Article History:
Received: November 8, 2023
Revised: January 17, 2024
Accepted: May 24, 2024

DOI: https://doi.org/10.3126/pycnjm.v17i1.76878
PYC Nepal Journal of Management
Vol. XVII, No. 1, Page: 192-209
ISSN 2091-0258, 2738-9847 (Online)

The Cross Section of Expected Stock Returns: Nepalese Evidence

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Abstract: *This study examines the impact of size, book-to-market equity ratio, cash flow yield, and earnings yield on the average stock returns of sample firms in Nepal. The analysis is based on the Fama and MacBeth (1973) model applied to pooled cross-sectional data from 51 NEPSE-listed companies. It includes 292 restricted observations spanning the period from 2010/11 to 2021/22, along with an assessment of portfolio properties. The findings reveal that results from developed economies do not fully align with those observed in least-developed economies like Nepal. For instance, the strong and statistically significant negative relationship between stock returns and the B/M ratio contradicts the positive association found in developed markets but aligns with previous studies in the Nepalese context. This study concludes that financial fundamentals do not entirely drive stock returns in Nepal's capital market. The findings offer valuable insights for investors, policymakers, and other stakeholders.*

Keywords: book to market ratio, CAPM, cash flow yield, earning yield, size, stock returns

I. INTRODUCTION

Understanding why some stocks generate higher average returns while others yield lower returns has been a fundamental question in financial economics, sparking extensive debate and research over the years. Many scholars argue that stock returns reflect compensation for taking on higher or lower risk (Jagannathan & Wang, 1996). However, asset-pricing literature has consistently identified significant cross-sectional predictability in stock returns, challenging the notion that risk alone dictates returns. To aid investors in evaluating asset performance, financial researchers have developed robust asset pricing models. Among them, the Capital Asset Pricing Model (CAPM), introduced by Sharpe (1964), Lintner (1965), and Black (1972) remain widely used by portfolio managers, institutional investors, and financial analysts for forecasting asset returns.

CAPM posits that systematic risk, represented by beta, positively correlates with asset returns. However, empirical studies have often found weak or negligible correlations between beta and returns, suggesting that other variables also significantly influence

expected returns (Chen & Joseph, 2002). Recognizing CAPM's limitations, Fama and French (1992) introduced the three-factor model, incorporating market risk, size premium, and value premium to better explain stock returns. This was later extended by Carhart (1997) with the inclusion of a momentum factor, forming a four-factor model. Yet, concerns persist that such empirical findings might stem from data mining rather than fundamental economic principles (MacKinlay, 1995; White, 2000). Continuing this evolution, Fama and French (2015) proposed a five-factor model, adding profitability and investment factors. These developments underscore the ongoing search for determinants that comprehensively explain stock price fluctuations.

The relationship between stock returns and their determinants has remained a critical research area, especially amid global economic volatility. While risk is theoretically considered the primary determinant of expected returns (Sharpe, 1964), additional factors such as firm size, earnings, dividend policies, tax policies, trading volume, liquidity, inflation, interest rates, exchange rates, agency problems, and information asymmetry also influence stock performance (Fama & French, 1992; Brennan et al., 1998). Despite extensive empirical testing, most research on asset pricing models has been conducted in the U.S. and other developed markets, leaving gaps in understanding how these relationships manifest in least-developed economies.

Nepal's stock market is still in its early stages of development, serving as a platform for trading government and corporate securities through brokers, market makers, and other intermediaries. In recent years, the market has exhibited high volatility in both investment volume and returns. The NEPSE index (closing), a key indicator of market performance, fluctuated from 961.2 points in 2013/14 to a peak of 2883.4 points in 2020/21 due to various economic and political factors (SEBON, 2022/23). Similarly, the market capitalization-to-GDP ratio varied between 40% in 2016/17 and 94% in 2020/21 (Economic Survey, 2023/24). Some stocks consistently generate profits, while others experience high volatility or remain stable within narrow bands. Despite these fluctuations, investors face considerable challenges in making informed decisions due to the lack of rigorous financial analysis and assessment practices.

This study aims to examine whether firm-specific variables explain cross-sectional variations in stock returns in Nepal's capital market. Additionally, it seeks to analyze the interrelationships among key financial variables such as stock returns, market capitalization, book-to-market equity, cash flow yield, and earnings yield. By analyzing data from Nepalese listed firms, this study contributes to the growing body of research exploring asset pricing in least-developed economies. The findings are expected to provide valuable insights for investors, policymakers, and other stakeholders. The remainder of this study is structured as follows: a review of relevant literature, a discussion of the methodology, presentation of results, analysis and discussion, followed by conclusions and implications.

