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Stock Market Performance and its Impact on Economic Growth of Pakistan

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Abstract
The purpose of study is to evaluate the impact of performance of Pakistan's stock market on its economic growth. The quarterly time series data have used from Q_1:2000 to Q_2:2024. Applying the HEGY Seasonal Unit Root test, Johansen Co-integration and Vector Error Correction Model (VECM). However, the variables are used in the study are Industrial Production Index (IPI) as a dependent variable, while the other macroeconomic indicators, stock market index (KSE-100 Index), interest rate (IR), and real exchange rate (RER) are dependent variables. The statistical findings reveal a conclusion that all variables confirmed the long run relationship and have a significant impact on economic growth. Findings show a negative impact of stock market index and the interest rate on economic growth in the long run, a 1% increase in these variables discourages economic growth by 0.13 and 0.0094 units respectively. But interest rate shows a positive impact in the short run. The negative impact would be the reason that these economic indicators do not promote the development of country. Meanwhile, the real exchange rate discloses a positive impact on economic growth showing a 1% increase causes to accelerate economic growth by 0.299 units in the long run. Further, our home industries are reluctant to compete with international ones, which provide cheaper products than home made products.
Keywords: Stock market performance, Economic growth, Pakistan economy, Financial development

Introduction

The stock market is a platform for both borrowers and savers to collect and convert savings into investments, offering potential for savings and reallocation of money across various economic sectors. Investors aim to understand the significant impact of macroeconomic factors on future returns before managing their portfolios in the financial market (Zeeshan, 2022). The financial market plays a crucial role in mobilizing investment in developing and industrialized nations due to liberalized and globalized procedures. It drives the expansion of

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industries and trade. A free-market economy relies on the stock market, which helps businesses manage funds from shareholders in return for investor ownership shares. Businesses can acquire capital by offering shares to traders on the stock exchange (Chungu, 2022).

Economic growth and financial development are closely linked, with stock market development illustrating a country's financial system. Government size and open markets positively impact the sustainability of financial market performance.(Islam et al., 2022). The study reveals that the sustainability of financial market development is directly influenced by microeconomic, macroeconomic, and official aspects, particularly in developing countries, which is considered a superlative representative of monetary structure (Salameh & Ahmad, 2022). Stock markets significantly contribute to economic growth by facilitating significant investments from capital-abundant to capital-dearth sectors. However, their development can decline when exchange rate unpredictability increases due to uncertain movement in exchange rates.(Begum, 2021).

One of the basic and fundamental keys for the sustainable economic achievement, it is essential to have a robust and extensively developed monetary system (Bogdan & Lomakovych, 2021; Chen et al., 2021). The evolution of a financial market is crucial for maximizing investments in a nation's economy. Attractive economic foundations, sizable markets, and host countries' trade policies attract investors. A strong capital market is essential for emerging economies, providing a platform, reducing transaction costs, and eliminating information asymmetry (Jamil, 2021). Every developing economy is linked to the growth of capital markets. Therefore, economic performance highly relies on foreign capital inflows (Sajid et al., 2021). Researchers measure economic growth as a crucial index for economic development, allowing policymakers to examine and reassess problems in Pakistan. Influential policies can attract foreign capital inflows, thereby enhancing economic growth.(Kamran et al., 2021). Researchers argue that the relationship between financial expansion and economic development in Pakistan is debated. They found that financial development significantly impacts economic progress in both high and low managements, with the effect being more pronounced in significant expansion scenarios.(Rahman et al., 2020).

Empirical studies have found a significant correlation between Pakistan's stock market performance and macroeconomic indices, a growing stock market performance leads to an increase in economic activities in the country (Akbar et al., 2019). Sustainable economic growth is closely linked to a country's financial markets, with significant focus on whether stock market expansion leads to economic satisfaction or creates nothing. A well-organized and functioning financial structure is considered pivotal for boosting an economy (Aluko & Azeez, 2019; Pan & Mishra, 2018a). The equity market performance in developed and emerging nations, providing crucial tools for measuring and predicting stock market activity (Akbar et al., 2019). Conversely, equity market liquidity and market capitalization can raise the firm activity to be boosted (Sulong et al., 2018). Central bank policies significantly impact financial stock market volatility through interest rate decisions. Monetary policy provides a better explanation of stock market performance than advanced communication or increased transparency. Therefore, decisions from monetary policy should be all-

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encompassing, allowing them to respond promptly to prevailing economic conditions, ensuring a more accurate representation of stock market performance (Adenijia et al., 2018).

