Stock Returns and Volatility: A Study of the Nepal Stock Market

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Abstract

The study shows the relationship between volatility and stock return for the NEPSE Index and NEPSE banking stocks. In this study, the NEPSE index and banking stock index were used to compare the risk-return trade-offs between the NEPSE index with the ADBL Bank and NBL Bank in Nepal. Secondary data are the major sources of information and the data were obtained from the NEPSE website over 5-years period, from 2018 to 2022. In this study, beta coefficients were calculated, indicating that both banks are perceived to have lower systematic risk than the overall stock market. This suggests that these banks are relatively less exposed to market volatility. The study will be useful for investors evaluating the safety of government bank stocks as an investment. Furthermore, this research is anticipated to offer valuable perspectives to investors assessing the security and appeal of government bank stocks as a potential investment. It not only illuminates the risk-return characteristics of these stocks but also acts as an informative guide for investors seeking to make well-informed choices in the Nepalese stock market.
Keywords: Coefficient of variation, Common stock, Required rate of return, Standard deviation

1. Introduction

In terms of financial management, risk and return are key ideas. The likelihood of suffering a loss or experiencing a decrease in income is referred to as the risk of an investment. An investment's return is the earnings or profits realized over time as a result of the investment.

For investing in the financial market, understanding risk and return are crucial concepts with important implications. Investing for high returns is what most investors look for, but doing so frequently entails greater risks. Making investments requires careful consideration of the trade-offs between risk and return. Malit, Scholastica, & Nelson (2023), it is clear that financial innovations have a big impact on a bank's Return on Assets and Return on Equity. Akani & Ezebunwa's (2021), study's findings support the idea that effective risk management techniques increase shareholder return. Joghee (2021) investigated risk-return analysis of selected companies in the banking sector.

Zafar et al. (2020), mentioned that Volatility is described as the risk or uncertainty associated with how much a stock's value will fluctuate. Risk is described by another researcher, Abhinandan & Nayak (2020) as the chance that an investment's actual return will be different from what was anticipated. This category includes the possibility of losing part or all of the initial investment. Agwor and Akani (2020), conducted research on a few Nigerian banks between 2004 and 2008 and discovered a strong link between credit risk management and bank performance. S & AP (2019), mentioned that the task of choosing suitable stocks for portfolio construction is challenging. Rout & Panda (2019), an intelligent investor always looks to maximize returns while limiting risk. Naveen (2018), analyzed the Risk and Return Analysis of Equity Shares in the Banking Sector. Wong & Tan (2006), concluded that return and systematic risk don't appear to have a clear non-linear relationship.

Poudel (2002), mentioned that investment uncertainty may be caused by a variety of elements. Typically, factors such as business risk, financial risk, liquidity risk, default risk, interest rate risk, management risk, and purchasing power risk are mentioned in relation to marketable securities.

Volatility and return are fundamental concepts in investing. Investors are always looking for high-return investments, but these investments typically entail greater risk. The risk-return trade-off is critical in investment decision-making. Investors expect higher returns to compensate for taking on additional risks. This relationship is measured by the risk premium, which is the additional return earned for taking on risk above the risk-free rate of return. Understanding volatility(risk) and return is critical for making sound investment decisions.

Objectives

i. To examine the relationship between risk & returns of NEPSE and Banking stocks.
ii. To analyze the constancy of beta for two Banking stocks of NEPSE index with respect to Market index.

2. Review of literature

The field of risk and return analysis has been significantly advanced by a number of researchers. This section discusses the main points of some of the scholarly works that have been published in this area. Krishnamoorthy & Basha (2022) , Risk and return are two factors that are crucial in the decision to invest. This study aims to examine the opportunities that exist for investors in terms of returns and risk when investing in particular stocks of companies that are listed on the BSE Sensex 30. Only nine of the 30 BSE stocks were included in the ideal portfolio.

