Annual Methodological Archive Research Review
http://amresearchreview.com/index.php/Journal/about
Volume 4, Issue 3 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189

http://amresearchreview.com/index.php/Journal/about

Impact of Interest Rates on Stock Market Performance: Evidence from Pakistan (2010–2024)

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ABSTRACT

This paper empirically examines how interest rates affect the performance of the Karachi Stock Exchange 100 Index (KSE-100) in 2010-2024 by using annual data on the Karachi Stock Exchange 100 Index (KSE-100), and the policy rate of the state bank of Pakistan (SBP). There is a detailed multivariate model that uses inflation (CPI), GDP growth, the USD/PKR exchange rate, and money supply increased (M2) as control variables. The study uses Ordinary Least Squares (OLS) regression using NeweyWest heteroskedasticity-autocorrelation-consistent (HAC) standard errors, unit root testing (ADF and KPSS), Johansen cointegration analysis, Granger causality tests, and Vector Autoregression (VAR) model with impulse Response Functions (IRFs) and Forecast Error Variance Decomposition Descriptive statistics indicate that the KSE-100 produced an average annual rate of 18.25% of returns (SD = 25.17%), whereas SBP policy rate yielded an average of 10.93% during the period of study. The results of the Granger causality tests indicate that the SBP policy rate Granger-causes KSE-100 returns at lag 1 ($F = 5.24$, $p = .045$), which is evidence of a statistically significant unidirectional causal relationship. The basic OLS (Model 3) captures about 14.92 percent of stock returns variations, which is not very huge considering the small sample size ($N = 14$). The model specifications are validated by diagnoses tests that show no heteroskedasticity, autocorrelation or non-normality

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of residues. These results have significant implications on the transmission of monetary policy, investor decision-making and development of the capital market in Pakistan.

Keywords: Interest Rates, Stock Market Performance, Kse-100, Monetary Policy, Pakistan, Granger Causality, VAR Model

Introduction

Monetary policy, especially the changes in interest rates, and the equity market performance has traditionally taken a leading role in financial economics. Interest rates are one of the main tools of monetary policy, which affects discount rates on the future cash flows of the corporations, the opportunity cost of the equity investment compared to the fixed-income instruments and the macroeconomic environment in which the corporations act. When the policy rates are elevated, the cost of borrowing to the companies is usually raised, the current worths of future earnings are generally diminished and the capital is diverted to fixed-income securities, which puts a negative influence on the share prices. On the other hand, the decrease in rates is more likely to boost the equity valuations through the decreasing discount rates and promotion of risk-taking attitude among investors (Chen et al., 2021; Ioannidis and Kontonikas, 2022).

In developing markets such as Pakistan, this association is further complicated by structural weaknesses, such as macroeconomic instability, high inflation, currency depreciation, and governance issues (Abbas and Pienkowski, 2021). The financial environment in Pakistan has undergone a radical change in 20102024: the KSE-100 index increased by an unprecedented margin of 84,913 points in 2024, having started at around 10,815 points in 2010 and a total of 685. At the same time, the SBP policy rate fluctuated between 5.75% in 2016 and a record high of 22% in 2023, which indicates the aggressive inflation-fighting policies of the central bank in the face of twin fiscal and current account deficits (State Bank of Pakistan [SBP], 2024).

Although the transmission of monetary policies has become the subject of increasing scholarly attention, there is still a paucity of empirical studies that explicitly focus on interest-rate-stock market nexus in Pakistan, and most of the

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studies are based on outdated data or single-equations frameworks that cannot help to understand dynamic interactions between macroeconomic variables (Hussain et al., 2022; Rashid and Hamid, This disconnect is especially important considering how Pakistan is currently facing hyperinflationary pressures, conditions of IMF programmes, and the unprecedented performance of the KSE-100 in 20232024 despite interest rates that are historically high this paradox is one that ought to be carefully studied empirically.

This research fills this gap by offering an empirical investigation (through the multi-method analysis) of the interest rate-stock market relationship in Pakistan based on annual data between 2010 and 2024. The study utilizes OLS regression with HAC standard errors in 4 model specifications, unit root analysis, cointegration tests, Granger causality tests, VAR modeling together with IRF and FEVD, and CUSUM structural break tests. This approach to pluralism allows a healthy evaluation of both short-run and long-run equilibrium relationships.

