International Journal of Finance and Commerce
www.commercejournals.com
Online ISSN: 2664-715X, Print ISSN: 2664-7141
Received: 02-06-2024, Accepted: 24-06-2024, Published: 17-07-2024
Volume 6, Issue 3, 2024, Page No. 7-12

Systematic and unsystematic risk and stock return in commercial Banks of Nepal

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Abstract
The purpose of this study is to determine the effect of systematic Risk and unsystematic Risk on expected rate of return of commercial banks in Nepal. The study was conducted using descriptive and causal research design collecting the data from mid-July 2013 to mid-July 2022 from ten commercial banks. The data collected from ten randomly selected commercial banks was processed and analyzed using the E-Views 2012. The result of random effect model revealed that there is a very weak negative correlation between the rate of return and systematic risk. This suggests that as systematic risk increases, the rate of return tends to decrease slightly, although the relationship is weak. The study also revealed systematic risk has significant negative impact of on the expected rate of return. Unsystematic risk has a positive impact on expected rate of return.

Keywords: Systematic risk, unsystematic risk, stock return

Introduction

The securities market is pivotal in the economic landscape, serving as a primary mechanism for raising capital for commercial enterprises and offering diverse investment opportunities for individuals and institutions. Bhattarai and Joshi (2009) emphasize that the activities of buying and selling securities within these markets are essential for the efficient allocation of capital across economies. A robust securities market is fundamental to economic development, providing stable long-term capital for companies, serving as an effective savings vehicle for the public, and facilitating efficient resource allocation. Systematic risk, also known as market risk, affects the entire market or a significant portion of it. It includes factors such as economic recessions, political instability, changes in interest rates, and natural disasters. These risks are inherent to the entire market and cannot be eliminated through diversification (Reilly, 2002). Systematic risk impacts all investments to some extent, causing asset prices to move together. For instance, an unexpected increase in interest rates by the Federal Reserve can lead to a broad decline in both bond and stock prices. The Capital Asset Pricing Model (CAPM) is a fundamental tool for understanding systematic risk. According to CAPM, the expected return on an investment is a function of its systematic risk, measured by beta (β), which indicates an asset's sensitivity to market movements (Sharpe, 1964) [44]. The model posits that investors should be compensated for both the time value of money and the risk taken. Hence, securities with higher betas should offer higher expected returns to compensate for higher market risk. Unsystematic risk, or specific risk, is associated with individual assets or companies and can be diversified away by holding a well-diversified portfolio. This type of risk includes business risk, financial risk, and operational risk, among others. For example, poor management decisions, product recalls, or competitive pressures can adversely impact a company's stock price independently of the broader market (Elton & Gruber, 1997) [10].

The Arbitrage Pricing Theory (APT), introduced by Ross (1976) [43], offers a multifactor approach to understanding asset returns, considering multiple sources of unsystematic risk. APT suggests that asset returns are influenced by several macroeconomic factors, such as changes in GDP, inflation rates, and interest rates, each contributing to the overall risk and return profile of an asset. Investment decisions hinge on the trade-off between risk and return. Investors seek to maximize returns while minimizing risks. Asekome and Agbonkhese (2015) [6] explain that low levels of uncertainty (low risk) are associated with low potential returns, while high levels of uncertainty (high risk) are associated with high potential returns. This relationship underscores the challenge investor’s face in selecting securities that provide high returns with acceptable levels of risk. Diversification is a key strategy for managing unsystematic risk. By spreading investments across various assets, investors can reduce the impact of any single asset's poor performance on the overall portfolio (Markowitz, 1952). Portfolio analysis aims to minimize risk for a given rate of return by selecting a mix of assets that collectively have lower risk than any individual asset. Financial markets play a crucial role in facilitating investment by providing mechanisms for raising funds. The primary methods of raising funds include the issuance of bonds, preferred stock, common stock, and debt. Each method has a distinct risk-return profile. Bonds and preferred stocks offer fixed returns, providing lower risk and return, while common stocks offer dividends and capital appreciation, carrying higher risk and return (Ali, 2011). Benartzi (2010) describes risk as the reward for waiting and compensation for bearing uncertainty. This notion aligns with the understanding that investors expect higher returns for taking on greater risk. However, the main challenge lies in identifying investments that offer favorable returns with manageable risk levels. Risk is defined as the variability of possible outcomes from what was expected (Horne & Wachowicz, 2009) [50]. Investors aim to achieve high returns with low risk, but this balance is often unattainable. Higher returns are generally associated with higher risk and vice versa. For instance, investments in common stock involve the expectation of dividends, but the actual returns may vary significantly, introducing a major risk factor. Every investment involves a present certain sacrifice for a future uncertain benefit, where the return on investment includes dividends plus changes in the market price of the share (MPS), both of which are uncertain (Khan & Jain, 2014). The expected rate of return for any asset is the weighted average rate of return, using the probability of each rate of return as the weight.