Stock exchanges allow shareholders to raise cash at affordable prices, benefiting economic development by offering market-based financing alternatives to bank-based financing. This reduces the risk of credit crises and costs of information acquisition. Price movements also facilitate information sharing, enabling businesses to make better investment decisions, enhancing resource allocation efficiency and accelerating economic growth (Mamun et al., 2018, Khalid, 2017).

An Overview of Karachi Stock Exchange (KSE-100)

The stock market is a prearranged marketplace where stocks, derivatives, and financial securities are traded at settled prices. Stock exchanges play a crucial role in maintaining and supporting businesses in raising capital, creating investment opportunities, mobilizing savings, facilitating growth, and efficiently redistributing wealth, alongside their role in the capital market (Akbar et al., 2019). Pakistan's main stock exchange is the Karachi Stock Exchange (KSE-100), established in 1947 with five companies. Its inclusive market capitalization was $260,000 (37 million PKR) at the time. The Lahore Stock Exchange (LSE) and Islamabad Stock Exchange (ISE) were also established in 1974 and 1997 respectively, forming the Pakistan Stock Exchange (PSX). The PSX is an emerging market that influences the economy and firms' performance. The three exchanges consolidated to form the Pakistan Stock Exchange (Alam et al., 2020; Sulong et al., 2018).

In November 1991, the KSE-100 index gained popularity due to numerous listed businesses in sectors like cement, banking, manufacturing, and pharmacology. On 20th April 2008, the index crossed over 15,000 points, reaching 15,737 points, marking 7.4% progress and making Pakistan Stock Exchange one of the world's most developing markets (Alam et al., 2020). The Pakistan stock market experienced a boom-and-bust situation in 2022 due to the Russia-Ukraine conflict and domestic political uncertainty. The KSE-100 index declined from 47,356 points to 44,929 points between July 2021 and March 2022, and from 41,540.8 points to 40,000.8 points between June 30 and March 31, 2023. The market capitalization reached Rs 6,108 billion as of March 31, 2023. The stock index closed at 43,676.6 points on August 17, 2022, and its lowest points were 38,342.2 on January 17, 2023. In September 2021, the turnover in shares reached its peak at Rs 9.12 billion, indicating investor interest in the markets. However, due to geo-political issues and domestic political instability, the market declined in February and March 2023.

The Pakistan stock market, an emerging market, faces challenges due to its instability and volatility due to unexpected market shocks. This affects financial market liquidity, leading to reliability issues and reduced investor confidence, slowed economic development. The stock exchange market is highly volatile, with severe price changes leading to significant wealth loss. Pakistan Stock Exchange (PSX) faces weaknesses and competition from countries like India, China, and Singapore, which have more established financial institutions and close international relations. PSX's hedging and speculation products make foreign investors and institutions hesitate to invest in Pakistan. Additionally, there is insufficient awareness of the stock market among the general public and

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investors, leading to a decrease in local and overseas investors from financial markets in Pakistan. Boosting the capital market investment, favourable mechanism of monetary policy, and the stock market can strengthen economic development. The study identifies which factors causing economic growth and identify hurdles, and investigate the association between financial market effects and economic enhancement in Pakistan's economic growth. The low level of foreign capital inflows and decreasing domestic investments in financial markets are also considered.

Research Objectives

To investigate the impact of stock market performance on Pakistan's economic growth.

To ascertain the association between stock market performance and Pakistan's economic growth over the long and short terms.

Literature Review

Numerous studies have demonstrated the link between economic development and financial market success, with some indicating that fluctuations in a country's stock market impact its economic growth, while others provide weak and counter-evidence. Zeeshan, (2022) examined the impact of variables such as interest rate, inflation, exchange rate, and foreign direct investment (FDI) on Pakistan Stock Exchange (PSE) returns. Results show a positive correlation between stock market returns, FDI, interest rate, inflation, and exchange rates. The study also highlights the cointegration of macroeconomic indicators and the significant effect of FDI on stock market development.