II. LITERATURE REVIEW

Theoretical review. The discussion of stock price behavior begins with Markowitz (1952, 1959), who introduced a single-period model where an investor constructs a portfolio at the start of the period. The objective is to maximize expected returns while maintaining an acceptable level of risk or, conversely, to minimize risk while ensuring a satisfactory expected return. The assumption of a single time period, combined with specific assumptions about an investor's risk preferences, enables risk to be quantified using the variance (or standard deviation) of portfolio returns.

Building on Markowitz's framework, Sharpe (1964), Lintner (1965), and Mossin (1966) independently developed the Capital Asset Pricing Model (CAPM). This model assumes that investors adhere to Markowitz's portfolio logic and that a risk-free asset exists with a certain return. Investors construct portfolios along the capital market line, which represents combinations of the risk-free asset and a risky portfolio, M. For markets to remain in equilibrium, portfolio M must represent the market portfolio of all risky assets. Consequently, all investors hold a combination of the market portfolio and the risk-free asset, with compensation provided only for the risk associated with the market portfolio. This results in the CAPM equation:

$$E(R_j) = R_f + \beta_j [E(Rm) - R_f]$$

where E(Rj) and E(Rm) are the expected returns of asset j and the market portfolio, respectively, Rf represents the risk-free rate, and βj denotes the beta coefficient of asset j, measuring its co-movement with the market portfolio.

Extensions of CAPM were later proposed to relax some of its assumptions (e.g., Black, 1972). Instead of merely extending the existing framework, Ross (1976) introduced an entirely different model: the Arbitrage Pricing Theory (APT). Unlike CAPM, which is a financial market equilibrium model, APT is based on the premise that arbitrage opportunities should not exist in efficient financial markets. This assumption is less restrictive than those underpinning CAPM. APT posits that n factors systematically drive deviations in asset returns from their expected values. However, the theory does not specify the exact number of factors or identify them; it merely assumes that these n factors cause return variations (Lehman & Modest, 1988). Firm-specific factors may also influence returns, but these idiosyncratic deviations are uncorrelated across stocks. Since these firm-specific deviations are independent, their effects can be diversified away, leaving only systematic variations. To prevent arbitrage, Ross demonstrated that an asset's expected return must be a linear function of its sensitivity to the n common factors, expressed as:

$$E(R_j) = R_f + \beta_j 1\, \lambda 1 + \beta_j 2\, \lambda 2 + \ldots + \beta_j n\, \lambda n$$

where each β_{jk} coefficient represents asset j's sensitivity to risk factor k, and λk denotes the risk premium for factor k.

APT assumes multiple sources of systematic risk (n factors), whereas CAPM posits only one. Both models, however, are static, single-period models (MacKinlay, 1995), meaning they do not account for the multi-period nature of capital market participation. To address this limitation, Merton (1973) introduced the inter-temporal capital asset pricing model (ICAPM), which incorporates multiple time periods into financial market equilibrium. According to ICAPM, securities that deliver high returns when aggregate consumption is low are highly valued by investors, increasing their prices. Conversely, stocks that co-vary positively with aggregate consumption require higher expected returns, as their high returns coincide with economic states where they provide the least marginal utility (Jagannathan & Wang, 1996). Extending this rationale, Breeden (1979) developed the consumption-based capital asset pricing model (CCAPM), which substitutes market beta with consumption beta to explain expected return premiums over the risk-free rate.

Review of empirical studies. There is considerable evidence from both developed economies and emerging markets that the cross-section of average stock returns is related to firm-level characteristics such as size, earnings yield, cash flow yield, dividend yield, book-to-market equity, and leverage.

Banz (1981) finds that size (in terms of market equity) explains the cross-section of average returns, concluding that it has the most significant negative influence on expected stock returns. Similarly, Barry and Brown (1984) provide evidence that the size effect is partly associated with differential information between small and large firms, linking it to the perceived riskiness of small firm stocks. Fama and French (1992) assert that size (ME) captures the cross-sectional variation in average stock returns related to leverage and the E/P ratio. Further, Berk et al. (1999) offer a theoretical explanation for the relationship between expected returns and size, arguing that size is always inversely related to expected returns. Stocks with high expected returns have high discount rates, which in turn result in lower market values. Dissanaike (1999, 2012) supports this view, arguing that the small-firm effect is merely an indication of investor overreaction, providing UK-based evidence that small-size firms tend to exhibit relatively negative stock price performance over time.