Objectives of the study

The objective of the study is to determine the effect of systematic risk and unsystematic risk on stock return of commercial banks in Nepal which are mentioned below;

- To analyze the relationship between systematic risk, unsystematic risk and Stock Return
- To analyze the effect of the systematic risk and unsystematic risk on Stock Return of returns

Review of literature

Capital Assets Pricing Model

Capital Asset Pricing Model (CAPM) is a model that posits the required rate of return on any stock is equal to the risk-free rate of return plus its risk premium, with risk measured by the beta coefficient. CAPM asserts a relationship where the expected rate of return of an asset is a linear function of its systematic risk. It represents the trade-off between systematic risk and the returns investors expect to receive. CAPM elucidates the behavior of security prices and determines how prices and interest rates on risky financial assets are set in the capital market. By integrating portfolio theory principles with assumptions about investor expectations and market characteristics (Francis & Schipper, 1999) [11], CAPM provides insights into asset pricing.

Empirical Review

Roman (2021) [42] explored how unsystematic risks—namely credit risk, liquidity risk, and operational risks—affect stock market returns in Jordanian commercial banks over the period from 2009 to 2019. The results demonstrated that unsystematic risks significantly influenced stock market returns for these banks. The research highlighted the necessity for commercial banks to manage these risks effectively to boost stock market returns, thereby enhancing shareholder wealth by improving investor perceptions of the banks' performance and management efficiency. Sukrianingrum and Manda (2020) [48] aimed to provide empirical evidence on the influence of systematic and unsystematic risks on the expected returns of share portfolios. The F-test findings revealed that both systematic risk (X1) and unsystematic risk (X2) had significant and positive impacts on portfolio expected returns (Y). However, the t-test results indicated that while systematic risk (X1) had a negative and significant effect on optimal portfolio expected returns (Y), unsystematic risk (X2) had a positive and significant effect. Combined, systematic and unsystematic risks accounted for 53.5% of the variance in expected returns, with the remaining 46.5% attributed to other unexamined factors.

Kandel (2018) [19] analyzed the risk and return of common stock investments in the Nepalese stock market, focusing on two commercial banks listed on the Nepal Stock Exchange Limited. Findings indicated a positive relationship between risk and return, with most investors exhibiting risk aversion. The study recommended constructing diversified portfolios rather than investing in single securities to mitigate unsystematic or diversifiable risks. The study concluded that all commercial banks exhibited significant risk with fluctuating rates of return. The study found NABIL to be more volatile than NIBL stock based on their respective beta coefficients, indicating high proportions of unsystematic risk.

Gandoman and Rostami (2018) [12] explored the connection between systematic risk factors, past returns, and expected returns of Iranian companies. The findings related to the study's first hypothesis indicated a significant and direct relationship between systematic risk factors and the firms' past returns. Additionally, the analysis supporting the second hypothesis revealed a significant and direct relationship between systematic risk factors and the expected returns of the firms.

Abonongo, Ackora-Prah, and Boateng (2017) [1] assessed the systematic risk of stocks using the Capital Asset Pricing Model (CAPM). The findings indicated that CAL, FML, and TLW were defensive stocks, each with a market beta of less than one. Conversely, PBC, CLYD, EGL, and UNIL had market betas of one, indicating they carried the same systematic risk as the market. All seven stocks exhibited positive market betas, suggesting their movements were in line with the market. The compensation for investing in each stock was approximately 3%, and the diversifiable risk for each stock was minimal, as indicated by the low dispersion of returns around the regression line.

