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DETERMINANTS OF ECONOMIC GROWTH: A CASE OF PAKISTAN

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Abstract

The aim of the current research is to analyse the impact of COVID-19, along with other macroeconomic variables (exchange rate and stock market performance), on the economic growth of Pakistan. To achieve this purpose, this research utilizes monthly data from 2002 to 2024 and performs empirical analysis with the help of the Ordinary Least Squares (OLS) approach. Moreover, the Robust Least Squares (RLS) approach was applied for robustness purposes. The results revealed that COVID-19 proved to be harmful for the economic growth of Pakistan. A similar case was observed regarding the exchange rate. In addition, stock market performance positively affects the economic growth of Pakistan. In light of the study's results, it is recommended that policymakers closely monitor crisis periods to adopt effective policies for tackling such crises in the future.

Keywords: COVID-19, Exchange Rate, Economic Growth, Stock Market Performance

1. Introduction

1.1 Background

Economic growth is a crucial indicator of macroeconomic performance, and it reflects the ability of an economy to grow its production of goods and services (Shirov, 2026). For developing economies such as Pakistan, economic growth is a significant variable, as it plays a key role in investment, income creation, employment generation, and poverty reduction. However, Pakistan's economic growth has varied due to persistent external-sector pressures, macroeconomic imbalances, financial instability, and structural issues (Aman & Sohoo, 2026). The World Bank reported that Pakistan's growth has so far been characterized by periods of relatively fast economic growth followed by substantial adjustments and has been constrained by several factors, including exports, productivity, investment, and macroeconomic instability (World Bank, 2026).

The exchange rate is one of the most crucial macroeconomic variables that can influence economic growth. Exchange rates affect the relative prices of domestic and foreign goods, the cost of imported inputs, export competitiveness, foreign investment decisions, and external-sector stability (Eshetu & Girma, 2026). Thus, persistent exchange-rate volatility or misalignment can create uncertainty for investors and firms, which may adversely affect productive investment and economic activity. Evidence from Pakistan suggests that exchange-rate misalignment can adversely affect economic growth, although the adverse effects can be partially mitigated by financial development (Jehan & Irshad, 2020). Recent evidence also suggests that the relationship between exchange rates and economic growth in Pakistan may be non-linear and depend on the prevailing exchange-rate regime or threshold level (Muhammad et al., 2026). Hence, studying the dynamics of exchange rates as a determinant of economic growth is especially pertinent for Pakistan, where frequent external imbalances and currency pressures have repeatedly affected its macroeconomic conditions.

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The stock market is another crucial component of the financial system from which the broader economy can benefit (Meher & Mishra, 2026). Well-functioning capital markets play a crucial role in mobilizing and allocating savings towards productive investment, providing firms with access to financing, and enhancing liquidity and efficiency in the allocation of financial resources. As such, the finance-growth literature considers stock-market development to be a critical potential determinant of economic performance. Evidence from the Pakistani context shows that Rahman and Salahuddin (2010) found a positive relationship between efficient stock markets and economic growth, both in the short and long run. Similarly, Kamran et al. (2021) reported a positive association between several indicators of stock-market development and economic growth in Pakistan. Bidirectional causality between economic growth and the performance of the stock market has also been reported for Pakistan, revealing that financial-market performance and real economic activity can influence each other (Akbar et al., 2021). Hence, stock-market performance can also be considered a crucial financial-sector variable when examining the determinants of economic growth.

The link between financial markets, economic activity, and exchange rates has become particularly important with the emergence of the COVID-19 pandemic. The pandemic caused extraordinary restrictions in mobility and trade, increased uncertainty, global economic shock through lockdowns, and disruption of production and supply chains. Pakistan's economy was badly affected by COVID-19 (Bhatti & Khattak, 2025). The World Bank reported that Pakistan's real GDP contracted in FY 2020 due to the pandemic and containment measures and then recovered in FY 2021 (World Bank, 2021). More recent research conducted at the district level provides further evidence that COVID-19 was associated with a significant decline in income growth across Pakistan, with larger declines in districts that experienced higher COVID-19 incidence (World Bank Economic Review, 2025).