Stattman and Dennis (1980) and Rosenberg and Lanstein (1985) find that average returns on U.S. stocks are positively related to the ratio of a firm's book-to-market equity to its market value. Similarly, Chan et al. (1991) identify a positive relationship between B/M equity and stock returns, concluding that B/M equity is the most important fundamental variable for explaining the cross-section of expected stock returns both statistically and economically. Fama and French (1992) further reinforce this finding, stating that B/M equity is more powerful than size in explaining the cross-section of average stock returns.

Davis (1994) postulates a positive cross-sectional correlation between B/M equity and cash flow yield, concluding that B/M equity has explanatory power in determining stock returns.

Cash flow yield is another important determinant of stock returns, as documented by various studies. Chan et al. (1991) find a positive and highly significant impact of cash flow yield on expected returns, concluding that after B/M equity, C/P yield has significant explanatory power in predicting stock returns. Similarly, earnings yield serves as a proxy for factors influencing expected returns and is typically higher for stocks with higher risks and expected returns. Basu (1983) and Jaffe et al. (1989) find positive relationships between earnings yield and subsequent stock returns. Davis (1994) also observes that earnings yield has explanatory power in cross-sectional variations in stock returns. Chan et al. (1991) rigorously examine the relationship between earnings yield and stock returns, reinforcing these findings.

Dividend policy remains a topic of debate despite extensive theoretical and empirical research, particularly regarding its linkage to stock price risk (Allen & Rachim, 1996). Ye and Turner (2016) analyze the cross-section of stock returns on stocks traded in the London Stock Exchange and find that stock characteristics such as beta, illiquidity, dividend yield, and past-year return performance are all positively correlated with stock returns.

The Nepalese capital market remains small and underdeveloped, with very few studies conducted on the cross-section of stock returns in this context. Examining stock market behavior in Nepal, Pradhan (2014) finds that larger stocks tend to have higher P/E ratios, larger B/M equity, smaller dividends, higher liquidity, higher leverage, and lower profitability. The study reveals that beta has a weak relationship with stock returns in Nepal, with its coefficient found to be statistically insignificant. Consequently, there is no strong evidence that beta explains variations in stock returns. However, the study identifies size, dividend yield, and book-to-market ratio as significant factors affecting stock returns, whereas beta, the earnings-price ratio, and the sales-to-price ratio do not appear to have a significant impact.

Similarly, Panta et al. (2016) reveal that the Nepalese capital market provides excess returns for large value stocks while small growth stocks yield lower excess returns. Their study finds that the typical Fama-French results do not hold in Nepal. Joshi (2024) finds that the Fama-French five-factor model successfully captures variations in cross-sectional stock returns in Nepal, with the market risk premium being the most prominent factor influencing stock returns.

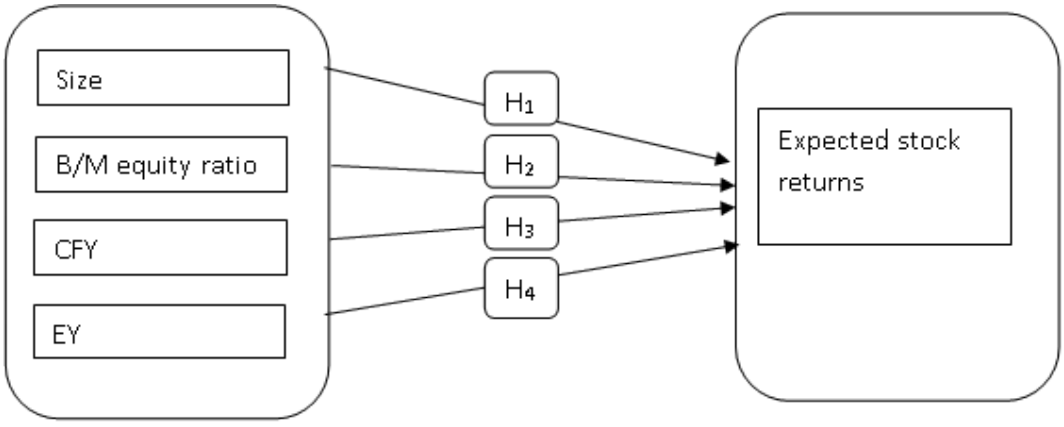
Other studies examining stock market behavior in Nepal provide evidence against the proposition of the Random Walk Hypothesis. However, the findings from different studies are not entirely consistent, likely due to variations in stock market characteristics, economic conditions, and data samples over time. There remains a consistent need for

further research in financial markets worldwide. This need is particularly strong in smaller and underdeveloped capital markets, as findings from developed capital markets have yet to be rigorously tested for their applicability in emerging markets like Nepal.

