

RISK-RELATED DETERMINANTS OF STOCK PRICES IN AN EMERGING MARKET: EVIDENCE FROM BANGLADESH

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Abstract

The capital market acts as an intermediary, channeling surplus funds into productive investments that promote economic growth. This study examines the risk-related factors influencing the market prices of stocks in Bangladesh's corporate sector. Employing a quantitative approach, data from 120 manufacturing companies listed on the Dhaka Stock Exchange (DSE) for the period 2014–2024 were analyzed. A rolling 10-year window was applied to calculate the sample variables. The study measured operating leverage, financial leverage, total leverage, earnings per share (EPS), and systematic risk (Beta), and assessed their relationships with stock prices using correlation and regression analyses in SPSS and STATA. The results indicate significant associations: EPS exhibits a strong positive correlation with stock prices, whereas systematic risk (Beta) and operating leverage are negatively related. These findings identify key determinants of stock valuation in Bangladesh and provide valuable insights for investors, corporations, and policymakers.

1. Introduction

Stock markets are widely recognized as vital indicators of economic performance, reflecting and influencing industrial growth, financial stability, and overall development. By mobilizing surplus capital into productive investments, stock exchanges serve as a cornerstone for sustainable economic progress. In emerging economies such as Bangladesh, the stock market plays an increasingly important role in attracting investment, guiding resource allocation, and shaping expectations of future growth.

The stock market is widely regarded as one of the most important economic indicators of a country. From an overall economic perspective, Ologunde (2006) noted that the stock market enables the economy to make long-term commitments in real capital. Financial markets channel savings into efficient investments, thereby facilitating economic growth and

development (Bushra G. et al., 2016). The stock market also plays a vital role in developing the country's industrial sector (Sen and Ray, 2013). A proper understanding of risk and its underlying sources has been a significant concern for investors when making informed investment decisions.

Bangladesh offers significant opportunities for investment under its liberalized industrial policy and export-oriented, private sector-led growth strategy. The government acts as a facilitator, creating an enabling environment to expand both domestic and foreign private investment. The Board of Investment (BOI), established by the government to accelerate private investment, provides institutional support services to prospective investors (Bangladesh Bank, 2024). Over the past few decades, Bangladesh has witnessed a steady increase in the number of private and public companies.

Investors in the stock market often face significant challenges, particularly due to information gaps, which heighten their concerns about investment decisions (Zhang et al., 2018). Stock market co-movements are influenced by how markets respond to global information flows, maintain attention to dynamic frequency-time domain properties, and exhibit relationships over both short- and long-term holding periods (Alam et al., 2019; Buriev et al., 2018).

The current investment environment in Bangladesh is increasingly attractive to investors across various industries. Factors such as flexible rules and regulations, a government-supported business environment, affordable labor, low-cost raw materials, an efficient banking system, a robust monetary system, favorable taxation, and accessible financing make the country highly appealing for investment. Both local and foreign investors are increasingly choosing Bangladesh as a destination for their investments. With abundant profitable opportunities available, the country continues to attract significant interest from investors.

Against this backdrop, the study investigates how various risk factors—operational, financial, and market-related—affect the market prices of corporate stocks. In particular, it examines the roles of leverage, earnings performance, and systematic risk in shaping valuation outcomes. By addressing these issues, this research contributes to the academic literature on risk-return dynamics while also offering actionable insights for investors, firms, and policymakers navigating Bangladesh's evolving capital market.

Significance of Research

Conducting this research is important for several reasons. It provides insights into operational, financial, and market risks while also reviewing the financial performance of selected companies in Bangladesh. The study will benefit the corporate sector by enhancing understanding of how to mitigate these risks and helping companies manage operational, financial, and market-related challenges in the current market. Additionally, investors can use the findings to make more informed decisions and build secure investment portfolios. Overall, the research offers valuable guidance for policymakers, corporations, investors, and other participants in

Bangladesh's financial markets, supporting more effective decision-making and risk management.

Theoretical Framework

Operating and Business Risk. Operating risk arises from day-to-day business activities and is influenced by fixed and variable costs. Firms with high fixed costs face amplified profit variability, increasing business risk.

