

REVISITING THE RELATIONSHIP BETWEEN MARKET MULTIPLES AND PORTFOLIO RETURNS: A CASE STUDY OF PAKISTAN

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Abstract

In this paper, we revisit the relationship between market multiples and portfolio returns in the case of the Pakistani equity market throughout the crisis period of 2017 to 2023, marked by currency devaluation (over 50% decline in Pakistani rupee), inflation at 38%, political instability, and a 30-billion-dollar annual increase in external debt burdens. Despite extensive global research on market multiples such as price to book ratio (P/B), price to earnings ratio (P/E), price to sales ratio (P/S), price to cash flow (P/CF), enterprise multiple (EV/EBITDA), and earnings per share (EPS), very little research has been done in case of Pakistan, motivating this analysis of how macroeconomic shocks disrupt traditional valuation of dynamics? The data has been collected through simple random sampling of 118 non-financial firms (10 of which defaulted during the period) listed at the Pakistan Stock Exchange (PSX) to provide an overall nationwide view of the situation. The results showed high dispersion and negative values amid distress. Findings show that P/CF and EPS are robust predictors of holding period returns (HPR), with positive significance across years, whereas P/E and P/B show negative relationships. This addresses research gaps in emerging market crises and offers adaptive insights for investors.

Keywords: Price to Book ratio (P/B), Price to Cash Flow (P/CF), Price to Earnings ratio (P/E), Price to sales ratio (P/S), Enterprise Multiple (EV/EBITDA), and Earnings per Share (EPS)

INTRODUCTION

Market multiples, including Price-to-Earnings (P/E), Price-to-Book (P/B), and Price-to-Cash Flow (P/CF) ratios, are vital variables for many investors seeking to identify undervalued or overvalued stocks. Earnings per share (EPS) and the Enterprise Multiple (EV/EBITDA) also affect portfolio returns. The existing research indicates that these value multiples have some predictive power for cross-sectional stock returns in normal circumstances. In their early study, Daniswara and Daryanto (2019) provided some evidence in support of earnings yield, while subsequent studies have found that value-based strategies that utilize low multiples deliver better-than-average returns in normal market conditions (Akhtar, 2021; Crawford et al., 2019; Fatima et al., 2026). Considerable empirical evidence has established the place of market multiples in portfolio construction and investment consideration, in both developed and emerging markets. But none of these market multiples have been studied simultaneously.

The validity of these valuation metrics wavers in a period of extreme macroeconomic dislocation. The Pakistani economy between 2017 and 2023 provides an extreme example of such dislocation, faced with unprecedented economic difficulties during this period. Hence, our sample data are from Pakistan and comprise 118 non-financial firms for the period 2017-2023. Specifically, the country's currency, the Pakistani rupee, lost more than half its value against the US dollar, while inflation climbed to 38% - the highest in fifty years (Annual Report, 2019-20). The country was forced to manage more than \$30 billion in annual external borrowing obligations and to contend with tremendous political instability following the first-ever no-confidence vote to remove a sitting prime minister (Khan, 2020; Stavar, 2025; Karim et al., 2026). All of this created a situation where historical corporate fundamentals were potentially overwhelmed, rendering the predictive power of the conventional market multiples (P/B, P/E, and EV/EBITDA) and making cash flow and earnings per share the most stable and reliable predictors, leading to questions about the traditional methods of valuing stocks even further in negative market conditions. Considerable global research has demonstrated that market multiples can be used to predict stock returns in relatively stable economic settings. Foundational and recent studies, such as Daniswara and Daryanto (2019) and Kai and Rahman (2018), confirm that value strategies based on price-to-earnings and price-to-book ratios generate

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abnormal returns. There remains a notable and essential gap in the financial literature on the use and validity of these valuation metrics in emerging markets during unprecedented economic shocks. The valuation models we use were largely designed in tranquil contexts, and we have no clear models for crisis-period investing when economies are facing a simultaneous currency crisis, hyperinflation, and/or political instability.

This issue is especially severe in Pakistan. Prior work, such as that of Muhammad and Ali (2018), adds to our understanding of the Pakistani marketplace; however, their results are based on different economic circumstances and may not apply to the extreme upheaval in Pakistan during 2017-2023. Pakistan faced a dire economic storm, marked by currency depreciation exceeding 50%, inflation at its highest level of 38% (Annual Report, 2019-20), and political turbulence. This creates uncertainty for investors, analysts, and policymakers hoping to use these models for capital allocation, risk assessment, or regulatory levers. This study aims to address this significant gap by quantitatively examining how the traditional relationships between market multiples and stock returns were disrupted, severed, or altered during this tumultuous macroeconomic environment.

