



## Research Article

# Evaluating the Impact of Capital Budgeting Parameters on Economic Prosperity in Pakistan: A Time Series Analysis Using the ARDL Model

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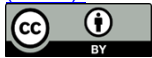
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## ABSTRACT

This study analyses the role of capital budgeting on economic growth in Pakistan while taking into consideration the current economic indicators apart from inflation rates, including interest rates along with foreign direct investment and exchange rates. The study will analyze 43 years of data, covering the period from 1980 to 2022, investigating vital relationships among the economic variables applying ARDL modeling for the short and long term. In the case of ADF, a stationarity state test was needed in order to increase the reliability of the outcome; hence, tests conducted on ARDL Bound confirmed that meaningful relationship existing between all these variables studied over the long-run. Its finding enhances our knowledge of capital budgeting with respect to its relevance with economic growth for Pakistan, offering very relevant implications for all policymaking strategies to investors and to all other academic research groups working towards development in all the economic sector segments.

## KEYWORDS

Capital budgeting, Economic prosperity, ARDL model, Time series analysis, GDP, Economic variables, ADF test.

## 1 | INTRODUCTION

This study examines the relationship between capital budgeting and economic growth in Pakistan (1980–2022), focusing on capital expenditure, interest rates, inflation, FDI, and exchange rate regimes using the Autoregressive Distributed Lag (ARDL) model. It explores investment strategies, economic challenges, and policy implications. Pakistan's energy sector, critical for growth, faces poor policies, mismanagement, and power shortages (Rehman et al., 2015; Sutradhar, 2020). Despite efforts, renewable energy adoption remains minimal, with rising electricity demand exceeding supply (Soares, 2015; Rehman & Deyuan, 2018). Sustainable economic growth requires human capital investment and public-private collaboration (Saleem et al., 2019; Shabbir et al., 2021). Foreign reserves and remittances influence growth, while terrorism and economic instability deter investment (Jawaid & Raza, 2016; Muhammad Tahir, 2020). The reliance on oil and gas, coupled with low utilization of renewables, necessitates comprehensive policy reforms (Usman et al., 2020; Rehman et al., 2021). Human capital is key to economic expansion, with higher education having a stronger impact than primary and secondary education (Ali, 2015; Wang & Liu, 2016). Many developing countries depend on foreign aid for educational improvements (H. Ali et al., 2018;

Cecen et al., 2014). Technological advancement and labor-capital accumulation drive growth (Bekun & Agboola, 2019), while human capital attracts investment and fosters innovation (Lucas, 1988; Romer, 1990; Channar et al., 2015). The research assesses capital budgeting's impact on economic growth using State Bank of Pakistan (SBP) data, applying NPV, IRR, and sensitivity analysis to evaluate investment decisions (Kengatharan, 2018; Shah, 2016; Ali et al., 2019). Pakistan's economic stagnation post-2008 is linked to ineffective policies, low taxation, and human capital underdevelopment (Seren & Marti, 2013). Addressing past research limitations, this study develops economic indicators—growth rates, expenditure, interest rates, FDI, and exchange rates—to assess capital budgeting's role in sustainable development. The findings aim to guide policymakers in economic planning and investment strategies for long-term growth in Pakistan.

## 2 | LITERATURE REVIEW

The paper examines the relationships between capital expenditure, interest rates, inflation, FDI, and exchange rates in Pakistan's economic development, highlighting irregular growth patterns. Moderate growth in the 1980s and 1990s was US-supported during the Afghan-Soviet war, while the 2000s saw a boom driven by foreign investment in telecom, banking, and textiles (Zhang et al., 2021). However, the current decade faces challenges such as power shortages, security threats, and political instability, though digitalization, IT sector growth, and remittances offer positive prospects (Hayat et al., 2021). State intervention and education are crucial, as population growth hampers development (R. N. Ahmad & Ahmad, 2016). Transportation infrastructure drives mutual growth, but in underdeveloped regions, investment in infrastructure is essential for economic progress (Mohmand, Wang, & Saeed, 2017).