Joghee (2021), looked into the computation of the mean, standard deviation, covariance, variance, correlation, and beta. The study revealed that Kotak Mahindra Bank had the highest return with the lowest risk of the seven banks used for the study. Borri & Giorgio (2020), examined how several sizable publicly traded European banks contribute to systemic risk. In a sample spanning the last twenty years and three distinct crises, we discovered that every bank in our sample significantly increases systemic risk. Additionally, banks with a business model more susceptible to trading and "financial market volatility," as well as larger banks, contribute more. Akani & Ezebunwa (2021), looked at how risk management procedures affected Nigerian commercial banks that are publicly traded's return to shareholders. Statistical bulletins from the Central Bank of Nigeria and financial statements of commercial banks were used as the sources for cross-sectional data. Return on equity and return on assets were used as stand-ins for the shareholders' return, and bank risk diversification, Basel risk compliance, credit monitoring, and credit appraisal were used as models for risk management procedures. Justa & Echaust (2020), explored the connection between S&P 500 returns on the US stock market and three market indicators: implied volatility, implied correlation, and liquidity. Additionally, it takes into account the short-term dependencies between the number of confirmed cases overall, deaths across twelve countries, and market changes. The structural divide between stock market returns and important stock market indicators is discovered using the two-regime Markov switching model. The results indicate a close relationship between returns and implied volatility and implied correlation, but not liquidity. The results highlight Italy's special contribution to the spread of crises.

Kavya et.al, (2018), examined the return, risk, and beta results of NSE nationalized banks from January 1 to January 31, 2017. As a benchmark, this study evaluated the Nifty Bank Index. Bank stock return and risk, as well as data packaging. The analysis method is used to evaluate the effectiveness of banks. The study's findings demonstrated that Axis Banking Portfolio is less risky while Bank of National Bank of India and Punjab have significant risks and returns. A study on the risk-return comparison of selected Indian banking equities and the Bombay Stock Exchange was conducted by Savsani & Rathod (2018). The study discovered that Sensex offered high returns when compared to all other chosen stocks and was positively correlated with all bank returns, showing a strong correlation with ICICI Bank returns.

Chandran (2016), analyzed the risk and return of the 12 banks listed in Bank Nifty as part of a study on the volatility and performance of the Indian Banking sector index. The study

discovered that all banks, with the exception of HDFC Bank, were significantly more volatile than the market because the beta for all other stocks was greater than 1.

In the Nepalese context, Kandel (2018) in his study revealed that it is uncommon for investors and shareholders to thoroughly assess the risk and return profiles of stocks before entering into securities investments. The majority of Nepali investors tend to put their money into a single security without engaging in any risk-return analysis. While a minority of investors do diversify their investments across various securities based on their personal expectations and assumptions about individual assets, rather than adopting a logical and portfolio-oriented approach, they frequently encounter substantial losses. Additionally, a significant number of investors are apprehensive about investing in securities due to fear. Therefore, it is crucial to furnish them with a comprehensive understanding of these tools, including their practical implications for investment decision-making and evaluation.

"Previous studies of Nepal narrowly focused on the risk and return characteristics of specific commercial banks from an investor's perspective. Beyond that, the current study aims to determine whether there is a connection between the returns of the government banks under investigation. This correlation is crucial for reducing risk through portfolio construction. Additionally, the current study, for the first time in Nepal, classifies the systematic risk of each government bank by comparing it with the market index. It also examines the factors influencing Nepalese stock returns and volatility, such as macroeconomic indicators, political events, and investor sentiment. Furthermore, the study explores the causal relationship between trading volume and stock returns in the Nepalese stock market."

3. Research Methodology

Research Design

Both the descriptive and analytical research designs have been used in this study. The annual reports and financial statements of related commercial banks are gathered for analytical purposes.

Population and Sample

The population of the study consists of all twenty commercial banks operating in Nepal at the present time. However, two government banks were chosen to represent the sample for the purpose of determining whether they are more reliable and secure for investment purposes. The following sample banks were used.

• Agriculture Development Bank (ADBL)

• Nepal Bank limited (NBL)

Nature and Sources of Data

The main source for this study is secondary data. The additional information and data are gathered from books, journals, articles, related websites, and unpublished official bank documents. In addition, commercial banks' secondary financial data is gathered.

