Bulletin of Business and Economics, 13(2), 1080-1089
https://bbejournal.com
https://doi.org/10.61506/01.00426

The Economic Consequences of Political Instability: Insights from the Economy of Pakistan

Mah Noor[1], Shabbir Ahmed[2], Mohammad Naeem[3], Asma Awan[4], Adnan Ali Shahzad[5]

Abstract
Inflation is a persistent economic challenge for Pakistan, deeply intertwined with the country's political instability. This research examines the influence of political instability on inflation, recognizing it as a crucial factor that undermines the effectiveness of economic policies and worsens macroeconomic imbalances. This study analyses the impact of various political factors, besides others, on inflation in Pakistan using data collected annually from 1981 to 2021, utilizing the ARDL bounds testing method. Inflation is the dependent variable whereas oil prices, GDP growth, domestic loans to the private sector, political factors, and political instability are independent variables. The findings imply that over the long run, while economic growth has a negative correlation with inflation, the quantity of credit extended to the private sector has a positive and significant correlation with inflation. On the other hand, both in the short- and long-term, inflation and oil prices have a significant and positive relationship.
Keywords: ARDL, Inflation, political instability, domestic credit, oil prices, GDP growth

1. Introduction

A nation is said to be in a condition of political instability if there are frequent changes in leadership, social unrest, political violence, civil disturbances, and a lack of agreement amongst social groups and political parties. This volatility frequently shatters the consistency and efficacy of economic policy, resulting in unfavorable economic consequences like inflation. Although most people think of inflation as a monetary phenomenon, it's important to look more closely at the significance of non-monetary elements, especially political instability.

Inflation has been linked to political instability, according to studies. Political instability has been shown to worsen inflation by generating economic uncertainty. Aisen and Veiga (2006) examined this relationship in several countries and Khan and Saqib (2011) utilized a related approach to investigate this approach in Pakistan. Iqbal et al. (2022) highlighted the role of social factors like gender equality and education in shaping economic growth, which indirectly influence inflation and economic stability. In the MENA region, a strong positive correlation between political instability and inflation was found which suggests that inflation issues and political instability are interconnected in many developing nations Ghanayem and et al. (2023).

The main reason Pakistan has long struggled with inflation and political instability is due to its complicated political system and enriched history of civil-military conflicts. Pakistan has experienced political unrest in many ways such as coups, brief civilian administrations and regime changes. Even though Pakistan is a democratic country, the lack of proper leadership makes the development and implementation of strong economic policies difficult which results in uncertainty and lowered confidence in investors. These circumstances and inflation are being faced because economic policy has lost its consistency and has been broken over time.

In 1958, Ayub Khan, from 1977 to 1988 Zia-ul-Haq, and from 1999 to 2007 General Musharraf imposed martial law in Pakistan. Proper economic planning and implementation were challenging during these times because of the frequent changes in political power. This led to a significant disturbance in the economic situation of the country. These regime shifts politically caused investment and economic development to halt very often, which resulted in increased inflationary pressures. These power shifts led to a loss of economic stability, as political instability hindered the government's ability to develop and implement effective policies. In such conditions, corruption thrived, further fueling inflation.

It is also evident in the literature that it becomes difficult for the government to endorse and execute coherent policies when there is instability in the political system which causes a loss of economic power. Corruption thrives in such circumstances and gives birth to inflation. In the literature, most researchers focused on monetary factors as the main drivers of inflation in Pakistan, such as Qayyum (2006), Akbari and Rankaduwa (2006) (Rehman et al., 2010) and (Hussain et al., 2010). However, Khan and Saqib (2011) it is of significant importance to take political instability into account as a major driver of inflation.

To add new knowledge to previous research, this study investigated the relationship between Pakistani political instability and inflation by using data from 1985 to 2021, to examine how inflation is affected by GDP growth, oil prices, domestic loans to the private sector, and a composite measure of political instability. The findings of the research will give policymakers important new perspectives that will highlight how important political stability is to fostering economic development and effectively controlling inflation.

2. Literature Review

Inflation has gained a lot of consideration in the economic literature, mainly because it has been characterized as a monetary phenomenon. Friedman expressively stated in his Quantity Theory of Money that "inflation is always and everywhere a monetary phenomenon" provides the theoretical foundation for this perspective. This approach is supported by various researchers including Khan et al. (2006), Ahmad and Ali (1999) and Qayyum (2006) emphasized the significance of the money supply as the basic factor of inflation.

Economists commonly highlight two primary types of inflation: demand-pull inflation and cost-push inflation. Cost-push inflation is the process by which rising prices for manufacturing inputs raise costs for production and, eventually, increase output prices. However, when there is more demand than supply, demand-pull inflation results in inflation.

However, inflation is not just a monetary problem because non-monetary components like political instability also contribute to an increase in prices. Researchers have examined these problems to understand the multiple reasons for inflation other than shifts in the supply of money.

[1] School of Economics, University of the Punjab, Lahore, Pakistan, mahirauf5@gmail.com
[2] School of Economics, University of the Punjab, Lahore, Pakistan, shabbir.eco@pu.edu.pk
[3] Department of Economics, DM&AS, University of Education, Lahore, Pakistan, muhammad.naeem@ue.edu.pk
[4] School of Economics, University of the Punjab, Lahore, Pakistan, asma.eco@pu.edu.pk
[5] Department of Economics, DM&AS, University of Education, Lahore, Pakistan, adnan.ali@ue.edu.pk

2.1. Literature related to political instability

The relationship between inflation and political instability has gathered a lot of attention from economists. The following literature review examines studies that specifically investigated this relationship, focusing on the findings and their significance for developing countries like Pakistan.

Nations that are dependent on seigniorage are more likely to have an unreliable political system which causes inflation to rise (Cukierman et al., 1989). A comprehensive investigation of this relationship presented two models in literature: a "myopic government" model in which inflation is a thoughtful political approach and a "weak government" model in which political conflicts give birth to inflation (Edwards & Tabellini, 1991).

