

# **IMPACT OF INTEREST RATE ON STOCK MARKET PRICE IN NEPAL**

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## CERTIFICATION OF AUTHORSHIP

I hereby corroborate that I have researched and submitted the final draft of dissertation entitled “**Impact of Interest Rate on Stock Market Price in Nepal**”. The work of this dissertation has not been submitted previously for the purpose of conferral of any degrees or it has been proposed and presented as part of requirements for any other academic purposes.

The assistance and cooperation that I have received during this research work has been acknowledged. In addition, I declare that all information sources and literature used are cited in the reference section of the dissertation.

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Jivan Sharma

November, 2024





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Researcher

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## ABBREVIATIONS

AD	:	Anno Domini
ANOVA	:	Analysis of Variance
BFI	:	Bank and Financial Institutions
CV	:	Coefficient of Variance
DPS	:	Dividend Per Share
ETC	:	Et Cetera
FPO	:	Further Public Offering
GDP	:	Gross Domestic Production
IPO	:	Initial Public Offering
MBS	:	Masters of Business Studies
MPS	:	Market Per Share
NEPSE	:	Nepal Stock Exchange
NRB	:	Nepal Rastra Bank
NSE	:	Nepal Stock Exchange
P/E	:	Profit Earning
ROA	:	Return on Assets
SD	:	Standard Deviation
SEC'S	:	Securities
SPSS	:	Statistical Package for Social Science
TB	:	Treasury Bills
TU	:	Tribhuvan University
WA	:	Weighted Average

## ABSTRACT

*One measure of an economy is the stock market index. Growth in the stock index is typically interpreted as a positive indicator since it shows that investors have faith in the economy's future. The study's main focus is on how interest rates affect Nepal's stock market price. It makes use of secondary data from the Central Bureau of Statistics, Nepal Rastra Bank, Nepal Stock Exchange, and Economic Survey. Among 11 types of company are total population of this study there are 6 types of company Commercial Banks, Development Banks, Finance company, Micro Finance, Manufacturing & processing and Hydropower company are selected over the period from 2013/14 to 2022/23. The research employs descriptive and causal comparative methodologies. In this study Stock Market Index is used as dependent variable while Deposit interest rate, lending interest rate, base rate, treasury bills rate are considered independent variables. The findings indicate that W.A deposit and T-bill rate has significantly influenced the manufacturing & processing index and Hydropower index respectively. Similarly, Banking index does not have any significant relationship with independent variables where lending interest rate, base rate, T-bills rate has insignificant relation with manufacturing & processing. Similarly deposit interest rate, lending interest rate and base rate have insignificant relationship with hydropower index. This research has a useful for policy maker, investors, government, bankers etc. further researcher may be needed larger no of data to uncover more significant.*

*Keywords: impact of interest rate, stock market price, deposit interest rate, lending interest rate, base rate, T-bill rate, banking index, manufacturing & processing index and hydropower index.*

## CHAPTER I

### INTRODUCTION

#### 1.1 Background of the Study

In Nepal, the stock market has a relatively short history. In order to facilitate and encourage the expansion of the capital market, the Securities Exchange Center (SEC) was founded in 1976 (Gurung, 2004). But only in 1981 did it open its floor to secondary share trading, and then only for government bonds (NRB, 1996). The securities Exchange Act of 1984 allowed corporations to trade shares on the SEC's floor, although relatively little was traded. When Securities Exchange Center changed its name to Nepal Stock Exchange (NEPSE) Limited in 1993, the country's first formalized stock market was established. In early 1994, the NEPSE launched for business with a trading floor. It is now Nepal's sole stock exchange. Because of this, the Nepali stock market is still developing but is particularly interesting because it has expanded greatly since it was founded. It was founded to raise funds as an alternative to the country's traditional banking industry in order to support economic growth and development. (Neupane, 2018)

The stock market index is often regarded as an indicator of economic health. An increase in the index is typically seen as a positive sign, reflecting investor confidence in the economy's future prospects. This, in turn encourages investment within the economy. However, a sharp rise in the stock market index can raise concerns, especially if it is not supported by underlying economic fundamentals. Such an unsustainable rise may lead to a significant drop in the index, threatening both economic and financial stability. Therefore, it is crucial for policymakers to monitor stock market trends closely and be prepared to implement appropriate measures if necessary to prevent the formation of market bubbles and their potential collapse. Understanding the relationship between the stock market index and its influencing factors is vital in this context. Various elements can impact the stock market, particularly those that affect a firm's cash flows or the discount rate. However, the extent to which these factors influence the market varies across countries, depending on the economy's size, structure, and specific characteristics (Neupane, 2018).

Using annual average data spanning from 2013/14 to 2022/23, this study seeks to examine the link between Nepal's interest rate variables and the NEPSE index in this setting. Apart from the primary variables, this research evaluates the effect of price fluctuations. It is anticipated that the study's conclusions would offer some important new information on the factors influencing the Nepalese stock market's performance, information that will be helpful to investors and policymakers alike.

Equity markets serve as a vital source of funding for long-term economic development, promote innovation, and increase business efficiency. Additionally, they offer governments a practical way to raise money by selling state-owned businesses. Furthermore, when governments move their pension systems closer to the private sector, equity market investments become an increasingly significant part of peoples' assets. To sum up, it is evident that the global economy's equities market is becoming a more significant capital market (Mosley & Singer, 2008).

One of the key macroeconomic factors that has a direct bearing on economic growth is interest rates. Interest rates are typically thought of as the cost of capital, or the amount paid to use money for a specific amount of time. Interest rates are the cost of borrowing money from the perspective of the borrower (borrowing rate). The cost of lending money, as seen from the perspective of the lender, is the interest rate (loan rate).

The study by Gaire (2016) is the sole one in the field of our interest in the Nepalese situation. He looked at the relationship between the NEPSE Index, short-term interest rates, and gold prices in Nepal, as well as their cointegration and causality. Monthly time series data from January 2006 to December 2016 were examined by him. He discovered that the NEPSE index, the short-term interest rate, and the price of gold in Nepal had an equilibrium relationship over the long term. He went on to say that one indicator of stock prices in Nepal's secondary market may be the short-term interest rate. His research had some flaws in the approaches used, while being a groundbreaking study in the Nepalese context. He employed the Augmented Dickey Fuller (ADF) test, for example, which is well-known for having poor power and size characteristics. Furthermore, when the series has a big negative moving average root, the ADF test is known to exhibit a strong size distortion (in the direction of over-rejecting the null when it is true). Additionally, our study makes use of more recent data that includes the exchange rate and spans a longer time period. We have discovered a causal association

between the NEPSE Index and the gold price and the exchange rate, which was the variable that was left out of his research.

## **1.2 Statements of the problems**

The stock market is determined by the interest rate; it cannot determine it (Mueller, 2006). An increase in interest rates will make borrowing more challenging. Profit would be impacted and the company wouldn't have as much money to grow. Eventually, investors were impacted by the reduction of bonuses and dividends. The stock market will then lose its allure as an investment vehicle. But there are other variables besides interest rates that have an impact on the stock market. Even with a high interest rate, the stock market index might be rising as a result of other reasons like economic expansion, political unrest, and monetary policies.

There are inconsistent results from the study. The majority of research has been done with an emphasis on how macroeconomic factors affect the stock market. As a result, this study is crucial to understanding how interest rates including sector, T-bill, base, deposit, and lending rates affect the Nepalese share market.

The general problem of the study is to examine the impact of interest rate on stock market price in Nepalese banking, manufacturing & processing and hydropower sector.

The specific statements of problems are outlined as follows:

- i. What is the position of base rate, deposit interest rate, lending interest rate and T-bill rate?
- ii. What is the relationship between bank interest rate and stock market price in Nepal?
- iii. What is the impact of interest rate on stock market price in Nepal?

## **1.3 Objectives of the Study**

The study's main goal is to investigate the connection between interest rates and the stock market. The following are some of the study's particular goals:

- i. To examine the position of base rate, deposit interest rate, lending interest rate and T-bill rate.

- ii. To analyze the relationship between bank interest rate and stock market price in Nepal.
- iii. To investigate the impact of interest rate on stock market price in Nepal.

#### **1.4 Significance of the Study**

Interest rates and stock exchanges are two important factors in a nation's economic growth. Interest rate fluctuations on stock exchanges have significant effects on government policy toward financial markets, risk management procedures, and monitoring policies. The purpose of the study is to determine whether market efficiency exists on the Nepal Stock Exchange (NEPSE). This study would be helpful to create an effective market mechanism for investors in order to win over investors and guarantee fairness for all market players. The study would also be beneficial to scholars, stock experts, and students. This report will be useful for future research on stock pricing. By taking into account all of the aforementioned concerns, the study has analyzed how interest rates affect the stock market. In order to make infirm decisions, implement sensible policies, and conduct additional research on stock price, investors, brokers, academicians, students, policy makers, government officers, bankers, and managers need to know the results of this study.

#### **1.5 Limitations of the Study**

The limitations of the study are as follows:

- i. The deposit, lending interest rate, base rate and T-bill are used from the banking, manufacturing & processing and hydropower index of Nepal. It does not include interest rate of other sector like hotel, trading and investment.
- ii. This study has used the average closing price of shares of each fiscal year from 2013/14 to 2022/23.
- iii. There are other relevant variables such as; government securities e.g. development bonds rate, inter-bank rate and other macro and non-macro-economic variables are excluded from this report.
- iv. This study has been based on secondary sources of data.

#### **1.6 Organization of the study**

In this research, the study is carried out in different stages and procedures, as it needed.

And as study has been organized on following chapters in order to make the study easy to understand.

### **Chapter I Introduction**

This chapter comes up with a general overview of the content connected to the topic. It explains background of the study, statement of problem, objectives of the study, significance and limitation of the study.

### **Chapter II Literature Review**

This chapter concerns to the review of the numerous national and international journals and article related to the impact of interest rate on stock price in Nepal. This chapter also indicates the research gap as well as used previous studies, journals, articles and academic books.

### **Chapter III Research Methodology**

This part involves research design, population and sampling, methods and tools to gather data from the respondents, data processing, analysis procedure, methodology and the conceptual framework as well as different selected variable used for the study.

### **Chapter IV Results and Discussions**

The majority of the study is contained in this chapter, where all pertinent data that has been gathered is examined and interpreted using a variety of statistical and financial tools. We outlined the study's key conclusions and discussions in this chapter.

### **Chapter V Summary, Conclusions and implementations.**

This chapter includes the summary, conclusions and logical assumption from the finding with relative implications as well as suggestions and their recommendation for future improvement.

The References and Appendices have been given at the end of the study.

## CHAPETR II

### LITERATURE REVIEW

This involves examining and critically evaluating the similarities and differences found in former related studies. It also includes highlighting key results and assessing the tools and techniques utilized in earlier research on the impact of interest rates on Nepal's stock market. The literature review for this study has been structured as follows:

#### 2.1 Conceptual Review

##### Theory of Pricing

Marshall (1990) contended that, under the presumption of perfect market competition, the interaction of supply and demand determines the equilibrium market price from the standpoint of classical economic theory and early neoclassical economics. This view aligns with the classical theory of value. Clarke (1982) describes price as the monetary value assigned to a good, service, or asset. An excess supply of money in the market tends to lower prices, whereas an excess demand for money can drive prices upward. Mishkin (1986), defining interest rate as the cost lenders charge for borrowed funds, explained that market forces of demand and supply determine the equilibrium interest rate, consistent with classical economic principles. In the money market, the supply side represents loanable funds available, while the demand side reflects the need for such funds. Consequently, the equilibrium interest rate is established where the supply of and demand for loanable funds intersect.