Conceptual framework. Following the general theoretical framework of Fama and French (1992) and Fama and McBeth (1973), this study identifies four firm specific independent variables as an attempt to study whether these variables capture the cross section of expected stock returns in the context of Nepal which is presented in the *Figure 1.*

Figure 1

Conceptual framework



Building upon the comprehensive research framework established in this study, a set of alternative hypotheses has been carefully developed to explore the intricate relationships between key variables.

H1: Size explains the expected stock returns in sample study.

H2: Book to market equity ratio affects the stock returns in sample study.

H3: Cash flow yield captures the cross section of stock returns in sample study.

H4: Earning yield determines the expected stock returns in sample study.

III. RESEARCH METHODOLOGY

By adopting a structured and methodical quantitative approach, this study has been meticulously conducted in alignment with the established research objectives. Utilizing secondary data from a sample of companies over a 12-year period, spanning from the fiscal year 2010/11 to 2021/22, this research aims to rigorously explore and analyze the extent to which firm-specific variables effectively capture the cross-section of stock returns

within the Nepalese market. To achieve this objective, annual time series data have been systematically collected from the Nepal Stock Exchange (NEPSE) and the Securities Board of Nepal (SEBON) publications, as well as the online records of selected sample companies. Additionally, other relevant sources such as the Economic Survey and the Nepal Rastra Bank (NRB) Macro-Economic Bulletin have been incorporated to enhance the comprehensiveness of the dataset used in this study.

The study's sample consists of 51 firms selected from a total of 219 listed companies as of the fiscal year 2021/22. The selection criteria were based on the availability of annual data for a minimum period of two years and a maximum of twelve years within the NEPSE and SEBON databases. A significant proportion of the sampled firms belong to the commercial banking sector, followed by finance companies, hydropower firms, insurance companies, development banks, and manufacturing and processing enterprises, respectively. The study exclusively includes stocks that have been traded at least once per month and companies that maintain a positive net worth. This sample accounts for approximately 23 percent of the total population of listed companies and includes an initial 412 observations. However, firms with only a single year of transactions and those reporting negative net worth have been excluded to ensure data validity. Additionally, to refine the calculation of stock returns (capital gains), the base year has been removed, reducing the total number of observations to 349. Further, to enhance the reliability of the results, the five highest and five lowest outliers in the dataset have been excluded, bringing the final restricted sample size to 292 observations. Moreover, in instances where specific data were unavailable, non-cash expenses have been estimated based on depreciation amounts.

Method of data analysis. This study predominantly employs regression models and a portfolio analysis approach, supplemented by various statistical tools and techniques, to ensure robustness, validity, and reliability of the findings. Statistical methods such as correlation analysis, the Durbin-Watson (DW) test, and the Variance Inflation Factor (VIF) test have been applied to assess data accuracy and multicollinearity. To further strengthen the study's predictive capabilities, the fundamental procedure developed by Fama and MacBeth (1973) has been implemented, with log transformations integrated into regression equations to determine whether log models offer superior explanatory power for independent variables.

All selected sample companies have been categorized into four equally sized portfolios based on quartiles (25, 50, 75, and above) over the 12-year period, allowing for a systematic examination of relationships between key variables. The portfolios have been sorted in sequential order, initially by stock returns, followed by market equity (lnSize), book-to-market (B/M) ratio, cash-flow-yield (C/P ratio), and earnings yield (E/P ratio). Their respective properties have then been thoroughly analyzed to discern meaningful

patterns and insights, contributing to a deeper understanding of stock return behavior in the Nepalese market

Model specification. Based on the Fama and French (1992) and Fama and McBeth (1979), the model used in this study is:

$$R_{it} = \alpha 0_t + \beta_{1t} (lnS)_{it} + \beta_{2t} (lnB/M)_{it} + \beta_{3t} (lnCFY)_{it} + \beta_{4t} (lnEY)_{it} + \varepsilon_{it} \quad (1)$$

$$R_{it} - R_{ft} = \alpha_{0t} + \beta_{1t} (lnS)_{it} + \beta_{2t} (lnB/M)_{it} + \beta_{3t} (lnCFY)_{it} + \beta_{4t} (lnEY)_{it} + \varepsilon_{it} \quad (2)$$

Where,

R_{it} = Annual average stock returns of company *i* calculated as $(MPS_{t-1} - MPS_t)/MPS_t$

R_{ft} = Weighted average of 91 days t-bill rate observed annually

R_{it}-R_{ft} = Excess return on company i calculated as stock returns of firms i minus risk free rate of time t (Risk free rate = weighted average rate of 91 days T- bills)

α_{0t} = An intercept in time t

$(lnS)_{it}$ = Average of the natural logarithm of market capitalization (lnSize) for firm i in time t calculated as the product of the number of shares outstanding and stock price at the end of year t.