Dabwor et al., (2022) The study examines the impact of financial market volatility on Nigeria's economic development, finding that stock market returns have a positive, inelastically, and negligible impact on economic development. However, globalization, including economic, social, and political factors, has a helpful, elastic, and statistically essential effect on the country's economy. Khan et al., (2022) also examine the effects of terror activities on the growth of Pakistan's stock market and its fluctuations, finding that terrorism significantly influences the growth of stock market returns and market fluctuations. Bui & Doan, (2021) had examined the impact of stock market development on GDP growth in Asian developing states. It found that equity market development positively impacts economic expansion, enhances capital growth, and allows investors to manage risks, leading to liquidity and economic growth.

M. Rizwan et al., (2021) used the Ordinary Least Square (OLS) technique to analyse the impact of stock market contributions on Pakistan's economic development. It measured the size and liquidity in the money market, which were linked to foreign direct investment (FDI) and total value shares of stock. The results showed that FDI, stock value, and size positively influenced economic growth, while liquidity had minimal impact. Shi et al., (2021) explored the factors influencing stock market performance and price volatility, as well as the impact of institutional excellence metrics on money market turbulence and growth. It found significant associations between variables and institutional freedom indicators, indicating positive and significant influence on stock market progress. Hayat et al., (2021) used monthly data to analyse the impact of interest and inflation rates on Pakistan's industrial production. It reveals a short-term

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unidirectional and long-term bidirectional relationship between inflation and output growth, and suggests that low interest and inflation rates are crucial for Pakistan's economic growth.

U. Bashir et al., (2017) investigated the relationship between interest rate and economic development in Pakistan, based on Keynesian views and Mackinnon-Show hypothesis. It found a unidirectional cause relationship between economic development and interest rate, indicating that interest rate does not cause economic development, but economic development does. The study suggests that a higher interest rate can lead to increased investment efficiency and economic growth. Khalid, (2017) examined the impact of interest rate and currency rate variation on Pakistan's stock market capitalization and economic growth. Results showed an inverse relationship between interest rate and stock market capitalization, while currency rate and market capitalization showed a positive connection.Wang et al., (2019) analyzed the financial structure with the association on economic development and expressed that real interest rate is affecting economic growth, such as a higher interest rate can prevent the development process and intern economic development.

Sari et al., (2022) analyzed several macroeconomic factors explaining economic development. The macroeconomic indicators (interest rate, inflation, exchange rate) are observed to be inverse and had significant effect on economic development. Haider, (2018) the author studied Pakistan's Islamic stock index, the Karachi Meezan Index 30, and its relationship with macroeconomic indicators like gold value, interest rate, exchange rate, and inflation. The results showed an inverse relationship with interest rate and a positive relationship with exchange rate, indicating a significant impact on economic development. M. F. H. Khan, (2021) explored the affiliation among nominal exchange rate on economic development of Bangladesh. He found from the outcomes that exchange rate has significantly explained the economy and also show positive impression on economic development. Jena & Sethi, (2020) studied how the currency rate is integrated with development of Indian economy. ARDL bounds test validated the long-term associated among economic growth and exchange rate, revealing positive and significant influence between economic expansion and exchange rate.

Aman et al., (2017) demonstrated the relationship between exchange rate and Pakistan's economic development. Results indicate that exchange rates can positively influence economic growth by promoting exports, increasing investment, and facilitating foreign direct investment (FDI) inflows when the domestic exchange rate depreciates. Deeviya Patel, (2018) also focused on the connection amongst South African economic expansion and actual exchange rate, and found a negative and significant linkages between these two variables. Karahan, (2020) studied the Turkey's economy and concluded a negative impact of exchange rates on economic development, particularly in underdeveloped nations. This is due to the high dependency on imported intermediate goods and capital in manufacturing input, which can be made more luxurious by an appreciation in currency rates. In according with the recent research of Irshad (2022), in the results, it was found, there is significant and inverse effect of exchange rate on economic development in case of Pakistan.