This study aims to measure and compare the individual and combined explanatory power of various market multiples on stock returns through uni-variate and multiple regression analysis across the defined crisis period and to identify and rank the performance of market multiples as reliable indicators by analyzing their statistical significance, correlation, and consistency in cross-sectional and portfolio-based tests, also to evaluate the performance of value-based growth strategies by comparing the mean returns of portfolios formed on high and low market multiples for each year of the study. To maintain a narrow focus on valuation dynamics, the research specifically limits itself to a defined period of crisis. The time frame in this study is strictly limited to a turbulent seven-year period from 2017 to 2023, characterized by distinct and severe macro-economic shocks in Pakistan. The study will also narrow its geographic focus and associated market-place to firms listed on the Pakistan Stock Exchange (PSX). These firms will be limited to 118 publicly traded, non-financial firms, which provides a broad, cross-sectional perspective of the industrial landscape while justifiably excluding financial firms due to their distinct and complex accounting standards, which create issues with comparability in ratio analyses (Gospodarchuk & Suchkova, 2019; Saidi & Bakhkat, 2025; Rauf et al., 2026). The research will focus on a specific set of six already established market multiples (P/E, P/B, P/S, P/CF, EV/EBITDA, and EPS), and their respective direct measures to Holding Period Return (HPR). It is important to reiterate that this study is not about building a new asset pricing model, but rather about empirically assessing the performance and reliability of these common, traditional multipliers and measures in extreme economic conditions.

LITERATURE REVIEW

Both developed and emerging markets have extensively studied the relation between stock returns and market multiples. Market multiples such as price-to-earnings ratio (P/E), price-to-book ratio (P/B), price-to-sales ratio (P/S), price-to-cash flow ratio (P/CF), Enterprise Multiple, and earnings per share serve as important indicators for evaluating whether stocks are overvalued, undervalued, or fairly priced relative to their intrinsic value. The literature review analyzes the empirical evidence on how these market multiples anticipate stock returns across different geographical markets and time periods.

Basu (1983) has one of the foundational works in this area, pointing out the relationship between Earnings to price ratio (E/P ratios), size of a firm, and the returns on common stock for NYSE firms, aiming to determine the significance of E/P and size effects in explaining expected returns, particularly in the context of asset pricing models. The main dependent variable is stock returns, which are influenced by both earnings yield and firm size, while abnormal returns, defined as returns more than expected levels based on systematic risk, are also examined. The independent variables include the earnings-to-price ratio, representing earnings per share relative to the stock price, and firm size, measured by market capitalization, to examine their impact on stock returns and their correlation with E/P ratios.

The study by Chan, Hamao, and Lakonishok (1993) uses a comprehensive dataset from 1971 to 1988 that covers monthly stock data from the Tokyo Stock Exchange (TSE), including all types of firms, from both manufacturing and non-manufacturing, as well as de-listed securities. The results show a significant relationship between the fundamental market multiples and expected returns in the Japanese market. The book-to-market ratio and cash flow yield have a significant positive impact on expected returns, whereas the effect of firm size is highly dependent on the time period and research model. Another interesting aspect is that the study finds no significant evidence of a positive earnings yield effect, even after controlling for other variables. The results suggest that the most important variable in predicting stock returns is the book-to-market ratio, having an expected difference in returns of about 0.44 percent per month between firms ranked by this ratio.

Another study by Loughran and Wellman (2011) examines the relationship between average stock returns and the enterprise multiple (EM), focusing on how EM predicts expected returns. The raw monthly return for firm i in calendar month j is the dependent variable, while market size (market capitalization), book-to-market ratio (BE/ME), prior returns, and enterprise multiple itself are independent variables. Researchers analyzed the data by conducting monthly regressions from 1963 to 2009. The results indicated that low firms with low EM significantly outperform high firms with high EM, with a return premium of 5.28% per year, suggesting that EM is a robust predictor of stock returns across various models.

A similar study by Kheradgar, Ibrahim, and Nor (2011) uses panel data from the Malaysian stock exchange to investigate the relationship between three independent variables—Dividend Yield (DY), Earnings Yield (EY), and Book-to-Market Ratio (B/M)—and the dependent variable, Stock Returns. The study finds that stock returns can be effectively predicted by financial ratios in the Malaysian market, with the Book-to-Market Ratio (B/M) exhibiting the highest predictive power among the ratios analyzed. The findings indicate that when combined in a multiple regression model, the predictive ability of these financial ratios is significantly enhanced. Overall, the study confirms that financial ratios play a unique and complementary role in predicting stock returns, aligning with similar findings in developed markets.