##### Fishers Theory

Make the argument that variations in the predicted rate of inflation are the primary cause of short-term interest rate variances. Furthermore, we believe that the market actors' predictions regarding the pace of inflation are generally accurate. Interest rate variations are mostly caused by changes in the rate of inflation. With  $r$  representing the real interest rate, we write  $r=i-p$ .  $P$  is the inflation rate, and  $i$  is the nominal interest rate (Mishkin, 2010). The theory, named after American economist Fisher (1930), is one of the most widely recognized and forms the foundation for conventional advice on real interest rates. It argues that competitive financial markets determine the nominal interest rate

on deposits, which must be positive in real terms. This is necessary because savers need to be incentivized to hold financial assets instead of real assets, as real assets typically appreciate in nominal terms at the rate of inflation. As a result, the nominal interest rate should equal the expected inflation rate plus a small real rate. Similarly, lending rates are also positive in real terms, as they are based on the cost of deposits, with an additional margin to cover intermediation costs, reserve requirements, taxes, and risks. For this reason, many economists suggest that maintaining low inflation is crucial for keeping nominal interest rates low. A key criticism of the Fisher theory is that it is a partial equilibrium model, which limits its scope to the analysis of capital markets while assuming that the prices of goods and services are already set, neglecting the broader economic context (Mishkin, 2010).

### **Loanable Funds Theory of Real Interest Rate**

According to the loanable funds theory of interest rate determination, factors affecting the supply and demand for loanable funds have an impact on the interest rate in the financial market (Saunders, 2010). In this framework, the interest rate is determined in a manner similar to the way the prices of goods are set through the interaction of supply and demand. As interest rates rise, the supply of loanable funds increases, assuming other factors remain constant. Conversely, the demand for loanable funds increases when interest rates reduction, again holding other factors constant. Saunders (2010) highlights that economic conditions are one of the factors that can shift the demand curve for loanable funds. These conditions reflect the total amount of money available for lending and the demand for it by consumers and investors throughout a given period. The interest rate is shaped by the interaction between borrowers and savers. According to the loanable fund's theory, economic agents aim to make the best use of available resources throughout their lifetimes. One way to enhance future real income is to borrow funds now to take advantage of investment opportunities, but only if the rate of return on the investment exceeds the borrowing cost. Borrowers are unwilling to pay a higher real interest rate than the return they expect from their investments. On the other hand, savers are only willing to lend if they are promised a real return that allows them to consume more in the future than they would otherwise be able to. The willingness of individuals to delay consumption is influenced by their time preferences (Saunders and Cornett, 2011).

### **Keynes Liquidity Preference Theory of Interest Rate**

The hypothesis states that investors typically favor short-term securities over long-term ones. Savings and investment choices may be more impacted by external shocks and expectations than by underlying economic dynamics in an uncertain society. Keynes (1973) introduced the liquidity preference theory, which he outlined in his *General Theory of Employment, Interest, and Money*. He argued that the interest rate is determined by the supply of money and the demand for money, specifically the demand for current money in comparison to future claims on it. As Keynes (1937) stated, "The rate of interest depends on the demand and supply of money." In Keynes' view, the primary way interest rates influence aggregate output is through their impact on planned investment spending. Firms seeking profits invest in physical capital such as machinery, factories, and raw materials provided they expect to earn more from these investments than the cost of financing them through loans. Therefore, interest rates play a crucial role in shaping the investment demand schedule.

Government "monetary policy directed at influencing the rate of interest" is what Keynes supports, but according to him, the other elements that affect the investment demand schedule are too strong for such "monetary policy" on its own to generate investment levels high enough to sustain full employment. Interest rates and the demand for investments are known to be related. Classical theory states that interest rates adjust sensitively to distribute all available cash for investments. The demand for investments is no longer the sole significant use of the money available for loans due to the expansion of consumer credit, which was first acknowledged in the 1920s. Keynes ignores the reality that interest rates distribute available funds for both consumption and a variety of investment uses.

### **Classical Theory of Interest Rate**

One of the earliest hypotheses regarding the factors that determine a pure or risk-free rate. Several British economists developed it in the nineteenth and twentieth centuries, and Irving Fisher (1930) further expanded it. It contends that two factors influence interest rates: the demand for capital and investment, which comes primarily from the business sector, and the supply of savings, which is primarily decided by the household. According to traditional ideas, paying interest is an incentive for delaying present

consumption in favor of increased spending. A higher interest rate makes saving more appealing than spending on consumption, which encourages more people to replace some of their current consumption with savings. A positive correlation between interest rates and the amount of saved is required by the so-called substitution effect.

## **2.2 Empirical Review**

### **2.2.1 Review of Foreign Literature**

According to research on property stocks, Liow and Huang (2004) discovered a highly significant negative long-term relationship between interest rates and the monthly excess return of property stocks for the UK, Hong Kong, and Japan during the pre-Asian financial crisis period, which spanned December 1987 to July 1997. In order to lower interest rate exposure, they recommended that investors carefully analyze the negative link between interest rates and property stock returns when building and managing their portfolios.

Ologunde et al. (2006) investigated the relationships between Nigeria's stock market capitalization rate and interest rates. The study found that the present interest rate has a beneficial impact on the stock market capitalization rate. Additionally, the study found that stock market capitalization rates are negatively impacted by both the present interest rate and the government's development stock rate. Lobo (2002) investigated how stock prices were affected by unforeseen adjustments to the federal funds target. According to the study, interest rate surprises on the day of the announcement have an impact on stock values. Furthermore, Zhou (1996) examined the connection between interest rates and stock prices using regression analysis. According to the study, interest rates significantly affect stock returns, especially when considering long-term investment objectives. The study also demonstrated that a sizable amount of the variation in price-dividend ratios can be attributed to long-term interest rates. Additionally, the analysis showed that the correlation between the high stock market volatility and the volatility of long-term bond yields can be explained by variations in discount rate estimates.

According to Kyereboah-Coleman and Agyire-Tettey (2008), bank lending rates have a detrimental effect on Ghana's stock market performance, which inhibits the expansion of businesses. Interest rates have a detrimental effect on Ghana's stock market.

However, Kyereboah-Coleman and Agyire-Tettey (2008) shown that bank lending rates have a detrimental effect on Ghana's stock market performance, which inhibits the expansion of businesses. For a pair of variables, cointegration can be checked across time periods. In a study conducted in Ghana by Demand Tweneboah (2008), macroeconomic variables have a co-integrating connection. They have demonstrated that there is a long-term relationship between the variables under study by using Johansen's Co integration and innovation accounting methodologies.

Somoye et al. (2009) investigated the factors that affected equity prices in the Nigerian stock market between 2005 and 2007 and the effects of oil prices, interest rates, earnings per share, GDP, and dividends per share on equity prices and returns. The analysis found that while GDP, earnings per share, and dividends per share have a positive relationship with stock prices, they are not important factors in determining stock return. However, a 2009 study by Mahmudul and Gazi, which examined 15 industrialized and emerging nations, demonstrated a strong inverse link between interest rates and share prices. According to Mukherjee and Naka (1995), interest rates have a long-term negative effect on the Japanese stock market index.

Chutang and kumara (2009) Three time series data pertaining to short-term Treasury bill rates (TB91, TB182, and TB364 days) and two time series relating to price indices of the Colombo Stock Exchange (ASPI and MPI) were used in the study to determine the relationship between short-term interest rates and stock prices in Sri Lanka. According to the Dickey-Fuller Unit Root Test, all of these time series are non-stationary and have unit root issues. Nevertheless, the Durbin-Watson statistic indicates that there is no autocorrelation issue with these time series. When non-stationary time series are converted to stationary time series, TB 91 and TB 182 become stationary at their second difference, while TB 364, ASPI, and MPI become stationary at their first difference. The validity of using both regression models in the study is improved by the non-existence multicollinearity issue among TB 91, TB 182, and TB 364. However, only 7.2 % of the variation in the ASPI and 5.3 % of the variation in the MPI can be explained by these explanatory variables. This indicates that other sources or variables not included in the analysis account for 92.8% of the variation in the ASPI and 94.7% of the variation in the MPI. While TB364 has a weakly negative link with both ASPI and MPI, the correlation coefficients for TB91

and TB182 in both multiple regression models reveal a weakly positive association with both ASPI and MPI. Based on the sample data, the null hypothesis is applied to the entire population of each variable.

Cengiz and Basarir (2014) investigated, using the actual gross domestic product as a framework, the relationship between interest rates and the stock market. The study found a strong and long-lasting correlation between interest rates and stock market performance. The study also showed that stock market crises can be successfully avoided by enacting laws to regulate long-term interest rates. The impact of fluctuations in interest rate volatility on the distribution of returns in the Australian financial sector was studied by Faff et al. (2005). According to the study, the correlation between interest rates and excessive gains on large bank stocks has changed as a result of deregulation. The connection was favorable before deregulation, but it has since shifted to a negative one. This demonstrates how the institutional environment has changed from being characterized by controlled credit rationing to becoming more competitive. The effect of interest rate differentials on stock returns in low- and high-rate circumstances was investigated by Salisu and Sikiru (2021). According to the study, short-term stock returns are more positively impacted by interest rate differentials in negative interest rate environments than in positive ones. This effect was only noticed in the short term, though.

Amarasinghe (2015) maintained that expectations for future company performance should be reflected in stock pricing. Uddin and Alam (2010) used data from the Dhaka Stock Exchange to examine the relationship between interest rates and the stock market. The results validated the theoretical claim that stock prices and current interest rates are negatively correlated. Therefore, controlling supply and demand to successfully manage interest rates in Bangladesh might greatly help the Dhaka Stock Exchange by drawing in more investors and motivating businesses to boost their market investments.

Mbulawa (2015) outlined how the interest rate level, local currency value, and stock market development level provide information on the dynamics of an economy's development level. The study discovered a negative correlation between the usefulness of stock price information and a nation with significant inflation. Interest rate sensitivity varied according to the term of interest rates, namely short-term versus longer-term interest rates, as Lynge and Zumwalt (1980) found. The analysis showed that compared

to nonfinancial stock returns, bank stock returns were more susceptible. Flannery and James (1984) carried out a thorough investigation to uncover the unique features of banks and the elements affecting how sensitive stock returns are to interest rates. A contributing factor to the observed sensitivity was the study's confirmation of the negative relationship between stock returns and both short- and long-term interest rates. The study also found that a key factor in understanding how sensitive stock returns were to unforeseen changes in interest rates was the mix of asset and liabilities maturities. In the United Arab Emirates, Bashir and Hassan (1997) investigated the connection between stock returns and interest rate sensitivity.

Amarasinghe, (2015). Finance theory explains the interest rate as a measurement of time value of money, which is one of the main determinants in stock prices. It plays a major role in any economy as a key macroeconomic variable which is defined as the cost of money. Thus, any change in interest rate can cause difficulty for the investors and can affect the profitability of firms, thereby fluctuating stock prices. due to any change in this variable. Diasakos et al. (2015) shown that the profitability of Greek commercial banks is significantly impacted by changes in the base rate set by the European Central Bank. The net interest margin of the banks is positively correlated with changes in the base rate. Additionally, Elsharnouby and Alexandridis (2020) discovered that shifts in the base interest rate significantly impair returns on the UK stock market. According to the study, there are signs that the nation's commercial banks' stock returns are somewhat sensitive to changes in interest rates. Additionally, only in the United States did the analysis discover a long-term negative correlation between long-term interest rates and stock prices. According to Maysami et al. (2004), Singaporean stock returns and long-term interest rates are negatively correlated.

Because commercial banks modify their interest rates in reaction to any changes announced by central banks, the base rate has an impact on the interest rate that consumers pay. According to Erten and Öztürk (2018), there is a significant lag effect between short-term interest rate changes and stock market returns. According to Jha (2018), one of the most important monetary policy instruments that central banks employ to affect economic activity is the base interest rate. Sari and Ergul (2017) evaluated how base rate fluctuations affected Turkey's stock market results. According to the analysis, stock returns and base rate changes were negatively correlated. Similarly, Alqahtani et al. (2021) discovered that stock market returns in emerging

nations are significantly impacted by changes in the base interest rate. The study revealed evidence of a negative correlation between stock market returns and changes in the base interest rate after analyzing data from six emerging markets.

Marry Hall (2019) The article "How Do Interest Rates Affect the Stock Market?" provided a clear picture of the inverse relationships between interest rates and stock prices. We also talked about the factors that influence market interest rates. The Fed Funds Rate is the most significant of the three. The interest rate that a central bank or reserve bank charges other banks for borrowing money is known as this. As a result, the central bank has some control over this. The central bank uses indirect control to rebalance the market if rising stock prices are hurting it and the rate of stock price growth is highly liquidated. If the bank raises Reserve Fund rates, it reduces the amount of money available to the other bank. As a result, the finance company raises interest rates for its customers. Reasonable consumers avoid taking out loans with higher interest rates. The stock price will also drop as a result of a greater supply of the stock and a decreased demand for it. This also holds true in other situations. The stock market is thus balanced, and the inverse relationship between interest rates and stock prices is maintained.