Aisen and Veiga (2005) analysed data from 100 different countries to back up this relationship between inflation and political instability. The findings of the study indicated that the rise in inflation and sovereign debt is due to a rise in political instability. The findings also concluded that for both higher inflation and higher rate volatility, political instability is mainly responsible. In developing countries like Pakistan, political instability has a significant inverse effect on macroeconomic consistency.

The correlation between inflation and political instability has been investigated by different researchers in different geographical areas, according to Cukierman et al. (1989) the dependency of a country on seigniorage is the main reason behind the rise in inflation and unhinged political structure in that country. The research studies conducted by Aisen and Veiga (2005, 2008) Aisen and Veiga (2006) have been constantly supporting this supposition that political instability has an impact on inflation rates and sovereign age over different periods and discovered a positive correlation between inflation and political instability.

In democratic nations, political stability plays an important part in regulating inflation (Erdinc Telatar et al., 2010). Various researchers in different countries studied the complex relationship among different variables such as inflation, political instability, and governance Khan and Saqib (2011); (Haider et al., 2011) in Pakistan & (Khani Hoolari et al., 2014) in Iran. Barugahara (2015) expanded the research to the African context, finding a positive correlation between these two variables.

Another study conducted in an oil-producing developing nation found a significant correlation between inflation and political instability (Maruf et al., 2018). Political instability, fluctuations in currency rates, and the growth of infrastructure are some of the factors that also affect inflation in Nigeria (Inim et al., 2020). Contemporary researchers in the Middle East and North Africa (Ghanayem et al., 2023) and a global perspective (Rehman & Waheed, 2023) have focused on the crucial effect of political instability on inflation and its volatility. According to Salma and Khan (2023), in South Asian countries political instability causes inflation to increase and political stability causes a decline in inflation.

It is concluded from the review of the literature that politics plays an important role in establishing the restraints on inflation. The review of literature also sheds light on the complex and diverse relationship that exists between political instability and inflation in a variety of contexts and locations.

2.2. Literature related to Credit, Oil Prices, and GDP

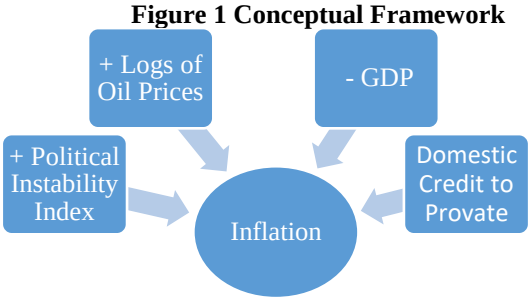
Numerous researches have investigated monetary and non-monetary factors as the causes of inflation in Pakistan. Khan et al. (2006) investigated how monetary factors affect inflation using monthly data from 1998 to 2005. They found that broad money and credit to the private sector had a significant effect on inflation with a one-year lag and could be used as a resourceful leading indicator for utilizing the Vector Error Correction Model (VECM) to predict inflation. Abdul Aleem Khan et al. (2007) continued this research by using yearly information from 1972-73 to 2005-06. The findings of the study stated that import prices, private sector lending, and adaptive expectations are the main drivers of inflation, emphasizing the impact of expansionary monetary policy on GDP growth and consumer prices.

In addition to various monetary factors, many non-monetary factors have also been the focus of research in Pakistan. in his study, they found a strong correlation between inflation and oil prices because Pakistan is heavily dependent on imported energy, Zakaria et al. (2021) have also emphasized the relationship among changes in oil prices, Pakistan's economy, and inflation rates. Qasim et al. (2021) found that the exchange rate of the currency and variation in the prices of oil have a combined effect on inflation. Internationally researchers have presented a significant number of studies on the importance of non-monetary factors. A comprehensive review of the literature in the Pakistani context reveals a lack of research on inflation, highlighting the need for further investigation into how political instability impacts the country's macroeconomic imbalances, particularly inflation.

The novelty of this research lies in integrating both monetary and non-monetary factors as study variables, utilizing the ARDL model, which has not been previously applied to explore this relationship in Pakistan. This approach aims to offer a comprehensive understanding of the complex dynamics influencing inflation in Pakistan, addressing gaps in the prevailing literature. Inflation being the main deterrent to economic growth has been the subject of extensive monetary and non-monetary research. Akbari and Rankaduwa (2006), Khan and Schimmelpfennig (2006), Ahmad and Ali (1999), and Qayyum (2006) focused on monetary factors like money supply and credit as primary reasons for inflation, other researchers have explored non-monetary components. Moreover, Aisen and Veiga (2005), Erdinc Telatar et al. (2010), Khan and Saqib (2011), and Haider et al. (2011)have emphasized the role of political unrest as a key driver of inflation.

This paper is mainly focused on learning more about the relationship between inflation and its causes, keeping in mind both monetary and non-monetary factors. The researcher will explicitly investigate the relationship between factors like GDP expansion, oil prices, political instability, domestic credit to the private sector, and inflation. This all-encompassing model will help in directing the growth of effective policy interventions aimed at reducing inflation's unfavourable influences on economic growth by giving a clearer understanding of the complex relationship among the multiple causes of inflation.

Figure 1 Conceptual Framework



2.3. Relation between Inflation and independent variables

Inflation can be affected by many intricately interrelated components, which presents a significant threat to economic expansion. Historically inflation has been linked with both monetary and non-monetary factors. Economic activity is often boosted and encouraged to raise borrowing, spending, and investment when the monetary component rises, such as domestic credit to private sector. This could lead to a rise in demand for goods and services, which would increase prices and inflation. This relationship has been confirmed by Abdul Aleem Khan et al. (2007), Khan et al. (2006) and Khan and Saqib (2011).