Methodology

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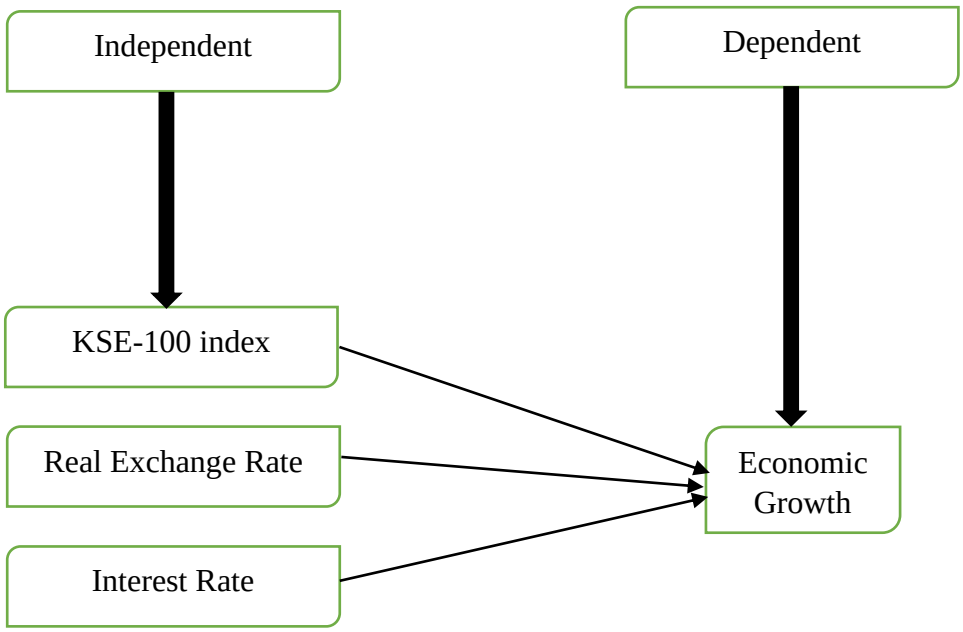
This study explores the relationship between economic achievements and stock market development using quarterly datasets. The time series quarterly data from Q1: 2000 to Q2: 2024 have been used for data analysis. This stud analyses Pakistan's developing economy using data from the International Financial Statistics (IFS), Karachi Stock Exchange (KSE), and State Bank of Pakistan (SBP). It considers the industrial production index (IPI) as a dependent variable and the KSE-100 index, interest rate, and exchange rate as independent variables. Study focuses the econometric conclusions for seasonal unit root tests of HEGY, Johansen co-integration, and Error Correction Model (ECM), among others.

Theoretical and Conceptual Framework

Applying the Efficient Market Hypothesis (EMH) and financial market theory of development in financial economics. Which states that stock market potentially accelerates economic development which might be different in accord with the level of development of an economy (Popoola et al., 2017). The conceptual framework derived from theory.



Econometric Model (Johansen Cointegration)

To estimate the long-run relationship between the performance of Pakistan's stock market and selected macroeconomic indicators, the Johansen co-integration model was employed for co-integration analysis (Johamen & Jtiselius, 1990). The study utilizes following econometric model to determine the relationship between stock market performance and economic growth:

$$IPI_t = \beta_0 + \beta_1 SMP_t + \beta_2 RER_t + \beta_3 IR_t + \mu_t \quad (1)$$

Where;
IPI= Industrial Production Index (proxy for economic growth).
SMP= Stock Market Performance measured as (KSE-100 index).
RER= Real Exchange Rate measured as the conversion of (PKR to USD).

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IR= Interest Rate proxy of by (lending rate of banking sector).
β_0= intercept, $\beta_{1...3}$= Coefficients of independent variables, μ= error terms.
The error correction specification from above equation (1) is presented in equation (2)

$$\Delta IPI_t = \beta_0 + \beta_1 \Delta SMP_t + \beta_2 \Delta RER_t + \beta_3 \Delta IR_t + \beta_4 \mu_{t-1} + \varepsilon_t \quad (2)$$

Where, μ_t is Error Correction Term, $t-1$ showing the variables were lagged by one period, ε_t is White Noise Residuals.

The error correction model i.e. equation (2) can be applicable to determine the long run equilibrium relationship between variables. The Granger causality test is used to evaluate whether there exists a unidirectional or bidirectional relationship between stock market performance and economic growth.