Financial Risk. Financial risk results from financing decisions, particularly the use of debt. While leverage can amplify shareholder returns, it also increases earnings volatility and risk exposure.

Market Risk. Also known as systematic risk, market risk reflects external factors such as macroeconomic shifts and political instability. Unlike firm-specific risks, market risk cannot be eliminated through diversification and is commonly measured by Beta.

2. Literature Review

Several studies have examined risk-related factors influencing stock prices worldwide. Global research highlights a range of determinants that drive stock price movements. To achieve the research objectives, numerous articles and papers from reputable journals were reviewed.

Considering other related factors, earlier studies by Bradrania et al. (2015), Amihud and Mendelson (1986), Chang et al. (2010), and Lam and Tam (2011) have highlighted the crucial relationship between market liquidity and stock returns. According to Bradrania and Peat (2014), Cao and Petrsek (2014), and Lee (2011), fluctuations in liquidity significantly influence investment decisions. Given their strong correlation with stock prices, Li et al. (2012) and Nadarajah et al. (2018) focused on the importance of market liquidity, cost of capital, and firm value.

Research by Srivastava et al. (2017), using monthly time series data, identifies the price-earnings ratio, inflation, industrial production, foreign exchange rate, and dividend yield as key sources of systematic risk in the Indian stock market within the broader context of global financial markets. Panda and Kamaiah (2001) found a significant correlation between stock returns, the wholesale price index, and real economic activity. Conversely, Nafooti et al. (2013) reported that systemic risk in the Tehran Stock

Exchange does not have a substantial impact on the variables studied.

Using a linear regression model, Malhotra and Tandon (2013) examined the factors influencing stock prices among NSE 100 companies, finding a positive correlation between the study variables and stock prices. Similarly, Alam S. (2016) investigated the key determinants of share prices in the Bangladeshi capital market and recommended that investors consider these factors carefully before investing in any particular sector.

Ghufran et al. (2016) found that market volatility is significantly associated with investors' engagement levels, risk attitudes, and overconfidence. Similarly, Sindhu et al. (2014) reported that cash flows, leverage, profitability, growth, market capitalization, and dividends collectively explain 65% of the variation in share prices.

Joy et al. (1977) reexamined how stock prices respond to reports of ostensibly unexpected profit adjustments. Chang and Ting (2000) applied the

variance ratio (VR) test to Taiwan's stock market and found that the weekly value-weighted market index did not follow a random walk.

Rahman et al. (2006) identified a negative relationship between stock returns and beta, reflecting market inefficiency. Hartono (2004) examined the association between stock prices and positive earnings information and found evidence of the opposite effect. Considering the interconnected nature of international markets in the era of globalization, Sun and Hou (2018), Morales and Andreosso-O'Callaghan (2012), and Chang et al. (2010) explored how volatility in specific markets is closely linked with other markets.

Oseni (2009) found a significant positive relationship between stock prices and earnings per share (EPS), oil prices, dividends per share, and GDP. In contrast, Subing et al. (2017) reported that inflation negatively affects stock prices, while the price-earnings ratio, return on assets, and oil prices have a positive impact.