Machdar (2015) [30] examined the impact of capital structure and systematic risk on stock returns using the SPSS Statistics 22 software. The study focused on public firms listed on the Indonesian Stock Exchange under the LQ45 Index for the period from 2009 to 2012. The findings of this research were as follows: (1) Capital structure, systematic risk, and unsystematic risk collectively have a positive influence on stock returns; (2) Capital structure has a positive and significant impact on stock returns; (3) Systematic risk (beta) negatively affects stock returns; and (4) Unsystematic risk also negatively affects stock returns.

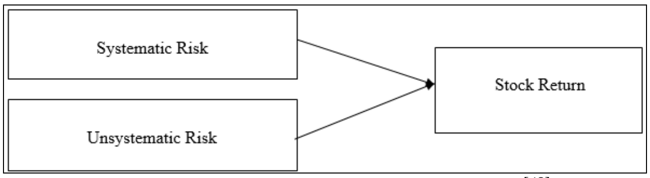
Muiruri (2014) [35] investigated the effects of estimating systematic risk on equity stocks across various sectors of the Nairobi Securities Exchange (NSE). Key findings of the study include significant effects of market sector betas on returns and a strong negative autocorrelation between systematic risk and stock market returns, indicating that stock market returns are influenced by more variables than just systematic risk. The agricultural sector was identified as the most volatile, while the Finance and Investment sector was the least risky during the study period. The Industrial and Allied, as well as the Finance and Investment sectors, exhibited fewer volatile returns compared to the overall NSE.

Mehrara, Falahati and Zahiri (2014) [32] examined the relationship between stock returns and systematic risk using the Capital Asset Pricing Model (CAPM) on the Tehran Stock Exchange. The results demonstrated statistically significant relationships between systematic risk and stock returns. Notably, the study found that a nonlinear (quadratic) function provided a better explanation of the relationship compared to a linear one, leading to the rejection of the assumption of linearity between systematic risk and stock returns on the Tehran Stock Exchange. Consequently, the study concluded that the traditional CAPM model, which assumes a linear relationship between systematic risk and stock returns, was not supported in their sample. Muhammad *et al*. (2013) conducted a study titled "Risk Return Analysis of Three Assets Portfolio using Islami Banks," focusing on the performance analysis of Shahjalal Islami Bank Ltd at a micro level. The study examined how the risk level of an Islamic bank is influenced by three new statutes governing its operations: replacing deposit holders with equity holders, converting interest payments to depositors into profit or loss sharing, and transforming loans to customers into capital participation. The findings indicated that Shahjalal Islami Bank Ltd exhibited characteristics of high return and low risk. Portfolio analysis demonstrated that incorporating Islamic bank stocks into portfolio investments could enhance portfolio returns while reducing overall risk. This suggests that the operational shifts mandated by Islamic banking principles could potentially lead to more favorable risk-return profiles for investors.

Theoretical Framework and Definitions of variables

The theoretical framework provides an understanding of relationships between different variables in a research study. In the context of analyzing the effect of Systematic Risk and Unsystematic Risk on Stock Return of Commercial banks in Nepal

Independent Variable **Dependent Variable**



Note: Adopted from Sukrianingrum & Manda (2020) [48]

Fig 1: Theoretical framework

Definition of Variables

Dependent Variable

Stock Return

Return refers to the future gain that investors aim to achieve in exchange for their investment of capital, driven by their goal to maximize wealth. It can also be defined as the future benefits accrued by investors for forgoing immediate possession of money (Hapsoro *et al*., 2020) [16]. Expected return, on the other hand, is the projected return used to guide investment decisions. In the context of portfolio management, expected portfolio return is the weighted average of the expected returns of each individual security within the portfolio (Ni Putu and Wirama, 2016). Stock market return reflects the short-term fluctuations in stock prices driven by trading activities, excluding cash dividends (Jizi *et al*., 2016).

Independent Variables

Systematic Risk

Systematic risk, also known as market risk, pertains to fluctuations affecting the entire market (Alena *et al*., 2017) [3]. It stems from macroeconomic factors impacting all risk assets, such as overall economic growth, interest rates on deposits, inflation rates, foreign exchange rates, and government economic policies (Evirrio *et al*., 2018). Systematic risk is influenced by macroeconomic events and can be quantified by the sensitivity of stock returns to changes in market portfolio returns, known as stock beta.