$(lnB/M)_{it}$ = Average of the natural logarithm of book-to-market value ratio for firm i in time t calculated as the ratio between book value of equity and market value of market equity

$(lnCFY)_{it}$ = Average of the natural logarithm of cash-flow-yield for firms i in time t calculated as ratio of net income to market value of firm's equity

$(lnEY)_{it}$ = Average of the natural logarithm of earning-yield for company i in time t calculated as a ratio of net income to market value of equity

ε_{pt}= is the error term which represents omitted sources of risk that the previous variables may not have identified.

β_{1t} , β_{2t} , β_{3t} and β_{4t} are the beta coefficients (unknown but true parameters) of selected variables of the estimated regression model.

IV. RESULTS AND DISCUSSION

Although the NEPSE index has been highly volatile and remains one of the lowest indices globally, there has been a noticeable upward trend in capital market activities. These activities include an increasing number of company listings, higher turnover rates, and growing participation from investors and other stakeholders. By the end of the Fiscal Year 2010/11, the total number of companies listed on the Nepal Stock Exchange Limited stood at 202, which subsequently increased to 242 by mid-October of the Fiscal Year 2021/22 (Economic Survey, 2022/23). Similarly, market capitalization, which was recorded at Rs. 323.48 billion in 2010/11, surged to Rs. 2869.34 billion in 2021/22, demonstrating

significant growth in the capital market. Additionally, the number of Demat account users reached an all-time high of 5,823,000 in 2079, with 1,763,301 actively engaged in online trading (SEBON, 2022/23). These figures reflect the increasing interest and engagement of individuals and institutions in Nepal's financial markets. Descriptive statistics, along with further data analysis, are presented in the following section for a detailed assessment of market trends and behaviors.

Sample adequacy test. To assess whether the sample size is appropriate for analyzing the relationships between key variables, the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity have been conducted. The KMO statistic evaluates the proportion of variance in variables that may be attributable to underlying factors, thereby determining whether the dataset is suitable for factor analysis. A higher KMO value indicates stronger adequacy of the sample, ensuring that the study's findings are statistically valid.

Table 1

KMO and Bartlett's test

Parameter		Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.772
Bartlett's Test of Sphericity	Approx. Chi-Square	478.086
	df	10
	sig.	.000

The results presented in *Table 1* confirm that the KMO value is greater than 0.6, signifying an acceptable level of sample adequacy. Additionally, Bartlett's Test of Sphericity is statistically significant ($p > 0.05$), reinforcing the appropriateness of the dataset for this study. Given these results, the analysis of relationships between dependent and independent variables is considered valid and reliable, supporting the robustness of the study's conclusions.

Table 2

Descriptive statistics

Variables	N	Mean	Range	Minimum	Maximum	SD
SR (in percentage)	292	1.57	63.81	-0.98	62.83	6.58
CFY (in percentage)	292	0.11	0.68	0.00	0.68	0.10
B2M (ratio)	292	0.62	4.71	0.01	4.72	0.52
EY (in percentage)	292	0.09	0.64	0.00	0.64	0.09
Market Capitalization (Rs. in Million)	292	155628.43	368747.40	32348.40	401095.80	102506.28

Table 2 illustrates that the size, CF yield, B/M equity, earning yield, and market capitalization of sample companies vary significantly. The standard deviations for earning yield and book-to-market ratio are 0.09 and 0.52, respectively, while those for market capitalization and cash flow yield are Rs. 102,506.28 and 0.10, respectively.

Table 3 demonstrates that stock returns are positively correlated with market equity, B/M ratio, and CFY ratio, with statistical significance at the 1 percent level. Likewise, the B/M ratio is positively correlated with stock returns at the 1 percent level, whereas size is significant at the 5 percent level. In contrast, CFY and EY ratios are negatively correlated with stock returns at the 1 percent significance level. Since the firm-specific variables analyzed are scaled versions of price, it is reasonable to expect that some may be redundant in explaining average returns.