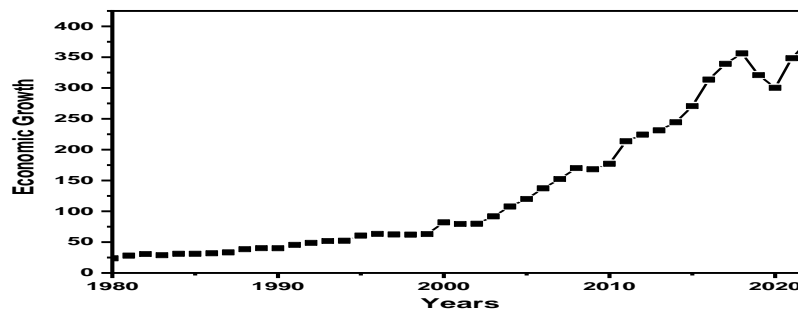


Fig 1: Graphical representations of economic growth (Billions of US \$) from 1980-2022

### 2.1 | Capital Budgeting

The study finds that larger companies in CEE nations prioritize detailed capital budgeting techniques driven by strategic and ethical factors (Andor, Mohanty, & Toth, 2015). Organizations emphasize long-term performance and sustainability in capital spending (Batra & Verma, 2017). Systematic Literature Review (SLR) and cluster analysis highlight key global capital budgeting trends (Sureka et al., 2022). Market trends shape financing decisions (Miller & O'Leary, 2007), with Swedish firms favoring payback methods but increasingly adopting NPV (Sandahl & Sjögren, 2003). Indian firms rely on NPV and IRR, though usage varies (Batra & Verma, 2017), while NPV is prevalent in Sri Lanka due to CFO education (Nurullah & Kengatharan, 2015). Nigeria faces inefficiencies in capital investments (Olatunji et al., 2017; Richardson & Nelson, 2017), and South African firms adhere to traditional financing principles without leveraging modern methods (Correia & Cramer, 2008). Demographic factors influence techniques in Kuwait (Marsh, 2014), while competitive intensity affects project valuations (Ang & Dukas, 1991). North Sumatra's growth is more influenced by capital expenditures than cash dividends (Muda et al., 2016), highlighting gaps in capital budgeting theory (Kengatharan, 2018).

### 2.2 | Capital Expenditure

Pakistan's early economic instability stemmed from unbalanced spending and political turmoil, limiting fiscal control. A dual strategy of deficit reduction and social spending was adopted (Khan, 2016), but the 2010s saw fiscal struggles due to energy crises and instability (Uroos et al., 2022). A declining Human Capital Index highlights the need for greater GDP investment in education and health (Afridi, 2016). Mubashar & Tariq (2019) found firms favour discounted cash flow methods but lack knowledge of advanced techniques. From 1972–2012, decentralized

spending hindered growth, while capital investment in buildings and machinery boosted it (Shahid & Ali, 2016; Can, Demiraj, & Mersni, 2023).

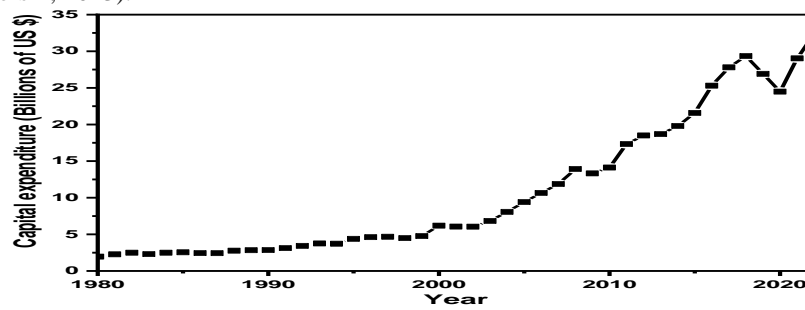


Fig 2: Graphical representations of the capital expenditure from 1980-2022

### 2.3 | Interest Rate

In early 2022, the State Bank of Pakistan (SBP) adjusted policy rates, aligning with Arshad & Ali (2016) on inflation control and growth. During COVID-19, SBP reduced rates from 13.25% (Jan 2020) to 7% (Nov 2020) (Rashid & Khalid, 2017). High money supply and rising rates drive exchange rate volatility (Ali, Mahmood, & Bashir, 2015). Studies (1960–2017) advised caution in rate hikes (Bashir, Ahmed & Khan, 2017), while Ahmed (2018) found a negative correlation between interest rates and growth.