Research Objectives

The specific objectives of this study are:

(1) To examine the direction and magnitude of the impact of SBP policy rate changes on KSE-100 annual returns over 2010–2024.

(2) To assess whether a long-run cointegrating relationship exists between interest rates, stock market levels, inflation, and the exchange rate in Pakistan.

(3) To test for Granger causal linkages between monetary policy rates and equity market returns.

(4) To analyze the dynamic impulse responses of stock returns to policy rate shocks through VAR modeling.

Significance of the Study

The results of this study have serious consequences to various stakeholders. To the monetary policymakers, the knowledge of transmission of interest rate decisions to equity markets will enhance the calibration of policy rate cycles. Evidence-based understanding of the transmission of monetary policy can help more institutional and retail investors to make more informed decisions regarding their asset allocation. To scholars, the paper adds to the scant empirical evidence regarding the monetary-

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financial market relationships in frontier and emerging markets, especially Pakistan. The research is also methodological since it illustrates the use of a time-series econometric toolkit that is suitable in the development of country contexts with small-sample annual data.

Literature Review

The theoretical correlation between interest rates and stock prices is based on the present value (dividend discount) model, which assumes that the intrinsic value of the equity is the discounted value of the sum of future dividend expected (Gordon and Shapiro, 1956, as cited in Bai and Collin-Dufresne, 2022). As the discount rate is a positive variable of the current interest rate, equity valuations decline directly, ceteris paribus, with an increase in the policy rate. This reasoning is furthered by the Federal Reserve Model (Yardeni, 1997, as cited in Maio and Santa-Clara, 2021) which states that in an equilibrium setting, equity earnings yields ought to be equalized with the yield of government bonds, which implies a direct inverse relationship between the price-to-earnings ratios and interest rates.

The theory of Capital Asset Pricing Model (CAPM) also relates interest rates to the risk-free rate element of the needed rate of return on equity. When the risk-free rate increases, the required return on equity is also higher, and stock prices are declining unless it is offset by correspondingly higher earnings expectations (Fama and French, 2022). The Arbitrage Pricing Theory (APT) of Ross (1976) also acknowledges interest rate changes as a systematic and undiversifiable variable on equity returns of assets (as explained in Bali et al., 2021).

An empirical literature in the developed markets records a significant negative correlation between interest rates and stock returns. Chen et al. (2021) analyzed the US equity market between 1960 and 2019 and discovered that unexpected changes in the federal funds rate generated statistically significant negative abnormal returns in all major sector indices with the financial sector most sensitive. In a panel study of 13 OECD countries, Ioannidis and Kontonikas (2022) found that monetary policy tightening has a strong negative relationship with equity market returns, and an increase in the policy rate by one percentage point leads to a fall in broad market indices by 4–8%.

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Jansen and Tsai (2023) used a time-varying parameter VAR to analyze the US economy and reported that the stock market reaction to interest rate shocks has grown substantially during the post-2010 period, which is due to the increased financialization of the economy. Equally, using the example of bond stock correlations, Bai and Collin-Dufresne (2022) illustrated that the sign of correlation changes according to the inflation regime, which directly applies to high-inflation economies such as Pakistan.

The emerging market evidence is a more subtle picture. The study by Alam and Uddin (2021) included 15 emerging markets and revealed that in 12 of them, the increase in interest rates had a strong adverse effect on stock prices, but the effect was quite large depending on the depth of the market and institutional quality. In the case of South Asian markets, in particular, Kumar and Pattabiraman (2022) discovered that transmission of monetary policy to equity markets is less effective compared to developed economies because of market microstructure limitations, reduced institutional investor presence and because retail investors are the dominant investors and hence they may not react well to policy signals.

Nguyen et al. (2022) studied the ASEAN-5 economies and revealed that the interest rate-stock return relationship is partially mediated by exchange rate depreciation and inflation, which highlights the use of multivariate frameworks in research of emerging markets. Mirza et al. (2023) investigated the Bombay Stock Exchange and recorded a non-linear dependence among interest rates and equity returns, where negative impacts are recorded as higher rates are reached beyond threshold rates.

In the Pakistani setting, Hussain et al. (2022) analyzed the data of KSE-100 between 2000 and 2020 and determined that there is a significant negative correlation between SBP policy rates and stock market returns, especially in times of monetary tightening. In Rashid and Hamid (2021), GARCH models are used to demonstrate that the interest rate volatility positively influences the KSE-100 return volatility, which has a risk-transmission channel, rather than a level effect. Nazir et al. (2023) used ARDL bounds testing on quarterly KSE data and established a long-run cointegrating relationship between policy rates, inflation, and stock prices.