Using data from China, Guangton Gu, Wenjie Zhu, and Chengjun Wang (2021) conducted a study on the "Time Varying influence of Interest rates on Stock Market returns," analyzing the relationship and impact of interest rates on stock market returns over time in that nation using a novel Bayesian time-varying regression model. They found that rising interest rates tend to obstruct the rise of stock values, whereas average interest rates typically have an exceptionally beneficial influence on the market and a negative impact on price returns. Similarly, because interest rate changes have an effect on borrowing costs, investment choices, and general market sentiment, they can have a big impact on stock market volatility. First off, central banks raising interest rates may make borrowing more expensive for consumers and companies, which could lower corporate profitability and impede economic expansion. Investors may reassess risk-return dynamics as a result of this monetary policy tightening, which could alter asset allocations and raise stock market volatility (Smith, 2021). On the other hand, by reducing borrowing costs, promoting investment, and increasing consumer spending, a drop in interest rates can boost economic activity. But too low rates can also be a sign

of economic worries, which could cause market turbulence and uncertainty as investors reevaluate the state of the economy (Jones, 2022).

Jeongism Kim (2023) In his work "Stock Market Reaction to United States Interest Rate Hike: Evidence from an Emerging Market," he looks at how a developing stock market responds to increases in US interest rates using data from Korean companies. OLS, correlation, and cross-sectional regression were among the models used. They found that determined companies with bigger market capitalization, more export sales, and foreign ownership outperform during US interest rate hikes, and that investors fly to emerging economies as a result of the Fed's rapid rate hike. They also found that amid US interest rate hikes, small-cap firms need to be more flexible financially.

### **2.2.2 Review of Nepalese Literature**

Gurung (2004) asserted that the securities market is essential for mobilizing savings, directing them toward beneficial endeavors, and many other things, such as offering liquidity on securities to reduce risk and increase returns. The analysis of the performance of the securities market shows that there is no synchronization between the various indicators of securities market performance, it is true that during the observation time, they have almost always displayed an unanticipated tendency. This demonstrates how unstable and underperforming the securities market is. The securities market is extremely tiny in comparison to the economy as a whole, and its liquidity is also subpar. These facts imply that a bearish situation is currently prevailing in the Nepalese capital market. Despite a gradual improvement, the Nepalese securities market's growth and performance remain unsatisfactory, even after a new mechanism was introduced in 1993/94.

Regmi (2012) The Nepalese economy grew thanks to the aforementioned stock market. When creating economic policies, the stock market should be incorporated into the nation's entire economic system since it serves as a medium for economic progress. Therefore, the government must make significant efforts to guarantee the stock market is run competently and well-organized since the more efficient the market, the more likely it is to draw in investors. Tax, legal, and regulatory barriers that hinder the growth of the stock market should be removed because they can sometimes deter investment. The government should also invest more and improve the country's infrastructure to

create an environment that encourages business expansion, boosts productivity and efficiency, and increases firm returns. Finally, it should implement appropriate trade policies that encourage foreign investment and international capital inflow to increase the country's production capacity. Finally, it should strengthen the Nepal Stock Exchange's ability to monitor and prevent sharp practices by market operators to protect the interests of shareholders. Additionally, the Nepal Stock Exchange should enhance its trading system to make it easier for investors to buy and sell shares, ensuring stock market liquidity. Additionally, stock market reformation measures could provide additional economic assistance and serve as a major accelerator and enabler of economic expansion.

Pradhan and Dahal (2016) discovered that a lot of research has been done on the variables influencing share prices in developing nations. The relationship between the share price, bank-specific factors, and microeconomic variables of a few Nepalese commercial banks is examined in this study. The market's stock price fluctuates daily rather than remaining constant. Demand and supply factors are the most evident influencing factors. Both macro and microeconomic factors influence the price of any commodity. The purpose of this study is to investigate the connection between MPS in Nepal's banking industry and macroeconomic and bank-specific factors. Profits per share, dividends per share, price-earnings ratio, book value per share, return on assets, size, GDP, inflation, and money supply all have an impact on MPS. According to this study's initial approximation of the theory, the MPS is influenced by a number of macroeconomic and bank-specific factors, including price, dividends per share, and earnings per share. Gross domestic product, return on assets, book value per share, earnings ratio, inflation, and money supply.

Shrestha and Subedi (2014) outlined the factors influencing Nepal's stock market performance, which has been fluctuating in recent years. We look at the factors influencing the stock market index using monthly data because the stock market is sometimes quite sensitive and volatile. We discovered that, in theory, the Nepalese stock market has been acting as we anticipated. It responds negatively to interest rates and has a high positive correlation with inflation and money supply increase. It demonstrates how investors have been investing in the stock market when there is a lot of liquidity available at a low interest rate and using it as a hedge against inflation over

time. More significantly, political changes have been found to have an impact on stock market performance, which is consistent with Dangol's (2008) findings and the NRB's strategy. The stock market index is positively impacted by the optimistic forecast for political stability. Similar to this, changes to the NRB's lending policies involving share collateral have a big effect on how the stock market index moves. From this study, several policy implications can be inferred. First, the expansion of the monetary sector in particular has had a significant impact on the Nepalese stock market. Second, an asset price bubble in the share market, which is primarily controlled by banks and financial institutions, might be triggered by a loose monetary policy. Third, stock investors appear to keep a close eye on political developments. Therefore, a stable political environment can further boost the share market, which is essential for capital market resource mobilization and financial intermediation. The NRB's share collateral lending policy has had a significant impact on the stock market. This demonstrates how important NRB policy is to the stock market. A negative outcome shows that rumors, news, and speculations also affect the share market; therefore, it is important to make information about listed businesses widely available in order to promote market transparency. In reality, the relevant authorities should improve communication and transparency to dispel rumors and gossip in the marketplace. According to the report, Kenya's banking industry is particularly profitable and dynamic, making it a great place to invest in the NSE. Despite declining performance in the global financial sector, the sector has been deemed to be doing well recently. According to the results of a review of a few competitive performance rankings, the top-performing commercial banks are primarily those that are listed on the NSE, so investing in them is equivalent to investing in the top companies, which are also competitors on the NSE bourse and can rank 43rd in the nation.

Neupane (2018) interest rate impact on the stock market: where will it go next? Interest rates and stock prices are inversely correlated everywhere. The relationship is as follows: Stocks become more appealing when interest rates decline, while fixed income investments such as bank deposits become less competitive due to their lower yields. On the other hand, as interest rates rise, fixed income investments become more competitive due to their greater yields, which makes stocks less appealing. There is no denying the relationship between interest rates and the NEPSE index. NEPSE has always gone in the other direction when interest rates have increased. Interest rates and

NEPSE have an inverse relationship in Nepal. When banks and financial institutions (BFIs) offer higher interest rates, individuals often turn to safer investment options, such as fixed deposits. Recently, many banks have been offering more attractive interest rates on fixed deposits compared to a few months ago, signaling a potential liquidity shortage in the market. A rise in interest rates can have a dual effect, potentially negatively impacting the stock market. On one hand, risk-averse investors may exit the market and shift their funds to fixed deposits. On the other hand, traders or speculators who rely on bank loans for investment may also pull out due to higher loan interest rates. Rational investors typically compare the returns from stocks with those from fixed deposits. However, it cannot be assumed that a recent increase in interest rates will necessarily lead to a sustained downward trend or a crash in the Nepal Stock Exchange (NEPSE). It is important to assess whether the interest rate increase is temporary or long-term. If the rise in interest rates is short-term, there is no strong evidence to suggest a major decline in the market. The current state of the Nepalese stock market is different from the past. Retail investors now play a larger role, and the influence of large investors has diminished as market capitalization has significantly grown. Positive reforms, such as the establishment of the central depository system, dematerialization of shares, improved regulations, and shorter settlement periods, have strengthened the market. Paper-based share transactions are being replaced with the help of the Central Depository System and the dematerialization of shares, which has also shortened the settlement time. Additionally, the market is moving towards an online trading system in the near future. Institutional investors, including insurance companies, mutual funds, and private equity funds, have also added stability to the market. The entry of three new mutual funds in the near future will further strengthen the market. Mutual funds typically invest a significant portion of their collected funds directly in the stock market. Many companies are currently issuing right shares and Further Public Offerings (FPO), which can sometimes lead to a decline in the market. A common trend is that the market tends to decline between the Dashain and Tihar festivals, as investors often need more liquid cash for the festive season. Minor corrections during this period are normal and are often viewed as a "Wait and Watch" phase. However, positive developments, such as the increased investment from non-resident Nepali (NRN) investors, the introduction of online trading, issuance of broker licenses to commercial banks, the growing number of mutual funds, and the expansion of brokerage services outside the valley, have the potential to provide a new dimension to the Nepalese stock market.

Shrestha and Pokhrel (2019) analyzed the factors affecting the Nepali stock index and found that the stock index responded positively to the growth of broad money but negatively to interest rates. Khatri (2019) explored the dynamic relationship between the stock market and macroeconomic factors such as inflation, interest rates, money supply, GDP, exchange rates, and foreign direct investment in Nepal. The study concluded that stock prices were positively and significantly correlated with money supply. However, real economic activity and interest rates showed an insignificant negative relationship with stock prices. Similarly, Lamichhane and Shrestha (2022) investigated the factors impacting the performance of the Nepalese stock market. Their findings indicated that remittances and money supply had a positive effect on the stock market, while interest rates and exchange rates negatively impacted stock market performance. In addition, Poudel (2017) identified that the market price per share was positively related to dividend per share (DPS), equity capital, price-to-earnings (P/E) ratio, return on assets (ROA), GDP, and inflation. On the other hand, non-performing loans (NPLs) and commercial bank interest rates were negatively associated with market price per share. Karki (2018) argued that macroeconomic factors alone could not fully explain the long-term volatility in stock prices.

The stock market index is often considered a barometer of a country's economic performance, with an increase in the index typically reflecting investor confidence in the economy's future and fostering investment. However, a rapid and unsustainable rise in the index can raise concerns, as it may not be backed by underlying economic fundamentals, potentially leading to a decline that could threaten economic and financial stability. Therefore, it is crucial to understand the relationship between the stock market and the various factors that impact it. A nation's stock market plays a vital role in driving the growth and development of its economy (KC, 2023).

### 2.3 Review of Empirical study Variables

<b>Variables</b>	<b>Findings</b>	<b>Sources</b>
Interest rate, Inflation, Exchange rate, industrial Production, Money Supply	Interest rate, inflation, money supply, have an inverse relationship with stock price, an increase in money supply would lead to inflation and may increase discount rate and reduce stock price. Exchange rate and industrial production have a positive relation with stock price.	Maysami et al (2004)
Market capitalization and interest rate	This study discovered that the stock market capitalization rate is positively influenced by the current interest rate.	Ologunde et. al (2006)
Inflation, growth of money supply and interest rate	Nepalese stock market has strong positively relationship with inflation and growth of money supply and negative relationship with interest rate.	Shrestha and subedi (2014)
Interest Rate, share Price	Malaysia, Bangladesh, Colombia, Italy and South Africa show a negative relationship between interest rate and share price, but in case of Japan has a positive relationship between interest rate and share price.	Amarasinghe (2015) Uddin and Alam (2010)
Equity capital, P/E ratio, DPS, ROA, GDP and inflation	Market price per share is positively associated to DPS, Equity capital, P/E ratio, ROA, GDP and inflation	Poudel (2017)
Bank Rate, Deposit interest Rate, Lending interest Rate, Risk free rate of return	Deposit rate lending rate, T-bill rate have a significant negative relationship with share price and bank rate have a no significant relationship with share price.	Neupane. (2018)

Interest Rate and Stock Market Index	The results found a statistically significant relationship between interest rate and the US automobile industry while the relationship was absent between interest rate and banking and technology	Mary Hall (2019)
Bank Rate, Base Rate, Deposit interest Rate, Inflation Rate, Lending Interest rate	Bank rate and inflation rate have a positive effect on stock price and deposit interest rate, lending interest, base rate and capital adequacy ratio have a negative impact on stock price.	K.C. (2023)
Government policies	Government policies refer to the rules and regulations established by the government to control or stimulate the economic indicators of a country. One of these policies includes tax rate policies, which are considered as a part of government policies. Government policy has a negative correlated with stock price.	Website of income tax department of India.
Foreign institutional investors	FII stands for foreign institutional investors, which refers to an individual or organization that invests or organization that invests money in the financial market of a company other than own. FIIs typically invest in stocks bonds and other securities in the country's market where they wish to gain exposure. Foreign institutional investors have a positive long-term correlation with stock price.	Website of NSE

*Source: Review of literature*

## 2.4 Research Gap

Earlier there were many articles on the topic i.e. impact of interest rate on stock market price in Nepal. But there was no any research on the topic with impact of interest rate on stock market index includes banking, manufacturing & processing and

hydropower index. Thus, this research is a unique for Nepalese context. Different interest rates, such as bank rates, deposit rates, lending rates, and short-term interest rates, as well as the NEPSE closing price of each fiscal year from mid-July 2003 to mid-July 2017 of 15 years of commercial banks, were included in the review of prior literature to create the sample for this study. For ten years, the banking index, manufacturing & processing index, and hydropower index are used in this study to examine the relationship and impact of stock market price on other financial indicators, including base rate, deposit interest rare, lending interest rare, and T-bill rate of average market closing price of each fiscal year from 2013–14 to 2022–23. Previous researches have used descriptive research design but this research have used descriptive and casual comparative research design based on quantitative method.