Another monetary factor is the price of oil. As oil prices rise, the number of businesses' expenses of production and transportation increases, which leads to higher prices for customers. This effect is more noticeable in countries like Pakistan, which is heavily dependent on oil imports. This positive relationship between oil prices and inflation has been supported by many researchers Asghar and Naveed (2015), Zakaria et al. (2021), Qasim et al. (2021)and Malik (2016). Inflation can be controlled with the help of a high GDP growth rate. According to Khani Hoolari et al. (2014) and Kirimi (2014), the relationship between GDP growth and inflation is inverse. In conclusion, high output and productivity increase supply, which can counterbalance rising demand and maintain prices.

Descent in the business conditions, deterioration in investment, increase in prices which results in inflation, disruptions in the supply chain, market disorganizations and disturbances in the economy are some of the consequences of political instability. An extensive review of the literature has shown that there is a positive correlation between political instability and inflation (Aisen & Veiga, 2006), (Akbari & Rankaduwa, 2006), (Ghanayem et al., 2023), (Inim et al., 2020);(Khan, 2023), and (Maruf et al., 2018).

It is imperative to comprehend the complex relationship between these variables to design effective policies that support long-term economic growth while contemporaneously reducing inflation.

3. Data and Methodology

Pakistan's political and economic conditions are investigated about inflation in this study. Oil prices, domestic credit to the private sector, GDP growth and political instability are the four independent factors examined about the dependent variable, inflation. Monetary (domestic credit to the private sector) and non-monetary (oil prices, GDP growth, and political instability) factors of inflation are used in our research, which covers the years from 1985 to 2021.

Table 1: Variables and Description

Variables	Description	Source
INF	Inflation (% change in CPI)	World Development Indicator
GDP	GDP (% change in growth)	World Development Indicator
OP	Oil prices (log of oil prices)	Dubai crude oil prices.
CREDIT	Domestic credit to private sector	World Development Indicator
PI	Political instability index	Polity IV dataset

This study utilizes three distinct indicators to measure political instability:

- *Democ*: This variable captures the level of institutionalized democracy, encompassing three key elements: the presence of established institutions, the existence of constraints on those institutions, and the guarantee of civil liberties. A higher score on this indicator suggests a more robust and democratic system.
- *Polity2:* This indicator reflects the specific type of government or political system in place. It assesses three core features: political competition, constraints on government power, and the process of political recruitment. Scores range from -10 (completely autocratic) to +10 (completely democratic), with higher scores indicating a more democratic regime.
- *Durable*: These variables measure regime durability, representing the number of years since the most recent regime change. A higher value indicates a more stable and long-lasting political system.

To provide context, Table 2 presents descriptive statistics for these indicators in the United States, the United Kingdom, and Pakistan, allowing for a comparative analysis of political stability across these countries.

Table 2: Descriptive statistics of political instability variables for selected countries

	USA	UK	PAK
POLITY2			
Mean	9.611111	9.823529	3.029412
Med	10.00000	10.00000	6.500000
Max	10.00000	10.00000	8.000000
Min	5.000000	8.00000	-6.000000
SD	1.07	0.57	5.7708
DEMOC			
Mean	9.611111	9.823529	4.4647059
Med	10.00000	10.00000	6.500000
Max	10.00000	10.00000	8.000000
Min	5.000000	8.00000	0.000000
SD	1.07	0.57	3.4630
DURABLE			
Mean	134.9677	121.5000	4.147059
Med	135.0000	121.5000	4.000000
Max	150.0000	138.0000	10.00000
Min	120.0000	105.0000	0.000000
SD	9.0718	9.958	3.1635

Source: Authors' calculations

The USA and UK are considered politically stable and democratic nations having a lower standard deviation of polity2 and *democ* indicating a lower degree of regime switching in these two countries. However, given Pakistan's significantly higher *polity2* and *democ* standard deviations (SD) it is sufficient to assume a high degree of regime switching here. In contrast to the other two countries, Pakistan has a lower standard deviation of *durable* (regime durability) demonstrating that the regime has not been growing significantly, showing how quickly the regime changes here. The high standard deviation of the other two countries indicates that their regimes are consistent.

3.1. Model specification

The study uses the following linear form of the model:

$$\mathrm{INF}_t = \beta_0 + \beta_1 \mathrm{GDP}_t + \beta_2 \mathrm{OP}_t + \beta_3 \mathrm{CREDIT}_t + \beta_4 \mathrm{PI}_t + \epsilon_t \quad (1)$$

where, β_0 is the intercept while β_1, β_2, β_3 and β_4 are the slopes of respective variables, i.e., GDP, OP, CREDIT, and PI. The symbol ϵ captures the error term. All the variables have already been defined in Table 1.

3.2. Econometric Methodology

The Autoregressive Distributed Lag (ARDL) model, developed by Pesaran and Shin (1998)and further refined by Pesaran et al. (2001), is a powerful tool for analyzing dynamic relationships in time series data. This model allows researchers to investigate the relationship between the dependent variable's historical values (lag values) and the relationship between one or more independent variables; current and previous values.

A key benefit of the ARDL model is its ability to look at both short and long-term connections. It is significantly beneficial for understanding how over time the variables interact. Operating with extremely small sample sizes may be difficult for other time series models, whereas the ARDL model excels in these circumstances.

Another feature is the ARDL model's capability to put up with various lag durations for each variable. In contrast, some models require lag times for each variable to remain consistent. The flexible nature of this model makes it favourable for illustration of the complex relation between variables. This model can also handle both integrated (I(1)) and stationary (I(0)) variables so it can be implemented to different types of data. It can also fit variables with varying degrees of stationarity.

Lastly, to express short-lived dynamics, the ARDL model can be transformed into an error correction model (ECM) while upholding the long-lasting equilibrium link between variables. This can help in understanding the thorough effects of underlying variables either short term or long-term.