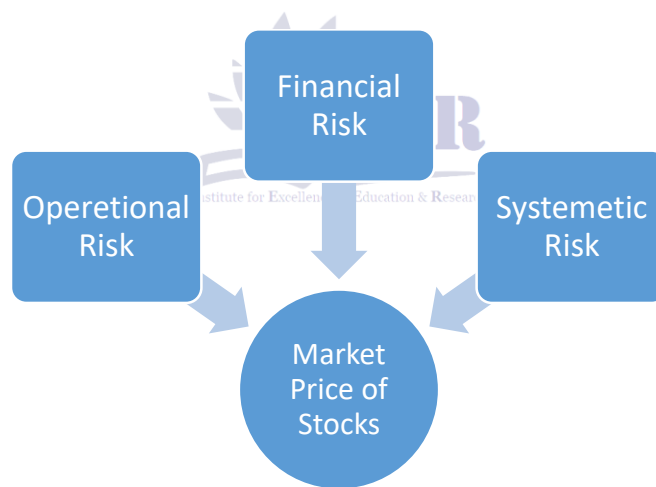


Figure-1: Conceptual framework of market price of stocks

Source: Author's Experiment

Numerous empirical studies across various financial markets have shown that investment decisions are not solely determined by traditional financial theories; they are also influenced by behavioral finance factors (Baker & Wurgler, 2007; Caparrelli et al., 2004; Chaudhary, 2013; Fogel & Berry, 2006; Jokar & Daneshi, 2018; Olsen, 1998; Shleifer, 2000; Waweru et al.). However, to assess the prevalence and effectiveness of behavioral finance, reliable data and testable estimations are essential (Sent, 2004).

Hamid et al. (2017) analyzed the stock market returns of Pakistan, India, Sri Lanka, China, Korea, Hong Kong, Indonesia, Malaysia, the Philippines, Singapore, Thailand, Taiwan, Japan, and Australia to assess weak-form market efficiency. They concluded that monthly returns do not fluctuate randomly across the Asia-Pacific countries.

Studies by Amihud and Mendelson (1986), Brennan et al. (1998), and Chordia et al. (2001) found a negative relationship between expected returns and liquidity in U.S. stocks. According to Chordia (2000),

Liu (2006), and Pástor and Stambaugh (2003), stock liquidity is a key determinant of the cost of financial assets.

However, finance practitioners often prefer the Capital Asset Pricing Model (CAPM) for evaluating the cost of equity (e.g., Bruner et al., 1998; Graham & Harvey, 2001). In studies of market portfolios, Goyal and Santa-Clara (2003), Graham and Harvey (2001), and Glosten et al. (1993) found no positive relationship, whereas Darrat et al. (2011), Bali et al. (2009), Bali and Peng (2006), and Ghysels et al. (2005) reported statistically significant evidence of a positive relationship. Conversely, Glosten et al. (1993) and Harvey (2001) documented a negative relationship.

Several studies have examined behavioral finance aspects of investors in the stock market and their impact on stock prices (Bakar & Yi, 2016; Bashar et al., 2017; Caparrelli et al., 2004; Chaudhary, 2013; Mouna & Anis, 2014; Trehan & Sinha, 2018). Research on the Dhaka Stock Exchange has yielded conflicting findings regarding the risk–return relationship, using various models and datasets (e.g., Rahman & Baten, 2006; Ali et al., 2010; Hasan et al., 2011).

Numerous studies have been conducted globally on risk–return analysis in the stock market. While some research has examined risk-related factors affecting stock prices, studies focusing on Bangladesh remain limited. Therefore, there is a need for research to identify the risk-related factors influencing stock prices and other relevant determinants of stock market performance in the country.

Here are the details of our sample data:

Sector	No. of Listed Companies in DSE
Ceramic	05
Fuel and Power	23
Pharmaceutical and Chemicals	34
Textile	58
Total	120

Additionally, the financial performance of the selected firms over a ten-year period was analyzed, and the results for the considered variables were calculated. For this study, the mean values of the ten-year data were computed, resulting in an effective

Hypothesis

H_0 : Risk related factors are not associated with market price of stocks.

H_1 : Risk related factors are associated with market price of stocks.

Research Objectives

The primary objective of this research is to examine the functional relationships between the market prices of common stocks traded on the Dhaka Stock Exchange (DSE), a developing capital market in Bangladesh, and the risk-related factors that influence these prices. This study aims to identify and analyze the underlying variables affecting investment decisions in the stock market, including financial and risk-related factors that impact stock price valuation and contribute to the broader direction of financial stability.

2. Methodology of the Study

To achieve the research objectives, this study utilized various secondary sources, including published annual reports of selected corporations and relevant information from the Dhaka Stock Exchange (DSE) website. A convenient sampling technique was employed to select four corporate sectors—pharmaceutical, ceramic, power generation, and textile—listed on the DSE. A total of 120 companies from these sectors were chosen based on their financial stability and performance. The study relied primarily on secondary data obtained from the annual reports of the selected companies for the period 2014–2024.

sample size of 120. Various descriptive and inferential statistics, including maximum, minimum, range, mean, standard deviation, coefficient of variation, Pearson's correlation, and multiple regression analysis, were employed to analyze the collected data

and facilitate comparisons. The Statistical Package for Social Sciences (SPSS) and STATA software were used for analytical purposes. Furthermore, a regression equation was developed to examine the impact of multiple risk-related factors on the market prices of stocks in the selected industries, and several statistical tools were applied to interpret the results.

