \text{column total}}{\text{Grand Total}}$

R1C1	19.6	**R2C1**	15.4
R1C2	8.4	**R2C2**	6.6
R1C3	16.8	**R2C3**	13.2
R1C4	11.2	**R2C4**	8.8

Calculation of χ2

Observed frequency (O)	Expected frequency (E)	(O-E)	(O-E)2	(O-E)2/E
15	19.6	-4.6	21.16	1.079592
8	8.4	-0.4	0.16	0.019048
21	16.8	4.2	17.64	1.05
12	11.2	0.8	0.64	0.057143
20	15.4	4.6	21.16	1.374026
7	6.6	0.4	0.16	0.024242
9	13.2	-4.2	17.64	1.336364
8	8.8	-0.8	0.64	0.072727

				5.013142

Hence, $\chi 2$ tabulated at 5% level of significant for (R – 1) (C – 1) – 1

i.e. (2 – 1)(4 – 1) – 1

i.e. 5 d.f. is 11.070

Interpretation: As per Table 21, it can be clearly seen that the calculated value of $\chi 2$ at 5% level of significance for 5 d.f. is 5.013412 and tabulated value of $\chi 2$ is 11.070. Since tabulated value of $\chi 2$ at 5% level of significance for 5 d.f. is greater than the calculated value (i.e. 11.070> 5.013142), the null hypothesis is accepted. Therefore we can conclude that there is no significant relationship between observed and expected opinion regarding the choice between government bonds and corporate bonds.

ANNEX-5

Calculation of value of Bond

S.N.	Issuance Company	Coupon Rate (K)	Maturity Period (Y)	Market Int. Rate (K)
1	Shree Ram Sugar Mills Limited	14%	4 Years	10.69%
2	Himalayan Bank Limited	8.50%	7 Years	5.50%
3	Nepal Investment Bank Limited	6%	7 Years	5.06%
4	Everest Bank Limited	6%	7 Years	4.89%
5	Bank Of Kathmandu Limited	6%	7 Years	4.89%

Source: Unpublished record of SEBON

Value of bond (Vo) = I(PVIFA kd%, n) + M (PVIF kd%, n)

For SRSM:

Vo = I/2 (PVIFA kd%/2, n*2) + M (PVIF kd%/2, n*2)

= 140/2 (PVIFA 10.69%/2, 4*2) + 1000 (PVIF 10.69%/2, 4*2)

= 70 (PVIFA 5.345%, 8) + 1000 (PVIF 5.345%, 8)

= 70* 6.3740 + 1000* 0.6593

= Rs. 1105.49

For HBL:

Vo = I/2 (PVIFA kd%/2, n*2) + M (PVIF kd%/2, n*2)

= 85/2 (PVIFA 5.5%/2, 7*2) + 1000 (PVIF 5.5%/2, 7*2)

= 42.5 (PVIFA 5.345%, 14) + 1000 (PVIF 5.345%, 14)

$= 42.5 * 11.49 + 1000 * 0.6840$

$= \text{Rs. } 1172.33$

For NIBL:

$Vo = I/2 \text{ (PVIFA kd\%/2, n*2)} + M \text{ (PVIF kd\%/2, n*2)}$

$= 75/2 \text{ (PVIFA 5.06\%/2, 7*2)} + 1000 \text{ (PVIF 5.06\%/2, 7*2)}$

$=37.5 \text{ (PVIFA 2.53\%, 14)} + 1000 \text{ (PVIF 2.53\%, 14)}$

$= 37.5 * 11.67 + 1000 * 0.7048$

$= \text{Rs. } 1142.43$

For EBL:

$Vo = I/2 \text{ (PVIFA kd\%/2, n*2)} + M \text{ (PVIF kd\%/2, n*2)}$

$= 60/2 \text{ (PVIFA 4.89\%/2, 7*2)} + 1000 \text{ (PVIF 4.89\%/2, 7*2)}$

$=30 \text{ (PVIFA 2.445\%, 14)} + 1000 \text{ (PVIF 2.445\%, 14)}$

$= 30 * 11.74 + 1000 * 0.7121$

$= \text{Rs. } 1064.29$

For BOK:

$Vo = I/2 \text{ (PVIFA kd\%/2, n*2)} + M \text{ (PVIF kd\%/2, n*2)}$

$= 60/2 \text{ (PVIFA 4.89\%/2, 7*2)} + 1000 \text{ (PVIF 4.89\%/2, 7*2)}$

$=30 \text{ (PVIFA 2.445\%, 14)} + 1000 \text{ (PVIF 2.445\%, 14)}$

$= 30 * 11.74 + 1000 * 0.7121$

$= \text{Rs. } 1064.29$

ANNEX-6

Calculation of Duration

S.N.	Issuance Company	Coupon Rate (K)	Maturity Period (Y)	Market Int. Rate (K)
1	Shree Ram Sugar Mills Limited	14%	4 Years	10.69%
2	Himalayan Bank Limited	8.50%	7 Years	5.50%
3	Nepal Investment Bank Limited	6%	7 Years	5.06%
4	Everest Bank Limited	6%	7 Years	4.89%
5	Bank Of Kathmandu Limited	6%	7 Years	4.89%

Source: Unpublished record of SEBON

Duration (MD) $= \frac{1+Y}{Y} - \frac{(1+Y) + T(C-Y)}{C[(1+Y)^T-1] + Y}$

For SRSM

$$MD = \frac{1+Y}{Y} - \frac{(1+Y) + T(C-Y)}{C[(1+Y)^T-1] + Y}$$

$$= \frac{1+0.1069}{0.1069} - \frac{(1+0.1069) + 4\ (0.14-0.1069)}{0.14\ [(1+0.1069)^4-1] + 0.1069}$$

= 6.4463 semiannual periods

For HBL

$$\mathbf{MD} = \frac{\mathbf{1+Y}}{\mathbf{Y}} - \frac{\mathbf{(1+Y) + T(C\text{-}Y)}}{\mathbf{C[(1+Y)^T\text{-}1] +Y}}$$

$$= \frac{1+0.055}{0.055} - \frac{(1+0.055) + 7(0.085\text{-}0.055)}{0.085\ [(1+0.055)^7\text{-}1] +0.055}$$

= 5.67 semiannual periods

For NIBL

$$\mathbf{MD} = \frac{\mathbf{1+Y}}{\mathbf{Y}} - \frac{\mathbf{(1+Y) + T(C\text{-}Y)}}{\mathbf{C[(1+Y)^T\text{-}1] +Y}}$$

$$= \frac{1+0.0506}{0.506} - \frac{(1+0.0506) + 7(0.075\text{-}0.0506)}{0.075\ [(1+0.0506)^7\text{-}1] +0.0506}$$

= 5.7947 semiannual periods

For EBL

$$\mathbf{MD} = \frac{\mathbf{1+Y}}{\mathbf{Y}} - \frac{\mathbf{(1+Y) + T(C\text{-}Y)}}{\mathbf{C[(1+Y)^T\text{-}1] +Y}}$$

$$= \frac{1+0.0489}{0.0489} - \frac{(1+0.0489) + 7(0.06\text{-}0.0489)}{0.06\ [(1+0.0489)^7\text{-}1] +0.0489}$$

= 5.9533 semiannual periods

For BOK

$$\mathbf{MD = \frac{1+Y}{Y} - \frac{(1+Y) + T(C-Y)}{C[(1+Y)^T-1] + Y}}$$

$$= \frac{1+0.0489}{0.0489} - \frac{(1+0.0489) + 7(0.06-0.0489)}{0.06\,[(1+0.0489)^7-1] + 0.0489}$$

= 5.9533 semiannual periods