3.2.1. Bounds Testing Procedure for Cointegration

The bounds-testing approach is applied to determine whether a long-term relationship exists between the variables. To conduct this, an ARDL model is developed for the dependent variable, incorporating the lagged values of both the independent and dependent variables.

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \lambda_1 Y_{t-1} + \lambda_2 X_{t-1} + \epsilon_t \quad (2)$$

where (Y_t) is the dependent variable,(X_t) is the independent variable, (Δ) denotes the first difference, (p) and (q) are the maximum lag lengths, (β_0) is the intercept, (α_i) and (γ_j) are short-term coefficients, (λ_1) and (λ_2) are long-term coefficients, and (ϵ_t) is the error term.

The next step is to articulate the null and alternative hypotheses for bounds test. There is no cointegration, or long-term connection, between the variables $(\lambda_1 = \lambda_2 = 0)$ according to the null hypothesis whereas according to the alternative hypothesis, the variables $((\lambda_1 \neq 0)$ and $(\lambda_2 \neq 0)$ have a long-term connection (cointegration).

After estimating the ARDL model, the F-statistic for the joint significance of the lagged level variables is calculated and compared with the critical values from Pesaran et al. (2001). These critical values include an upper bound for I(1) variables and a lower bound for I(0) variables. If cointegration is found, the long-term coefficients are estimated, and the model is reparametrized into an Error Correction Model (ECM) to capture short-term dynamics.

$$\Delta Y_t = \beta_0 + \sum_{i=1}^{p} \alpha_i \Delta Y_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \phi \mathrm{ECM}_{t-1} + \epsilon_t \quad (3)$$

where (ϕ) is the error correction term coefficient, which also indicates the speed of adjustment towards the long-term equilibrium. There are many studies that have applied this procedure in various contexts (Ahmad, 2010, 2017, 2019; Ahmad et al., 2012)

3.2.2. Stationarity Test

It is imperative to check used stationarity of the series before estimating the model. Non-stationary variable lacks consistent “mean and variance” over time means that the average and variability of the variable change over time making it unreliable for analysis that’s why it is a mandatory step in every analysis.

Several tests are commonly used to check stationarity, including the Phillips-Perron test, Dickey-Fuller Generalized Least Squares (DF-GLS) test, Elliott, Rothenberg, and Stock (ERS) test, and the Augmented Dickey-Fuller (ADF) test, which is the most frequently applied. The optimal number of lags is determined using the Akaike Information Criterion (AIC), and the order of integration is assessed based on the significance of the p-value. For the ARDL model to be applicable, the variables must have a mixed order of integration, either I(0) or I(1). If any variable is integrated beyond I(1), the ARDL approach is invalid as it violates its core assumptions.

4. Empirical Results and Discussions

The descriptive statistics of key economic variables in Pakistan over the study period provide valuable insights into their potential influence on inflation in Table 3 Inflation (INF) has a mean of 8.16%, with a standard deviation of 3.83%, indicating moderate but variable inflation rates. The positive skewness of 0.677 suggests that while most inflation rates are clustered near the mean, there are instances of significantly higher inflation. This distribution highlights the periods of elevated inflation, potentially driven by external shocks or domestic policy changes, which merit further investigation.

GDP growth (GDP) displays an average rate of 4.40%, with a standard deviation of 2.04%, reflecting moderate economic growth with some fluctuations. The negative skewness of -0.450 indicates that the distribution is slightly left-skewed, suggesting that the economy experienced occasional contractions. The inverse link between GDP growth and inflation in the data implies that, despite the general upward trend, there were times of economic downturns that may have led to reduced inflationary pressures.

Both oil prices (OP) and domestic credit (CREDIT) offer significant new information. With a low standard deviation of 0.72 and a mean oil price index of 3.52, the oil prices were comparatively constant across time. The slight positive skewness of 0.203 suggests that higher oil prices were less frequent but did occur, potentially impacting inflation. Domestic credit shows a mean value of 22.03% and a standard deviation of 4.66%, with a slight negative skewness of -0.255, implying that credit levels were generally high but occasionally lower. These findings, alongside the nearly symmetrical distribution of the Political Instability Index (PI), emphasize the importance of both monetary (credit) and non-monetary (GDP growth, oil prices, political instability) factors in influencing inflation in Pakistan over the long term.

4.1. Descriptive statistics

Table 3: Descriptive Statistics

Variables	Sample	Mean	Median	Standard Deviation	Max	Min	Skewness
INF	36	8.162703	7.920000	3.828072	20.29000	2.530000	0.67722
GDP	36	4.400330	4.674708	2.040054	7.705898	-1.27000	-0.45049
OP	36	3.518628	3.286161	0.721373	4.690430	2.495682	0.202562
CREDIT	36	22.03489	23.49682	4.660934	29.78608	14.68225	-0.25545
PI	36	0.470444	0.465000	0.291146	0.965000	0.000000	0.144203

Source: Author's calculations

4.2. Stationarity Test

Table 4 presents the results of the Augmented Dickey-Fuller (ADF) test for all variables. The null hypothesis (H_0) suggests the presence of a unit root, indicating non-stationarity, while the alternative hypothesis (H_1) posits that the time series is stationary, meaning no unit root is present.

Table 4 shows that only GDP rejects the null hypothesis, indicating it is stationary at the level with an integration order of I(0). In contrast, all other variables, including inflation (INF), credit (CREDIT), oil prices (OP), and political instability (PI), are non-stationary at the level but become stationary at the first difference, with an order of integration I(1). This mixed order of integration justifies the use of the ARDL model, as it requires variables to be a combination of I(0) and I(1).