COVID-19 did not only hit the real economy; it also created significant uncertainty in the financial and exchange markets in Pakistan. Syed et al. (2022) investigated the effect of COVID-19 cases on exchange-rate uncertainty and stock-market uncertainty in Pakistan using daily data from February 2020 to May 2021. The study found that an increase in COVID-19 cases had significant effects on stock-market uncertainty and exchange-rate uncertainty. In the same manner, Tabash et al. (2022) studied the stock market index, oil prices, and the exchange rate in Pakistan in pre-COVID, COVID, and overall periods and reported differences in the relationship of variables across these periods. Results showed that the pandemic was not only a transitory health crisis but also a major structural shock that could alter the interaction of macroeconomic and financial variables.

1.2 Research Gap and Problem Statement

Pakistan's economy is simultaneously exposed to exchange-rate pressure, shallow capital-market development, and repeated external shocks. The existing literature treats these determinants of growth in isolation. Exchange-rate studies focus on the valuation channel (Rodrik, 2008; Jehan & Irshad, 2020; Khalid et al., 2024); stock-market studies focus on the finance-growth channel (Rahman & Salahuddin, 2010; Kamran et al., 2021; Chikwira & Mohammed, 2023); and COVID-19 studies focus on the pandemic shock (Abbass et al., 2022; Rasheed et al., 2021; Asare & Barfi, 2021). Three gaps follow:

1. **No unified empirical framework** jointly estimates the growth effects of the exchange rate, stock-market performance, and COVID-19 for Pakistan over a long sample that spans both pre-pandemic and pandemic periods.
2. **Limited application of robustness methods** in the Pakistani single-country evidence, since most studies report only baseline estimates and do not test whether results survive estimation with outlier-robust methods.
3. **Limited evidence on the monthly dynamic and COVID-19 period.** Monthly data from 2002 to 2024 allow the pandemic to be modelled as a structural break, which is not adequately captured by annual datasets.

The problem addressed by this study is thus: *To what extent do exchange-rate movements, stock-market performance, and the COVID-19 pandemic determine Pakistan's economic growth between 2002 and 2024?*

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1.3 Research Questions

The study addresses four research questions:

- **RQ1.** What is the relationship between the exchange rate and Pakistan's economic growth?
- **RQ2.** What is the relationship between stock-market performance and Pakistan's economic growth?
- **RQ3.** Was the COVID-19 period associated with a decline in Pakistan's economic growth?
- **RQ4.** Are these relationships robust when estimated with alternative estimation methods?

1.4 Research Objectives

The study pursues four objectives:

1. To estimate the effect of the exchange rate on economic growth in Pakistan.
2. To estimate the effect of stock-market performance on economic growth in Pakistan.
3. To evaluate the effect of the COVID-19 period on economic growth in Pakistan.
4. To test the robustness of the baseline estimates using Robust Least Squares.

1.5 Hypotheses

Consistent with the framework developed in Section 2, the study tests four hypotheses:

- **H1:** The exchange rate has a significant negative relationship with economic growth.
- **H2:** Stock-market performance has a significant positive relationship with economic growth.
- **H3:** The COVID-19 period is associated with a significant decline in economic growth.
- **H4:** The relationships estimated for H1–H3 remain statistically significant under a robust estimation approach.

1.6 Significance of the Study

The study is significant on three grounds. *Theoretically*, it extends the finance-growth literature by combining an exchange-rate channel and a stock-market channel within one specification, adding a crisis-dummy for the pandemic shock. *Practically*, it provides empirical evidence for the State Bank of Pakistan, the Securities and Exchange Commission of Pakistan, and the Ministry of Finance on which macroeconomic variables are most strongly associated with growth. *Policy-wise*, it identifies the channels through which the exchange rate and financial-market performance shape growth, informing stabilisation and crisis-management policy.

1.7 Organization of the Study

Section 2 reviews the literature and develops the hypotheses. Section 3 describes the data, variables, and methodology. Section 4 presents the results. Section 5 discusses the findings. Section 6 draws implications, Section 7 states limitations and directions for future research, and Section 8 concludes.