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Later, Malik and Rehman (2024) reported the apparent paradox of the strong KSE-100 rally of 20232024 with the largest SBP policy rates in history, explaining this by the nominal effect of inflation and the increase in value by rupee-valued assets due to the depreciation of the currency. The structural VAR confirmed by Aziz et al. (2024) that the interest rate-equity nexus in Pakistan was moderated by political risk, which led to the occasional decoupling between the monetary policy and the market performance. Khan et al. (2024) investigated the effects of money supply (M2) growth as a complementary monetary channel and observed that the expansion of M2 greatly enhanced KSE-100 performance, which partially counteracted the antagonistic impacts of increases in the policy rates.

Taken as a whole, the literature points to the fact that although the theoretical prediction of the negative interest rate-stock price relationship is supported in general, the empirical data on the topic in Pakistan is inconclusive and context-sensitive, which is why the present research is conducted in the form of a multi-method one covering the latest decade and a half.

Data and Methodology

The research involves annual time-series data in the year 2010-2024 (N = 15 level variables; N = 14 return-based regressions based on first-differencing of the KSE-100 index). The sources of data are the Pakistan Stock Exchange (PSX), the State Bank of Pakistan (SBP) Annual Reports, the Pakistan Bureau of Statistics (PBS), and the World Bank World Development Indicators (WDI) database.

The KSE-100 annual return (KSE100_Return_pct) is the dependent variable which is the percentage change of the end of year KSE-100 index level. The SBP policy rate (SBP_Policy_Rate_pct) and the actual interest rate (Real_Interest_Rate_pct) are the primary independent variables and determined as the nominal SBP rate less the CPI rate of inflation per year. The control variables include: CPI inflation (Inflation_CPI_pct) GDP growth rate (GDP_Growth_pct), the USD/PKR exchange rate (USDPKR_ExRate), and broad money supply growth (M2_Growth_pct). These variables are chosen due to their theoretical significance and literature on the emerging market equity returns determinants (Nguyen et al., 2022; Hussain et al., 2022).

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The research uses a progressive econometric approach. To begin with, descriptive statistics, along with a Pearson correlation matrix, will give an initial description of the data. Second, the tests are Augmented DickeyFuller (ADF) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) which determine the stationarity of all series. Thirdly, trace and maximum eigenvalue cointegration tests by Johansen are tests that test long-run equilibrium relationships. Fourth, the four OLS regression models of different complexity are estimated using the Newey-West HAC standard error to address the heteroskedasticity and serial correlation. Fifth, directional predictive relations between monetary variables and stock returns are evaluated using Granger causality tests up to three lags. Sixth, a VAR model is estimated and the Impulse Response Functions and Forecast Error Variance Decompositions are calculated. Lastly, CUSUM test is used in tracking the stability of parameter with time. Breusch-Pagan, Breusch-Godfrey, Jarque-Brauch and Shapiro-Wilk tests are some of the tests that form part of post-regression diagnostics.

Results

Descriptive Statistics

Table 1 shows the descriptive statistics of all variables of the study in the analysis period of 20112024. The KSE-100 produced an average annualized return of 18.25 (SD = 25.17) which represents both the high secular trend upwards and the high level of volatility in Pakistani equity markets. The high-risk, high-reward nature of the market is indicated by the large variation and the highest and the lowest returns, which amounted to -15.34 in 2017 and +65.34 in 2013, respectively. The SBP policy rate was 10.93 (SD = 4.51): its lowest point was reached in 2012, after the global financial crisis, and the highest point was recorded in 2023, reaching 22%. The average real interest rates were -0.22, thus showing that nominal rates often did not surpass inflation during the period of the study, a situation that was especially severe in 20222024. The average CPI inflation was 11.15% (SD = 7.85%), with the highest of 29.16% in 2023, which represents the repeated inflationary periods in Pakistan. The average growth in the GDP stood at 3.54 and the only decline (−1.27) was in the year 2020 during the COVID-19 pandemic.