Table 3

Correlation matrix

Variables	Stock return	lnSize	B/M	CFY	EY
Stock Return	1				
lnSize	.139*	1			
B/M	.249**	.716**	1		
C/P ratio	-.182**	.-416**	.484**	1	
E/P ratio	-.219**	.575**	.697**	.586**	1

**Correlation is significant at the 0.01 level (2-tailed). *Correlation is significant at the 0.05 level (2-tailed).

Test for multicollinearity and autocorrelation. Given that the variables do not exhibit significant coefficients a priori in predicting stock returns, there may be multicollinearity issues. Additionally, as the data follows a time-series pattern, autocorrelation may exist between time-series variables (Gujarati, 2007). To examine this, tolerance levels, variance inflation factors (VIF), and Durbin Watson-d test values for autocorrelation are analyzed.

Table 4

Test of multicollinearity and autocorrelation

Variables	Tolerance	Variance inflation factor (VIF)
lnsize	0.475	2.105
B/M equity	0.364	2.75
C/P ratio	0.643	1.555
E/P ratio	0.427	2.34
	DW-d test:1.948	

Table 4 presents the values for tolerance level, VIF, and Durbin Watson-d (DW-d) test. The moderate tolerance level and VIF values indicate that independent variables are moderately correlated, suggesting no severe multicollinearity. Similarly, the DW-d statistic suggests a positive autocorrelation; however, as its value is close to 2, it is not severe enough to warrant corrective measures.

Table 5 reveals that average stock returns increase with size, indicating that the largest-sized portfolios have the highest returns. The average stock returns increase from -10.6 percent for the lowest portfolio to 37 percent for the highest portfolio, implying that firms with higher market equity tend to achieve higher returns. However, the returns between portfolios II and IV exhibit a U-shaped pattern, with smaller stocks showing higher return variation than larger stocks. In general, the results suggest that large stocks attain higher returns in the Nepalese capital market. Additionally, stock size and book-to-market (B/M) value ratio exhibit an inverse relationship, where smaller stocks have higher B/M ratios, a trend also observed with B/M equity and earning yield (E/P ratio).

Table 5

Properties of portfolio sorted by size

Variables		Portfolio I	Portfolio II	Portfolio III	Portfolio IV
Size (Rs. in million)		17.6121	18.5023	20.6653	22.8817
	Median	17.7707	18.4987	20.8034	22.7303
	SD	(0.3858)	(0.2866)	(0.6723)	(0.7307)
SR (%)		-0.1059	0.2917	0.4349	0.3710
	Median	-0.1200	0.0784	0.1462	0.1535
	SD	(0.3003)	(0.6669)	(1.1501)	(1.0390)
CFY (%)		0.1956	0.1620	0.0803	0.0451
	Median	0.1500	0.1259	0.0703	0.0379
	SD	(0.1291)	(0.2357)	(0.0655)	(0.0269)
B2M (ratio)		1.1486	0.7808	0.3815	0.1680
	Median	1.0165	0.6944	0.3577	0.1527
	SD	(0.6357)	(0.3042)	(0.2013)	(0.0706)
EY (%)		0.1731	0.1126	0.0528	0.0380
	Median	0.1345	0.1130	0.0442	0.0312
	SD	(0.1238)	(0.0604)	(0.0444)	(0.0254)

Table 6 indicates that when sorted by B/M value ratio, stock returns exhibit a negative relationship with B/M equity. This suggests that stocks with higher B/M ratios tend to have lower returns. The average stock returns decline from 72.20 percent for the smallest portfolio to -9.69 percent for the largest portfolio, consistent with Pradhan (2004). Moreover, B/M equity is negatively correlated with size, implying that stocks with higher B/M equity are typically smaller. However, B/M value ratio exhibits a positive relationship with both cash flow yield and earning yield. These findings suggest that the book-to-market value ratio of Nepalese companies does not significantly impact share prices.

Table 6

Properties of portfolio sorted by book-to-market equity

Variables		Portfolio I	Portfolio II	Portfolio III	Portfolio IV
B2M ratio		0.1422	0.3583	0.6613	1.3170
	Median	0.1384	0.3530	0.6692	1.1073
	SD	(0.0418)	(0.0919)	(0.0833)	(0.5510)
SR (%)		0.7220	0.2300	0.1365	-0.0969
	Median	0.2889	0.0952	-0.0331	-0.0789
	SD	(1.3876)	(0.6535)	(0.5647)	(0.2897)
lnSize (Rs.)		22.5175	20.6659	18.5931	17.8850
	Median	22.7213	20.9794	18.3799	17.9099
	SD	(1.1825)	(1.3981)	(1.0196)	(0.5813)
CFY (%)		0.0376	0.0862	0.1436	0.2155
	Median	0.0320	0.0742	0.1117	0.1909
	SD	(0.0220)	(0.0545)	(0.2364)	(0.1221)
EY (%)		0.0299	0.0675	0.0966	0.1826
	Median	0.0267	0.0627	0.0965	0.1438
	SD	(0.0197)	(0.0448)	(0.0540)	(0.1226)