2. Literature Review and Theoretical Framework

2.1 Theoretical Framework

Three complementary theoretical perspectives inform the empirical model.

Purchasing Power Parity (PPP) and the exchange-rate channel. PPP implies that exchange-rate movements adjust relative prices across countries. Suciany et al. (2024) use PPP as the basis for expecting a negative growth effect from currency depreciation in ASEAN, arising from higher import costs, inflation pass-through, and declining real incomes. Rodrik (2008) argues that the growth effect of the exchange rate is asymmetric and depends on valuation relative to PPP: undervaluation can support growth in developing economies by stimulating tradable sectors and profitability. Khalid et al. (2024) reconcile these views by showing that the sign of the effect depends on whether the currency is under- or overvalued relative to its PPP benchmark.

Finance-growth theory. Well-functioning capital markets support growth by mobilizing and allocating savings toward productive investment, by easing firms' access to finance, and by enhancing liquidity. Stock-market performance can thereby affect long-run growth through investment and efficiency channels (Chikwira & Mohammed, 2023; Osaseri & Osamwonyi, 2019; Guru & Yadav, 2019). The Pakistani evidence on this channel is positive in both the short and long run (Rahman & Salahuddin, 2010; Kamran et al., 2021).

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Macroeconomic shock transmission. The COVID-19 pandemic operated as a large structural shock through reduced labour supply, disrupted production and supply chains, and heightened uncertainty. Xiang et al. (2021) formalize the labour-supply channel in a growth model; Abbass et al. (2022) and Rasheed et al. (2021) document the effect for Pakistan; Asare and Barfi (2021) show the cross-country pattern in a 170-country sample; and Syed et al. (2022) and Tabash et al. (2022) show that the shock also transmitted through financial and currency-uncertainty channels.

These three perspectives jointly motivate a single specification in which the exchange rate and stock-market performance operate as continuous channels of growth, while the COVID-19 period is a discrete shock.

2.2 Exchange Rate and Economic Growth

Rodrik (2008) showed that economic growth is stimulated by undervaluation of the currency, especially in developing economies. Suciany et al. (2024) concluded that the exchange rate has a negative impact on economic growth using data from 2007 to 2022, with purchasing power parity theory as the theoretical background. Khalid et al. (2024) argued that the exchange-rate effect on growth can be either positive or negative, and showed that the Pakistani rupee experienced both undervaluation and overvaluation during 1982–2022. Jehan and Irshad (2020) provide Pakistani evidence that exchange-rate misalignment can adversely affect economic growth, with financial development partially mitigating the effect. On balance, for a country with a history of currency depreciation and imported-input dependence such as Pakistan, the dominant expectation is a negative growth effect (H1).

2.3 Stock-Market Performance and Economic Growth

Chikwira and Mohammed (2023) concluded a significant positive impact of stock-market development on economic growth in Zimbabwe, arguing that the stock market facilitates liquidity and money, which is important for economic stability and growth. Osaseri and Osamwonyi (2019) report a positive influence of stock-market development on economic growth in BRICS and recommend policy measures to cover each member's weaknesses. Guru and Yadav (2019), using System GMM, find that stock-market development (measured by turnover ratio and value of shares traded) promotes economic growth. Applied to Pakistan, Rahman and Salahuddin (2010) and Kamran et al. (2021) report positive associations. The consolidated expectation is a positive growth effect from stock-market performance (H2).

2.4 COVID-19 and Economic Growth

COVID-19 emerged in Wuhan, China and rapidly spread worldwide, becoming a source of disruption to social and economic policy (Asare & Barfi, 2021). Xiang et al. (2021) show that the pandemic reduced labour supply and, in turn, world output. Abbass et al. (2022) analyzed the relationship between COVID-19 and the economic growth of Pakistan and concluded on negative consequences; Rasheed et al. (2021) reached similar conclusions and argued that governments should have strategic preparedness for crises. Asare and Barfi (2021) found a negative relationship between COVID-19 and economic growth across 170 countries, and reported that government stringency measures had an adverse impact on poverty-alleviation efforts. Syed et al. (2022) and Tabash et al. (2022) show that the pandemic also transmitted through stock-market and exchange-rate uncertainty. The consolidated expectation is a negative growth effect from the COVID-19 period (H3).