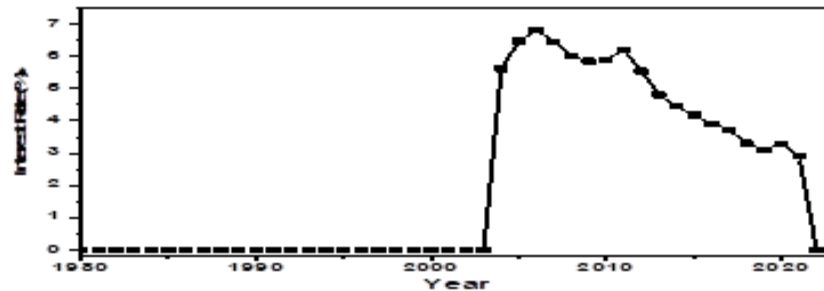


Fig 3: Graphical representations of the interest rate from 1980-2022

### 2.4 | Inflation Rate

Pakistan faced persistent inflation challenges (1980–2023) due to political, economic, and global factors. Under General Zia-ul-Haq (1980s), U.S.-led Cold War alliances caused trade imbalances and debt, leading to moderate inflation (Amjad et al., 2021). The 1990s saw double-digit inflation due to sanctions after Pakistan's 1998 nuclear tests. Early 2000s stability from War on Terror commitments was disrupted by rising energy prices (Hazoor et al., 2022). The 2010s faced global oil and food price hikes and CPEC-related pressures, while COVID-19 relief measures fueled further inflation (Amjad et al., 2021). Monetary policy struggled against supply disruptions, currency depreciation, and public borrowing, highlighting inflation's complex link with political and economic shifts (Siddique et al., 2017). Özyılmaz (2022) notes that inflation rises during economic expansions.

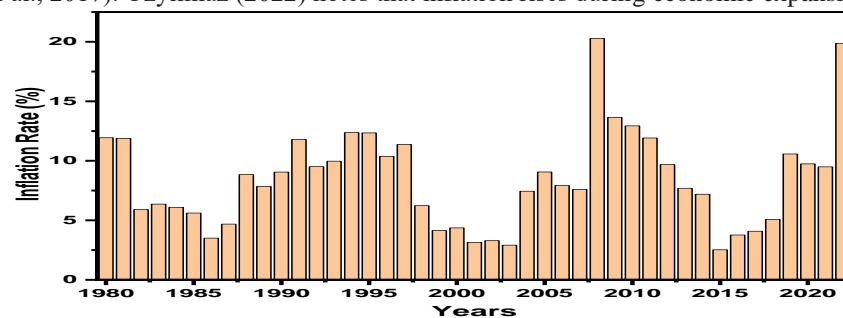


Fig 4: Graphical representations of the inflation rate (%) from 1980-2022

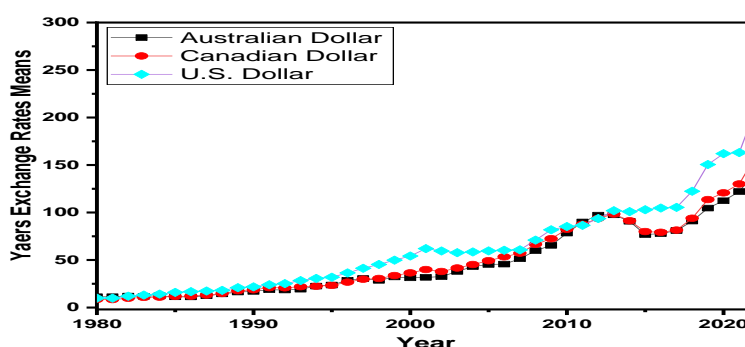
## 2.5 | Exchange Rate

Before 1970, exchange rates were driven by trade flows due to capital controls, with currencies strengthening or depreciating based on trade performance (Muhammad Tahir, Khan, & Shah, 2015). Modern analysis highlights the greater impact of goods and services exchange over financial flows (Yousaf et al., 2015). In the early 21st century, Pakistan's currency devalued against the USD despite a positive current account balance, prompting National Bank intervention to stabilize rates, leading to peak foreign reserves (Latief, 2019). Exchange rates remain crucial for trade and investment, with research showing an inverse relationship with U.S. growth but a positive correlation with Canadian and Australian currencies (Javid, 2016). The table 1 summarizes mean PKR exchange rates (1980–2022) for trend analysis