Appendix 1 reports an inverse relationship between stock returns and cash flow yield, where stocks with higher CFY exhibit lower returns. The average stock returns decline from 67.78 percent for the lowest portfolio to 1.77 percent for the highest portfolio. This finding aligns with Pradhan (2004), where stocks with higher CFY were associated with lower capital gain yield and total yield. Additionally, cash flow yield is inversely related to market equity (lnSize), as average size decreases from ln22.11 for the smallest portfolio

to ln18.15 for the highest portfolio. The table further reveals that stocks with higher B/M values have higher CFY, which also holds for EY, suggesting that higher CFY corresponds to higher earnings yield.

In the literature, the empirical model for cross-section stock returns is based on excess stock returns over the risk-free rate (Drew et al., 2003). To test the robustness of this study's findings, excess stock returns were regressed against four fundamental variables.

Table 7

Regression analysis

The model is: $R_{it} = \alpha_{0t}+\beta_{1t}(lnS)_{it}+\beta_{2t}(lnB/M)_{it}+\beta_{3t}(lnCFY)_{4t}+\beta_{4t}(lnEY)_{it}+\varepsilon_{pt}$. Models 1 to 4 are the simple log linear regression models and models 5 to 7 are the multiple log linear regression models.

Models	Intercept	lnSize	lnBM	lnCFY	lnEY	F	SEE	Adj. R^2
(1)	-.896	.057				4.895	.870	.015
	(0.086)[c]	(0.028)[b]				(0.001)[a]		
(2)	.0.006		-.312			25.910	.836	.090
	(0.929)		(0.000)[a]			(0.000)[a]		
(3)	.376			-1.058		24.347	.839	.085
	(0.002)[a]			(0.000)[a]		(0.000)[a]		
(4)	-.371				-0.222	17.929	.850	.063
	(0.000)[a]				(0.000)[a]	(0.000)[a]		
(5)	4.665	-.258	-.872			26.703	.799	.170
	(0.000)[a]	(0.000)[a]	(0.001)[a]			(0.000)[a]		
(6)	4.386	-.259	-.751	-.164		19.122	.795	.178
	(0.000)[a]	(0.000)[a]	(0.000)[a]	(0.065)[c]		(0.000)[a]		
(7)	4.446	-.263	-.760	-.153	-.015	14.317	.798	.176
	(0.000)[a]	(0.000)[a]	(0.000)[a]	(.303)	(0.889)	(0.000)[a]		

Note. a, b and c denote that the results are significant at 1 percent, 5 percent and 10 percent level of significance respectively.

Table 7 reveals that lnB/M, lnCFY, and lnEY are negatively related to stock returns at the 1 percent significance level, whereas lnSize is significant at the 5 percent level. Log models better explain variable relationships. Interestingly, size positively influences stock returns, with lnSize exhibiting positive coefficients, while lnB/M ratio, CFY, and EY ratio exhibit negative coefficients, indicating opposing effects on expected stock returns. Across models 5-7 in multiple regression equations, market equity (lnSize) consistently shows a significant negative coefficient when included with B/M equity, CFY ratio, and EY ratio

at the 1 percent level. Further inclusion of other variables does not alter the significance or direction of coefficients, suggesting that the variables do not dominate one another. Notably, the negative influence of B/M equity on stock returns increases in significance from 5 percent to 1 percent in model 7, confirming that B/M equity is a more powerful determinant of stock returns than other variables. Model 6 suggests better predictive power when variables are included in log models.

Table 8

Regression analysis

The model is: $R_{it}-R_{ft} = \alpha_{0t}+\beta_{it} (R_{mt}-R_{ft}) +\beta_{1t} (lnS)_{it} +\beta_{2t} (B/M)_{it} +\beta_{3t} (CFY)_{it} + \beta_{4t} (EY)_{it} +\varepsilon_{it}$. Models 1 to 4 are the simple linear regression models and 5 to 7 are the multiple linear regression models.