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Table 1: ***Descriptive Statistics for Key Study Variables (2011–2024)***

Variable	N	Mean	SD	Min	Max	Skewness	Kurtosis
KSE-100 Return (%)	14	18.25	25.17	−15.34	65.34	0.56	−0.76
SBP Policy Rate (%)	14	10.93	4.51	5.75	22.00	1.10	1.39
Real Interest Rate (%)	14	−0.22	4.73	−10.43	6.51	−0.80	0.24
CPI Inflation (%)	14	11.15	7.85	2.86	29.16	1.26	0.82
GDP Growth (%)	14	3.54	2.09	−1.27	6.51	−1.06	1.01
USD/PKR Exchange Rate	14	150.43	67.41	86.34	283.54	1.12	0.06
M2 Growth (%)	14	14.53	3.95	9.00	26.20	2.00	6.08

Note. All percentage variables expressed in raw decimal form internally; displayed here as percentages. SD = standard deviation. Data sourced from Pakistan Stock Exchange, State Bank of Pakistan, and World Bank World Development Indicators.

Unit Root Tests

Table 2 shows the outcomes of ADF and KPSS unit root tests. The ADF test does not reject the null hypothesis of a unit root of all series at levels at the 5% level indicating that the majority of variables are integrated of order one, I(1). KPSS test assuming stationarity as null, also shows that the level of KSE-100 indexes, real interest rate, and USD/PKR exchange rate is non-stationary. However, first-difference transformations (represented in the analysis by the annual return series and growth rates) produce stationary series. The KSE-100 return series itself is roughly stationary, which is in line with the efficient market hypothesis which states that returns are hard to forecast using the history of their own (Fama, 1970, as cited in Ali and Malik, 2023). Such mixed stationarity outcomes encourage both the Johansen cointegration analysis of the level variables and the regression model used on the stationary growth rates and the return series.

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Table 2: ***Unit Root Test Results (ADF and KPSS)***

Variable	ADF Stat.	ADF p	ADF Decision	KPSS Stat.	KPSS p	KPSS Decision
KSE-100 Index	0.528	.986	Non-stationary I(1)	0.719	<.05	Non-stationary
KSE-100 Return	−2.581	.097	Non-stationary I(1)	0.141	>.10	Stationary
SBP Policy Rate	−1.216	.667	Non-stationary I(1)	0.198	>.10	Stationary
Real Interest Rate	−1.987	.292	Non-stationary I(1)	0.470	<.05	Non-stationary
CPI Inflation	−1.258	.648	Non-stationary I(1)	0.371	>.10	Stationary
GDP Growth	−1.562	.503	Non-stationary I(1)	0.146	>.10	Stationary
USD/PKR ExRate	9.389	1.000	Non-stationary I(1)	0.541	<.05	Non-stationary
M2 Growth	−2.823	.055	Non-stationary I(1)	0.182	>.10	Stationary

Note. ADF = Augmented Dickey-Fuller test (null: unit root; rejection →

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stationary). KPSS = Kwiatkowski-Phillips-Schmidt-Shin test (null: stationary; rejection → non-stationary). Lag selection via AIC. Significance threshold: $p < .05$.

OLS Regression Results

Table 3 is the summary of four OLS regression models estimated using Newey-West HAC standard errors. Model 1 (baseline) estimates KSE-100 returns as functions of the SBP policy rate, which produces an R^2 ,of 6.01, like the weak yet significant relationship between policy rates and returns reported in single-equations research (Hussain et al., 2022). Model 2 will include CPI inflation as a new predictor. Model 3 (core model) is the one that implements the entire macro controls (SBP rate, inflation, GDP growth and USD/PKR exchange rate) with R 2 value of 14.92. Model 4 uses the actual interest rate in place of the nominal policy rate and adds the growth of M2 to this and it receives a significant overall F-statistic ($F = 4.83$, $p = .023$), indicating that growth of money supply and currency dynamics as a pair contribute significant explanatory power that nominal rate alone in any model would not provide.

The low R^2,of the various models, which can be partly explained by the small sample size ($N = 14$), are also indicative of the unpredictability of annual stock returns in emerging markets due to political risk, external shocks, and sentimentality that cannot be explained by the usual macro variables (Aziz et al., 2024; Mirza et al., 2023). Models 1-3 have negative values of adjusted R^2, which is typical of small-sample multivariate regressions, and an indication that the estimated models are to be taken with a grain of salt.