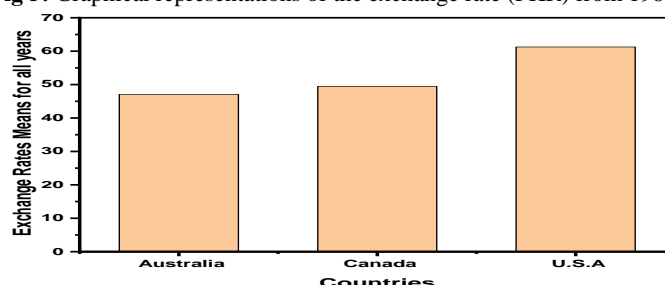
**Table 1**

The table contains means of exchange rates (PKR) from 1980-2022

Countries	Mean of exchange rates (PKR) from 1880 to 2022
Australia	47.0535
Canada	49.4646
U.S.A	61.2475



**Fig 5:** Graphical representations of the exchange rate (PKR) from 1980-2022



**Fig 6:** Graphical representation of PKR exchange rate trends (1980–2022) across multiple countries.

## 2.6 | Foreign Direct Investment

Pakistan actively attracts FDI to drive economic growth, focusing on telecommunications, energy, financial services, and manufacturing (Yousaf et al., 2015). Policies streamline administration, improve infrastructure, and enhance investment security through trade agreements (Muhammad Tahir, Khan, & Shah, 2015). Tax incentives further boost FDI, though energy shortages hinder growth, highlighting a bidirectional energy-economy link (Latief, 2019). Research confirms FDI's direct impact on development (Javid, 2016).

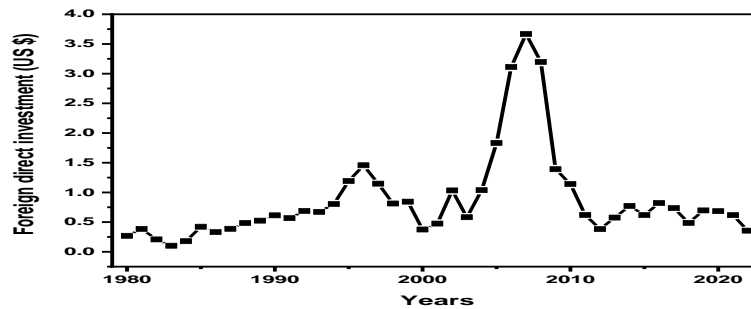


Fig 7: Graphical representations of the foreign direct investment (US \$) from 1980-2022

## 2.7 | Theoretical Framework

This study analyzes capital budgeting's impact on Pakistan's economic prosperity through multiple theoretical lenses. Neoclassical Economic Theory emphasizes efficient resource allocation for growth, while Financial Management Theories link capital budgeting to profitability and liquidity. Institutional Theory examines the role of policies and financial institutions, and Modern Portfolio Theory highlights its role in diversification and risk management. Resource Dependency Theory explores external resource reliance and its economic implications.