## CHAPTER III

### RESEARCH METHODOLOGY

This chapter clarifies the methodologies design and research procedure used to achieve the study stated goals. The research approach examines the study procedure for determining how interest rates affect Nepal's share market. The extensive process of research methodology has been further broken down into several subtopics for the sake of simplification. These consist of the study restrictions, instrumentation, sample description, research plan and design, data collection procedure and timeliness, data analysis method, and analysis plan. The primary goal of the study is to examine how interest rates affect Nepal's stock market.

#### 3.1 Research Design

The process of doing research that aids in determining the relationship between dependent and independent variables is known as research strategy and design. It is a comprehensive strategy outlining the techniques and steps for gathering and examining the necessary data. Investigated the impact of one variable on another is made easier by research design.

The descriptive and casual comparative study design will be used in the quantitative method. In order to ascertain the correlation between interest rates and stock market index, the author has chosen various years. Along with various interest rates, such as the base rate, deposit rate, lending rate, and T-bill rate, we have seen trend analysis of the NEPSE index.

#### 3.2 Population and Sampling

The population for this study is based on the NEPSE index and various interest rates, such as base rates, deposit rates, lending rates, T-bill rates, and average NEPSE closing prices of each fiscal year (2013/14 to 2022/23) of ten years of commercial banks, development banks, finance companies, microfinance, insurance companies, manufacturing & processing, hotels, trading, investment, hydropower, and others.

This following table displays the list of companies and Market capitalization of Nepal Stock Exchange, these are the data from mid of fiscal year 2022/23.

**Table 3.1***Listing companies of NEPSE*

Particulars	No of listed company		
	Mid July 2023	Share Value	Share %
Financial Institutions	132	1928903.4	63.4
Commercial Bank	20	983845.1	32.3
Development Bank	16	140061	4.6
Finance Company	20	55803.4	1.8
Microfinance	55	276724.4	9.1
Insurance Companies	21	472469.4	15.5
Manufacturing & Processing	20	149222.7	4.9
Hotel	7	103485.8	3.4
Trading	4	16855.4	0.6
Investment	6	212312.1	7
Hydropower	81	379805.6	12.5
Other	4	252424.2	8.3
Total	254	3043009.23	100

Data Source: [www.nepse.gov.np/market](http://www.nepse.gov.np/market) capitalization

This study has involved different interest rate like: base rate, deposit rate, lending rate, T-bill rate & NEPSE closing price of every fiscal year starting from 2013/14 to 2022/23 of 10 years of Banking sector, Manufacturing & processing sector and Hydropower sector has been selected as a sample under purposive sampling method for this study.

### 3.3 Nature and sources of data

The study relied on secondary data. This part explains the approach used to analyze the data for this research. In any statistical analysis, the collection of data is a crucial step. However, the availability of financial and macroeconomic data in Nepal remains limited, similar to other developing countries, due to the country's relatively low capacity for data generation and management.

### 3.4 Data collection Procedures

The Central Bureau of Statistics, Nepal Rastra Bank, Nepal Stock Exchange, Economic Survey, and other approved sources provided the data for this study. In addition to these, a number of published books, journals, reports, articles, and graduate studies were also looked at.

### 3.5 Data Processing and Analyzing Procedures

To accurately interpret the results and generalize the findings, it is essential to adhere to specific steps and procedures in data analysis. The analysis of secondary data aims to examine the relationships and causal effects between the variables. The descriptive statistics of the sample observations, such as the mean, standard deviation, coefficient of variation, and the lowest and maximum values, are presented first in this section, which is divided into multiple subsections. The second part of the analysis involved correlation analysis, followed by stepwise regression analysis.

The primary objective of the data analysis in this study was to examine the impact of interest rates on stock market prices in Nepal. The study utilized quantitative data, which were analyzed using descriptive, correlation, and regression methods. Excel and SPSS software were employed to process the data and generate the necessary results and insights. This section outlines the statistical models used for data analysis.

$$\text{Stock price} = a + b_1BR + b_2DIR + b_3LIR + b_4TIR + e_i$$

i.e Stock market Price (Market Index) = f (Base rate, Weighted Average Deposit Interest rate, Weighted Average Lending Interest rate, Weighted Average T-bills Interest rate, Error term)

The Market Index consists of the average closing price for each fiscal year, while the independent variables represent the average closing interest rates for the corresponding fiscal years. All commercial banks' deposit interest rates are averaged to determine the Weighted Average Deposit Interest Rate. Likewise, the average of commercial banks' lending interest rates is known as the Weighted Average Lending Interest Rate. The average interest rates on 28-day, 91-day, 182-day, and 364-day Treasury bills are used to calculate the Weighted Average T-bills Interest Rate.

### **3.6 Instrumentation**

The secondary data for this study were gathered from various sources, as outlined in the previous section of this chapter. Information on both the dependent and independent variables was compiled in Microsoft Excel, using pooled data from government publications, reports, journals, and other relevant sources. These data were analyzed using Excel and SPSS. To investigate the relationship between interest rate factors and stock market prices, descriptive, correlational, and regression analyses were used. The significance of each individual model as well as the overall significance of the model were ascertained using t-tests and F-tests in order to evaluate the validity and reliability of the findings.

### **3.7 Validity and Reliability**

Validity is the extent to which a study's findings can be relied upon and if the measurement appropriately captures the idea it is meant to assess. To assess the quality of this study, we have focused on both internal and external validity, despite the fact that there are many distinct types of validity.

The relationship between the study's variables and its results is known as internal validity (Bryman & Bell, 2007). To strengthen the conclusions, previous studies were reviewed to ensure that the selected factors are the most significant determinants of the stock market. External validity, on the other hand, concerns whether the findings of the study can be generalized to other contexts and research settings (Saunders et al., 2009). Given the large number of companies and the extended time period covered by the study, the results are applicable to the Nepalese capital market.

Reliability refers to whether the findings of a study would remain consistent if the same study were repeated under similar conditions and with the same topic. If the results are stable, the study is considered reliable. Conversely, if the results vary, the study's reliability may be questioned. This research used data from the period 2013/14 to 2022/23, demonstrating its high reliability. The data is recent and sourced from various government authorized outlets. To ensure data validity and reliability, we cross checked information from different sources and confirmed that the same data was consistent across all authorized references.

### 3.8 Statistical Tools

Statistical tools are essential for analyzing data gathered from various sources. In the field of statistics, there is a wide range of tools available to examine data of different types. In this research, the following statistical methods have been employed to analyze the data.

#### a. Mean ( $\bar{X}$ )

The arithmetic mean, often referred to as the mean, is the most commonly recognized and frequently used measure of central tendency. It is computed by adding all the values together and dividing the sum by the total number of values. This measure can be used for any set of numerical data.

A symbolic expression for the mean would be,

$$\text{Mean } \bar{X} = \frac{\sum X}{n}$$

Where,

$\bar{X}$  = Arithmetic mean

$\sum X$  = Sum of all the values of the variable X

n= Number of observations

#### b. Standard Deviation ( $\sigma$ )

The standard deviation ( $\sigma$ ) quantifies the complete dispersion of data. It is clear as the positive square root of the average of the squared deviations from the arithmetic mean. A larger standard deviation indicates that the deviations are more significant, while a smaller standard deviation suggests a higher degree of consistency or accuracy in the data

This can be symbolically as:

$$\text{S.D } (\sigma) = \sqrt{\frac{1}{n} \sum (X - \bar{X})^2}$$

Where,

$\sigma$  = Standard deviations

n= number of observations

$\bar{X}$  = Arithmetic mean

### c. Coefficient of Variation (C.V.)

The standard deviation is expressed as a percentage of the mean by the Coefficient of Variation (C.V.), a relative measure of dispersion. The variability of two or more distributions is compared using this method. As a unit independent measure, the C.V. allows for comparison across different datasets. A higher C.V. indicates greater variability, while a lower C.V. signifies less variability. The formula for calculating C.V. is as follows:

$$\text{Coefficient of Variation (C.V.)} = \frac{\sigma}{\bar{X}} \times 100$$

Where,

CV= Coefficient of Variation

$\sigma$  = Standard deviations

$\bar{X}$  = Arithmetic mean

### d. Correlation Analysis

Correlation analysis is used to examine the relationship between two variables. Pearson's correlation coefficient is a bivariate measure that evaluates the strength and direction of this relationship. The correlation coefficient, denoted as  $r$ , ranges from 0 (no relationship) to 1 (perfect positive linear relationship) or -1 (perfect negative linear relationship). A positive correlation coefficient suggests a direct relationship, where an increase in one variable corresponds with an increase in the other. A coefficient of zero indicates no relationship between the variables, while a negative coefficient indicates an inverse relationship, where an increase in one variable leads to a decrease in the other.

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{n \sum X^2 - (\sum X)^2} \sqrt{n \sum Y^2 - (\sum Y)^2}}$$

### e. Regression Analysis

Regression analysis is the development of the statistical model that can be used to predict the values of the dependent variable based upon the values of at least one independent variable. Regression analysis helps us to know the relative movement in the variables.

## Multiple Regression Analysis

Multiple regression is an extension of simple linear regression, used to forecast the value of a dependent variable based on the values of two or more independent variables. The dependent variable, also known as the outcome, target, or criterion variable, is the one being predicted. The independent variables, also referred to as predictor, explanatory, or regression variables, are used to make predictions about the dependent variable.

Multiple regression also enables the assessment of the overall fit of the model, or the amount of variance explained, as well as the individual contribution of each predictor to the total explained variance. For instance, you may want to understand how much of the variation in exam performance is explained by factors such as revision time, test anxiety, lecture attendance, and gender collectively, as well as the specific contribution of each independent variable in explaining that variance.