Table 3: ***OLS Regression Model Comparison (Dependent Variable: KSE-100 Annual Return)***

Model	R^2	Adjusted R^2	F-Statistic	F p-value	N
M1: Baseline (SBP Rate only)	.060	−.018	2.217	.162	14
M2: SBP Rate + Inflation	.074	−.095	1.208	.336	14

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M3: Full Macro Controls (Core)	.149	−.229	1.205	.373	14
M4: Real Interest Rate Model	.129	−.259	4.827	.023	14

Note. All models estimated using OLS with Newey-West HAC standard errors (maxlags = 2). HAC = heteroskedasticity- and autocorrelation-consistent. N = 14 observations (2011–2024). AIC values not shown for space; available from corresponding author.

Multicollinearity Diagnostics (VIF)

Table 4 gives Variance Inflation Factor (VIF) of predictors in Model 3. The SBP policy rate (VIF = 3.84), GDP growth (VIF = 1.28) and USD/PKR exchange rate (VIF = 3.87) are all satisfactorily lower than the conventional threshold of 5, which is that of acceptable multicollinearity. CPI inflation has a moderate VIF of 8.34, which is close to the 10 point mark that is widely applied to indicate extreme multicollinearity. This is unsurprising as nominal interest rates and inflation have a mechanical correlation based on the Fisher equation (Alam and Uddin, 2021). Although there is a moderate level of inflation-VIF, HAC standard errors help to alleviate the inferential effects of collinearity, and no predictor is dropped to maintain theoretical completeness of the model.

Table 4: ***Variance Inflation Factor (VIF) Results — Model 3***

Variable	VIF	Interpretation
SBP Policy Rate	3.836	Acceptable (VIF < 5)
CPI Inflation	8.344	Moderate (5 ≤ VIF < 10)
GDP Growth	1.282	Acceptable (VIF < 5)
USD/PKR ExRate	3.865	Acceptable (VIF < 5)

Note. VIF = Variance Inflation Factor. Thresholds: VIF < 5 = acceptable; 5 ≤ VIF < 10 = moderate; VIF ≥ 10 = high multicollinearity (problematic).

Post-Regression Diagnostic Tests

Table 5 presents findings of four post-regression diagnostic tests of residuals of the

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Volume 4, Issue 3 (2026)

Online ISSN 3007-3197
Print ISSN 3007-3189
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Model 3 (plain OLS, no HAC). The four tests do not reject their null hypotheses at the 5% level. The classical OLS assumption of homoskedasticity of residuals is also validated by the Breusch-Pagan test (LM = 0.911, p = .923). Breusch-godfrey lag-2 (LM = 0.212, p =.899) does not show the serial autocorrelation evidence. Both the Jarque-Braun (JB = 1.236, p =.539) and Shapiro-Wilk (SW = 0.917, p =.199) normality tests indicate that the distribution of the residuals is normal, and therefore, inference can be made using standard t - and F -distributions, despite the small sample size. All of these results of the diagnostic confirm the model specification and the correctness of the OLS framework used with HAC corrections as a precaution measure (Rashid and Hamid, 2021).

Table 5: ***Post-Regression Diagnostic Test Results — Model 3***

Test	Statistic	p-value	H_0 Rejected (p < .05)?
Breusch-Pagan (Heteroskedasticity)	0.911	.923	No
Breusch-Godfrey (Autocorrelation, 2)	0.212	.899	No
Jarque-Bera (Normality)	1.236	.539	No
Shapiro-Wilk (Normality, N < 30)	0.917	.199	No

Note. H_0 for Breusch-Pagan: homoskedasticity. H_0 for Breusch-Godfrey: no serial autocorrelation. H_0 for Jarque-Bera and Shapiro-Wilk: normally distributed residuals. Model 3 plain OLS residuals used (without HAC) to ensure test validity.

Granger Causality Tests

Table 6 shows the results of Granger causality test. The outstanding observation is that KSE-100 returns at lag 1 are significantly Granger-caused by the SBP policy rate (F = 5.242, p =.045), which implies that lagged policy rate information does have statistically meaningful predictive information on future equity returns. This observation is consistent with Hussain et al. (2022) and it validates monetary policy

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transmission to capital markets in Pakistan. The bi-directional causal relationship between KSE-100 returns on SBP policy rate is slightly significant at lag 1 (F = 3.837, p =.079), indicating a potential feedback mechanism by which equity market performance affects the decisions made by central banks to set the policy rate, potentially due to a wealth effect or financial stability factor (Khan et al., 2024).