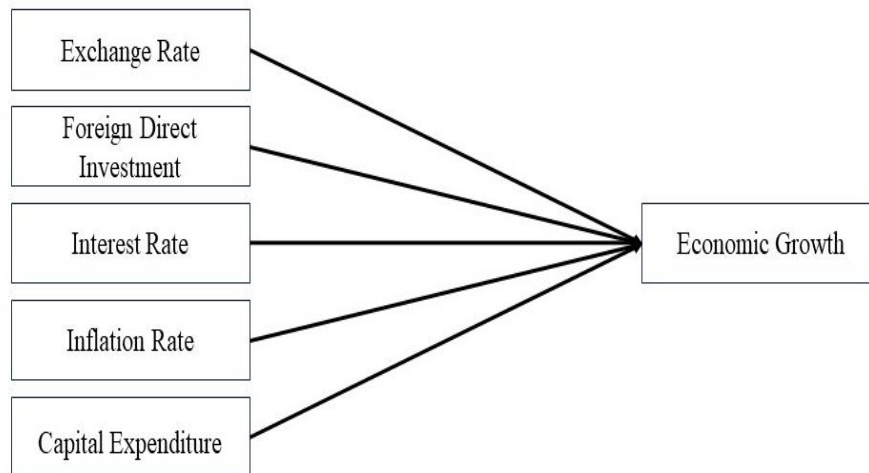


Figure 8: Conceptual model

## 2.8 | Hypotheses

- **(H<sub>0</sub>):** Capital expenditure has no significant effect on economic growth.
- **(H<sub>0</sub>):** Inflation rate has no significant effect on economic growth.
- **(H<sub>0</sub>):** Interest rate has no significant effect on economic growth.
- **(H<sub>0</sub>):** Foreign direct investment has no significant effect on economic growth.
- **(H<sub>0</sub>):** Exchange rate has no significant effect on economic growth.

## 3 | METHODS

This empirical study employs monthly time series data from 1980 to 2022, focusing on economic growth, capital expenditure, interest rates, inflation rates, foreign direct investment, and exchange rates. The ARDL model is applied to investigate both long-term and short-term relationships among these variables.

### 3.1 | Data Analysis

This study examines Pakistan's capital budgeting and economic growth (1980–2022) using the ARDL model to assess the impact of capital expenditure, interest rates, inflation, FDI, and exchange rates. Unit root tests ensure stationarity, preventing spurious regressions. The ADF test, with lag selection via AIC, indicates exchange rate fluctuations, with a stable period followed by recent increases.

## 4 | RESULTS

### 4.1 | Inflation rate

**Table 2**

*Null Hypothesis: Inflation has a unit root*

Variables	t-Stat	P-Val
ECONOMIC GROWTH	2.0276	0.9998
INF	-5.1913	0.0001

Lag Length: (Automatic - based on AIC, max lag=0)

**Table 3**

*ADF and TCV*

Variables	t-Statistic	Prob.*
ADF	-5.1913	0.0001
TCV:	1% level	-3.6267
	5% level	-2.9458
	10% level	-2.6115

**Table 4**

*ADFE*

*Dependent Variable: D(INFLATION)*

*Method: Least Squares*

*Sample (adjusted): 1987 - 2022*

*Included observations: 36 after adjustments*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
I	-1.4711	0.2833	-5.1913	0.0000
C	12.6057	2.4016	5.2487	0.0000
R-Sq	0.5777		MD Var	0.4546
Adj R-Sq	0.4721		SDD var	3.6767
SER	2.6713		AC	4.9961
SSR	199.8046		SC	5.3480
LLhood	-81.9305		HQC	5.1189
F-stat	5.4720		DW stat	1.8721
Prob(F-stat)	0.0004			

### 4.2 | Exchange rate

The ADF test for INFLATION ( $t = -5.1913$ ,  $p = 0.0001$ ) rejects the null hypothesis, confirming stationarity. The autoregressive model for D(INFLATION) shows positive lagged coefficients, indicating past changes positively influence current changes. The model includes a constant (12.6057), with  $R^2 = 0.578$  and Adjusted  $R^2 = 0.472$ , explaining 57.8% of the variation.

**Table 5**

*Null Hypothesis: AUSTRALIA has a unit root*

Variables	t-Stat	P-Val
ECONOMIC GROWTH	2.0276	0.9998
AUS	2.7181	0.9999
CANADA	4.1744	1.0000
U_S_A	1.1604	0.9971

Lag Length: (Automatic - based on AIC, max lag=0)

**Table 6**  
ADF & TCV

Variables	t-Statistic	Prob.*
ADF	2.7181	1.0000
TCV:	1% level	-3.6329
	5% level	-2.9484
	10% level	-2.6128

**Table 7**  
ADFE  
Dependent Variable: D (AUSTRALIA)  
Method: Least Squares  
Sample (adjusted): 1988 - 2022  
Included observations: 35 after adjustments.