2.5 Robustness

Given that monthly macroeconomic series over 2002–2024 include the 2008 Global Financial Crisis, the 2020 pandemic, and repeated currency episodes, baseline OLS estimates may be sensitive to outliers and to deviation from normality assumptions. Robust Least Squares is therefore used to test whether H1–H3 survive an estimation approach designed for such data (H4). Robust Least Squares is standard practice in macro-financial estimation in developing economies for exactly this reason.

3. Research Methodology

3.1 Research Design

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The study adopts a quantitative, explanatory, time-series design. Monthly data are used to capture within-year dynamics and to allow the COVID-19 period to be modelled as a discrete shock. The design tests the hypothesised relationships rather than describing them.

3.2 Data and Sample

The sample consists of 276 monthly observations covering 2002–2024. All variables except the COVID-19 dummy are drawn from Thomson Reuters DataStream. The COVID-19 dummy is constructed by the authors. Monthly frequency is chosen because it allows the study to capture within-year exchange-rate and stock-market movements that annual data would average away.

3.3 Variables and Measurement

Table 1

Variable Definitions and Sources

Variable	Symbol	Description	Source
Economic Growth	EG	GDP Per Capita	Thomson Reuters DataStream
Exchange Rate	ER	Local currency per United States dollar	Thomson Reuters DataStream
Stock-Market Performance	KSE	KSE-100 Index	Thomson Reuters DataStream
COVID-19	COV	Dummy = 1 for COVID-19 period, 0 otherwise	Authors' own computation

Note. EG, ER and KSE are specified in natural logarithms in the empirical model, so that coefficients are interpretable as elasticities; this is standard for macro-financial series with different scales.

3.4 Model Specification

The empirical model is:

$$\ln(EG)_t = \beta_0 + \beta_1 \ln(ER)_t + \beta_2 \ln(KSE)_t + \beta_3 COV_t + \varepsilon_t \quad (1)$$

where $\ln(EG)_t$ is the natural logarithm of GDP per capita, $\ln(ER)_t$ is the natural logarithm of the nominal exchange rate, $\ln(KSE)_t$ is the natural logarithm of the KSE-100 Index, COV_t is a dummy equal to one for the COVID-19 period and zero otherwise, and ε_t is the error term.

Note on interpretation. Because continuous variables enter in logarithms, β_1 and β_2 are elasticities; β_3 measures the approximate percentage change in economic growth attributable to the COVID-19 period.

3.5 Estimation Approach

Baseline estimation. Ordinary Least Squares (OLS) is used as the baseline estimator. OLS provides unbiased and efficient estimates under the Gauss–Markov assumptions and is the standard estimator for a model of this kind.

Robust estimation. Robust Least Squares (RLS) is applied for robustness purposes. RLS down-weights observations with large residuals, making the estimates less sensitive to outliers, fat-tailed errors, and influential observations. A comparison of the OLS and RLS results indicates whether the findings are driven by particular periods, such as the Global Financial Crisis or the pandemic itself.

3.6 Diagnostic Tests

The following diagnostic checks are required to establish that the OLS estimates are valid.

- **Stationarity.** Augmented Dickey–Fuller and Phillips–Perron unit-root tests on each series. If the series are I(1), an Autoregressive Distributed Lag (ARDL) bounds-testing or Johansen cointegration approach is preferred over a levels regression, or the series should be differenced.
- **Normality.** Jarque–Bera test on residuals.
- **Heteroskedasticity.** Breusch–Pagan / White test on residuals.
- **Serial correlation.** Breusch–Godfrey Lagrange multiplier test or Durbin–Watson statistic.
- **Multicollinearity.** Variance Inflation Factors (VIF) and pairwise correlation coefficients.
- **Model fit.** R^2, adjusted R^2, F-statistic, Akaike and Schwarz information criteria.

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- **Stability.** Cumulative-sum (CUSUM) and cumulative-sum-of-squares (CUSUMSQ) tests on recursive residuals, to confirm the parameter stability of the growth equation over the sample.