Models	Intercept	lnSize	BM	CFY	EY	F	SEE	Adj. R^2
(1)	-.22.633	1.223				36.955	6.084	0.146
	(0.000)[a]	(0.000)[a]				(0.000)[a]		
(2)	3.347		-2.952			12.292	6.4134	0.051
	(0.000)[a]		(0.001)[a]			(0.001)[a]		
(3)	2.381			-7.447		2.790	6.555	0.008
	(0.001)[a]			(0.096)[b]		(0.096)[a]		
(4)	2.495				-10.287	4.356	6.5311	0.016
	(0.000)[a]				(0.038)[b]	(0.038)[b]		
(5)	-24.705	1.311	.526			18.530	6.095	0.142
	(0.012)[b]	(0.000)[a]	(0.625)			(0.000)[a]		
(6)	-25.378	1.330	-1.636	14.332		14.014	6.047	0.156
	(0.000)[a]	(0.000)[a]	(0.272)	(0.038)[b]		(0.000)[a]		
(7)	-24.318	1.280	-1.872	23.948	-11.040	10.703	6.049	0.155
	(0.000)[a]	(0.000)[a]	(0.216)	(0.061)[c]	(0.369)	(0.000)[a]		

Note. a, b and c denote that the results are significant at 1 percent, 5 percent and 10 percent level of significance, respectively.

Simple regression analysis in *Table 8* indicates that size is positively related to excess returns, while book-to-market equity, cash flow yield, and earning yield are negatively related. The coefficients of all four fundamental variables are significant at the 1 percent and 5 percent levels. Models 5-7 present results from multiple regressions of excess returns on firm-specific variables, with size consistently positively related to excess returns. This relationship remains statistically significant when combined with other variables, highlighting size as a more intuitive explanatory factor in excess return models. Book-to-market equity shows a positive association with stock returns when combined with lnSize in model 5, though the relationship is not significant. Interestingly, in models 6 and 7, CFY exhibits a significant positive influence on stock returns, aligning with prior expectations and previous studies.

V. CONCLUSION AND IMPLICATIONS

The analysis of portfolio properties sorted by firm-specific variables and OLS regression suggests that firm-specific variables are not strong determinants of stock returns in Nepal. However, market capitalization (size) is positively associated with stock returns, consistent with Banz (1981), who found that smaller stocks yield higher returns. The significant negative effect of book-to-market equity on stock returns contradicts Fama and French (1992), who argued that B/M equity proxies risk and is positively related to stock returns. Additionally, this study contradicts Chan, Hamao, and Lakonishok (1991) by finding that cash flow yield and earnings negatively influence stock returns. These findings, however, align with Pradhan (2004, 2014) in the Nepalese capital market. Thus, B/M equity, cash flow yield, and earnings yield do not explain stock returns in Nepal, rejecting the hypothesis and highlighting inconsistencies with findings from developed economies. Based on these findings, this study concludes that, except for size, firm-specific variables do not strongly determine stock returns in Nepal. Further research incorporating political, seasonal, and macroeconomic factors is recommended to understand Nepalese capital market behavior more comprehensively.

The implications of these findings suggest that investors and stakeholders should reconsider their reliance on traditional firm-specific factors when making investment decisions in the Nepalese stock market. Since size appears to have a positive influence on stock returns, investors may benefit from focusing on larger firms while being cautious of the weak explanatory power of book-to-market equity, cash flow yield, and earnings yield. Policymakers should work toward strengthening financial market fundamentals and reducing inefficiencies in the capital market to enhance its predictive power. Future research should explore external macroeconomic and political factors that may drive stock returns in Nepal, helping market participants develop more effective investment strategies and risk assessment models.

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Funding

The authors received no funding or financial support in carrying out the research.

Conflict of Interest

The authors declared having no conflict of interest in the research work.

APPENDICES

Appendix 1

Properties of portfolio sorted by cash flow yield (C/P ratio)

Variables	Portfolio I	Portfolio II	Portfolio III	Portfolio IV
CFY (%)	0.0281	0.0668	0.1165	0.2715
Median	0.0294	0.0681	0.1214	0.2161
SD	(0.0094)	(0.0109)	(0.0164)	(0.2385)
SR (%)	0.6778	0.1446	0.1515	0.0177
Median	0.2658	0.0714	0.0250	-0.0476
SD	(1.4368)	(0.4561)	(0.5144)	(0.5643)
lnSize (Rs.)	22.1150	20.4863	18.9079	18.1523
Median	22.3743	20.8322	18.4930	17.9586
SD	(1.6797)	(1.6860)	(1.4802)	(0.9349)
B2M ratio	0.2131	0.4544	0.6619	1.1495
Median	0.1384	0.4052	0.6246	1.0451
SD	(0.2379)	(0.3012)	(0.3039)	(0.6287)
EY %	0.0207	0.0515	0.1013	0.2030
Median	0.0205	0.0535	0.1036	0.1743
SD	(0.0095)	(0.0153)	(0.0240)	(0.1135)