Results and Discussion

Unit Root Test

The study describes unit root tests using the HEGY test, which observes each variable separately for stationarity. Seasonal unit roots are assumed at zero frequency $\boldsymbol{\pi_1}$, biannual frequency $\boldsymbol{\pi_2}$, and annual frequency $\boldsymbol{\pi_3, \pi_4}$ concurrently. The calculated value and crucial value are compared at a 5% significance level, and it was developed by (Hylleberg et al., 1990).
To avoid the existence of spurious results, this study employed HEGY test for deducting the seasonal unit roots in the model. Results show that all variables became stationary at first difference I(1). See the tables below;

Table 1: Stock Market (KSE-100 Index)

At Level				**1st Difference**			
KSE-100	Calculated	Critical Value at 5%	Sea/Tr/C	Calculated	Critical Value at 5%	Sea/Tr/C	Decision
$\boldsymbol{H_0^A: \pi_1}$	-2.66	-3.32	T., C	-4.86	-3.28	Sea., T., C	I (1)
$\boldsymbol{H_0^B: \pi_2}$	-5.76	-1.88	T., C	-5.19	-2.75	Sea., T., C	I (1)
$\boldsymbol{H_0^C: \pi_3 = \pi_4}$	58.96	2.98	T., C	34.56	6.60	Sea., T., C	I (1)

Source: (Authors' computation, Eviews-12)

Table 2: Industrial Production Index

At Level				**1st Difference**			
IPI	Calculated	Critical Value at 5%	Sea/Tr/C	Calculated	Critical Value at 5%	Sea/Tr/C	Decision
$\boldsymbol{H_0^A: \pi_1}$	-2.12	-3.28	Sea., T., C	-4.71	-2.76	Sea., C	I (1)
$\boldsymbol{H_0^B: \pi_2}$	-4.03	-2.75	Sea., T., C	-3.36	-2.76	Sea., C	I (1)

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$H_0^C: \pi_3 = \pi_4$	35.33	6.60	Sea., T., C	20.47	6.57	Sea., C	I (1)

Source: (Authors' computation, Eviews-12)

Table 3: Real Exchange Rate

At Level				**1st Difference**			
RER	Calculated	Critical Value at 5%	Sea/Tr/C	Calculated	Critical Value at 5%	Sea/Tr/C	Decision
$H_0^A: \pi_1$	-2.24	-3.28	Sea., T., C	-4.24	-3.28	Sea., T., C	I (1)
$H_0^B: \pi_2$	-5.64	-2.75	Sea., T., C	-5.22	-2.75	Sea., T., C	I (1)
$H_0^C: \pi_3 = \pi_4$	70.44	6.60	Sea., T., C	29.18	6.60	Sea., T., C	I (1)

Source: (Authors' computation, Eviews-12)

Table 4: Interest Rate

At Level				**1st Difference**			
IR	Calculated	Critical Value at 5%	Sea/Tr/C	Calculated	Critical Value at 5%	Sea/Tr/C	Decision
$H_0^A: \pi_1$	-2.22	-3.28	Sea., T., C	-4.29	-3.28	Sea., T., C	I (1)
$H_0^B: \pi_2$	-6.04	-2.75	Sea., T., C	-5.46	-2.75	Sea., T., C	I (1)
$H_0^C: \pi_3 = \pi_4$	41.54	6.60	Sea., T., C	42.90	6.60	Sea., T., C	I (1)

Source: (Authors' computation, Eviews-12)

The table below represents the lag length selection criteria. The second lag of variables is found to be better lag for the data with regard to the case of our study, majority of the steric values also suggest the second lag.

Table 5: Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-142.2307	NA	6.05e-08	3.244146	3.436022	3.321589
1	623.4254	1398.155	1.04e-14	-12.33534	-10.80033*	-11.71580
2	731.1318	180.2911*	2.95e-15*	-13.61156*	-10.73343	-12.44992*
3	771.1645	60.91926	3.76e-15	-13.41662	-9.195364	-11.71288
4	819.3522	65.99629	4.18e-15	-13.39896	-7.834580	-11.15313
5	872.6769	64.91693	4.43e-15	-13.49298	-6.585467	-10.70505
6	919.0337	49.38011	5.98e-15	-13.43552	-5.184881	-10.10549

Source: (Authors' computation, Eviews-12)