Multiple Correlation Coefficient procedures the strength and way of the linear relationship between the experiential values of the dependent variable and the values predicted by the regression model. Its series from -1 to 1, where values closer to 1 or -1 indicate a stronger linear relationship. An adjusted version of  $R^2$  that accounts for the number of predictors in the model relative to the number of observations. It adjusts  $R^2$  for the degrees of freedom, provided that a more accurate measure of model fit by penalizing excessive use of predictors. It can decrease if the added predictors do not improve the model sufficiently and is typically used to compare models with different numbers of predictors.

$$\text{Stock price (Y)} = a + b_1\text{BR} + b_2\text{DIR} + b_3\text{LIR} + b_4\text{TIR} + e_i$$

Where,

Y = Stock price (NEPSE Index)

a = constant (intercept)

b = Coefficient

BR = Base Rate

DIR = Deposit Interest Rate

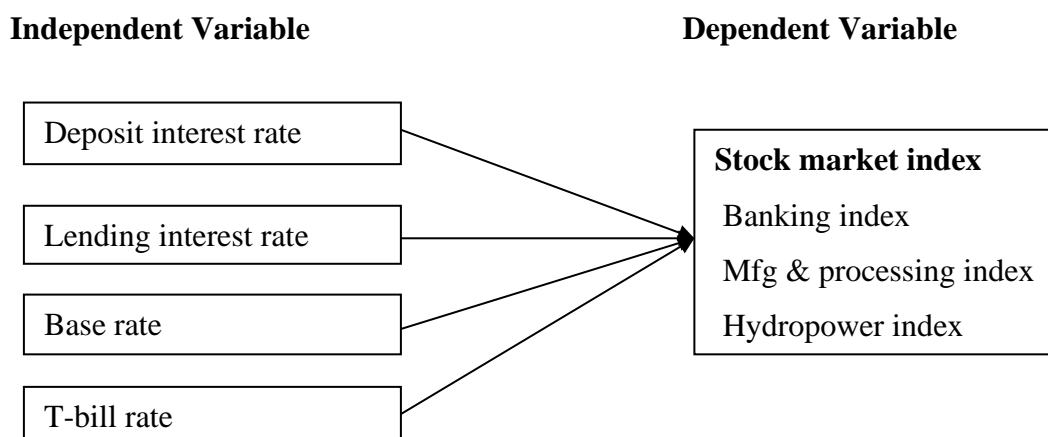
LIR = Lending Interest Rate

TIR = T-bills Interest Rate

$e_i$  = Error term

### 3.9 Conceptual framework

This study's identification of dependent and independent factors served as a basis for the entire endeavor. The stock market has been supercilious; that is, the bank rate, weighted average deposit interest rate, weighted lending interest rate, and T-bill rate are the dependent and independent factors. The conceptual framework that follows is developed from the reviewed literature.



**Source: Neupane. (2018)**

This figure displays the conceptual framework of the study by screening the dependent and independent variables.

### 3.10 Variables Define

#### 3.10.1 Deposit interest rate

Financial organizations pay deposit account holders this amount. Certificates of deposit, savings accounts, and retirement accounts with self-directed deposits are examples of deposit accounts. For investors who want a safe vehicle to retain their principle, receive a little amount of fixed income, and benefit from insurance, deposit accounts are appealing ways to park cash.

The deposit interest rate is the average interest rate on merchandizing deposits at each bank. As per Ben-David et al. (2017), the rates on bank deposits are influenced by the availability of deposits from households and firms and the banks' demand for deposits. According to Smith (1984), the competition for deposits among banks may drive up the deposit interest rates, theoretically prompting banks to maintain riskier portfolios, thus posing a threat to the constancy of the banking system. In their 2018 study, Sun and

Wang discovered that the stock price is adversely affected by the interest rate applied to bank deposits. Likewise, Kwan's 2003 research revealed that the removal of regulations on deposit interest rates in Hong Kong would decrease the income banks earn from IRRs and cause a drop in bank market prices. In addition, Uddin and Alam (2009) asserted that a rise in the interest rates offered by banks to depositors might lead to individuals withdrawing their funds from the stock market and opting to invest in banks instead. This change in investment could lead to a reduction in demand for shares and share prices, and could also have a negative impact on both the stock market and deposit interest rates.

Higher balance accounts usually get better rates from financial organizations. This serves as a lure for valuable customers with substantial assets. Naturally, a higher deposit amount will result in a larger return over time due to the higher interest rate. These types of accounts can provide greater stability than more volatile, high-risk financial products, even if they may still be perceived as a slower growth way to earning profits.

Financial institutions promote long-term deposits since they increase the institution's liquidity as well as benefit the client by earning longer interest. An organization can offer its clients additional lending services, such credit cards and loans, if it has more cash on deposit.

### **3.10.2 Lending Interest rate**

Give credit Interest rates are one of the most important factors that commercial banks consider when making lending decisions. Commercial banks are independent businesses that set their own interest rates for loans. The lending interest rate is the percentage of the loan amount that the lender charges in exchange for the loan. Banks charge interest on loans to their customers for a number of reasons, including as asset preservation, risk-reward, and profit making.

Commercial banks may increase their profit margins by lowering deposit rates and raising lending rates. Independent businesses, commercial banks determine their own lending interest rates. Lending interest rate is the percentage of the loan amount that the lender charges for making a loan. Sheriff and Amoakon (2014) state that interest is

charged by banks for a number of reasons, including profit, risk compensation, and value preservation, when they lend money to customers. According to Chirchir (2014), there is a causal relationship between lending rates and stock prices, with the direction of causality being from interest rates to stock prices. Stock market crises might be avoided if bank lending rates were regulated. The stochastic characteristics of stock market returns, macroeconomic variables, and their co-integration residual were studied by Otieno et al. (2017). The study discovered that the long-term returns on the stock market are negatively impacted by the rates on 3-month T-Bills and loans. In a similar vein, variations in bank lending have a big impact on stock and real estate values Chen, (2001). Similarly, nominal effective exchange rates become statistically irrelevant with share prices, whereas GDP, lagged GDP, and lagged lending interest rates continued to be statistically significant. This was explained by Beck et al. (2015). Additionally, Basten and Mariathan (2018) used a difference in difference analysis to evaluate the effect on lending margins in Switzerland. According to the study, when interest rates were negative, Swiss banks' lending margin rose. Interest rates were raised more by the banks with bigger reserve reserves.

### **3.10.3 Base Rate**

The base rate is the lowest interest rate that commercial banks are not permitted to lend to their customers below, as regulated by a central bank (like the Nepal Rastra Bank). It acts as a benchmark for other interest rates in the economy and represents the cost of capital for the banks.

Customers' interest rates are influenced by the base rate since commercial banks modify their rates in reaction to changes declared by central banks. According to Erten and Öztürk (2018), there is a significant lag effect between short-term interest rate fluctuations and stock market returns. According to Jha (2018), one of the most important monetary policy instruments that central banks employ to affect economic activity is the base interest rate. The study found that variations in the base rate were negatively correlated with stock returns. Similarly, Alqahtani et al. (2021) found that changes in the base interest rate have a big impact on how emerging stock market's function. After examining data from six emerging markets, the study found evidence of a negative link between changes in the base interest rate and stock market returns.

Elsharnouby and Alexandridis (2020), however, discovered that changes in the base interest rate significantly affect the returns on the UK stock market.

In Nepal, the base rate is a key factor in defining the general interest rate landscape. Commercial banks modify their interest rates on loans and deposits in response to changes in the base rate made by the central bank. Interest rates on loans and savings accounts, among others, usually climb in response to an increase in the base rate. The Nepalese stock market may be directly impacted by this interest rate increase. Increased borrowing rates have the potential to reduce business earnings and, consequently, stock values. Furthermore, investors may move their portfolios away from stocks as fixed-income instruments become more appealing with rising interest rates, which would further lower stock values. On the other hand, a base rate decrease can result in lower interest rates.

#### **3.10.4 T-bill rate**

The government issues risk-free assets, which mature in less than a year. Treasury notes that are devoid of risk are thought to be the most prevalent type. Treasury notes are not subject to default risk because they are backed by government treasury funds. Treasury bills are free from interest rate risk due to their short duration, which also makes them immune to changes in the market interest rate. Treasury bonds and notes are two other types of government assets that do not have a default risk. They cannot, however, be completely considered risk-free because of their extended term to maturity, which exposes them to interest rate risk.

The T-bill rate is the theoretical return on an investment with no risk of financial loss. It is typically represented by the yield on government securities, such as U.S. Treasury bonds, which are considered to have minimal risk of default. This rate serves as a benchmark for evaluating the performance of other investments, helping investors assess the additional return required for taking on higher levels of risk. Fabozzi, F. J., & Markowitz, H. M. (2011).

#### **3.10.5 Stock market index**

An essential tool for assessing the performance of a particular stock market sector or the market overall is a stock market index. It acts as a statistical depiction of how the

prices of particular stocks fluctuate over time. Because they shed light on market patterns, investor mood, and the state of the economy as a whole, indices are essential tools for economists, analysts, and investors.

A stock market index is usually composed of a variety of stocks that are either representative of the whole market or of a certain industry. Market capitalization, or the total value of a company's outstanding shares, industrial sector, and trading volume are some examples of selection criteria for stocks. Due to their larger market capitalization, larger, more powerful corporations frequently have a stronger influence on the fluctuations of the index.

The market capitalization is an index or other factors determined by the index provider are used to determine its weight. In comparison to smaller companies, the performance of larger corporations might therefore have a disproportionate impact on the index.

An index's value is determined by adding together the market capitalizations or prices of the companies that make up the index, in accordance with the index's methodology. The index value is directly impacted by changes in the stock prices of the included companies, which in turn reflect changes in the general sentiment of the market and the state of the economy.

### **3.10.6 Banking index**

A statistical metric used to monitor the performance of a collection of banking industry stocks is called a banking index. It is employed to assess the general well-being and patterns of the banking sector. Averaging the stock values of a chosen group of banks often weighted by market capitalization calculates the index. Often used by investors, analysts, and regulators to track market trends and make well-informed decisions, this index offers insights on the banking sector's financial health, profitability, and mood.

### **3.10.7 Manufacturing and processing index**

An index used in statistics to track the performance of businesses in the manufacturing and processing industries is called a manufacturing and processing index. This index, which is frequently weighted by market capitalization, averages the stock prices of a subset of these industries' companies. It offers a thorough analysis of the state of the

economy, productivity, and market developments in processing and manufacturing. This index is used by analysts, investors, and policymakers to evaluate the state of the industry, spot trends, and decide on investments and economic strategies.

### **3.10.8 Hydropower index**

An indicator of the success of businesses in the hydropower sector is called a hydropower index. This index tracks the stock prices of businesses that create, run, and maintain hydropower facilities in addition to those that provide associated services and technologies. The hydropower index is calculated by averaging these stock values and is frequently weighted by market size, offers information about the hydropower industry's financial standing, potential for growth, and general sentiment among investors. This index is used by analysts, investors, and legislators to evaluate market trends and make well-informed choices regarding hydropower-related investments and regulations.

## CHAPTER IV

### RESULTS AND DISCUSSION

Data analysis involves exploring and interpreting data to address specific questions. The fundamental steps in this process include recognizing the key issues, assessing the availability of relevant data, selecting suitable methods to address the questions, applying these methods, and then reviewing, summarizing, and sharing the finding.

This chapter focuses on analyzing, interpreting, and presenting secondary data to examine the relationship between interest rates and their influence on stock market prices. The statistical models outlined in Chapter Three are employed to achieve this objective. The chapter is organized into five sections: the first section covers the analysis of data structure and patterns, the second section presents descriptive statistics, the third explores correlation analysis, the fourth discusses stepwise regression analysis, and the fifth outlines the key findings. The chapter concludes with a summary of insights drawn from the analysis of the secondary data.

#### **4.1 Data presentation**

Information is gathered from government-approved sources. A variety of interest rates, including base, deposit, lending, and T-bill rates, have been calculated and analyzed. Similarly, each fiscal year's average closing prices for the manufacturing & processing, banking, and hydropower indexes have been calculated and analyzed.

The dependent variable, the NEPSE Market Index, is obtained from the Nepal Stock Exchange's official webpages. From the 2013/14 fiscal year to the 2022/23 fiscal year, these average closing prices are based on each fiscal year. In a similar vein, different government agencies offer us varying interest rates.

The following table demonstrates the time series data of different interest rate and NEPSE index from 2013/14 A.D to 2022/23 A.D.

**Table 4.1***Different interest rate and NEPSE closing index*

<b>Year</b>	<b>NEPSE Index</b>	<b>W.A. Deposit Rate</b>	<b>W.A. Lending Rate</b>	<b>Base Rate</b>	<b>T- bills rate</b>
2013/14	747.8	4.60	11.36	8.77	0.36
2014/15	945.4	3.90	9.84	7.65	0.57
2015/16	1213.2	3.33	9.26	6.74	0.81
2016/17	1601.9	4.45	9.86	7.68	1.62
2017/18	1408.7	6.36	11.87	10.16	3.64
2018/19	1212.7	6.59	12.29	9.86	3.34
2019/20	1233.8	6.64	11.58	9.28	2.67
2020/21	2237.9	5.07	9.18	7.22	1.88
2021/22	2577.3	6.34	9.98	8.38	6.16
2022/23	1976.94	8.21	12.55	10.45	9.95

Note: [www.nepse.gov.np/closing price](http://www.nepse.gov.np/closing price)

From Table 4.1 shows that, Commercial banks have provided lowest deposit interest rate of 3.33% at 2015/16 A.D. and banks have provided highest deposit interest rate of 8.21% at 2022/23 A.D. Similarly, Commercial banks have collected lowest lending interest rate of 9.18% at 2020/21 A.D. and banks have collected highest lending interest rate of 12.55% at 2022/23 A.D. On the other hand, the highest base rate provided by NRB is 10.45% at 2022/23 A.D. and NRB has provided lowest interest rate of 6.74% at 2015/16 A.D.