Lan Sun (2012) analyzed the Australian equity market from 1995 to 2004, utilizing the data from Aspect FinAnalysis. The dependent variable is the excess stock returns, and the effect of the following independent variables is analyzed: Price-to-Earnings (P/E) ratio, Price-to-Book (P/B) ratio, and market capitalization (firm size). The results of the study indicate that over a short-term period, the P/E ratio and firm size have less predictive power for stock returns. However, these stocks tend to outperform over longer holding periods, as shown by the significant returns associated with lower price-to-book ratios. The analysis aligns with previous findings in the literature, showing that excess returns decrease as P/E increases. The study concludes that P/E is useful for predicting long-term returns but is less effective for short-term predictions of stock returns and emphasizes the importance of the price-to-book ratio in the Australian market context. On the contrary, Akhtar and Rashid (2015) investigated in their study, the relationship between stock returns and market multiples for Pakistani market, specifically focusing on four independent variables: Price to Earnings ratio (P/E), Price to Book (P/B), Price to Sales (P/S), and Price to Cash Flow (P/CF) ratios, with the Holding Period Returns (HPR) as the dependent variable. The results indicate a large negative relationship between the Price to Earnings (P/E) ratio and stock returns, which was particularly noted in the year 2010, while the Price to Cash Flow (P/CF) ratio also showed a negative relationship in the same year. On the contrary, the Price to Book (P/B) ratio demonstrated a significant positive relationship with stock returns among the years 2005, 2007, and 2010, and the Price to Sales (P/S) ratio showed a positive relationship in 2004, 2006, and 2010. Overall, the findings suggest that the P/B ratio has the most predictive power for returns compared to the other market multiples, which highlights its importance for investors in the context of the Karachi Stock Exchange.

Namira and Nugroho (2018) published this study, which uses quantitative data from non-financial companies listed on the Indonesian Stock Exchange over the period 2006 to 2015. The dependent variable is the Stock Return, while the independent variable is the Enterprise Multiple (EV/EBITDA). The results of the study indicate that firms with high enterprise multiples tend to have lower stock returns than those with low enterprise multiples. Lai and Cho (2016) in this study have utilized Price to Sales Ratio (PS), Market to Book Ratio (MB), Earnings per Share (EPS), Dividend Yield (DY), and Market Capitalization (Firm Size) as independent variables, while the dependent variable is Stock Returns (R). The results indicate that only two independent variables, the Market-to-Book Ratio and Dividend Yield, have a significant impact on stock returns, with their p-values below the 0.05 threshold, suggesting their effectiveness as predictors. On the contrary, the Price-to-Sales Ratio, Earnings per Share, and Firm Size were found to be not significant while predicting stock returns. Overall, the study's findings suggest that while certain financial ratios can effectively predict stock returns in the Hong Kong market, others may not have the same predictive power.

Igrejas, da Silva, Klotzle, Pinto, and da Gama Silva (2017) in this study use quantitative data covering the period from 2005 to 2013 for companies listed on the BM&F BOVESPA index. The independent variable is the Enterprise Multiple (EV/EBITDA), and the dependent variable is future stock returns. There is a strong negative relationship between the enterprise multiple and future stock returns, as shown by the study's results, indicating that companies with high enterprise multiples tend to exhibit lower returns than those with lower enterprise multiples. Specifically, the investment strategy of buying low-EV/EBITDA stocks and selling high-multiple stocks yielded abnormal returns of 1.24% per month, for an annualized return of 15.94%, even after controlling for risk factors such as market size, market premium, and book-to-market value. The findings highlight the relevance of the enterprise multiple as a significant predictor of stock

returns, providing insights for investment strategies for financial analysts and investors in the Brazilian market.

Akhtar (2021) in his study used emerging (ASEAN) and developed (European) markets to investigate the relationship between market multiples and portfolio returns, with independent variables such as price/book ratio, price/cash flow ratio, price/dividend ratio, price/sales ratio, and price/earnings ratio, while the dependent variable is the holding period return (HPR). The results indicate significant differences in the impact of market multiples on stock returns between ASEAN and European markets, with R-squared values of 0.110 for ASEAN and 0.241 for Europe, suggesting that market multiples explain a greater percentage of stock return variation in developed markets. Specifically, the price/book ratio, price/cash flow ratio, price/dividend ratio, and price/sales ratio positively influenced stock returns in both regions, whereas the price/earnings ratio showed a strong positive relationship in European markets but not in ASEAN markets. The dynamic panel model results confirmed that the interim HPR was significantly and positively related, although the price/cash flow ratio became insignificant in both markets, and the dividend growth and price/dividend ratios lost significance in the ASEAN and European markets, respectively. Additionally, the analysis highlighted that the 2008-2009 financial crisis and the 2011-2012 European debt crisis affected stock returns negatively, with significant variation in the predictive power of market multiples before and after these crises, underscoring the necessity for investors to consider local market characteristics and economic conditions when developing future investment strategies.