Table 6: Johansen Cointegration Test Result

	Trace statistics	**Maximum Eigenvalue Statistics**

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Hypothesized No. of CE (s)	Trace Statistic	0.05 Critical Value	Max-Eigen Statistic	0.05 Critical Value	Conclusion
None *	250.3095	125.6154	101.4736	46.23142	Reject H_0
At most 1 *	148.8358	95.75366	67.08022	40.07757	Reject H_0
At most 2 *	81.75561	69.81889	42.33338	33.87687	Reject H_0
At most 3	39.42222	47.85613	18.43454	27.58434	Do not reject H_0
At most 4	20.98768	29.79707	13.03962	21.13162	Do not reject H_0
At most 5	7.948064	15.49471	7.672301	14.26460	Do not reject H_0
At most 6	0.275764	3.841466	0.275764	3.841466	Do not reject H_0

Source: (Authors' computation, Eviews-12)

Results of Johansen Cointegration test in the above table demonstrates that results of the Trace and Max-Eigen statistics. There is at least three cointegrating equations at 5% level of significance.

Table 7: Results of Long Run Relationship

Variables	Coefficients	Std. Error	t-Statistics	Conclusion
KSE-100	0.126131	(0.03985)	[3.1651]	Negative and significant
IR	0.009426	(0.00604)	[1.5611]	Negative and significant
RER	-0.299123	(0.11848)	[-2.5247]	positive and significant

Source: (Authors' computation, Eviews-12)

The outcome displays that a 1% upsurge in the real exchange rate will result in a 0.299-unit acceleration in economic development. A 1% upsurge in the interest rate would hinder the growth performance of production in the Pakistani economy by 0.0094 units, the same result has been investigated in the work of (Gatawa et al., 2017). The negative but statistically significant role of KSE-100 index on the development of industrial production sector. It has been observed from the empirical results that if there would be an increase in KSE-100 index then it causes inversely the industrial production growth to be declined by 0.13 units in the long run. However, this result is aligned with the work of (Alajekwu and Achugbu, 2012; Kamran et al., 2018).

Table 8: Results of Short Run Error Correction Model

Variables	Coefficient	Std. Error	t-Statistics	Conclusion
ECT	-0.5772	(0.220)	[-2.624]	Negative and significant
D(KSE-100)	-1.9285	(0.459)	[-4.199]	Negative and significant
D(IR)	3.4778	(2.958)	[1.176]	Positive and

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D(RER)	0.4206	(0.201)	[2.092]	significant Positive and significant

Source: (Authors' computation, Eviews-12)

The error correction term (ECT) results indicates that 57% of the error or disequilibrium was formed in the past and fixed in the present. The long-term association of variables with positive signs shows a diverging trend, while variables with negative signs express a convergent trend. D(KSE-100) has a negative relationship and statistically significant in determining economic growth. This implies that an increase in KSE-100 index causes to slowdown the growth of economy or vice versa.

Table 9: Results of Granger Causality Test

Null Hypothesis	F-Statistics	Prob.	Decision
KSE-100 does not Granger cause IPI	4.58574	0.0001	Reject Ho
IPI does not Granger cause KSE-100	0.49231	0.8579	Do not reject Ho
RER does not Granger cause IPI	4.10093	0.0004	Reject Ho
IPI does not Granger cause RER	1.92908	0.0683	Do not reject Ho
IR does not Granger cause IPI	3.83718	0.0008	Reject Ho
IPI does not Granger cause IR	0.86685	0.5483	Do not reject Ho

Source: (Authors' computation, Eviews-12)

The KSE-100 index does not Granger cause IPI and that it runs from the KSE-100 index to the industrial production index (IPI), the results designate a strong unidirectional causation, representing that the IPI is Granger caused by the KSE-100 index. In the same manner, there also exists unidirectional causality between real exchange rate (RER) and IPI, interest rate (IR) and IPI respectively. The causality runs from RER, IR to the IPI, meaning that RER, IR Granger cause the IPI.

Table 10: Diagnostic and Stability Tests

Tests	Null hypothesis	Obs*R-Square	Prob.Chi-Square	Source	Conclusion
Serial correlation	No serial correlation	0.168529	0.9192	Breusch-Godfrey LM test	No evidence of serial correlation
Heteroscedasticity	No Heteroscedasticity	30.12215	0.9927	Breusch-Pagan-Godfrey	No evidence of heteroscedasticity
Normality	Residuals are normally distributed		0.667098	Jarque-Bera	Normally distributed

Source: (Authors' computation, Eviews-12)

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The above table focuses on the results of the diagnostics and stability tests. The evidence of serial correlation and heteroscedasticity does not exist in the model. The residuals are normally distributed as shown in the following figure.