Table 4: Augmented Dickey-Fuller (ADF)- Unit Root Test

Variables	t-statistic (at level)	t-stat (at 1st difference)	Critical values			P-value	Order of integration	Decision (Stationary)
			1%	5%	10%			
INF	-2.77	-7.11	-3.63	-2.95	-2.61	0.0000	I(1)	1st difference
GDP	-4.53		-3.62	-2.95	-2.61	0.0009	I(0)	level
CREDIT	-1.10	-5.02	-3.63	-2.95	-2.61	0.0002	I(1)	1st difference
OP	-1.01	-6.64	-3.63	-2.95	-2.61	0.0000	I(1)	1st difference
PI	-2.46	-6.62	-3.59	-2.93	-2.60	0.0000	I(1)	1st difference

Source: Authors' calculations

4.3. VAR Lag Order Selection Criteria

The Vector Autoregressive (VAR) model is employed to determine the optimal lag length, with several criteria available for selection. The most commonly used criterion is the Akaike Information Criterion (AIC), which helps find the optimal lag order by balancing model fit and simplicity. A lower AIC value shows a favorable trade-off between the model's goodness of fit and complexity. Based on the AIC, a lag length of 1 is chosen for the estimations.

Table 5: Results of lag Length selection

VAR Lag Order Selection Criteria					
Lag	LogL	LR	AIC	SC	HQ
0	-281.3123	…	16.84190	17.06636	16.91845
1	-184.5535	159.3674*	12.62079*	13.96758*	13.08009*
2	-167.4818	23.09700	13.08716	15.55628	13.92920*
3	-144.3221	24.52204	13.19542	16.78685	14.42020*

Source: Authors' Calculations

Table 5 summarizes the VAR lag order selection criteria which describe the Log-Likelihood (LogL), Likelihood Ratio (LR), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hannan-Quinn Criterion (HQ) for various lag lengths. Lag 0 has a LogL of -281.3123 and higher AIC, SC, and HQ values, indicating it is a baseline model. Lag 1 significantly improves the LogL to -184.5535, with the highest LR statistic of 159.3674, and the lowest AIC (12.62079), SC (13.96758), and HQ (13.08009), making it the optimal choice. Lag 2 and Lag 3 show diminishing returns in fit, as their AIC values are higher than Lag 1, and their LR statistics indicate only marginal improvements. Thus, Lag 1 is recommended for its best balance of model fit and simplicity.

4.4. Bound Test for Cointegration

Table 6 presents the results of the bounds test for cointegration, which assesses whether a group of variables is cointegrated, indicating a long-term relationship among them. The F-statistic has a crucial role in determining acceptance or rejection of the null hypothesis, which states that no long-term relationship exists between the variables. In contrast, the alternative hypothesis

posits that such a relationship does exist. If the F-statistic exceeds the upper bound, we reject the null hypothesis; if it falls below the lower bound, we accept it. If the F-statistic lies between the upper and lower bounds, the outcome is considered inconclusive.

Table 6: Bound Test Results

	F statistics =5.471163	
Critical value	Lower Bound I(0)	Upper Bound I(1)
90 % Confidence Interval	2.2	3.09
95% Confidence Interval	2.56	3.49

Source: Authors' Calculations

The results in Table 6 indicate that the F-statistic value of 5.471163 exceeds the upper bound at both the 90% and 95% confidence intervals. Therefore, we reject the null hypothesis, suggesting that a long-run relationship exists among the variables.

4.5. Long Run Results

Table 7: Long Run Results

Regressor	Coefficient	Std. Error	T-statistic	P-value
Credit	0.758667	0.177646	4.270665	0.0002
GDP	-0.909003	0.320708	-2.834361	0.0084
OP	2.399445	1.005126	2.387207	0.0240
PI	7.525648	2.269509	3.315981	0.0025
C	-17.63664	7.394890	-2.384976	0.0241
R-squared: 0.740506				
Adjusted R-squared: 0.675633				

Source: Authors' calculations

An overview of long-term estimations of Pakistan's inflationary factors from 1985 to 2021 is given in the text (Table 7). With a coefficient of 0.758667, which suggests that a 1% increase in domestic credit results in a 0.7% increase in inflation, the data indicate that domestic credit has a positive and significant influence on inflation. This outcome is coherent with the research conducted by Abdul Aleem Khan et al. (2007)and A. A. Khan et al. (2007). According to the connection, credit growth may lead to more consumer spending and a growth in the demand for goods and services, both of which drive inflation.

In contrast, a coefficient of -0.909003 shows that there is a significant and inverse relation between inflation and GDP growth. This depicts that stronger economic development lessens the inflationary pressures because there would be a 0.9% drop in inflation for every one percent rise in GDP. Studies conducted by Kirimi (2014)and Khan and Saqib (2011) concur with this conclusion which also found a negative correlation between GDP growth and inflation.

The data also showed significant and a positive correlation between oil prices and inflation, with an increase in oil prices of 1% corresponding to an increase in inflation of 0.02%. The results are supported by previous studies such as A. A. Khan et al. (2007)and Zakaria et al. (2021), who also found a significant positive effect of oil prices on inflation in Pakistan and other South Asian countries.

At last, it is concluded that the Political Instability Index is a significant non-monetary predictor of inflation. 1% rise in political instability is linked with a 0.075% rise in inflation. These results are supported by earlier research conducted by Aisen and Veiga (2006), Khan and Saqib (2011), Khani Hoolari et al. (2014) and Haider et al. (2011). The overall findings emphasize the significance of both monetary (domestic credit and oil prices) and non-monetary (GDP growth and political instability) factors in predicting inflation.

Pesaran and Shin (1998)and Pesaran et al. (2001) proposed the Autoregressive Distributed Lag (ARDL) model, which can be utilized to explore the complex relationships in time series data. Using this model, researchers can examine how the values of one or more independent variables —current and past— influence the historical values of the dependent variable.

The most significant purpose of this model is that it can analyse both short-run and long-run relations between variables, giving a comprehensive understanding of how these variables vary over time. This feature is especially beneficial in research that focuses on distinguishing between short-term and long-term effects. This model over other time series analysis models can also function well even with smaller datasets.