**Table 4.2***Different T-bills rate from 2013/14 A.D to 2022/23 A.D*

<b>Years</b>	<b>T-bills* (28 days)</b>	<b>T-bills*(91 days)</b>	<b>T-bills* (182 days)</b>	<b>T-bills* (364 days)</b>	<b>Weighted Average T-bills</b>
2013/14	0.06	0.13	0.40	0.83	0.36
2014/15	0.26	0.46	0.71	0.84	0.57
2015/16	-	0.77	1.20	1.25	0.81
2016/17	-	1.54	2.20	2.72	1.62
2017/18	3.14	3.58	3.93	3.92	3.64
2018/19	2.61	3.18	3.67	3.89	3.34
2019/20	0.11	2.79	3.90	3.88	2.67
2020/21	0.94	1.65	2.26	2.68	1.88
2021/22	6.37	6.08	5.78	6.42	6.16
2022/23	8.48	10.18	10.62	10.52	9.95

Note: [www.nrb.gov.np/closing T-bills](http://www.nrb.gov.np/closing T-bills)

The Government of Nepal, with the assistance of the Nepal Rastra Bank (NRB), issues treasury bills to address short-term financial deficits and regulate the money supply in the market. Typically, treasury bills are issued for durations of 28 days, 91 days, 182 days, and 364 days. This report highlights the weighted average interest rates of these four types of treasury bills. However, there are certain periods, such as specific months or years, when the government does not issue treasury bills, and the NRB does not publish the corresponding rates.

In the Table 4.2, NRB has presented the highest interest rate of weighted average treasury bill of 9.95% at 2022/23 A.D. Similarly, NRB has provided lowest interest rate of weighted average Treasury bill of 0.36 % at 2013/14 A.D.

**Table 4.3**

*Different market index from 2013/14 A.D to 2022/23 A.D*

<b>Years</b>	<b>NEPSE Index</b>	<b>Banking Index</b>	<b>Mfg. &amp; processing Index</b>	<b>Hydropower Index</b>
2013/14	747.8	707	1071.31	2405.56
2014/15	945.4	832.4	1353.55	2275.8
2015/16	1213.2	1208.4	2057.97	2220.8
2016/17	1601.9	1499.9	2285.60	2187.83
2017/18	1408.7	1215.9	2420.22	1744.72
2018/19	1212.7	1066.6	2307.25	1249.93
2019/20	1233.8	1091.6	2491.88	976.24
2020/21	2237.9	1617.7	4845.95	1895.96
2021/22	2577.3	1722.5	6202.6	2975.27
2022/23	1976.94	1299.08	4965.33	2321.19

Note: <https://merolagani.com>

The numbers of companies listed in Nepal stock Exchange are 254 numbers. These companies are categorized in to 11 groups. These are Commercial Banks, Development Bank, Finance Company, Microfinance, Insurance Company, Hotel, Hydropower Company, Trading Company, Manufacturing & processing Company, Investment Company and others category. This table includes the NEPSE index, banking index, Mfg. & processing index and hydropower index from 2013/14 A.D to 2022/23 A.D.

From Table 4.3, the NEPSE index has lowest point of 747.8 at 2013/14 A.D. Similarly, there is highest point of 2577.3 at 2021/22 A.D. The NEPSE index showed an upward trend alongside a growing number of listed companies. As credit expansion increased, the stock market experienced significant growth. Banks also saw a rise in margin lending within their portfolios. Since bank shares constitute a major portion of the stock market, their rising prices supported further margin lending activities. This increase in bank share prices led to a surge in the stock market, reaching its peak in 2021/22. However, as credit growth decelerated and the real estate market began to cool, banks faced challenges due to their heavy investments in the real estate sector. Consequently, share prices, which had climbed sharply, plummeted. Overvalued stocks eventually adjusted to reflect their actual value.

In the Table 4.3 has represented the highest banking index of 1722.5 at 2021/22 A.D. and the table has represented lowest banking index of 707 at 2013/14 A.D. Similarly, has represented the highest Manufacturing and processing index of 6202.6 at 2021/22 A.D. and, the table has represented lowest Manufacturing and processing index of 1071.31 at 2013/14 A.D. As well as, the highest Hydropower index of 2975.27 at 2021/22 A.D. Similarly, the table has represented lowest Hydropower index of 976.24 at 2019/20 A.D.

#### **4.2 Listed Companies and Market Capitalization**

As of the fiscal year-end 2022/23 in mid-July, the NEPSE index included 254 listed companies. The total market capitalization stood at Rs 30 million, with financial institutions holding the largest share. Among these, commercial banks accounted for Rs 0.98 million in market capitalization, followed by development banks with Rs 0.14 million. Finance companies, microfinance institutions, and insurance companies contributed Rs 0.055 million, Rs 0.27 million, and Rs 0.47 million, respectively. Other sectors, including manufacturing, hotels, trading, investment, hydropower, and miscellaneous industries, held smaller portions of the market capitalization on the Nepal Stock Exchange.

### 4.3 Descriptive Analysis

**Table 4.4**

*Descriptive analysis*

Variable	Mean	Median	S. D	Minimum	Maximum	CV
NEPSE Index	1515.56	1321.25	582.90	747.80	2577.30	38.46
Banking Index	1226.10	1212.15	324.63	707	1722.50	26.47
Mfg. & Processing Index	3000.16	2363.73	1713.65	1071.31	6202.60	57.11
Hydropower Index	2025.29	2204.31	582.99	976.24	2975.27	28.79
W.A Deposit Rate	5.55	5.70	1.51	3.33	8.21	27.20
W.A Lending Rate	10.77	10.67	1.29	9.18	12.55	11.97
Base Rate	8.61	8.57	1.30	6.74	10.45	15.098
T-base Rate	3.10	2.28	2.97	0.36	9.95	95.80

Note: SPSS

From the Table 4.4, The Manufacturing & Processing Index has the highest coefficient of variance (57.11%) among the indices, indicating significant variability relative to its mean. This suggests that this sector is highly volatile which lies between 1071.31 and 6202.60 points, with substantial risks but also potential rewards.

The Banking Index has the lowest Coefficient of variance (26.47%) among the indices, showing the least relative variability. This implies that the banking sector has been relatively stable compared to the other sectors which lies between 707 and 1722.50 points. Investors might see this as a safer sector in terms of price fluctuations.

The mean and median value of NEPSE index is 1515.56 and 1321.25 respectively which lies between 747.80 to 2577.30 points. Likewise, Standard deviation and coefficient of variation is 582.90 and 38.46% respectively. And the mean and median value of banking index is 1226.10 and 1212.15 respectively which lies between 707 to 1722.50 points and standard deviation and coefficient of variation is of 324.63 and 26.47% respectively. As well as the mean and median value of manufacturing and

processing index is 3000.16 and 2363.73 respectively which lies between 1071.31 to 6202.60 points and standard deviation and coefficient of variation is of 1713.65 and 57.11% respectively. Similarly, the mean and median value of hydropower index is 2025.29 and 2204.31 respectively which lies between 976.24 to 2975.27 points and standard deviation and coefficient of variation is of 582.99 and 28.79% respectively.

Deposit interest rate has the mean and median value of 5.55% & 5.70% respectively; these rates are lies between 3.33% and 8.21%. Similarly, Standard deviation and coefficient of variation is of 1.51 and 27.20% respectively. Similarly, Lending interest rate has the mean and median value of 10.77% & 10.67% respectively; these rates lie between 9.18% and 12.55%. Similarly, Standard deviation and coefficient of variation is of 1.29 and 11.97% respectively. Base rate has the mean and median value of 8.61% & 8.57% respectively; these rates lie between 6.74% and 10.45%. Similarly, Standard deviation and coefficient of variation is of 1.30 and 15.098% respectively. As well as T-bills interest rate has the mean and median value of 3.10% & 2.28% respectively; this rate lies between 0.36% and 9.95%. Similarly, Standard deviation and coefficient of variation is of 2.97 and 95.80% respectively.

#### **4.4 Correlational Analysis**

The Pearson correlation coefficients were computed following the presentation of the descriptive statistics. Regardless of whether the initial data changes or stays the same, these coefficients show the direction and intensity of the linear relationship between two variables.

The NEPSE Index, Banking Index, Manufacturing & Processing Index, Hydropower Index, average deposit interest rate, average loan interest rate, average Treasury bills, and base rate are examples of correlations with each dependent and independent variable to examine the relationships between them

**Table 4.5***Correlation Analysis*

	NEPSE Index	Banking Index	Mfg. & Processing Index	Hydropower Index	W.A Deposit Rate	W.A Lending Rate	Base Rate	T- bill Rate
NEPSE Index	1							
Banking Index	0.929**	1						
Mfg. & processing Index	0.968**	0.821**	1					
Hydropower Index	0.370	0.267	0.353	1				
W.A Deposit Rate	0.410	0.217	0.538	-0.247	1			
W.A Lending Rate	-0.226	-0.377	-0.082	-0.416	0.775**	1		
Base Rate	-0.033	-0.20	0.095	-0.338	0.866**	0.967**	1	
T-bill Rate	0.617	0.415	0.728*	-0.182	0.862**	0.519	0.637*	1

Note: \*\*Correlation is significance at the 0.01 level (2-tailed)

\*Correlation is significance at the 0.05 level (2-tailed)

Correlation allows researchers to predict how changes in one variable may align with changes in another. It is important to note, however, that correlation indicates the direction of movement or change but does not imply causation.

From the Table 4.5, The banking and manufacturing & processing index is perfectly positive correlated and significance relationship with NEPSE index is 0.929\*\* and 0.968\*\* respectively, it indicates that increase the banking and manufacturing & processing index also would be increase the NEPSE index. Similarly base rate is perfectly positive correlated with deposit interest rate and lending interest rate is 0.866\*\* and 0.967\*\* respectively, it shows that increase the base rate also would increase the deposit and lending interest rate and vice versa.

On the other hands increase the T-bill rate also would be increase the deposit interest rate, that indicates the perfectly positive correlated by 0.862\*\*.

The NEPSE index is positively correlated with the W.A. deposit rate. This indicates that as bank rates rise, the NEPSE index rises as well. Similarly, the lending interest rate and the NEPSE index are negatively correlated. In other words, the NEPSE index declines when lending interest rates rise. Likewise, the NEPSE index and base rate are negatively correlated. It demonstrates that the NEPSE index would decrease when the base rate increased. Furthermore, the T-bill rate and the NEPSE index have a positive correlation. It suggests that a rise in the T-bill rate causes the NEPSE index to rise. The results also indicate that there is a favorable correlation between the banking index and the deposit and T-bill rates. It demonstrates that the banking index would rise in tandem with the interest rate. The banking index has a negative correlation with the lending rate and base rate. It suggests that a higher interest rate would result in a lower banking index.

We can infer from the correlation between independent variables that the manufacturing and processing index has a positive relationship with the deposit interest rate, base rate, and T-bills rate. This indicates that the manufacturing and processing index would rise in response to increasing base, deposit interest, and T-bill rates. Likewise, there is a negative correlation between the manufacturing and processing index and loan interest rates. It suggests that the manufacturing and processing index would rise in response to a lower loan interest rate, and vice versa. Additionally, the hydropower index is negatively correlated with the deposit interest rate, loan interest rate, base rate, and T-bill rate; the lower the interest rate, the higher the hydropower index, and vice versa.

#### **4.5 Regression Analysis**

To evaluate the statistical significance and reliability of the findings, this study utilizes secondary data analysis based on the regression model outlined in Chapter Three. It primarily focuses on regression outcomes derived from different model specifications to assess the estimated relationships between the dependent variables Banking Index, Manufacturing & Processing Index, and Hydropower Index and the independent variable, interest rate, in relation to profitability and stock returns. The regression results are presented in the tables below.