RESEARCH METHODOLOGY

RESEARCH DESIGN

The research uses a quantitative, longitudinal panel data design to examine the impact of market multiples on stock returns during a crisis. The design is basically explanatory, and is aimed at testing and explaining how independent variables, that is, price-to-earnings (P/E), price-to-book (P/B), price-to-cash flow (P/CF), price-to-sales (P/S), the enterprise multiple (EV/EBITDA), and earnings per share (EPS), affect the dependent variable, holding period return (HPR), over a given period of economic strain. The methodology uses secondary data derived annually from the audited financial statements of non-financial corporations listed on the Pakistan Stock Exchange (PSX) over a salient seven-year period, 2017-2023. The longitudinal panel data structured layout for the research is particularly useful as it provides the opportunity to compare firms, simultaneously observing differences between firms at a given moment in time and observing changes within firms over time; thereby providing a robust design to observe the fluid and evolving nature of value relationships (Hsiao, 2022; Zahid et al., 2026). By assessing how the effects of these financial metrics vary across different phases of the macroeconomic crisis, this design provides a strong avenue for analyzing the disruption and scientific breakdown of traditional valuation models, a direct research agenda emphasized in the current emerging market finance literature (Indrawati et al., 2020; Tahir et al., 2026).

DATA COLLECTION

DATA TYPE AND SOURCE

This research is based entirely on secondary data to maintain objectivity, reproducibility, and audited financial data. The main source of data is the official website of the Pakistan Stock Exchange (PSX), which is a publicly available and credible source of the annual financial reports of all listed companies. The full set of annual financial statements, including the income statement, balance sheet, and cash flow statement, was carefully collected each year from this source for the selected companies and years. Using official financial data sources has been a well-accepted practice for maintaining data accuracy and credibility (Nguyen & Khominich, 2024).

SAMPLING TECHNIQUE AND SAMPLE SIZE

A Simple Random Sampling method was used to create a representative sample of the market. This is a probabilistic method, and every non-financial firm on the PSX had an equal chance of being selected, thus reducing selection bias and improving the applicability of the results to the broader population of non-financial firms in Pakistan (Black & Babin, 2019; Choudhary et al., 2026). The sampling frame consisted of an initial random draw of 180 firms. The final sample was limited to 118 non-financial firms to provide a balanced, complete panel dataset for a longitudinal study. We removed firms with missing or incomplete data in any year from 2017 to 2023.

STUDY PERIOD AND DATA POINTS

The study's time frame, from 2017 to 2023, was intentional to cover the full recent macroeconomic crisis in Pakistan and to provide a rational context for assessing valuation changes in times of distress. The raw data points taken directly from the financial statements included: year-end Stock Prices, Net Income, Dividend Payments, Number of Outstanding Shares, Total Debt, Cash and Cash Equivalents, Market Capitalization, Operating Income, Depreciation and Amortization, Total Sales, and Book Value of Equity. These raw

quantities were used to compute final market multiples and holding period return, our main variables for empirical analysis.

DATA ANALYSIS

Data will be analyzed using the Statistics and Data (STATA), version 17, using a structured multi-phase process developed to achieve data that are reliable and robust enough to provide good findings. The first phase of the analysis will consist of an intensive screening and cleaning process to identify and address missing values, as well as data entry errors or outliers; as has been indicated, the inclusion of the 10 defaulted firms will remain in the data-set, as they are necessary to fully illustrate the range of corporate distress period, and to increase the ecological validity of the study (Bell, Harley, & Bryman, 2022). Descriptive statistics will be calculated for the variables (HPR, PER, PBV, PCF, PS, EPS, EV/EBITDA, etc.) to summarize the central tendency and variability of the dataset and will be a necessary context to clearly present the high degree of volatility in the crisis-era dataset. Pearson's correlation analysis will be used to calculate a correlation matrix to determine bivariate relationships between variables and to assess potential multicollinearity to be considered when conducting regression analysis (Black & Babin, 2019). The main part of the inferential analysis will consist of univariate and multiple regression analysis. We will conduct univariate regressions for each year from 2017 to 2023 to examine the independent predictive power of each market multiple for Holding Period Returns (HPR). This analysis will also be supplemented by a multiple regression analysis of market multiples to evaluate the combined explanatory power of all multiples for HPR, while controlling for interrelationships among the multiples, providing a nuanced understanding of their relative importance in Pakistan during this period of economic turbulence.