4. Result and Discussion

The data gathered from various sources were presented and analyzed using a variety of financial and statistical tools.

Comparison of bank rate of return with NEPSE index

Table 1.1 shows the rate of return of each selected commercial bank from fiscal year 2017/18 to 2021/22 and the rate of return of NEPSE Index.

Table 1: Rate of Return

Years	ADBL BANK Rate of return(R)	NBL BANK Rate of return(R)	NEPSE Index Rate of return(R)
2017/18	-24.4%	-22.8%	-23.44%
2018/19	37.9%	24.9%	5.12%
2019/20	-5.7%	-22.3%	5.10%
2020/21	24.7%	83.5%	115.31%
2021/22	-29.9%	-34.1%	-30.32%

Source: Annual General Report (2018 - 2022)

Table 1.1 shows that it is crucial to remember that the rate of return represents the value change as a percentage over a given time frame. A gain is indicated by a positive rate of return, whereas a loss is indicated by a negative rate of return. The performance of ADBL Bank, NBL Bank, and the overall stock market, represented by the NEPSE Index, is broken down in the table for the specified years.

Over the years, ADBL BANK's rate of return changed. Its rate of return significantly decreased in the fiscal year 2017–18 (-24.4%), then significantly increased in the fiscal year 2018–19 (37.9%). ADBL bank experienced a negative rate of return (-5.7%) in the fiscal year 2019–20, which denotes a decline in profitability. A positive rate of return of 24.7% for the fiscal year 2020–2021 indicated a recovery or increase in profitability. The rate of return, however, decreased once more in the fiscal year 2021/22 (-29.9%).

The rate of return for NBL Bank fluctuated as well. In the fiscal years 2017–18 and 2019–20, it had a negative rate of return (-22.8% and -22.3%, respectively). In the fiscal year 2018–19 (24.9%), NBL BANK experienced a positive and comparatively high rate of return. The rate of return significantly increased in the fiscal year 2020–21 (83.5%), indicating a significant rise in profitability. The rate of return, however, significantly decreased (-34.1%) in the fiscal year 2021/22.

The NEPSE Index, which represents the entire market, also showed alterations. In the fiscal year 2017–18, it had a negative rate of return (–23.44%). The NEPSE Index had a positive rate of return (5.12%) for the fiscal year 2018–19, though it was considerably lower than the rates of return for banks. In the fiscal year 2019–20 (5.10%), it kept exhibiting positive growth. In the fiscal year 2020–21, the NEPSE Index significantly increased (by 115.31%), signaling a sizable expansion of the market as a whole. But in the fiscal year 2021/22, the NEPSE Index's rate of return also went downhill (-30.32%).

In conclusion, the rates of return for all three entities (ADBL BANK, NBL BANK, and NEPSE Index) varied over time. The banks' profitability fluctuated from year to year, with some years seeing growth and others seeing declines. Similar trends with periods of growth and decline were also seen in the NEPSE Index, which represents the entire market. Numerous elements, including the state of the economy, market sentiment, changes in the law, and others, may have an impact on these fluctuations.

Comparison of average return, Risk and C.V.

In accordance with the results of the analysis part, a comparison of return, total risk, and risk per unit is made here. The primary objective of such return and risk analyses is to help investors choose reputable and trustworthy banks. For the years 2017–2018 to 202–202, the expected return, standard deviation of return, and coefficient of variation are given for each bank.