Countries	Coefficient	Std. Error	t-Statistic	Prob.
AUS	0.0810	0.0298	2.7182	0.0115
CAN	0.1602	0.0384	4.1745	0.0003
U_S_A	0.0759	0.0654	1.1604	0.2583
C	0.8801	1.4294	0.6157	0.5434
R-Sq	0.6206		MDVar	3.7279
Adj R-Sq	0.5039		SDD var	6.0877
SER	4.2877		AC	5.9664
SSR	478.0002		SC	6.3664
LLhood	-95.4124		HQC	6.1045
F-stat	5.3173		DW stat	2.0225
Prob(F-stat)	0.0005			

The ADF test indicates stochastic trends for Canada ( $t = 4.1745$ ,  $p = 1.0000$ ), Australia ( $t = 2.7182$ ,  $p = 1.0000$ ), and the USA ( $t = 1.1604$ ,  $p = 0.9972$ ), as the null hypothesis is not rejected. The autoregressive models for the first-differenced series (D) include constant terms of 2.0316 (Canada), 0.8801 (Australia,  $R^2 = 0.621$ , Adjusted  $R^2 = 0.504$ ), and -1.4306 (USA), with lagged values incorporated.

**Table 8**  
Capital Expenditure  $\rightarrow$  Null Hypothesis: Capital EXPENDITURE BILLIONS (US\_\$) has a unit root

Variables	t-Stat	P-Val
ECONOMIC GROWTH	2.0276	0.9998
Capital EXPENDITURE (US \$)	-1.4784	0.5325

Lag Length: (Automatic - based on AIC, max lag=0)

**Table 9**  
ADF & TCV

Variables	t-Statistic	Prob.*
ADF	-1.4784	1.0000
TCV:	1% level	-3.6329
	5% level	-2.9484
	10% level	-2.6129

The ADF test for CAPITAL EXPENDITURE ( $t = -1.4784$ ,  $p = 0.5325$ ) suggests a possible stochastic trend, indicating non-stationarity. The autoregressive model for D (EXPENDITURE BILLIONS (US\$)) includes a constant (6.1554) and explains 56.1% of the variation ( $R^2 = 0.561$ , Adjusted  $R^2 = 0.426$ ).

**Table 10**

ADFE

Dependent Variable: D(CAPITAL EXPENDITUREBILLIONS (US\$))

Method: Least Squares

Sample (adjusted): 1988 - 2022

Included observations: 35 after adjustments.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
CE	-0.1437	0.0972	-1.4784	0.1513
C	6.1554	3.2226	1.9100	0.0672
R-Sq		0.5609	MD Var	8.5702
Adj R-Sq		0.4258	SDD var	14.5513
SER		11.0263	AC	7.8554
SSR		3161.059	SC	8.2554
LL hood		-128.4708	HQC	7.9935
F-stat		4.1517	DW stat	1.8558
Prob(F-stat)		0.0026		

**Table 11**

Interest rate → Null Hypothesis: INTEREST\_RATE has a unit root

Variables	t-Stat	P-Val
ECONOMIC GROWTH	-1.1779	0.6324
INTEREST_RATE	-1.3839	0.5415

Lag Length: (Automatic - based on AIC, max lag=0)

**Table 12**

ADF &amp; TCV

Variables	t-Statistic	Prob.*
ADF	-1.3839	0.5415
TCV	1% level	-4.4206
	5% level	-3.2598
	10% level	-2.7711

**Table 13**

ADFE

Dependent Variable: D(INTEREST\_RATE)

Method: Least Squares

Sample (adjusted): 2014 - 2022

Included observations: 9 after adjustments.

Included observations: 35 after adjustments.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
INTEREST_RATE	-0.7178	0.5187	-1.3839	0.2089
C	6.8795	4.5834	1.5009	0.1771
R-Sq		0.2148	MD Var	0.7778
Adj R-Sq		0.1026	SDD var	3.9675
SER		3.7583	AC	5.6789
SSR		98.8763	SC	5.7228
LL hood		-23.5553	HQC	5.5844
F-stat		1.9153	DW stat	1.4471
Prob(F-stat)		0.2088		



The ADF test for INTEREST\_RATE ( $t = -1.3839$ ,  $p = 0.5415$ ) fails to reject the null hypothesis, suggesting non-stationarity. The autoregressive model for  $D(\text{INTEREST\_RATE})$  estimates a lagged coefficient of  $-0.7178$ , indicating a 1-unit increase in lagged INTEREST\_RATE decreases  $D(\text{INTEREST\_RATE})$  by 0.7178 units, with a constant of 6.8795. The model explains 21.5% of the variation ( $R^2 = 0.215$ , Adjusted  $R^2 = 0.103$ ).