The model's flexibility to work well with various lag durations for each variable is yet another important advantage. In contrast to other models that need consistent lag structures, this model allows for configurable lag lengths, interpreting the distinct complexities among variables more realistically. Additionally, data with various degrees of stationarity and a variety of time series can be analyzed with the help of the ARDL model because it can handle both combinations of order one (I(1)) and stationary variables (I(0)). Most importantly, the ARDL model may be converted into an error correction model (ECM), which preserves the long-term equilibrium connection between variables while capturing short-term variations. This dual focus enables a comprehensive analysis of both the immediate and enduring impacts of changes in the studied variables.

4.6. Short Run Results

Table 8 presents the Error Correction Model (ECM), showing the short-run relationship between inflation and its control variables. The ECM is used to capture short-term adjustments when there are deviations from the long-term equilibrium relationship among the variables. The findings align closely with the long-run results and reinforce the existence of a strong long-term relationship. Specifically, there is a highly significant positive correlation between oil prices and inflation in the short run, as indicated by the statistically significant p-value and positive coefficient. A 1% increase in oil prices is associated with an average increase in inflation of 0.05% in the short run, assuming all other variables remain constant during the period from 1985 to 2021. These findings are consistent with those of Zakaria et al. (2021)

Political instability appears to be an important determinant of inflation in short run. The results reveal that there is a highly significant and positive relation between political instability and inflation because the probability value is less than 0.05 which

is statistically significant and a positive coefficient indicates positive association. A 1% increase in political instability, on average has increased inflation by 0.09% in the short run keeping other variables constant from 1985 to 2021. These results are somehow different from previous studies because most of the time political instability is considered to be a long-run phenomenon.

Table 8: Short Run Results

Regressor	Coefficient	Std. Error	t-Statistics	P-value
D(OP)	5.244769	1.198053	4.377743	0.0002
D(PI)	9.524506	2.028847	4.694540	0.0001
CointEq(-1)*	-0.653815	0.105114	-6.220043	0.0000
Log-likelihood	-74.89440	R-Squared	0.641585	
Durbin Watson stat	2.121241	Adjusted R-Squared	0.619862	

Source: Authors' Calculations

Domestic credit and GDP growth do not show any relationship with inflation in the short run.

4.7. Diagnostic Tests

After estimating the main model, we have also performed the diagnostic tests to determine the robustness of the results obtained. The subsequent sections provide the details of these tests.

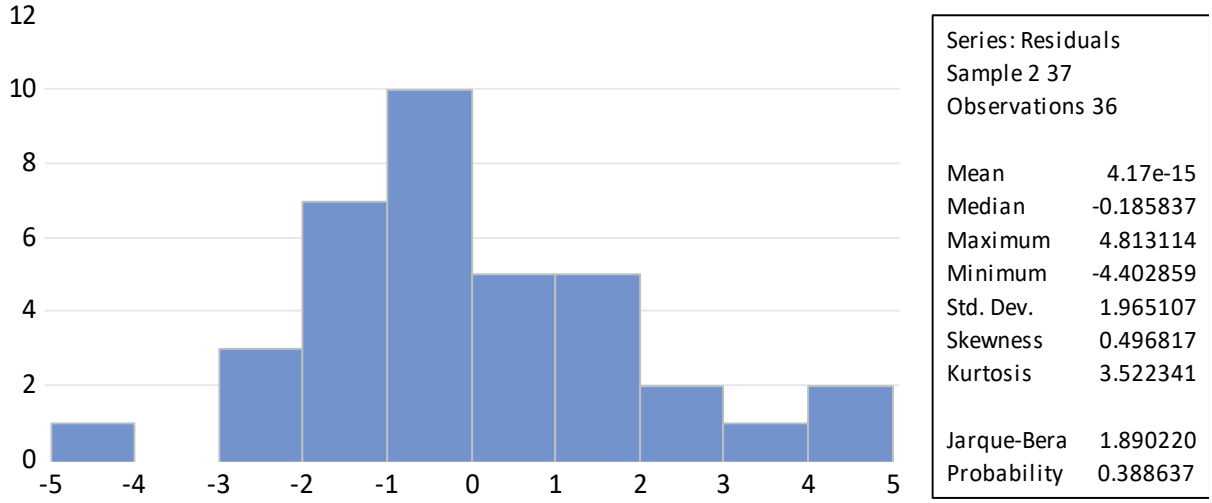
4.7.1. Jarque-Bera Test

Table 9: Jarque-Bera Test

Hypothesis	Jarque-Bera	Probability
H_0 =Normally Distributed	1.890220	0.388637
H_1 =Not Normally Distributed		

To check the normality of residuals, Jarque-Bera test has been applied. The results show a probability value of 0.388637 which indicates that null hypothesis cannot be rejected at five percent, implying the residuals are normally distributed.

Figure 2: plot of residuals



Source: Authors' Calculations

4.7.2. Breusch-Godfrey Serial Correlation LM Test

The Breusch-Godfrey Serial Correlation LM Test is employed to assess serial correlation. As presented in Table 10, the probability values for the F-statistic and the observed R-squared are 0.2212 and 0.1391, respectively. Since these probability values exceed the significance level of 0.05, we fail to reject the null hypothesis, indicating that there is no evidence of serial correlation in the model.

Table 10: Breusch-Godfrey Serial Correlation LM Test

Hypothesis				
H_0 : No Serial Correlation	F-statistics	1.599786	Prob.F(2,34)	0.2212
H_1 : Serial Correlation	Obs *R-squared	3.944735	Prob.Chi-Square (2)	0.1391

Source: Authors' Calculations

4.7.3. Heteroscedasticity Test

The results of the homoscedasticity test indicate that the null hypothesis (H_0) of homoscedasticity cannot be rejected. The F-statistic is 1.56 with a p-value of 0.1870, and the observed R-squared value is 10.12 with a p-value of 0.1817. Additionally, the Scaled Explained Sum of Squares (SS) statistic is 7.72, with a p-value of 0.3576. Since all p-values exceed the 0.05 significance level, these results suggest that there is no evidence of heteroscedasticity in the model.