Table 2: Expected Returns, SD. and C.V of each Bank

Bank	Expected Return (ER)	Standard Deviation (б)	Coefficient of Variation (CV)	Return	Risk
ADBL	0.87	26.72	30.83	Low	High
NBL	5.83	43.82	7.50	High	Low
NEPSE	14.354	58.70	4.09	Highest	Lowest

Source: Annual General Report (2018 - 2022)

Table 2 shows that ADBL has an expected return of 0.87, which is the average return that investors can expect from this bank. ADBL's returns have a moderate level of variability or volatility around the expected return, as indicated by the standard deviation of 26.72. The coefficient of variation (CV) of 30.83 indicates that ADBL's risk-adjusted return is relatively high, which means that the risk associated with its returns is relatively high in comparison to its expected return. Similarly, NBL's expected return of 5.83 is higher than ADBL's, indicating that investors can expect a higher average return by investing in NBL. The higher standard deviation of 43.82 indicates that NBL's returns are more variable or volatile than ADBL and NEPSE. The coefficient of variation (CV) of 7.50 indicates that NBL is a low-risk investment in relation to its expected return.

Among the two banks, NEPSE has the highest expected return of 14.354, indicating the highest average return potential. NEPSE's returns have the highest level of variability or volatility, with a standard deviation of 58.70, making it potentially riskier than both ADBL and NBL. The

coefficient of variation (CV) of 4.09 indicates that NEPSE's risk-adjusted return is relatively low, implying that the risk is low in comparison to the expected return.

Table 3: Beta Coefficient and correlation coefficient

Bank	Beta coefficient	Remarks	Correlation coefficient
ADBL	0.4652	Below the market i.e. 1>0.4652	0.8742
NBL	0.8212	Below the market i.e. 1 > 08212	

Source: Annual General Report (2018 - 2022)

Table 3, the sensitivity of a stock's returns to the returns of the entire market is gauged by the beta coefficient. A value less than 1 indicates that the stock is less erratic than the market, whereas a value above 1 denotes greater volatility. The beta value for ADBL in this case is 0.4652, indicating that it is less volatile than the market. The beta value for NBL is 0.8212, indicating that it is more volatile than ADBL but less volatile than the market as a whole. The correlation coefficient of 0.8742 indicates that ADBL and NBL banks on the Nepalese Stock Exchange (NEPSE) have a significant positive correlation. This indicates that the two banks' return on stock and volatility are highly correlated. It is essential to note, however, that correlation does not always imply causation, and further investigation is required to find out the underlying variables driving the relationship between the two banks. Further, to provide a more comprehensive analysis of the interbank relationships in the Nepalese stock market, the study could benefit from comparing the correlation between ADBL and NBL with other banks in the NEPSE.

5. Conclusion and Recommendation

The volatility of a stock in relation to the market as a whole can be determined in large part by the beta coefficient. If the stock's price movements are less erratic than those of the larger market, it has a beta value that is less than 1. In contrast, a Beta value greater than 1 denotes greater market volatility. The computed beta coefficient for ADBL registers at 0.4652, indicating that ADBL demonstrates reduced volatility in comparison to the overall market, given its value is less than 1. Consequently, ADBL's price fluctuations are expected to be relatively stable when contrasted with the broader market's fluctuations.

Likewise, the beta coefficient for NBL is documented at 0.8212, also falling below the 1 threshold. This suggests that NBL experiences lower volatility than the broader market, even though its beta is higher than that of ADBL. Consequently, while the market exhibits relatively less volatility than NBL, it may still encounter more substantial price oscillations than ADBL. It's worth noting that beta coefficients serve as valuable tools for investors seeking to grasp how a stock's price movements correlate with shifts in the overall market. The findings for ADBL and NBL can be summarized as follows:

- NBL's beta value stands at 0.8212, signifying a beta below 1, albeit higher than ADBL's. This implies that NBL is less volatile than the market, although potentially more volatile than ADBL.

These findings, as presented in the article's conclusion, carry significance for investors who seek to strike an equilibrium between risk and return when making investment choices. In

summary, this article explores the interplay of risk and return within the framework of the banking sector in the Nepal Stock Market, providing valuable insights into the behavior of specific banking stocks relative to the market and underlining the importance of these concepts for investors.

The study has suggested few recommendations. Firstly, a diversified and balanced portfolio should be maintained by investors, who should periodically review their investment holdings, look at individual stock performance, and make any necessary adjustments. Additionally, according to the research, investors should consider how trade agreements, geopolitical unrest, and economic trends may affect their portfolios.

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