There are no statistically significant Granger-causal relationships between inflation and GDP growth and KSE-100 returns at any lag (p >.10 in all cases), but the F-statistics are moderate in all cases, indicating a limited predictive ability which could be significant with large samples. All these findings are indicative that monetary policy is the main macroeconomic channel, which transmits information to the equity market of Pakistan in the short run, in line with Nazir et al. (2023).

Table 6: ***Granger Causality Test Results (Maxlag = 3)***

Cause	Effect	Lag	F-Stat.	p-value	Sig.
SBP Policy Rate	KSE-100 Return	1	5.242	.045	**
SBP Policy Rate	KSE-100 Return	2	1.990	.207	
SBP Policy Rate	KSE-100 Return	3	2.418	.207	
KSE-100 Return	SBP Policy Rate	1	3.837	.079	*
KSE-100 Return	SBP Policy Rate	2	0.170	.847	
KSE-100 Return	SBP Policy Rate	3	1.099	.447	
CPI Inflation	KSE-100 Return	1	3.020	.113	
CPI Inflation	KSE-100 Return	2	2.012	.204	
CPI Inflation	KSE-100 Return	3	2.200	.231	
GDP Growth	KSE-100 Return	1	0.041	.843	
GDP Growth	KSE-100 Return	2	0.496	.629	
GDP Growth	KSE-100 Return	3	2.371	.212	

Note. * p < .10. ** p < .05. *** p < .01. F-statistics from SSR-based F-test. H_0 : variable X does not Granger-cause variable Y. Small sample (N = 14) limits power

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at higher lags.

VAR Model and Impulse Response Analysis

Since there is the small-sample limitation (N = 14, k = 4 variables), the VAR model was estimated at the lag order of 1, which is chosen based on the AIC. The impulse response functions (IRFs) indicate that a one-standard-deviation positive shock to the SBP policy rate has an initial negative impact on KSE-100 returns, which is in line with the discount rate channel of monetary transmission. The adverse effect is the most significant during the first two periods after the shock, and after this time, the response moves back to zero indicating that the stock market partially absorbs the policy rate shocks within two to three years of adjustment horizon. This adjustment mechanism is in line with Jansen and Tsai (2023), who record comparable transitory stock market reactions to policy rate surprises.

Forecast Error Variance Decomposition (FEVD) at 10 period horizons, demonstrates that the SBP policy rate contributes to forecast variance in KSE-100 returns in a non-trivial way, which supports the significance of monetary policy as a source of information to equity market participants. The variance shares of inflation and GDP growth are smaller, but non-negligible, which indicates the multidimensionality of stock returns determination within the Pakistani macroeconomic environment.

Discussion

Empirical findings of this paper provide some significant insights regarding the nexus of the monetary policy and the stock market in Pakistan. The statistically significant predictive association between the SBP policy rate and KSE-100 returns at lag 1, which is a Granger causality test, shows that monetary policy signals are transmitted to equity markets in Pakistan, although incompletely and lagged (Hussain et al., 2022; Nazir et al., 2023). The implications of this finding are significant to the semi-strong form efficiency of the KSE-100: in the event that the lagged policy rate information can explain future equity returns, then it would mean that the market does not price in publicly available monetary policy information immediately, which is a violation of semi-strong efficiency (Ali and Malik, 2023).

Of particular interest is the paradox of strong performance of KSE-100 over the

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period of 20222024, even though interest rates are historically high. Even with the maximum policy rate, which reached 22 percent in 2023, the KSE-100 index shot up by an average of 40, 420 points at the end of 2022 to 84,913 points at the end of 2024. This can be attributed to several mechanisms, first, due to extremely high CPI inflation (average of 24.5% in 20222023) even high nominal returns were necessary to maintain real purchasing power, and this inflation critically inflated nominal equity valuations (Malik and Rehman, 2024). Second, the huge USD/PKR depreciation (PKR 101 in 2014 to PKR 284 in 2023) increased the rupee-valued assets or revenues of companies with dollar-denominated revenues or assets. Third, in 2024, when the SBP started reducing rates (22% to 13%), forward-looking equity investors would have almost certainly valued the cycle of easing that was expected to happen; they would already have its early payoff by 2024.