Table 11: Heteroskedasticity Test: Breusch-Pagan-Godfrey

Assumption	Statistic	Value	p-value
H_0: Homoscedasticity	F-statistic	1.56	.1870
	Obs * R-squared	10.12	.1817
H_1: Heteroscedasticity	Scaled Explained SS	7.72	.3576

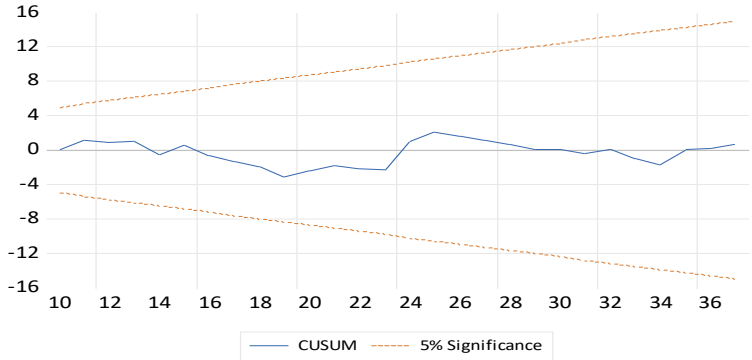
Source: Author's Calculation

4.7.4. Stability Test

The CUSUM test relies on the cumulative sum of recursive residuals and is presented through a visual plot. When the cumulative sum does not intersect the 5% critical line, it indicates parameter stability, and conversely, if it does intersect, it suggests instability.

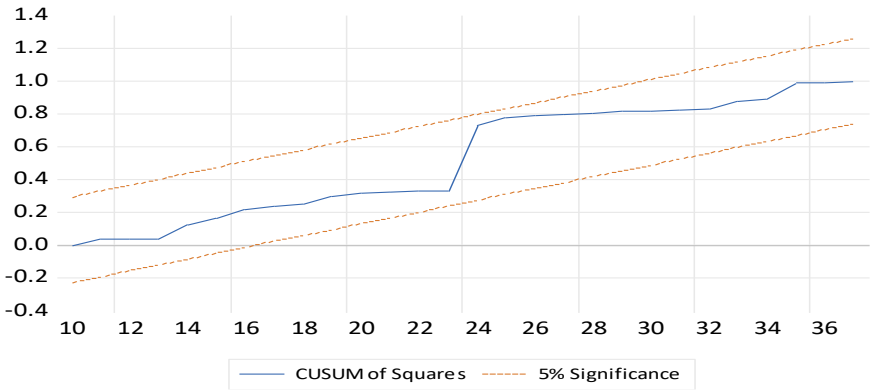
On the other hand, CUSUM square test is based on the cumulative sum of square residuals. It serves as a means to assess the stability of data. Like the CUSUM test, it involves a visual plot as a graphic representation of the data. The CUSUM square test is similar to the CUSUM test, illustrating a critical line around the mean value. If the recursive line intersects the critical line, it implies instability in the regression parameters; conversely, if it does not intersect, stability is indicated.

Figure 3: CUSUM Plot



As evident in Figures 3 and 4, both the CUSUM and CUSUMQ plots consistently remain within their boundaries. This compelling visual evidence strongly supports the conclusion that these statistical measures confirm the overall stability of the model. In other words, there is no indication of structural instability affecting the model's performance over the entire duration of the study.

Figure 4: CUSUMSQ plot



4.7.5. Regression Specification Error Test

Table 12: Regression Specification Error Result Ramsey
Test for Omitted Variables: Squares of Fitted Values

Statistic	Value	Df	p-value
t-statistic	1.46	27	0.1555
F-statistic	2.13	(1, 27)	0.1555

Source: Authors' calculations

Ramsey's RESET test has been applied to check if the specified functional form is correct. The results in Table 12 shows the probability value of F-statistic and t-statistic are 0.1555 and 0.1555 respectively which are greater than the significance level of

0.05. This means the acceptance of the null hypothesis of the correct functional form of the model which shows that the model is correctly specified.

5. Conclusion and Policy Recommendations

The present study has made a significant contribution to the determinants of inflation in Pakistan, particularly highlighting the role of political instability. By analyzing time series data over 36 years from 1985 to 2021, the research confirms that political instability, alongside oil prices and domestic credit to the private sector, plays a critical role in driving inflation in both the short and long run. The results highlight the necessity of continuous and stable economic policies to reduce inflationary pressures and encourage long-term economic growth.

This article also recommends ideas for future researchers who will be interested in studying these variables. Future researchers can inculcate dummy variables to better quantify political instability which will result in a thorough understanding of political instability's effects on inflation. Different approaches and methods can also be used to study the research variables for better understanding. To get valuable and unique perspectives future researchers can investigate multiple time frames or compare Pakistan's experience with other countries.

It is concluded that to grow and move forward Pakistan must raise national harmony on long-term economic policies. This harmony can be created by combining all significant stakeholders like political parties and financial institutions at a single platform. To lessen the negative influence of political instability on inflation and overall economic development, a Charter of Economy could be created with the help of a collaborative dialogue that will help in developing stable and reliable economic strategies. Pakistan can only be able to break out of the vicious cycle of inflation and economic stagnation if this is implemented properly and successfully which will pave the way for a more prosperous and bright future for the country.

References

Ahmad, E., & Ali, S. A. (1999). Exchange rate and inflation dynamics. *The Pakistan Development Review, 38*(3), 235-251.

Ahmad, S. (2010). The long-run Fisher effect in developing economies. *Studies in Economics and Finance, 27*(4), 268-275.