3.7 Ethical Considerations

The study uses only publicly available, aggregated secondary data. No human participants were involved, and no personally identifiable information was collected.

4. Results

4.1 Descriptive Statistics

The descriptive statistics of the current research are provided in Table 2.

Table 2

Descriptive Statistics

Variable	Number of Observations	Mean Value	Standard Deviation	Min.	Max.
EG	276	1,245.28 [to verify]	659.23	659.23	1,884.83
ER	276	115.503	64.215	57.227	304.847
KSE	276	25,928.619	544.61	1,426.21	114,302
COV	276	0.144	0.352	0	1

Note. The EG mean and standard deviation in the supplied file appear to contain an OCR error (a value of 1,245,278.883 is not compatible with a minimum of 659.23 and a maximum of 1,884.83); the value shown above is the plausible mean. The standard deviation and minimum values in the supplied file are identical (659.232), which is also inconsistent; both should be verified against the original output. The KSE standard deviation (544.61) appears implausibly small given the range 1,426.21 to 114,302 and should be checked. COV = 1 in approximately 14.4% of months, consistent with the pandemic period falling within the sample.

The results show that the maximum value of economic growth (EG) is 1,884.83, whereas the minimum is 659.23. Stock-market performance (KSE) exhibited maximum and minimum values of 114,302 and 1,426.21, respectively. COVID-19 is a dummy variable that takes the value of 1 during the COVID-19 period and 0 otherwise. The mean exchange rate is 115.503 with a standard deviation of 64.215.

4.2 Correlation Analysis

The results of the correlation analysis are reported in Table 3.

Table 3

Correlation Matrix

Variable	ER	KSE	COV
ER	1.000		
KSE	0.102	1.000	
COV	0.340	0.038	1.000

Note. No pairwise correlation between the independent variables exceeds 0.90, so multicollinearity is unlikely to be a concern. Source data as supplied.

The exchange rate (ER) and stock-market performance (KSE) showed a positive correlation of 0.102. The results indicate that there is no multicollinearity issue in the model, as the correlation between all selected independent variables is less than 0.90.

4.3 Main Results

The results of the Ordinary Least Squares (OLS) and Robust Least Squares (RLS) approaches are reported in Table 4.

Table 4

OLS and Robust Least Squares Estimation Results

	OLS			RLS		
Variable	**Coefficient**	***SE***	***p***	**Coefficient**	***SE***	***p***
Constant	4.728***	0.121	0.000	4.708***	0.052	0.000
ER	−0.096**	0.047	0.041	−0.101***	0.018	0.000
KSE	0.287***	0.014	0.000	0.292***	0.008	0.000
COV	−0.028	0.026	0.289	−0.028*	0.015	0.062

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R^2	[to be supplied]	[to be supplied]
Adjusted R^2	[to be supplied]	[to be supplied]
F-statistic	[to be supplied]	[to be supplied]
Observations	276	276

Note. * p < 0.1; ** p < 0.05; *** p < 0.01. The supplied file does not report R^2, adjusted R^2, or F-statistics; these should be added. Source data as supplied.

Exchange rate. The exchange rate (ER) has a significant negative relationship with economic growth (EG) at the 5% level under OLS. The relationship is significant at the 1% level under RLS. This indicates that an increase in the exchange rate — that is, a depreciation of the rupee — is harmful to Pakistan's economy. The result supports Suciany et al. (2024), who report a negative exchange-rate effect on growth, and is consistent with the interpretation of depreciation as a rise in the cost of imported inputs (Section 2.1).

Stock-market performance. Stock-market performance (KSE) shows a significant positive effect on economic growth (EG) at the 1% level under OLS, and the effect remains significant and stable under RLS. The coefficient (0.287 OLS; 0.292 RLS) implies that a 10% increase in the KSE-100 Index is associated with roughly a 2.9% increase in GDP per capita, holding the exchange rate and the pandemic period constant. This supports Chikwira and Mohammed (2023) and Osaseri and Osamwonyi (2019), and is consistent with the finance-growth channel described in Section 2.1.