**Table 14**

Foreign direct investment  $\rightarrow$  Null Hypothesis: FOREIGN\_DIRECT\_INVESTMENT has a unit root

Variables	t-Stat	P-Val
Economic Growth	2.0276	0.9998
Foreign Direct Investment	-2.9961	0.0436

Lag Length: (Automatic - based on AIC, max lag=0)

**Table 15**

ADF & TCV

Variables	t-Statistic	Prob.*
ADF	-2.9960	0.0436
TCV	1% level	-3.6009
	5% level	-2.9350
	10% level	-2.6058

**Table 16**

ADFE

Dependent Variable:  $D(\text{FOREIGN\_DIRECT\_INVESTMENT})$

Method: Least Squares

Included observations: 41 after adjustments.

Variables	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-0.2491	0.0831	-2.9961	0.0048
C	0.2181	0.0962	2.2666	0.0292
R-Sq	0.2941		MDVar	-0.0007
Adj R-Sq	0.2570		SDD var	0.4564
SER	0.3935		AC	1.0426
SSR	5.8828		SC	1.1680
LLhood	-18.3750		HQC	1.0883
F-stat	7.9184		DW stat	1.9996
Prob(F-stat)	0.0013			

### 4.3 | Foreign Direct Investment Analysis

The t-statistic ( $-2.9960$ ,  $p = 0.0436$ ) for FOREIGN\_DIRECT\_INVESTMENT suggests stationarity by rejecting the null hypothesis. The autoregressive model estimates an FDI coefficient of  $-0.2491$  ( $p = 0.0048$ ) and a constant of  $0.2181$  ( $p = 0.0292$ ), indicating a negative impact of the first lag of the differenced series. The model explains 29.4% of the variance ( $R^2 = 0.2942$ ), with an F-statistic p-value of 0.0013, confirming at least one significant variable

### 4.4 | ARDL Bound Testing

The ARDL bound testing method assesses co-integration among time series variables, identifying long-term equilibrium despite short-term fluctuations. It estimates models with varying lag lengths, analyzing the significance of lagged differences. Key parameters include economic growth, capital expenditure, interest rates, inflation, FDI, and exchange rates, with estimation conducted in Eviews 10.

**Table 17**

ARDL Bound Testing

Dependent Variable: ECONOMIC\_GROWTH

Method: ARDL

Maximum dependent lags: 3 (Automatic selection)

Model selection method: AC (AIC)

Dynamic regressors (3 lags, automatic): Capital Expenditure foreign direct investment, Inflation, Interest rate, Exchange Rate (Usa, Canada, Australia)

Fixed regressors: C

Number of models evaluated: 49152

Variables	Coefficient	Std. Error	t-Statistic	Prob.
<b>Economic Growth</b>	0.0760	0.1855	0.409856	0.6906
<b>CE</b>	1.1727	0.0640	18.31366	0.0000
<b>FDI</b>	0.7718	1.2352	0.624820	0.5461
<b>I</b>	-0.6254	0.2438	-2.565770	0.0281
<b>IR</b>	0.6196	0.5571	1.112056	0.2921
<b>USA</b>	-0.3843	0.2172	-1.769453	0.1072
<b>CAN</b>	0.4160	0.2886	1.441405	0.1800
<b>AUS</b>	0.1391	0.2949	0.471612	0.6473
<b>C</b>	11.3046	3.6407	3.105017	0.0112
<b>R-Sq</b>	0.9999		<b>MDVar</b>	142.2573
<b>Adj R-Sq</b>	0.9999		<b>SDD var</b>	112.4134
<b>SER</b>	1.1471		<b>AC</b>	3.2261
<b>SSR</b>	13.1590		<b>SC</b>	4.4927
<b>LLhood</b>	-34.5220		<b>HQC</b>	3.6841
<b>F-stat</b>	0.9999		<b>MDVar</b>	142.2573
<b>Prob(F-stat)</b>	0.9999		<b>SDD var</b>	112.4134

#### 4.5 | Regression Model Summary

The regression model is defined as:

$$\text{Economic Growth} = \beta_0 + \beta_1 \text{economic Growth} (-1) + \beta_2 \text{Exchange rate} + \beta_3 \text{Exchange rate} (-1) + \dots + \varepsilon$$

In this model,  $\beta$  coefficients represent estimated parameters, with  $\varepsilon$  being the error term. This output comes from an Autoregressive Distributed Lag (ARDL) model, using a maximum of 3 lags based on the Akaike Information Criterion (AIC), and includes lags for Capital Expenditure (CE), Foreign Direct Investment (FDI), Inflation (I), Interest Rate (IR), and Exchange Rates for the USA, Canada, and Australia.