### 4.5.1 Regression analysis of banking index

The Banking Index is the dependent variable in the regression study, whereas the weighted average interest rates on deposits, loans, Treasury bills, and base rates are the independent variables.

**Table 4.6**

*Model Summary*

	Regression Statistics
R	.896
R Square	.803
Adjusted R Square	.646
Std. Error of the Estimate	193.20

a. Predictors: (Constant), T-bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

The above Table 4.6 shows a goodness fit with an R value of 0.896 and R-Square of 0.803 indicate that the predictors are explaining a momentous portion of the variation in the banking index and remaining 19.7% portion are contributed by others factors on the other hand the adjusted R-Square is in lower side i.e. 0.646. Signifying that some predictors may not be causative as much after adjust for the numbers of variables, the standard error of 193.20 shows some changeability in the predictions, but in general the mention model performs well.

**Table 4.7**

*ANOVA*

	Sum of Squares	DF	Mean Square	F	p-value
Regression	761846.158	4	190461.54	5.103	.052
Residual	186622.212	5	37324.442		
Total	948468.37	9			

a. Dependent variable: Banking index

b. Predictors: (Constant), T-bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

From the Table 4.7 shows that, the F-Statistic is large purely by chance, a P-value of 0.052 is above the threshold of 0.05, the model isn't significant. As per norms P-value below 0.05 shows strong evidences that the independent variables show the significant portion of the variation in banking index.

**Table 4.8**  
*Coefficients*

	Un standardized Coefficients		Standardized	t	p-value
	B	Std. Error	Coefficients Beta		
(Constant)	3546.456	660.269		5.371	.003
W.A Deposit Rate	207.644	145.546	0.968	1.427	.213
W.A Lending Rate	-438.317	232.496	-1.733	-1.885	.118
Base Rate	140.368	285.654	0.560	0.491	.644
T-bill Rate	13.479	48.200	0.124	0.280	.791

a. Dependent Variable: Banking Index

Analyzing above Table 4.8, among the independent variables, no any variables are 5% level of statistically significant, as all their p-values exceed 0.05. The W.A Deposit interest Rate has the strong positive influence on the Banking Index, followed by the Base Rate, but both are not significant. The W.A Lending interest Rate has the strongest negative relationship on the Banking Index, but it is also not statistically significant (p-value = 0.118). T-bill Rate has the least impact on the Banking Index, as both the coefficient and the p-value small, representative it does not explain of the variation in the dependent variable.

#### **4.5.2 Regression analysis of manufacturing & processing index**

The Manufacturing & Processing Index is the dependent variable in the regression study, and the weighted average interest rates on deposits, loans, Treasury bills, and base rates are the independent variables.

**Table 4.9***Model Summary*

Regression statistics	
R	.971
R Square	.942
Adjusted R Square	.896
Std. Error of the Estimate	553.50

a. Predictors: (Constant), T bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

The above Table 4.9 represents a good fit with an R value of 0.971 and R-Square of 0.942 indicate that the predictors are explaining a crucial section of the variation in the manufacturing & Processing index and remaining 5.8% are contributed by others factors on the other hand the adjusted R-Square is in lower side i.e. 0.896. Signifying that some predictors may not be causative as much after adjust for the numbers of variables, the standard error of 553.50 shows some variableness in the predictions, however in general the mention model performs well.

**Table 4.10***ANOVA*

	Sum of Squares	DF	Mean Square	F	p-value
Regression	24897560.320	4	6224390.08	20.31	.003
Residual	1531803.520	5	306360.700		
Total	26429363.840	9			

a. Dependent variable: Manufacturing & Processing index

b. Predictors: (Constant), T-bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

The above ANOVA Table 4.10 indicates that the overall regression model is well significant. The independent variables (T-bill Rate, W.A Lending Rate, W.A Deposit Rate, and Base Rate) collectively explain a large portion of the variation in the Manufacturing & Processing Index, and the low p-value (0.003) confirms the statistical fit of the model. However, to understand which specific variables are driving this effect, you'd need to look at the individual coefficients and their significance in the regression output.

**Table 4.11***Coefficients*

	Un standardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	p-value
(Constant)	11504.906	1891.651		6.082	.002
W.A Deposit Rate	1197.115	416.985	1.057	2.871	.035
W.A Lending Rate	-1447.827	666.093	-1.085	-2.174	.082
Base Rate	-28.488	818.389	-0.022	-0.035	.97
T bill Rate	226.675	138.092	0.394	1.641	.16

a. Dependent Variable: Manufacturing and Processing Index

The above Table 4.11 represents the coefficients of regression analysis on dependent variable is the Manufacturing and processing index, and independent variable are deposit interest rate, lending interest rate, base rate and T-bill rate.

W.A. deposit interest rate is the most significant and positive impact of the manufacturing and processing index ( $p > 0.05$ ). It's fit with a theory, if deposit interest increase manufacturing and processing index also would be increase. W.A lending rate has strong negative influence by -1447.827, through its significant is near to standard value. Base rate and T-bill rate do not show significant impacts by 0.97 and 0.16 respectively in this regression model, and they may not be strong indicators for the manufacturing and processing index.

#### **4.5.3 Regression analysis of hydropower index**

The hydropower index is the dependent variable in the regression study, while the weighted average interest rates on deposits, loans, Treasury notes, and bases are the independent variables.

**Table 4.12***Model Summary*

Regression statistics	
R	.85
R Square	.72
Adjusted R Square	.50
Std. Error of the Estimate	411.41

a. Predictors: (Constant), T-bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

The Table 4.12 shows that the model does a good job of explaining the variation in the Manufacturing & Processing Index, with an R square of 0.72, indicating a strong overall fit. However, the Adjusted R Square of 0.50 shows that there may be affect 50% by other factors. The model does not significantly improve the predictive power. These could potentially be removed to improve the model's prudence. The standard error 411.41 is suggests some deviation between the predicted and actual values, so there may be room for refinement in the model, possibly by considering other variables or modifying the existing ones.

**Table 4.13***ANOVA*

	Sum of Squares	DF	Mean Square	F	p-value
Regression	2212669.044	4	553167.260	3.270	.113
Residual	846293.270	5	169258.650		
Total	3058962.310	9			

a. Dependent variable: Hydropower index

b. Predictors: (Constant), T-bill Rate, W.A Lending Rate, W.A Deposit Rate, Base Rate

Considering that the p-value in Table 4.13 is higher than 0.05, it appears that the regression model is not a relevant explanation for the variation in the Hydropower index. Although some of the variability in the Hydropower index can be explained by the predictors, this does not provide enough evidence to establish a statistically significant relationship between the independent and dependent variables.

**Table 4.14***Coefficients*

	Un standardized Coefficients		Standardized	T	p-value
	B	Std. Error	Coefficients Beta		
(Constant)	4919.821	1406.047		3.499	.017
W.A Deposit Rate	-758.236	309.941	-1.969	-2.446	.058
W.A Lending Rate	-446.662	495.101	-0.983	-0.902	.408
Base Rate	602.579	608.301	1.338	0.991	.367
T bill Rate	301.103	102.643	1.536	2.934	.033

a. Dependent Variable: Hydropower Index

Examining the Table 4.14, the only one variable that has a statistically significant positive impact on the Hydropower Index is the T-bill rate ( $p=0.033$ ), an increase in this rate would therefore result in an increase in the Hydropower Index. The Hydropower Index is negatively impacted by the W.A. Deposit Rate, which is nearest significant ( $p=0.058$ ). Both the W.A Lending Rate and Base Rate do not show statistically significant effects by 0.408 and 0.367 respectively, indicating that their influence on the Hydropower Index may be less reliable in this model.

#### 4.6 Major findings

The research concerns with analysis of impact of interest rate on stock market price in Nepal over the different 10 fiscal years from FY 2013/14 to FY 2022/23. Secondary sources have been used to collect necessary data and information to meet the objectives of the study.

Likewise, the statistical tools employed over the course of 10 years to support the results include mean, standard deviation, coefficient of variation, correlation, and regression models. The key findings of this study are summarized as follows:

1. According to descriptive analysis, the average market index of manufacturing and processing sector (3000.16), indicating that this sector tends to have higher overall index values compared to others, reflecting perhaps a higher average

performance or valuation.

2. Based on the standard deviation of Manufacturing & Processing Index (1713.65), which indicates a significant dispersion of data points from its mean, the Manufacturing & Processing Index had the highest amount of volatility according to the standard deviation (S.D.). This implies that, in comparison to other index components, the Manufacturing & Processing sector undergoes notable oscillations. With respective standard deviations of 582.90 and 582.99, the NEPSE Index and Hydropower Index exhibit substantial volatility; nonetheless, they both exhibit significantly lower levels than the Manufacturing & Processing Index.
3. Manufacturing & Processing Index also has a high CV (57.11%), showing substantial variability, implying greater fluctuations in the manufacturing and processing sector compared to other indices. NEPSE Index and Hydropower Index have moderately high CV (38.46% and 28.79%, respectively), suggesting that these indices exhibit moderate volatility. Banking Index has the lowest CV (26.47%), implying it is the least volatile among the stock indices, making it more stable relative to the others.
4. The correlation study reveals a substantial and very significant association between the NEPSE Index and the Banking Index ( $r = 0.929$ ,  $p < 0.01$ ). This implies that the banking sector's performance is highly associated with the overall performance of Nepal's stock market. The Manufacturing & Processing Index has a good connection with the NEPSE Index ( $r = 0.968$ ,  $p < 0.01$ ), suggesting that changes in the sector are closely tied to broader stock market movements. On the other hand, the Hydropower Index has a weak and non-significant correlation with the NEPSE Index ( $r = 0.370$ ), indicating that the hydropower sector's performance is not as strongly linked to the general market.
5. The W.A. Lending Rate has the greatest negative impact on the Banking Index, with a coefficient of -438.317 and a reasonably low p-value of 0.118, indicating that when lending rates rise, the Banking Index falls. However, this relationship is not statistically significant ( $p > 0.05$ ). The W.A. Deposit Rate has a positive but non-significant influence ( $B = 207.644$ ,  $p = 0.213$ ), implying that higher deposit rates may have a beneficial effect on the Banking Index, while the evidence is insufficient to substantiate this association. Similarly, both the Base Rate and the T-Bill Rate exhibit non-significant coefficients (p-values of 0.644

and 0.791, respectively), indicating that their impact on the Banking Index is not statistically significant in this model.

6. The Weighted Average (W.A.) Deposit Rate has a statistically significant positive effect on the manufacturing and Processing Index. This shows that as deposit rates rise, the manufacturing and processing sector performs better. The correlation is significant at the 5% level ( $p < 0.05$ ). On the other side, the W.A. Lending Rate has a negative influence on the Manufacturing and Processing Index ( $B = -1447.827$ ), indicating that higher lending rates are related with poorer performance in the manufacturing and processing sector. However, this association is not statistically significant ( $p = 0.082$ ). Similarly, both the Base Rate and the T-bill Rate had no significant effects on the Manufacturing and Processing Index ( $p$ -values of 0.97 and 0.16, respectively).
7. The T-bill Rate has a statistically significant positive effect on the Hydropower Index ( $B = 301.103$ ;  $p=0.033$ ). Hydropower sector's performance improves with higher T-bill rates, with a significant link at the 5% level ( $p < 0.05$ ). On the other hand, the W.A. Deposit Rate has a significant negative effect on the Hydropower Index ( $B = -758.236$ ), implying that higher deposit rates may harm the hydropower sector's performance. However, this relationship is not statistically significant at the 5% level, although being close to significance ( $p = 0.058$ ), indicating a potential relationship worth investigating further. The W.A. Lending Rate and Base Rate had no significant effects on the Hydropower Index ( $p$ -values of 0.408 and 0.367, respectively), indicating that these variables do not have a meaningful impact on the sector in this model.