Prior to analysis, summary statistics were computed for all variables. The regression model was then

estimated, with the market price of the stock serving as the dependent variable. The independent variables included the degree of operating leverage (DOL), degree of financial leverage (DFL), earnings per share (EPS), and systematic risk (Beta). These variables were treated as the fundamental factors in the model. Subsequently, the study also discusses the technical factors that influence stock prices.

The equation for the technical factors in the analysis is specified as follows:

$$Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon$$

4. Findings and Analysis

4.1. Variable Measurement

Corporations are exposed to various indicators of operational, financial, and market risk. However, this study focuses on the following factors as measures of these risks.

Types of Risk	Risk Indicators
Operational Risk	Degree of Operating Leverage (DOL)
Financial Risk	Degree of Financial Leverage (DFL)
Market Risk	Beta of Individual Corporation

Operating leverage is used to measure the operating risk of a corporation, while financial leverage is employed to assess financial risk. Beta, which represents a stock's sensitivity to the market, is used to measure and describe the impact of systematic risk. The formulas for calculating operating leverage, financial leverage, and Beta are as follows:

$$\text{Operating Leverage} = \frac{\text{Cost of Goods Sold}}{\text{Earnings before Interest \& Tax}} \dots\dots\dots(i)$$

$$\text{Financial Leverage} = \frac{\text{Earnings before Interest \& Tax}}{\text{Earnings before Interest \& Tax} - \text{Interest}} \dots\dots\dots(ii)$$

$$\text{Market risk} = \text{individual stock's beta} = \beta_{im}$$

Where, β_{im} = sensitivity or responsiveness of stock's return with market movement.

Calculation process,

$$\beta_{im} = \text{Correlation Coefficient Stock Standard} \times \frac{\text{Standard Deviation of Stock Returns}}{\text{Standard Deviation of market Returns}} \dots\dots(iii)$$

Mathematical Model:

$$Y_1 = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon \dots\dots\dots(iv)$$

Where,

Y_1 = Market price (on an average),

X_1 = DOL (degree of Operating leverage),

X_2 = DFL (degree of financial leverage),
 X_3 = DTL,
 X_4 = EPS,
 X_5 = Beta,
 ε = Error term

In this study, the market price of a stock serves as the dependent variable, while the degree of operating leverage (DOL), degree of financial leverage (DFL),

earnings per share (EPS), and systematic risk (Beta) are treated as the independent variables.

4.2. Descriptive Statistics

After performing the calculations in Excel, the data were transferred to SPSS for analysis. Table 1 presents a summary of the degree of operating leverage (DOL), degree of financial leverage (DFL), degree of total leverage (DTL), earnings per share (EPS), and systematic risk (Beta) for the full sample. Descriptive statistics are employed to summarize the basic characteristics of the data, providing simple yet informative measures of the sample and its variables. The descriptive statistics indicate that the

maximum values of DOL and DFL are relatively close (23.00 and 25.29, respectively), although their mean values differ considerably. While the minimum value of DOL is 0.70, DFL reaches -23.83. The standard deviations of DOL and DFL are 6.62 and 8.19, respectively. From the table, it is also observed that Beta, as a measure of systematic risk, exhibits the lowest standard deviation, whereas the market price shows the highest. Earnings per share (EPS) range from a minimum of 0.585 to a maximum of 38.15.

Table 1: Descriptive statistics of considered variables

	N	Minimum	Maximum	Mean	Std. Deviation
DOL	120	.70	23.00	7.60	6.62
DFL	120	-23.83	25.29	1.89	8.19
DTL	120	-328.94	62.61	-1.0289	79.36
EPS	120	.53	38.15	7.049	8.72
BETA	120	.5850	1.313	.96	.2255
Price	120	11.98	732.13	9.37	158.45
Valid N	120				

Systematic risk (Beta) has a minimum value of 0.585 and a maximum value of 1.313, with a mean of 0.96 and a standard deviation of 0.2255. These results

indicate that the Beta values of the sampled companies show relatively little variation, with most observations closely clustered around the mean.