CONSTRUCTION OF PORTFOLIOS

To empirically test the performance of value-based investment strategies during the crisis period, portfolios will be systematically formed and evaluated annually across the six market multiples of interest. The methodology is similar to that in prior empirical asset pricing papers (Fama & French, 2018) and involves a strict annual rebalance. For each year in the calendar between 2017 and 2023 (inclusive), the sample of 118 firms will be ranked in ascending order by one market multiple; here, for illustration, we can use the price-to-earnings ratio. They will be separated into two portfolios: a Low-Multiple Portfolio, consisting of the lowest 30% of firms ranked by multiples, and a High-Multiple Portfolio, consisting of the highest 30% of firms ranked by multiples. The annual formation of the portfolios ensures that the portfolios are based on the most recent financial data and market valuations to appropriately incorporate the dynamic nature of the crisis. The annual performance of the two portfolios will be evaluated by taking the mean Holding Period Return (HPR) for all firms included in each portfolio for that specific year. We will measure the effectiveness of the value-investing strategy—buy-low-multiple stocks and sell-high-multiple stocks—by measuring the annual return differential (Diff) between the average HPR of the Low-Multiple Portfolio and the average HPR of the High-Multiple Portfolio. A positive, statistically significant difference in the difference-in-means tests would support the low-multiple strategy's generation of excess returns, thus confirming that the strategy was useful to investors in the volatile Pakistani market during the study period (Akinde, Peter, & Ikpefan, 2019).

RESEARCH MODEL

The study is based on empirical evidence from existing financial models to examine the link between market multiples and stock returns during crisis periods. To study individual and collective effects of valuation variables on investment performance, we adopted two separate regression methods.

Variable Measurement Models: The dependent and independent variables are calculated using standardized financial formulas:

$HPR = [\text{Dividend Income} + (\text{Ending Stock Price} - \text{Beginning Stock Price})] / \text{Beginning Stock Price}$

$EPS = (\text{Net Income} - \text{Preferred Dividends}) / \text{Weighted Average Outstanding Shares}$

$\text{Enterprise Value} = \text{Market Capitalization} + \text{Total Debt} - \text{Cash}$

$EBITDA = \text{Operating Income} + \text{Depreciation} + \text{Amortization}$

$EV/EBITDA = \text{Enterprise Value} / EBITDA$

$P/E = \text{Stock Price} / \text{Earnings Per Share}$

$P/B = \text{Stock Price} / \text{Book Value Per Share}$

$P/S = \text{Stock Price} / \text{Sales Per Share}$

$P/CF = \text{Stock Price} / \text{Cash Flow from Operations Per Share}$

Empirical Regression Models: The study employs two distinct regression approaches to analyze the relationships:

UNIVARIATE REGRESSION MODEL

$$HPR_{it} = \beta_0 + \beta_1 (\text{Market Multiple}_{it}) + \varepsilon_{it}$$

Multiple Regression Model

$$HPR_{it} = \beta_0 + \beta_1(PE_{it}) + \beta_2(PB_{it}) + \beta_3(PS_{it}) + \beta_4(PCF_{it}) + \beta_5(EPS_{it}) + \beta_6(EVEBITDA_{it}) + \varepsilon_{it}$$

Where:

- i represents the firm ($i = 1$ to 118)
- t represents the year ($t = 2017$ to 2023)
- β_0 is the intercept term
- β_1 to β_6 are the coefficients of independent variables
- ε_{it} is the error term

These models facilitate a thorough examination of the performance of traditional valuation indicators during periods of extreme market stress, evaluating their reliability and predictive ability during crisis environments (Fama & French, 2018; Psacharopoulos & Patrinos, 2018).

RESULTS AND FINDINGS

DESCRIPTIVE STATISTICS

Table 1 summarizes market multiples. Findings show high variation across the enterprise multiples (EVEBITDA) and earnings per share (EPS), with standard deviations of 70.43 and 61.72, respectively, indicating potential. Price-to-earnings (PER) and price-to-book (PBV) also indicate slightly larger differences in valuation ratios across the firms, with 48.82 and 27.75 standard deviations, respectively. The price-to-sales (PS) ratio has the smallest variation across market multiples, with a mean of 0.7 and a standard deviation of 1.79. The mean holding portfolio return (HPR) is 0.12 with a standard deviation of 0.20, suggesting that, on average, the portfolio generated a positive return during the period of 2017-2023. The wide range of -0.625 to 0.8806 indicates that returns may vary significantly across firms and years. Overall, summary statistics indicate that market multiples may play an important role in portfolio return differences.

Table 1: Descriptive statistics of Market Multiples

Variable	N	Mean	Median	Std. Dev.	Min	Max
Price to Earning (PER)	825	14.76	8.3	48.82	-37.7	47.1
Price to Book (PBV)	825	3.15	1.2	27.75	-18.1	78.2
Price to Cash-Flow (PCF)	825	5.1	5.1	8.39	-35.1	36.7
Price of Sales (PS)	825	1.26	0.7	1.79	0.2	22.1
Earnings per Share (EPS)	825	22.69	7.8	61.72	-18.7	81
Enterprise Multiple (EVEBITDA)	825	7.84	6.5	20.34	-100.9	94
Holding Period Return (HPR)	825	0.12	0.13	0.2	-0.625	0.8806