#### **4.7 Discussion**

The discussion results of the study, which examined the impact of interest rate on stock market price in Nepal. On the basis of available data, the market index and different interest rate from FY 2013/14 to FY 2022/23 were analyzed in relationship to the market index of listed companies, including banking index, manufacturing & processing index and hydropower index. Numerous academic sources, namely, journal, articles, report, book and prior these pertaining to the topic, have been examined in order to carry out the investigation. Utilizing a variety of financial and statistical instruments and methodologies, numerous academics in the past have studied interest

rate on stock market price in Nepal using data from diverse market index at various time periods. Thus, the findings of the study may or may not support to the findings of the previous studies.

From the correlation analysis, banking index has a positive relationship with deposit interest rate and T-bill rate also with manufacturing and processing index along with base rate, but manufacturing & processing index has 5% level of significant with T-bills rate. The result has consistent with the previous studies of Poudel (2017), Ologunde et. al (2006), and website of NSE. Similarly, Banking index was negative relationship with lending interest rate and base rate also manufacturing index has negative relationship with lending interest rate. As well as, hydropower index has negative relationship with deposit interest rate, lending interest rate, base rate and T-bill rate. This finding supports the finding of Neupane (2018), Amarasinghe (2015), Uddin and Alam (2010), KC (2023), Shrestha and Subedi (2014) and Maysami et al (2004).

The multiple regression analysis, Banking index has a positive beta coefficient with deposit interest rate, base rate and T-bill rate. It indicates that interest rate has a positive impact on banking index. This finding is similar to the findings of Ologunde et.al (2006) and Poudel (2017). Similarly negative beta coefficient with lending interest rate. This finding is similar to the findings of Neupane (2018), Amarasinghe (2015), Uddin and Alam (2010), KC (2023), Shrestha and Subedi (2014). But no any variable is statistically significant.

Manufacturing and processing index has a positive beta coefficient with deposit rate and T-bill rate. It indicates that interest rate has a positive impact on manufacturing & processing index. The finding is consistent to the finding of Ologunde et.al (2006) and Poudel (2017). As well as negative beta coefficient with lending interest rate and base rate. This finding supports the finding of Neupane (2018), Amarasinghe (2015), Uddin and Alam (2010), KC (2023), Shrestha and Subedi (2014) and Maysami et al (2004).

The beta coefficients for deposit rate and lending rate are negative with hydropower index. It indicates that interest rate has a negative impact of hydropower index. This finding supports the finding of Neupane (2018), Amarasinghe (2015), Uddin and Alam (2010), KC (2023), Shrestha and Subedi (2014) and Maysami et al (2004). Similarly,

beta coefficient of base rate and T-bill rate are positive with hydropower index. It indicates that this interest rate has a positive impact of hydropower index. This finding is similar to the findings of Ologunde et.al (2006) and Poudel (2017).

## CHAPTER V

### SUMMARY, CONCLUSION AND IMPLICATIONS

This chapter offers a succinct synopsis of the entire study along with a summary of its key conclusions. A second section of this chapter also examines the main conclusions, after which some implications and suggestions are regarding how interest rates affect Nepal's stock market pricing. The chapter concludes with summarizing the area for further research on the same subject.

#### 5.1 Summary

One indicator of an economy is the stock market index. Since it shows that investors are upbeat about the economy's prospects, growth in the stock index is typically seen as a good sign. It encourages economic investment. A sharp increase in the stock market index, however, is usually reason for concern. The stability of the economy and financial system will be threatened if the index's rise is not supported by the fundamentals. Eventually, the index will decline. Understanding the relationship between the stock market index and the factors that influence it is essential. The stock market may be influenced by a number of things. However, depending on the size, makeup, and other characteristics of the market and economy, the elements that have an impact and to what extent will vary from nation to nation. The purpose of this study is to calculate how interest rates affect the price of stocks in Nepal.

This study is divided into five chapters: introduction, literature review, methodology, results and discussion and summary and conclusions. The first chapter includes the background of the study, statement of the problems, objectives of the study, significant of the study and limitations of the study.

The second chapter includes review of previous articles, research gap and the third chapter cover the research methodology, including research design, population and sampling, nature and sources of data, data collection procedures, data processing and analyzing procedures and statistical tools. It provides an overall plan and guideline for analyzing data to summarize indicators highlights and their impact of interest rate on stock market price in Nepal during the study period.

The fourth chapter, “Results and Discussion” covers the entire data calculation, data analysis, major findings and discussion of the study. The data collection from relevant sources are presented using computer software like Excel and SPSS in tabular and graphical form.

Likewise, the fifth chapter, “Summary, Conclusion and Implication”, includes a summary, logical conclusion and implication of the study. The implications section of this chapter implies the relative beneficiaries of this research work and limitations that can be solved through future research in the same field.

In conclusion, this study explores the interest rate and its impact on the stock price in Nepal. This study findings could help investors, brokers, students, academicians, policy makers and government. Additionally, the limitations highlighted in this study can guide future researchers in exploring future avenues for research in this field.

## **5.2 Conclusion**

The major conclusion of this study was to examine the impact of interest rate on stock market price from 2013/14 to 2022/23 in this study deposit rate, lending rate, base rate and T-bills rate have been taken as an independent variables and banking index, manufacturing & processing index and hydropower index have been taken as dependent variables.

Based on the objectives mentioned, here are conclusion that can be drawn:

The manufacturing & processing index has a highest coefficient of variance. It indicates that manufacturing & processing index is high risk sector among the index but also potential rewards. Similarly, banking index has a lowest coefficient of variance. It indicates that banking index is lower risk sector. Banking sector has been relatively stable compare to other sectors.

According to correlation analysis, banking index has a positive relationship with deposit interest rate and T-bill rate also with manufacturing and processing index along with base rate. It indicates that increase the interest rate banking and manufacturing & processing index also would be increase. Similarly, Banking index was negative relationship with lending interest rate and base rate also manufacturing index has

negative relationship with lending interest rate. As well as, hydropower index has negative relationship with deposit interest rate, lending interest rate, base rate and T-bill rate. It represents that increase the interest rate banking, manufacturing & processing and hydropower index also would be decrease.

The multiple regression analysis, banking index has a positive beta coefficient with deposit interest rate, base rate and T-bill rate. It indicates that interest rate has a positive impact on banking index. Similarly negative beta coefficient with lending interest rate. This finding has indicated that lending interest rate has a negative impact on banking index. But no any variable is statistically significant. Manufacturing and processing index has a positive beta coefficient with deposit interest rate and T-bill rate. It indicates that interest rate has a positive impact on manufacturing & processing index. As well as, Negative beta coefficient with lending interest rate and base rate. It shows that interest rate has a negative impact on manufacturing & processing index. There only deposit interest rate has a statistically significant. The hydropower index has negative beta coefficients for both the lending and deposit rates. It suggests that the hydropower index is negatively impacted by interest rates. Likewise, the hydropower index has a positive beta coefficient for both the base rate and the T-bill rate. It indicates that this interest rate has a positive impact of hydropower index. There only T-bill rate is statistically significant.

### **5.3 Implications**

This research is beneficial for different stakeholders such as investor, brokers, policy makers, students, academicians, regulatory bodies and bank & financial institutions etc. Deposit rates, lending rate and base rate partially affect the stock market index which is need be Further research with additional variables or a larger dataset may be needed to uncover more significant relationships. Regulatory institutions like NRB issues T-bills by analyzing interest rate.

- i. The NRB should plan the monetary policy 2024/25 wisely to enhancement up the share market.
- ii. The analysis found no meaningful correlation between the stock market index and various interest rates. Therefore, policymakers ought to take interest rate

fluctuations into account and employ the right instrument to manage the money market.

- iii. The NRB should utilize government securities such as development bonds and foreign savings bonds, among others, to address the liquidity issue.
- iv. Strategies to increase the trust of shareholders and investors should be put into place by the government and policymakers.
- v. Transparency and financial stability are essential.
- vi. The government's substantial revenue collection and lack of capital spending have affected banks' liquidity positions. The government should make sure that capital expenditures are spent on time.
- vii. Foreign direct investment should be supported and encouraged by government policymakers.
- viii. This study will advance community knowledge and assist other scholars in publishing more research on financial issues. The study's findings can be used as support for research by academicians writing dissertations for bachelor's and master's degree programs provided in Nepal and other countries.

#### **5.4 Scope for the future research**

This study explores the effect of interest rates on stock market prices in Nepal and presents several intriguing insights and findings. Future researchers can use this work as a reference for their own studies, as it identifies certain gaps, such as:

- i. The interest rates for loans and deposits are taken from Nepalese commercial banks. In order to examine the effect of interest rates on stock market index like; banking, manufacturing & processing and hydropower index. future research may take into account the market index of other sectors, such as hotel, trading, investment and other.
- ii. The average closing price of shares for each fiscal year was considered in this investigation. High variances affect annual closing prices and stock indices, which raises annual returns. Consequently, the focus of future research should be on estimating returns using closing price observations made on a daily or weekly basis
- iii. The study is not sufficient on its own because there are additional factors of interest, such as rates on government instruments like development bonds and

interbank rates. As a result, these criteria will help to further filter their research and choose what is worthy of investigation in the future.

- iv. The preferences of various investors are not included in this analysis; instead, it is only dependent on secondary data. As a result, more sample sizes and questionnaires can be used in future research utilizing primary data, which could produce different results.

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## APPENDIX-1

### Listing companies of NEPSE

Particulars	No of listed company Mid July 2023	Share Value	Share %
Financial Institutions	132	1928903.4	63.4
Commercial Bank	20	983845.1	32.3
Development Bank	16	140061	4.6
Finance Company	20	55803.4	1.8
Microfinance	55	276724.4	9.1
Insurance Companies	21	472469.4	15.5
Manufacturing & Processing	20	149222.7	4.9
Hotel	7	103485.8	3.4
Trading	4	16855.4	0.6
Investment	6	212312.1	7
Hydropower	81	379805.6	12.5
Other	4	252424.2	8.3
<b>Total</b>	<b>254</b>	<b>3043009.23</b>	<b>100</b>

## APPENDIX-2

### Different interest rate and NEPSE closing index

Year	NEPSE Index	W.A. Deposit Rate	W.A. Lending Rate	Base Rate	T- bills rate
2013/14	747.8	4.60	11.36	8.77	0.36
2014/15	945.4	3.90	9.84	7.65	0.57
2015/16	1213.2	3.33	9.26	6.74	0.81
2016/17	1601.9	4.45	9.86	7.68	1.62
2017/18	1408.7	6.36	11.87	10.16	3.64
2018/19	1212.7	6.59	12.29	9.86	3.34
2019/20	1233.8	6.64	11.58	9.28	2.67
2020/21	2237.9	5.07	9.18	7.22	1.88
2021/22	2577.3	6.34	9.98	8.38	6.16
2022/23	1976.94	8.21	12.55	10.45	9.95

### APPENDIX-3

#### Different T-bills rate from 2013/14 A.D to 2022/23 A.D

Years	T-bills* (28 days)	T-bills*(91 days)	T-bills* (182 days)	T-bills* (364 days)	Weighted Average T-bills
2013/14	0.06	0.13	0.40	0.83	0.36
2014/15	0.26	0.46	0.71	0.84	0.57
2015/16	-	0.77	1.20	1.25	0.81
2016/17	-	1.54	2.20	2.72	1.62
2017/18	3.14	3.58	3.93	3.92	3.64
2018/19	2.61	3.18	3.67	3.89	3.34
2019/20	0.11	2.79	3.90	3.88	2.67
2020/21	0.94	1.65	2.26	2.68	1.88
2021/22	6.37	6.08	5.78	6.42	6.16
2022/23	8.48	10.18	10.62	10.52	9.95

### APPENDIX-4

#### Different market index from 2013/14 A.D to 2022/23 A.D

Years	NEPSE Index	Banking Index	Mfg. & processing Index	Hydropower Index
2013/14	747.8	707	1071.31	2405.56
2014/15	945.4	832.4	1353.55	2275.8
2015/16	1213.2	1208.4	2057.97	2220.8
2016/17	1601.9	1499.9	2285.60	2187.83
2017/18	1408.7	1215.9	2420.22	1744.72
2018/19	1212.7	1066.6	2307.25	1249.93
2019/20	1233.8	1091.6	2491.88	976.24
2020/21	2237.9	1617.7	4845.95	1895.96
2021/22	2577.3	1722.5	6202.6	2975.27
2022/23	1976.94	1299.08	4965.33	2321.19