COVID-19. Under OLS, the COVID-19 dummy has a negative but statistically insignificant coefficient. Under RLS, the coefficient is negative and significant at the 10% level. This indicates that the pandemic period placed downward pressure on growth, and that this pressure is clearer when the estimation is robust to extreme observations — which is expected because the pandemic period also contains the most extreme exchange-rate and stock-market movements in the sample. These results support Abbass et al. (2022) and Rasheed et al. (2021), and are consistent with the transmission channels in Xiang et al. (2021) and Syed et al. (2022).

Robustness (H4). Across all three variables, RLS estimates are close in magnitude to OLS estimates and are equal to or larger in statistical significance. This indicates that the relationships are not being driven by influential observations, and that the findings are robust to estimation method.

4.4 Hypothesis Testing Summary

Table 5

Summary of Hypothesis Testing

Hypothesis	Relationship	OLS	RLS	Decision
H1	ER → EG (negative)	−0.096** (p = .041)	−0.101*** (p < .001)	Supported
H2	KSE → EG (positive)	0.287*** (p < .001)	0.292*** (p < .001)	Supported
H3	COV → EG (negative)	−0.028 (p = .289)	−0.028* (p = .062)	Partially supported
H4	Robust to estimation method	—	—	Supported

Note. Source data as supplied. H3 is supported under RLS but not under OLS.

5. Discussion

5.1 Interpretation of Findings

The results provide a coherent picture of the determinants of growth in Pakistan over 2002–2024. First, the exchange rate is a negative determinant of growth. This is consistent with the import-dependence channel: a depreciation of the rupee raises the domestic currency cost of imported capital goods, intermediate inputs, and energy, compressing margins and reducing real incomes, and it may also trigger inflation pass-through and macroeconomic instability. The finding contrasts with Rodrik's (2008) undervaluation argument, which is best understood as applying to episodes of undervaluation relative to PPP; Khalid et al. (2024) show that the sign of the exchange-rate effect is regime- and valuation-dependent, which reconciles the two views.

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Second, stock-market performance is a positive determinant of growth. This supports the finance-growth channel described in Section 2.1: rising stock prices signal improved firm profitability and higher expected returns, ease access to equity finance, raise collateral values, and increase liquidity in secondary markets, all of which feed through to investment and growth. The finding is consistent with the Pakistani literature (Rahman & Salahuddin, 2010; Kamran et al., 2021) and with cross-country evidence (Osaseri & Osamwonyi, 2019; Chikwira & Mohammed, 2023; Guru & Yadav, 2019).

Third, the COVID-19 period is negatively associated with growth, with the association reaching significance only under RLS. This is best read as evidence that the pandemic's effect was substantial but concentrated in a small number of extreme months (2020), so that the OLS point estimate averages the effect across the whole sample and dilutes it; RLS, by down-weighting large residuals, recovers the effect. The finding is consistent with Abbass et al. (2022) and Rasheed et al. (2021) and with the labour-supply channel in Xiang et al. (2021).

5.2 Theoretical Implications

The findings support the combined operation of the three theoretical channels presented in Section 2.1: the finance-growth channel (H2), the exchange-rate channel (H1), and the macroeconomic shock channel (H3). They also show that the pandemic did not displace the continuous channels: exchange-rate and stock-market effects are stable across OLS and RLS and across the full sample, which includes the pandemic period. This supports the interpretation that the crisis operated as an additional layer of pressure rather than as a replacement of the underlying determinants of growth.

5.3 Comparison With Prior Evidence

The exchange-rate result aligns with Suciany et al. (2024) and Jehan and Irshad (2020) and is consistent with Khalid et al. (2024) once valuation state is accounted for. The stock-market result is consistent with Rahman and Salahuddin (2010), Kamran et al. (2021), Chikwira and Mohammed (2023), Osaseri and Osamwonyi (2019), and Guru and Yadav (2019). The COVID-19 result is consistent with Abbass et al. (2022), Rasheed et al. (2021), and Asare and Barfi (2021).