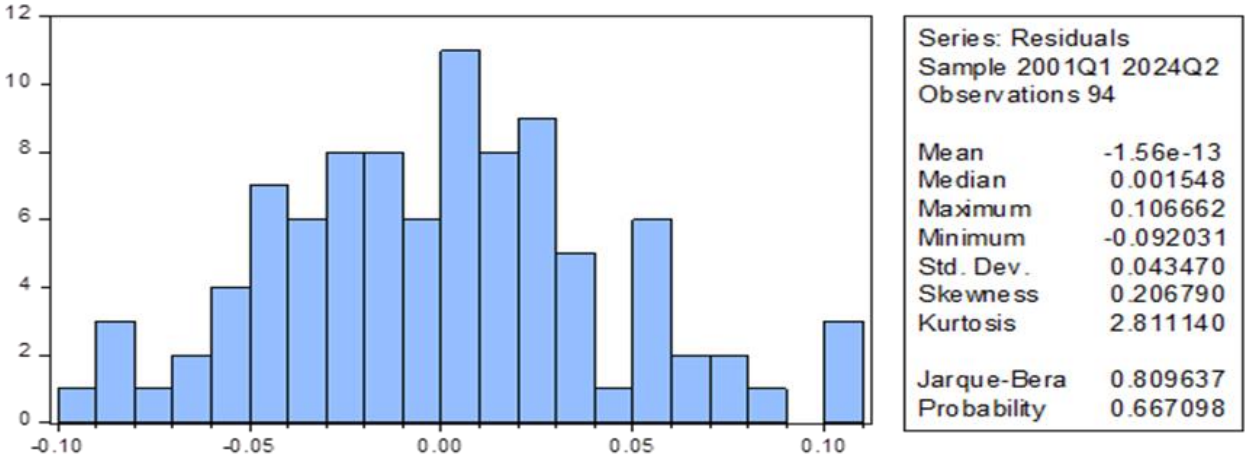

Figure 1: Residual Normality Test

Stability Test

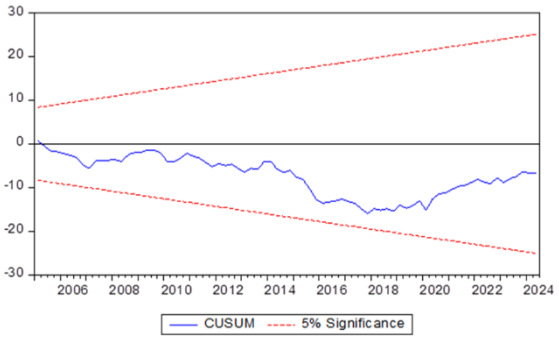

Figure 2: Cumulative Sum Test

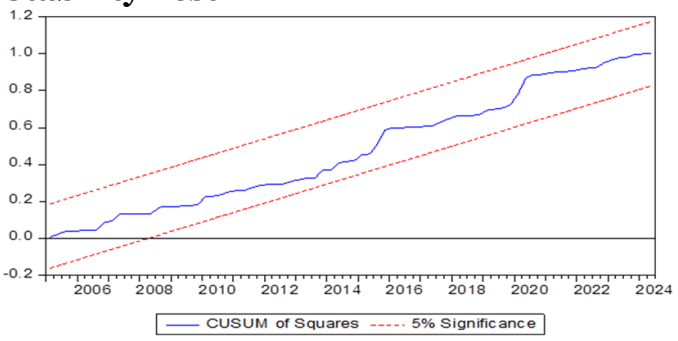

Figure 3: Cumulative Sum Squared Test

The model is strong and in the both short-term and long-term coefficients adequacy remains constant across the quantified sample periods.

Conclusion

The study found a negative but significant correlation between the KSE-100 index and economic growth in Pakistan. An increase in the index would inversely affect economic growth in the long run. Interest rates were also found to be negative but significant with economic development, suggesting that macro-factors inversely affect economic growth. Exchange rates showed a positive and significant relationship with economic growth, with appreciation leading to a decline in imports and an increase in exports. The vector error correction model (VECM) short-term outcomes explained the speed of adjustment in the direction of disequilibrium. The study concluded that there is a short-term causal association between economic development and explanatory factors.

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