Ahmad, S. (2017). Saving and investment in Asia and Saudi Arabia. *International Journal of Economics and Financial Issues, 7*(4), 225-232.

Ahmad, S. (2019). The impact of oil price uncertainty on stock returns in Gulf countries. *International Journal of Energy Economics and Policy, 9*(6), 168-175.

Ahmad, S., Shamsudin, A., & Treadgold, M. (2012). A monetary analysis of foreign exchange market disequilibrium in Fiji. *International Journal of Economic Policy in Emerging Economies, 5*(1), 64-78.

Aisen, A., & Veiga, F. J. (2005). Does political instability lead to higher inflation? A panel data analysis. *Monetary and Financial Systems Department*, International Monetary Fund.

Aisen, A., & Veiga, F. J. (2006). Does political instability lead to higher inflation? A panel data analysis. *Journal of Money, Credit and Banking, 38*(5), 1379-1389.

Aisen, A., & Veiga, F. J. (2008). The political economy of seigniorage. *Journal of Development Economics, 87*(1), 29-50.

Akbari, A. H., & Rankaduwa, W. (2006). Inflation targeting in a small emerging market economy: The case of Pakistan. *SBP Research Bulletin, 2*(1), 169-190.

Asghar, N., & Naveed, T. A. (2015). Pass-through of world oil prices to inflation: A time series analysis of Pakistan. *Pakistan Economic and Social Review, 53*(2), 269-284.

Barugahara, F. (2015). The impact of political instability on inflation volatility in Africa. *South African Journal of Economics, 83*(1), 56-73.

Cukierman, A., Edwards, S., & Tabellini, G. (1989). Seigniorage and political instability. *National Bureau of Economic Research*.

Edwards, S., & Tabellini, G. (1991). Explaining fiscal policies and inflation in developing countries. *Journal of International Money and Finance, 10*(S16-S48).

Erdinc Telatar, F., Telatar, T., Cavusoglu, T., & Tosun, U. (2010). Political instability, political freedom, and inflation. *Applied Economics, 42*(30), 3839-3847.

Ghanayem, A., Downing, G., & Sawalha, M. (2023). The impact of political instability on inflation volatility: The case of the Middle East and North Africa region. *Cogent Economics & Finance, 11*(1), 2213016.

Ghanayem, N., & et al. (2023). Political instability and inflation: Evidence from MENA countries. *Journal of Economic Studies, 50*(2), 123-142.

Haider, A., Din, M. U., & Ghani, E. (2011). Consequences of political instability, governance, and bureaucratic corruption on inflation and growth: The case of Pakistan. *The Pakistan Development Review, 50*(4), 773-807.

Hussain, T., Iqbal, A., & Siddiqi, M. (2010). Growth, population, exports, and Wagner's law: A case study of Pakistan (1972-2007). *International Journal of Human and Social Sciences, 5*(5), 318-323.

Inim, V., Emmanuel Samuel, U., & Ishaku Prince, A. (2020). Other determinants of inflation in Nigeria. *European Journal of Sustainable Development, 9*(2), 338-348.

Iqbal, A., Hassan, S., Mahmood, H., & Tanveer, M. (2022). Gender equality, education, economic growth, and religious tensions nexus in developing countries: A spatial analysis approach. *Heliyon, 8*(11).

Khan, A. A., Ahmed, Q. M., & Hyder, K. (2007). Determinants of recent inflation in Pakistan. *Social Policy and Development Center*.

Khan, D. S. R. (2023). Political instability and inflation volatility. *International Journal of Financial Management and Economics, 6*(1), 144-147.

Khan, M. S., & Schimmelpfennig, A. (2006). Inflation in Pakistan. *The Pakistan Development Review, 45*(2), 185-202.

Khan, M. S., Senhadji, A. S., & Smith, B. D. (2006). Inflation and financial depth. *Macroeconomic Dynamics, 10*(2), 165-182.

Khan, S. U., & Saqib, O. F. (2011). Political instability and inflation in Pakistan. *Journal of Asian Economics*.

Khani Hoolari, S. M., Abounoori, A. A., & Mohammadi, T. (2014). The effect of governance and political instability determinants on inflation in Iran.

Kirimi, W. N. (2014). The determinants of inflation in Kenya (1970–2013) [Master's thesis, University of Nairobi]. *University of Nairobi Repository*.

Malik, A. (2016). The impact of oil price changes on inflation in Pakistan. *International Journal of Energy Economics and Policy*, *6*(4), 727-737.

Maruf, N., Alamgir, F., & Alishahi, M. (2018). Political instability and inflation in selected developing countries: A panel data analysis. *World Review of Business Research*, *8*(1), 41-52.

Pesaran, H. H., & Shin, Y. (1998). Generalized impulse response analysis in linear multivariate models. *Economics Letters*, *58*(1), 17-29.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289-326.

Qasim, T. B., Ali, H., Baig, A., & Khakwani, M. S. (2021). Impact of exchange rate and oil prices on inflation in Pakistan. *Review of Economics and Development Studies*, *7*(2), 177-185.

Qayyum, A. (2006). Money, inflation, and growth in Pakistan. *The Pakistan Development Review*, *45*(2), 203-212.

Rehman, J., Iqbal, A., & Siddiqi, M. W. (2010). Cointegration-causality analysis between public expenditures and economic growth in Pakistan. *European Journal of Social Sciences*, *13*(4), 556-565.

Rehman, M. Z. U., & Waheed, A. (2023). What are the economic challenges Pakistan is confronting for burgeoning its economic development? *Harf-o-Sukhan*, *7*(3), 260-269.

Salma, U., & Khan, M. F. H. (2023). The Connection Between Political Stability and Inflation: Insights from Four South Asian Nations.

Zakaria, M., Khiam, S., & Mahmood, H. (2021). Influence of oil prices on inflation in South Asia: Some new evidence. *Resources Policy*, *71*, 102014.