4.3. Correlation Analysis

To examine the precise relationship between the independent and dependent variables, bivariate correlation analysis was conducted. According to

standard conventions, the values of the correlation coefficient range between -1 and +1.

The summary result can be presented through the following table.

Table 2: Correlation structure of influential factors with market price

Influential factors	Market price
DOL	-0.240
DFL	0.156
DTL	0.100
EPS	0.889

BETA

-0.534

According to Farrar and Glauber (1964) and Ratner (2008), a general rule of thumb for interpreting Pearson correlation coefficients is as follows: values between 0 and 0.3 indicate a weak positive correlation, while values between 0 and -0.3 indicate a weak negative correlation. Coefficients between 0.3 and 0.7 (or -0.3 and -0.7) represent a moderate correlation, and values greater than 0.7 indicate a strong correlation. The findings for each factor influencing stock market prices are interpreted separately below.

4.3.1. Correlation between degrees of operating leverage (DOL) and market price of stocks

Table 2 shows that Pearson correlation analysis indicates a weak negative relationship between market price and the degree of operating leverage (DOL), with a correlation coefficient of -0.240. This suggests that higher operating risk is associated with lower market prices, and conversely, lower operating risk corresponds to higher market prices. When operating risk increases for a firm, investors may be reluctant to purchase its stock, which is a common market behavior. Therefore, the finding reflects a meaningful inverse relationship between DOL and stock market prices.

4.3.2. Correlation between degrees of financial leverage (DFL) and market price of stocks

Table 2 shows that the correlation analysis indicates a weak positive relationship between market price and the degree of financial leverage (DFL), with a correlation coefficient of 0.156. This suggests that higher financial leverage is generally associated with higher market prices, although the effect is relatively modest. Investors and analysts often argue that increasing leverage through additional debt financing can benefit shareholders. If financial risk rises for a

firm, investors may be inclined to purchase its stock, anticipating potential future growth. However, the actual outcome depends on the firm's effective use of financial leverage.

4.3.3. Correlation between earning per share (EPS) and market price of stocks

Table 2 indicates that correlation analysis reveals a strong positive relationship between market price and earnings per share (EPS), with a correlation coefficient of 0.889, suggesting a near-perfect positive association. Investors are highly attentive to EPS and often base their investment decisions on its positive trends. Therefore, the strong correlation between these variables underscores the significance and reliability of the calculated results.

4.3.4. Correlation between systematic risk (beta) and market price of stocks

Systematic risk can negatively influence stock prices during periods of high market volatility. It represents the inherent risk present in the entire market or in a specific market segment and cannot be eliminated through diversification. The overall stock market is always exposed to the possibility of significant disruptions, and this risk tends to increase when asset returns become more highly correlated during periods of heightened volatility and market drawdowns.

Table 2 shows that correlation analysis reveals a moderate negative relationship between market price and systematic risk (Beta), with a correlation coefficient of -0.534. This suggests that higher systematic risk is generally associated with lower market prices. Conversely, when systematic risk is lower, market prices tend to be higher. This finding indicates that most investors prefer to avoid risky securities, and a reduced demand for such securities can lead to declines in market prices.

4.4. Regression Analysis:

Table 3: One way ANOVA

Model	Sum of Squares	df	Mean square	Sig.
Regression	443625.042	5	88725.008	.000

Predictors: (Constant), BETA, DTL, DOL, EPS, DFL. Dependent Variable: Price

To reject the null hypothesis, the following condition must be satisfied:

$P \text{ value} < \alpha$

Here $\alpha = 0.05$

In this study, α is set at 0.05. The calculated p-value is 0.000, which is lower than the significance level (α), indicating that the null hypothesis is rejected. Consequently, the alternative hypothesis is accepted. This means that the observed result is statistically significant, as the p-value of 0.000 (0.00%) is well below the 5% threshold.