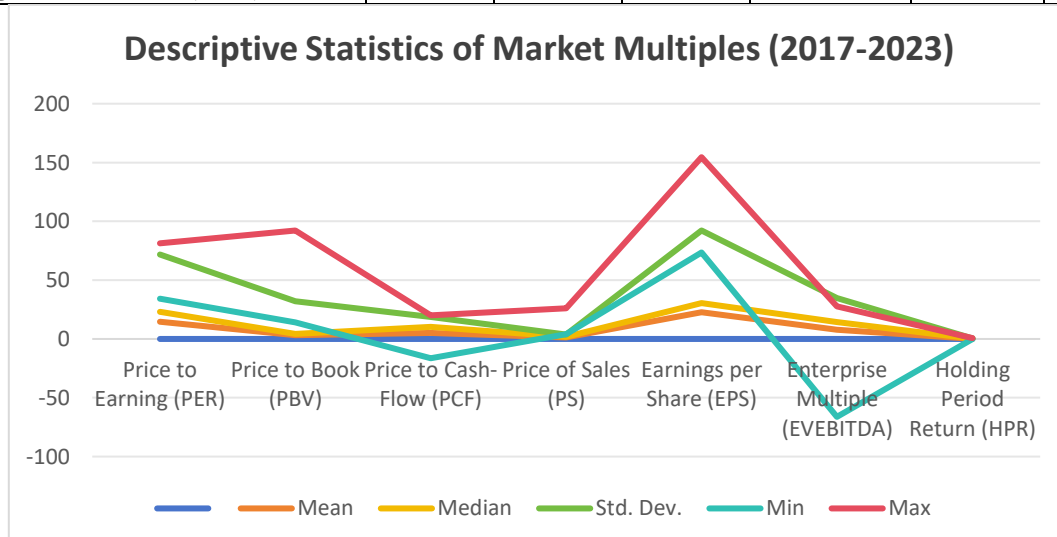


Figure 1: Descriptive Statistics of Market Multiples (2017-2023)

UNI-VARIATE REGRESSION ANALYSIS (2017-2023)

Table 2 is based on univariate regression analyses over 7 years for the 6 market multiples and portfolio returns. The univariate regression results show a mixed relationship between market multiples and holding-period returns (HPR). Price-to-earnings (P/E) shows a consistently insignificant negative relationship across all years, suggesting that P/E is not a very strong predictor of returns in Pakistan's markets. Price-to-book shows a statistically significant relationship in 2020 and 2021, suggesting that higher book multiples are associated with superior returns in those years. Price-to-cash flow (PCF) shows a highly significant and

positive effect in 2017, 2019, 2020, and 2022. These results for PCF imply that valuation ratios based on cash flow are more reliable predictors of holding-period returns. Price-to-sales (PS) is significant in several years, including 2017, 2018, 2020, and 2021, indicating its importance in HPR. Earnings per share (EPS) is the most important predictor across all variables, as it is positively significant in all years except 2021. This suggests that earnings play a strong role in explaining the portfolio returns. The enterprise multiple (EVEBITDA) is found to be negatively significant in 2021, suggesting that this multiple does not play a significant role in predicting portfolio returns in the Pakistani market.

Table 2: Uni-variate Regression Analysis (2017-2023)

Variables	Statistic	2017	2018	2019	2020	2021	2022	2023
PER	t stat (p)	-0.2	-0.76	-0.62	-0.55	0.66	0.39	0.51
	Adjusted R ²	-0.0083	-0.0036	-0.0053	-0.006	-0.0048	-0.0073	-0.0064
PBV	t stat (p)	1.53	2.79	1.64	2.50**	2.24**	0.252	0.19
	Adjusted R ²	0.0113	0.0547	0.0144	0.0428	0.0332	0.0028	-0.0084
PCF	t stat (p)	3.27*	0.76	3.71*	3.71*	1.64	2.09**	0.86
	Adjusted R ²	0.0767	-0.0036	0.0983	0.0984	0.0142	0.0279	-0.0023
PS	t stat (p)	2.18**	2.32**	1.39	3.68*	2.14**	-0.72	-0.06
	Adjusted R ²	0.0312	0.0361	0.008	0.097	0.0297	-0.0042	-0.0087
EPS	t stat (p)	2.09**	2.96*	2.36**	2.28**	0.96	3.59*	2.05**
	Adjusted R ²	0.0281	0.0624	0.0375	0.0345	-0.0007	0.0922	0.0268
EVEBITDA	t stat (p)	0.4	0.44	0.47	0.44	4.19**	0.15	1.6
	Adjusted R ²	-0.0072	-0.007	-0.0067	-0.007	0.1237	-0.0084	0.0132

*Shows that variable is significant at 1% Level

** Shows that variable is significant at 5% Level

CORRELATION MATRIX OF MARKET MULTIPLES AND HPR

Table 3 shows the results of the correlation analysis. The correlation matrix shows a weak relationship between market multiples and portfolio returns. Earnings per share (EPS) was found to be statistically significantly correlated with portfolio returns ($r = 0.141$), a slightly weak correlation but higher than for other market multiples. Price-to-cash flow was found to be significantly correlated with portfolio returns ($r = 0.079$). Price-to-sales (PS) shows a weak positive correlation ($r = 0.105$), the second-highest among the other market multiples. The correlations among the multiples themselves suggest that the valuation ratios are interrelated but distinct from firm performance.