Unsystematic Risks

Gabriel (2016) defines unsystematic risk as residual risk specific to a banking institution or industry, such as management errors, labor strikes, and competitive marketing campaigns, changes in consumer preferences, or legal disputes, which cause fluctuations in returns independent of market factors or financial instruments. Gupta (2011) also characterizes unsystematic risk as internal risks specific to a bank or company, including inadequate management practices and investment policies, which can be managed through stringent controls, procedural frameworks, and robust corporate governance principles.

The model

$$ER_{it} = \alpha + \beta_1 SR + \beta_2 USR + \varepsilon_{it} \quad (1)$$

Where,

α =Intercept/constant term

ER=Expected Rate of Return

SR=Systematic Risk

USR=Unsystematic Risk

ε = error term of the stochastic model

Betas (β) are the parameters of the models.

Research methodology

The research design employed in this study includes both a descriptive research design and a causal-comparative research design. The population consists of 19 commercial banks operating in Nepal from Mid-July 2013 to Mid-July 2023.However, the study utilized a sample size of 10 commercial banks selected through simple random sampling. The nature of the data is quantitative, gathered from secondary sources such as shareshansar available on each bank’s website. The study used a panel data approach to analyze the collected data, focusing on examining relationships and causal effects among variables within the banking. Correlation, regression, analysis of variance (ANOVA), coefficient of regression was conducted. The acquired data were statistically examined using E-views software. The effect of Systematic Risk and Unsystematic Risk on Stock Return is analyzed using equation (1).

$$ER = \alpha + \beta_1 SR + \beta_2 USR + \varepsilon \quad (1)$$

Results and Conclusion

Results

Descriptive Statistics

Descriptive statistics summarize key aspects of a dataset, aiding researchers in understanding its central tendencies, variability, and distribution. These measures include central tendency, dispersion, and shape, forming the foundational step for extracting insights from data.

Table 1: Descriptive Analysis of Variables

	Rate of Return	Systematic Risk	Unsystematic Risk
Mean	-0.0001	0.0001	0.0003
Median	-0.0004	0.0001	0.0002
Maximum	0.0056	0.0006	0.0012
Minimum	-0.0053	0.0000	0.0000
Std. Dev.	0.0021	0.0001	0.0002
Skewness	0.5375	0.7085	1.7476
Kurtosis	2.9273	4.1752	5.9281
Jarque-Bera	4.8385	14.1222	86.6330
Probability	0.0889	0.0008	0.0000
Observations	100	100	100

Note: E-views Analysis

Table 1 shows the Rate of Return has a mean of -0.0001 and a median of -0.0004, indicating overall losses and a left-skewed distribution. It ranges from -0.0053 to 0.0056, with a standard deviation of 0.0021. Skewness is 0.5375, kurtosis is 2.9273, and the Jarque-Bera test p-value is 0.0889, suggesting normality cannot be rejected. Systematic Risk has a mean of 0.0001 and a median of 0.0001, indicating low risk with a small positive skew. It ranges from 0.0000 to 0.0006, with a standard deviation of 0.0001. Skewness is 0.7085, kurtosis is 4.1752, and the Jarque-Bera test p-value is 0.0008, indicating non-normality. Unsystematic Risk has a mean of 0.0003 and a median of 0.0002, indicating higher risk with a right-skewed distribution. It ranges from 0.0000 to 0.0012, with a standard deviation of 0.0002. Skewness is 1.7476, kurtosis is 5.9281, and the Jarque-Bera test p-value is 0.0000, indicating significant non-normality.

Correlation

Correlation is a statistical measure that quantifies the degree to which two variables change together.

Table 2: Analysis of Correlation

Probability	Rate of Return	Systematic Risk	Unsystematic Risk
Rate of Return	1		

Systematic -Risk	-0.0806	1	
	(.05)	-----	
Unsystematic Risk	0.0623	-0.1523	1
	0.043	0.045	-----

Note: E-views Analysis

The correlation table 2, presents the results of a covariance analysis among three variables: rate of return, systematic risk, and unsystematic risk. It includes the correlation coefficients and the corresponding probabilities.

There is a very weak negative correlation between the rate of return and systematic risk, with a p-value of 0.05. This suggests that as systematic risk increases, the rate of return tends to decrease slightly, although the relationship is weak.

The rate of return has a very weak positive correlation with unsystematic risk, with a p-value of 0.043. This indicates a slight tendency for the rate of return to increase as unsystematic risk increases, but the relationship is weak.