#### 4.6 | Model Details

The ARDL (3, 3, 2, 3, 2, 3, 3, 3) model was selected using the Akaike Information Criterion (AIC), incorporating dynamic lags for Capital Expenditure (CE), Foreign Direct Investment (FDI), Inflation (I), Interest Rate (IR), and Exchange Rates for the USA, Canada, and Australia. The positive coefficients for lagged economic growth indicate persistence, with CE, IR, and Canada's exchange rate (CAN) being statistically significant ( $p < 0.05$ ), while the USA's exchange rate is not. The F-statistic ( $p = 0.000$ ) confirms model significance, and the Durbin-Watson statistic (2.76) suggests no significant autocorrelation. An R-squared value of 0.9999 reflects an excellent model fit without overfitting. Economically, capital expenditure (CE) positively impacts economic growth, while other factors exhibit varying influences. The AIC value of 3.2261 indicates a well-balanced model, and a low Standard Error of Regression (SER) supports a strong fit to the data.

#### 4.7 | Hypothesis Results

The analysis reveals that Capital Expenditure (CE) does not significantly impact economic growth, with concerns regarding its stationarity. In contrast, the Inflation Rate significantly influences economic growth, as the null hypothesis is rejected. The Interest Rate exhibits a unit root, requiring further regression analysis. Foreign Direct Investment (FDI) has a significant positive impact, though lagged effects diminish its current contribution.

Exchange Rate effects are mixed; while certain Australian components influence growth, Canadian and US components lack strong significance.

## 5 | CONCLUSION

The ARDL approach was employed to analyze the relationship between key economic factors and Pakistan's economic growth (1980–2022). The findings indicate significant long-term relationships for capital expenditure, FDI, inflation, and exchange rate, while the interest rate negatively affects growth. The model demonstrated a high goodness of fit ( $R^2 = 0.9999$ ).

### 5.1 | Research Limitations

The study acknowledges data inconsistencies, challenges in establishing causality, potential macroeconomic confounders, and limited generalizability beyond Pakistan.

### 5.2 | Theoretical Implications

1. Advances theories on capital budgeting and economic growth.
2. Introduces a Capital Budgeting Instability Index for future research.
3. Provides a comprehensive perspective by integrating multiple economic factors.

### 5.3 | Practical Implications

1. Guides policymakers in effective capital budgeting.
2. Assists investors in decision-making.
3. Supports the development of sustainable economic strategies.
4. Enhances risk assessment through the instability index in capital budgeting

## Declarations

**Ethical Approval and Consent to Participate:** This study strictly adhered to the declaration of Helsinki and relevant national and institutional ethical guidelines. Informed consent was not required as secondary data available on websites was obtained for analysis. All procedures performed in this study were in accordance with the ethical standards of the Helsinki Declaration.

**Consent for Publication:** Not Applicable

**Availability of Data and Material:** Data links for this study are available below the references list and can also be requested from corresponding author.

**Competing Interest:** The authors declare no competing interest

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#### Data link source:

##### [1] Foreign direct investment (US \$)

<https://www.macrotrends.net/countries/PAK/pakistan/foreign-direct-investment>

##### [2] Interest Rate (%)

<https://databank.worldbank.org/source/world-development-indicators#>

##### [3] Inflation rate (%)

<https://www.macrotrends.net/countries/PAK/pakistan/inflation-rate-cpi>

##### [4] ECONOMIC GROWTH (Billions of US \$)

<https://www.macrotrends.net/countries/PAK/pakistan/economic-growth-rate>

##### [5] Capital Expenditure (Billions of US \$)

<https://databank.worldbank.org/source/world-development-indicators#>

##### [6] Exchange rates [https://www.sbp.org.pk/ecodata/ibf\\_arch.xls](https://www.sbp.org.pk/ecodata/ibf_arch.xls)