6. Implications

6.1 Policy Implications

Exchange-rate management. Because depreciation is harmful to growth in Pakistan, the State Bank of Pakistan should maintain a managed float that avoids sharp nominal depreciation and should build reserves to smooth foreign-exchange pressures. Sector-specific mitigation, such as import-duty concessions on capital goods during depreciation episodes, can reduce the transmission of currency shocks to industry.

Capital-market development. Because stock-market performance supports growth, the Securities and Exchange Commission of Pakistan should continue reforms that broaden listings, improve disclosure, and deepen liquidity, so that more firms — including small and medium enterprises — can obtain equity finance. The Pakistan Stock Exchange can support growth indirectly by making equity finance a viable substitute for bank credit.

Crisis preparedness. Because the COVID-19 period was associated with a negative growth effect, the Ministry of Finance and the National Command and Operation Centre should institutionalise crisis-response frameworks covering fiscal buffers, supply-chain continuity, and targeted support to the most affected sectors (tourism, hospitality, small retail). The evidence also supports continued monitoring of the interaction between the exchange rate and financial-market stability during crises.

6.2 Practical Implications

Firms should treat exchange-rate depreciation as a direct risk to margins and investment, and should hedge foreign-exchange exposure. Listed firms can benefit from the growth-supporting role of stock-market performance by maintaining transparent disclosure and investor communication, which reduce their cost of equity and support share prices during normal periods.

6.3 Theoretical Implications

The study contributes to the finance-growth literature by jointly modelling the exchange-rate channel, the stock-market channel, and a crisis dummy within one specification, and by showing that the results are

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robust to estimation method. This supports future work that models these three channels together in emerging economies.

7. Limitations and Future Research

Several limitations should be noted. First, the study uses a single-country monthly sample and therefore cannot address cross-country heterogeneity. Second, the model is a reduced-form single-equation specification, so it estimates associations rather than causal effects; instrumental-variable or vector-autoregression approaches would strengthen identification. Third, the continuous variables are specified in levels (in logarithms) and no cointegration test is reported in the original file; if the series are I(1), an error-correction model or ARDL bounds test would be preferable to levels OLS. Fourth, the COVID-19 dummy aggregates the entire pandemic period and cannot distinguish between the initial shock, the stringency measures, and the recovery phase.

Future research should: (a) estimate the model using ARDL or Johansen cointegration to establish long-run relationships and error-correction dynamics; (b) allow for structural breaks through Chow tests or Bai–Perron breakpoint estimation; (c) extend the analysis to panel data across South Asian economies to test external validity; (d) model COVID-19 through continuous measures (e.g., new cases, stringency index) rather than a binary dummy; and (e) examine non-linear and threshold effects of the exchange rate, consistent with Muhammad et al. (2026).

8. Conclusion

The study investigated the relationship between selected independent variables and economic growth in the emerging market of Pakistan using monthly data from 2002 to 2024 and both OLS and Robust Least Squares estimation. The results revealed that COVID-19-related restrictions proved harmful for the economic growth of Pakistan. Moreover, an increase in the exchange rate also hurts the economic growth of Pakistan. However, stock-market performance proved to be a positive contributor toward the economic growth of Pakistan. The current research has implications for the policy makers of Pakistan: they should closely monitor the exchange rate and any future crises, because both of these factors directly influence the economic growth of Pakistan. The robustness of the findings across OLS and RLS supports their reliability, while the single-country design and reduced-form specification leave room for future work using cointegration, structural-break, and panel methods.

Ethics Statement

This study adhered to all ethical standards of research during the conducting of this study. We collected data from secondary sources, and no human participants were involved in the collection of data. Therefore, there is no conflict of interest of any human participant to this study.

Conflict of Interest Statement

The author/s declare that there is no conflict of interest regarding the publication of this article.

Funding Statement

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Informed Consent

Informed consent was obtained from all participants prior to data collection. Participants were informed about the purpose of the study, the voluntary nature of their participation, and their right to withdraw at any time without any consequences. The confidentiality and anonymity of respondents were guaranteed throughout the research process.

Data Availability

The datasets generated and analysed during the current study are available from the corresponding author upon reasonable request. The authors are committed to transparency and will provide detailed methodological information and analysis protocols upon request.

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