Table 3: Annual Correlation Matrix between Market Multiples and Portfolio Return

Variables	HPR	PER	PBV	PS	PCF	EPS	EVEBITDA
HPR	1						
PER	-0.0029	1					
PBV	0.0646	0.0892**	1				
PS	0.1053	0.146*	0.3187*	1			
PCF	0.0796**	0.1275*	0.142*	0.3119*	1		
EPS	0.141*	0.0194	0.1821*	0.1941*	0.1956*	1	
EVEBITDA	0.0352	0.011	0.0514	0.0517	0.0692**	0.0182	1

*Shows that variable is significant at 1% Level

** Shows that variable is significant at 5% Level

GROWTH STRATEGIES ANALYSIS

Table 5 uses market-multiple growth strategies to examine the significance of our findings. For each year (2017–2023), the firms were ranked by market multiples. Then each multiple is split into two portfolios using the median, such as low and high portfolios. Low portfolios include firms with low multiples, and high portfolios include firms with high multiples. For each portfolio, the average holding-period return (HPR) was calculated annually, yielding yearly mean returns for the low and high portfolios. Then the difference is calculated. The positive difference indicates growth firms, which imply high multiples, and the negative difference indicates low multiples.

Findings show that the earnings per share (EPS) consistently performed better than any other multiples, with a mean difference of 0.06, which is the highest among all. This result proves that EPS is a reliable multiple for investors. Price-to-book shows the outperformance of low-PBV firms, with a mean difference of 0.05, the second-highest after EPS. Price-to-cash flow (PCF) and price-to-sales (PS) performed moderately, but were

less effective than EPS and PBV. The mean difference in price to earnings (PER) is small, which shows an inconsistent growth strategy among all. The enterprise multiple (EVEBITDA) yields the weakest results, such as A.M = 0.02, indicating the smallest predictive capacity.

Overall, growth strategies imply that EPS and PBV multiples outperform value strategies more consistently and strongly, while EVEBITDA and PER contribute very little to holding period returns (HPR) across all years.

Table 4. Mean Percentage Returns of High and Low-Multiple Portfolios

Variables	Growth Strategies	2017	2018	2019	2020	2021	2022	2023	A.M.
PER	HPR Low	0.07	0.12	-0.16	0.2	0.3	0	0.17	0.1
	HPR High	0.17	0.14	-0.15	0.27	0.35	-0.03	0.2	0.14
	Diff	0.1	0.02	0.01	0.07	0.04	-0.03	0.03	0.03
PBV	HPR Low	0.11	0.11	-0.17	0.18	0.28	0	0.17	0.1
	HPR High	0.16	0.14	-0.13	0.29	0.38	-0.02	0.19	0.14
	Diff	0.05	0.03	0.03	0.11	0.1	-0.02	0.02	0.05
PCF	HPR Low	0.1	0.12	-0.19	0.21	0.31	-0.02	0.19	0.1
	HPR High	0.17	0.14	-0.13	0.29	0.34	0	0.17	0.14
	Diff	0.07	0.02	0.06	0.08	0.03	0.02	-0.01	0.04
PS	HPR Low	0.09	0.12	-0.16	0.19	0.3	-0.01	0.17	0.1
	HPR High	0.17	0.14	-0.14	0.27	0.35	-0.01	0.19	0.14
	Diff	0.08	0.02	0.02	0.08	0.06	0	0.02	0.04
EPS	HPR Low	0.08	0.12	-0.17	0.22	0.29	-0.07	0.18	0.09
	HPR High	0.19	0.14	-0.13	0.27	0.35	0.04	0.18	0.15
	Diff	0.1	0.02	0.05	0.06	0.06	0.11	-0.01	0.06
EVEBITDA	HPR Low	0.12	0.13	-0.15	0.2	0.33	-0.01	0.17	0.11
	HPR High	0.15	0.13	-0.15	0.25	0.32	-0.01	0.2	0.13
	Diff	0.03	0.01	0	0.05	-0.01	0.01	0.03	0.02

MULTIPLE REGRESSION ANALYSIS

The table below shows the results of multiple regression analyses across all the years. Multiple regression provides stronger evidence by considering all market multiples simultaneously. The price-to-cash flow ratio shows a statistically significant result in 2017, 2019, 2020, and 2022, highlighting the importance of returns. Earnings per share (EPS) were found to be statistically significant for the years 2022 and 2023. Price-to-sales (PS) ratios were also statistically significant for the year 2020. The enterprise multiple (EVEBITDA) was found to be negatively significant in 2021. PER and PBV are found to be insignificant across all years and are less important than other market multiples.