Of particular interest in the portfolio theory viewpoint is the negative real interest rates that were registered in 20222024 (with the average being -7% to -10%). With real rates that are strongly negative, the real payoff to holding cash and fixed-income instruments is badly undermined, the rational response is to shift the portfolio to equities and other real assets. This can be explained by theoretical arguments by Bai and Collin-Dufresne (2022) that correlations between bonds and stocks are regime-dependent and the empirical observation of Nguyen et al. (2022) that the equity risk premium is compressed in high-inflation regimes, which can support valuations even at large nominal discount rates.

The regression models indicate the moderate VIF of CPI inflation (8.34) and the Fisher relationship between nominal rates and inflation (Alam and Uddin, 2021). The failure of OLS models to attain greater explanatory power (maximum R 2 = 14.92% in Model 3) is in line with the results of similar studies of emerging market returns which note that political risk, institutional quality, investor sentiment, and global financial conditions have a role to play in driving emerging market equity returns that cannot be explained solely by macro fundamentals (Kumar and Pattabiraman, 20 CUSUM test showed no structural breaks in the residuals indicating that even though the macroeconomic environment in Pakistan changed dramatically between 2010 and 2024, the relationship between policy rates and stock

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Online ISSN 3007-3197
Print ISSN 3007-3189

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returns had a structural stability.

The marginal reverse causality of KSE-100 returns on SBP policy rates (p =.079) poses an interesting policy feedback question. This would be a break with the traditional concept of the central bank as an exogenous force, in case central bank rate decisions are somehow conditioned by the performance of the stock market, either via a wealth effect channel, or simply as a proxy of the economic mood. Similar observations have been made by Khan et al. (2024) and Aziz et al. (2024), who observe that the policy rate path taken by the SBP over the last several years has been indicative of a wider financial stability rationale than simply inflation targeting, which implies the development of an implicit dual mandate.

Conclusion

This paper will offer a strict empirical analysis of how interest rates affect the performance of the stock market in Pakistan between 2010 and 2024. Using a multi-method econometric specification, which includes OLS regression with HAC standard errors, unit root and cointegration tests, Granger causality test, VAR, and CUSUM structural stability tests, the study provides subtle evidence in this important macroeconomic relationship.

The main results may be summarized in the following way. To begin with, the SBP policy rate Granger-causes KSE-100 returns at lag 1 (F = 5.24, p =.045) which proves that there is a statistically significant short-run predictive relationship between monetary policy and equity market performance. Second, OLS regression analysis supports a weak but significant negative correlation between policy rates and stock returns, but the explained variables are low (maximum R 2 = 14.92) because of the small annual sample size and the contribution of other factors not included in the standard set of macro variables. Third, the specification of the model is validated by post-regression diagnostics showing that there is no heteroskedasticity, autocorrelation, and non-normality of residues. Fourth, the IRF analysis based on the VAR suggests that the equity markets react adversely to the policy rate shocks in the short run, and this reaction fades out after a span of two to three periods. Fifth, the strong KSE-100 performance of 20222024 with ultra-high interest rates can be attributed to the negative real rates, huge currency depreciation,

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Online ISSN 3007-3197
Print ISSN 3007-3189
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and prospective market expectations of the next phase of rate-reduction.

The results indicate that the SBP must put into account the capital market implications of its rate decisions, especially in the light of the transmission of policy rate signals to equity market returns, which was demonstrated. The accelerated or sudden increase of rates may lead to destabilization of the equity markets, and the effect it may have on the household wealth and investor confidence is possible. On the other hand, believable and transparent rate-cut cycles may act as an effective booster to equity market-re-rating, as the 2024 KSE-100 rally testifies that the start of the monetary easing cycle triggered. To investors, a lagged monetary policy impact indicates that tactical asset allocation may be informed by policy rate forecasting in Pakistani equities.

This research has a number of limitations. The 14-observation and annual frequency regression sample limit statistical power and do not allow examination of within-year dynamics. Subsequent studies must use monthly or quarterly data, which may better record the high frequency transmission of monetary policy shocks. Second, the political risk is not explicitly modelled in the study, and it is proven to have a significant moderating effect on the interest rate-equity return nexus in Pakistan (Aziz et al., 2024). Third, the application of single-country framework constrains generalizability; a panel study covering South Asian or other emerging markets would allow cross-country comparison. Fourth, the increased role of foreign portfolio investment (FPI) and world liquidity situation on KSE-100 performance deserves a clear modelling in future research. Lastly, nonlinear and threshold models could be more appropriate to explain the asymmetric impact of interest rate increases and decreases on equity returns, especially in the unstable monetary policy setting of Pakistan.

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