Regression

Regression analysis is a statistical technique used to examine the relationship between one dependent variable and one or more independent variables.

Table 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Systematic Risk	-1.3340	0.6318	-2.1115	0.0385
Unsystematic Risk	0.4230	0.2135	1.9811	0.0474
C	0.0454	0.0113	4.0204	0.0034
R-squared	0.2906			
Adjusted R-squared	0.2234			
F-statistic	8.4432			
Prob(F-statistic)	0.000			
Durbin-Watson stat	2.0137			

Note: E-views Analysis

Table 3 shows the R-squared value of 0.2905 suggests that about 29.06% of the variance in the dependent variable is explained by the model, while the adjusted R-squared of 0.2234 accounts for the number of predictors. The overall model is statistically significant, as indicated by the F-statistic p-value of 0.000. Additionally, the Durbin-Watson statistic of 2.0137 suggests no autocorrelation in the residuals, implying that the model assumptions are likely met.

The coefficient for systematic risk is -1.3340, with a p-value of 0.0385, indicating a significant negative impact on the Expected Rate of Return: a unit increase in systematic risk results in a decrease of approximately 1.334 units.

The coefficient for unsystematic risk is 0.4229, with a p-value of 0.0474, indicating a significant positive impact on Expected Rate of Return: a unit increase in unsystematic risk leads to an increase of approximately 0.423 units.

Table 4: Hypothesis Table

Hypothesis		P-Value	Result
H1	SR has significant correlation with ER	0.05	Accepted
H2	USR has significant correlation with ER	0.043	Accepted
H3	SR has significant impact on ER	0.038	Accepted
H4	USR has significant impact on ER	0.047	Accepted

Discussion

There is a very weak negative correlation between the rate of return and systematic risk. This suggests that as systematic risk increases, the rate of return tends to decrease slightly, although the relationship is weak. Systematic Risk has significant negative impact on Expected Rate of Return. This finding is similar with Sukrianingrum & Manda (2020) [48] found that systematic risk has a negative impact on the expected return of the optimal portfolio. Mehrara *et al*. (2014) [32] demonstrated a statistically significant relationship between systematic risk and stock returns, indicating that higher systematic risk is associated with lower returns. Kolani & Vikpossi (2014) [37] showed that the Capital Asset Pricing Model (CAPM), which links expected returns to systematic risk, does not adequately explain the return-beta relationship, suggesting a potential non-linear or negative relationship between systematic risk and returns. Mukherjee & Naka (1995) [36] found a negative relationship between Tokyo Stock Exchange (TSE) and long-term government bond rates, a proxy for systematic risk, indicating that higher systematic risk leads to lower stock prices and returns. Darrat (1990) [9] showed that fiscal policy impacts, which represent systematic risk, have a significant lagged impact on stock prices, implying a negative impact on returns. Unsystematic risk has a very weak positive correlation with the expected rate of return, indicating a slight tendency for the rate of return to increase as unsystematic risk rises, though the relationship is weak. However, unsystematic risk significantly impacts the expected rate of return. This finding aligns with research by Paramitasari (2014), Fajri and Wahyu (2014), and Effendi *et al*. (2017), which states that unsystematic risk has a significant positive effect on stock returns. Additionally, Sukrianingrum & Manda (2020) [48] found that unsystematic risk significantly and positively affects the expected return of an optimal portfolio. Masuman & Chowdhury (2013) demonstrated that portfolio diversification among Islamic banks can enhance portfolio returns and reduce risk, highlighting the positive impact of managing unsystematic risk. Karthikeyan (2011) [20] discussed the risk/return trade-off, emphasizing that managing unsystematic risk can lead to higher expected returns. Poudel (2002) found that shares with higher unsystematic risk yielded higher rates of return than the average stock, suggesting a positive impact of unsystematic risk on returns.

Conclusion

The study findings revealed that there is negative significant relationship between In Lending and In Inflation Rate. This implies that an increase in bank lending tends to suppress or reduce the inflation rate. This could be due to factors such as increased access to credit leading to higher production efficiency, thereby reducing overall price levels.

It shows that there is positive significant relationship between Interest Rate and In Inflation Rate. This indicates that an increase in interest rates tends to lead to higher inflation. This relationship might be attributed to the fact that higher interest rates can dampen consumer spending and investment, thereby slowing down economic activity and reducing price competition, resulting in higher prices.

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