Overall, the findings emphasize that cash-flow and earnings-based multiples are stronger contributors to portfolio returns in Pakistan, while PS and EV/EBITDA have less explanatory power, and PER and PBV are not important for holding-period returns.

Table 5: Multiple Regression Analysis

Years	Variables					
	PER	PBV	PS	PCF	EPS	EVEBITDA
2017	-1.21	-0.16	0.8	2.39**	0.91	-0.46
2018	-1.23	-0.9	0.54	-0.26	1.41	-0.19
2019	-0.46	-0.37	-0.22	3.05*	1.41	-0.3
2020	-0.86	-0.38	2.19**	2.90*	0.94	-0.3
2021	-0.1	1.22	1.77	0.43	0.99	5.07*
2022	0.43	0.47	-1.58	2.18**	3.47*	0.34
2023	0.8	0.42	0.34	1.53	2.34**	1.15

* Shows that variable is significant at 1% Level

** Shows that variable is significant at 5% Level

When we compare univariate and multiple regression analyses, we see remarkable consistency for the price-to-cash flow ratio (P/CF), which remains significant across both approaches in the same set of years (2017, 2019, 2020, 2022). This consistency confirms that P/CF is the most reliable predictor for analyzing the

Pakistani market. In later periods, consistency is also seen in earnings per share EPS, validating its importance during times of severe crisis and recovery. This cross-method confirmation strengthens confidence in the practical utility of these variables for making investment decisions during crisis periods.

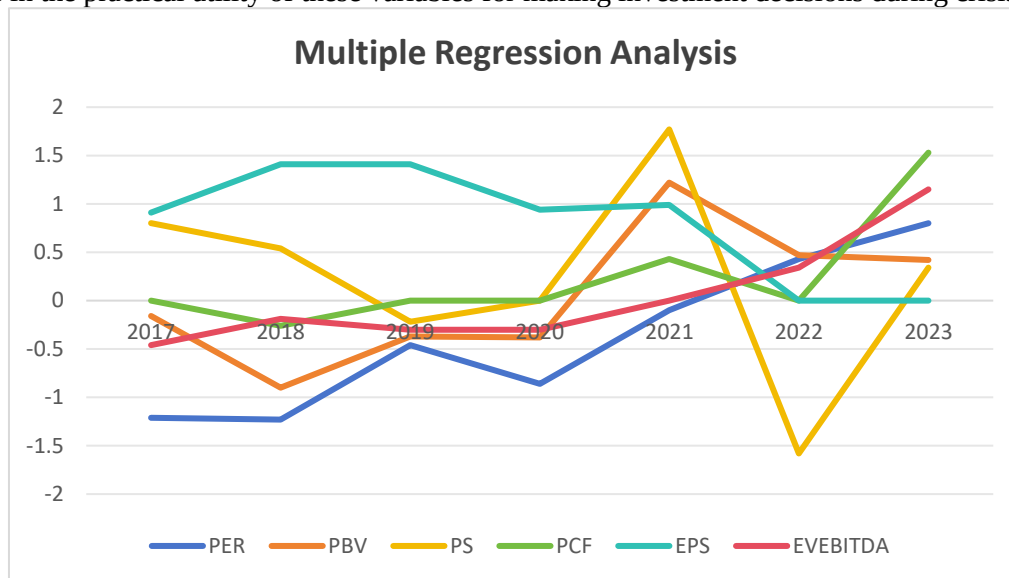


Figure 2: Multiple Regression Analysis

CONCLUSIONS

Studying the equity market in Pakistan during a period of intense political, economic, and external shocks (2017-2023) reveals the effect of extreme macroeconomic stress on traditional valuation relationships observed in normal market conditions. While global studies mostly find that low market multiples (especially P/E, P/B, and EV/EBITDA) predict higher returns, the crisis environment in Pakistan reversed many of these trends, including a persistent negative relationship between the price-to-earnings ratio and returns and a loss of explanatory power for traditional multiples. Instead, earnings per share and price-to-cash flow ratio became the strongest predictors of portfolio returns across different analysis methods (univariate, multivariate, and portfolio analyses). This shows that in severely liquidity-constrained and unstable political settings, survival measures are more important than conventional valuation signals. These findings add to existing research on market multiples by showing that, in severe market crises, investors shift from relative valuation to fundamental measures of corporate resilience, highlighting the importance of cash flow and earnings quality when external pressures make standard multiples unreliable.

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