Table 4: Model summary of linear regression

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	.930	.905	48.83

The coefficient of determination (R^2) represents the proportion of the variance in the dependent variable (market price) explained by all independent variables. In this study, the R^2 value indicates that the selected independent variables explain 93% of the variation in stock prices, demonstrating their strong influence. The adjusted R^2 value, which accounts for the number of predictors, shows that 90.05% of the variation is explained, confirming the robustness of the model. These results suggest that the majority of the variability in market prices is accounted for by the chosen independent variables. Based on the high explanatory power indicated by R^2 , the null hypothesis can be rejected.

4.5. Coefficients

According to the calculated results presented above, operating risk (DOL), financial risk (DFL), and earnings per share (EPS) are highly influential in determining the market price of stocks. These three variables significantly explain the variation in stock prices at the 5% level of significance. Among them, EPS is the most influential, with a significance level of 0.000. This indicates that investors frequently consider a firm's earnings per share when making stock purchase decisions. Additionally, investors are also attentive to firm-specific business risks as well as overall financial risk.

Table 5: Coefficients

	Unstandardized Coefficients		Sig.
	coefficient	Std. Error	
(Constant)	140.599	68.867	.061
DOL***	-7.182	1.730	.001
DFL**	4.600	2.487	.086
DTL***	-.563	.262	.050
EPS***	15.562	1.515	.000
BETA**	-115.284	59.267	.072

Dependent Variable: Price

If a 10% level of significance is considered, financial risk (DFL) and systematic risk (Beta) can also be regarded as important variables that significantly influence the variability of stock prices. Overall, the independent variables included in this study

5. Conclusion

demonstrate substantial explanatory power over the market value of corporate stocks. Based on these results, the null hypothesis is rejected, and the alternative hypothesis is accepted.

The stock market, as a segment of the capital market, plays a pivotal role in the growth of industry and

commerce and serves as an indicator of a country's future economic sustainability when it is active. This study is based on data published in the annual reports of firms listed on the Dhaka Stock Exchange (DSE). In this study, the market price of stocks serves as the dependent variable, while the degree of operating leverage (DOL), degree of financial leverage (DFL), degree of total leverage (DTL), earnings per share (EPS), and systematic risk (Beta) are treated as independent variables. The empirical results support the hypothesis that DOL, DFL, EPS, and Beta are significantly associated with stock market prices. Specifically, the study finds a negative relationship between market prices and both operating leverage (DOL) and systematic risk (Beta), with DOL showing a weak negative correlation and Beta a moderate negative correlation. Conversely, financial leverage (DFL) and earnings per share (EPS) exhibit a positive relationship with stock prices. Overall, this research concludes that DOL, DFL, DTL, EPS, and systematic risk are key determinants of stock prices in Bangladesh. The findings provide valuable insights for policymakers, investors, corporations, and other participants in the financial market.

Key findings

- ✓ Negative correlation between market price and degree of operating leverage (DOL).
- ✓ Weak positive correlation between market price and degree of financial leverage (DFL)
- ✓ Strong positive correlation between market price and earnings per share (EPS)
- ✓ Moderate negative correlation between market price and systematic risk (beta)

Recommendation

This study has examined the factors influencing stock market prices. Based on the overall findings, the following recommendations are proposed for all relevant stakeholders:

- Investors should consider both firm-level risks (operational and financial) and market risks when making decisions.
- Regulators should enforce stricter reporting standards to improve transparency of financial statements.

- Policymakers should stabilize macroeconomic factors to reduce systematic risk.
- Investor education programs are needed to enhance awareness of risk factors in stock valuation.

Practical implication

This research provides valuable insights into operational, financial, and market risks. Additionally, it reviews the financial performance of companies in Bangladesh, offering useful guidance to the corporate sector. The study enhances understanding of how to mitigate these risks and assists firms in managing operational, financial, and market-related challenges. Stakeholders and investors can benefit from the findings by gaining essential information on various risk factors, which can support more informed and effective investment decisions.

Limitations and Future Research

The study relied on secondary data from a limited number of sectors and years. Expanding the sample across industries and incorporating behavioral finance perspectives would enrich future research. Primary data on investor perceptions could also complement financial analysis.

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