An Explanation of Tenacious Inflationary Pressure: Evidence from Hyperinflationary Economy

Faisal Mumtaz Department of Economics, University of Education, Lahore

Hasan Kamran Finance Executive GCC Solutions, Cayan Business Center, Dubai, United Arab Emirates Email: hassankamranazhar@gmail.com

Amina Shabir Research Assistant Department of Management Sciences, COMSATS University Islamabad, Lahore Campus

Abstract

The primary purpose of this research is to investigate the elements that have an impact on the rate of inflation in Pakistan. In the course of this inquiry, time series data spanning the years 1997 to 2020 were utilized. For the purpose of this investigation, five different factors were taken into consideration: the amount of tax revenue, the official exchange rate, the level of political stability, the trade deficit, and the level of regulatory standards. In the present investigation, the stationary nature of the data is investigated by means of the ADF and Philip Perron models. In order to determine the long-run and short-run correlations that exist between the variables, the autoregressive distributive lag technique is utilized. It has been demonstrated through empirical data that every variable is highly relevant, both in the long term and in the short term. According to the findings of empirical research, maintaining political stability and enhancing the policies of the government are both essential components in order to keep inflation under control.

Keywords: Economic issues, Inflation, Political stability, Regimes and Trade deficit

Submission 24-May-23; Revision 06-June-23, Accepted 10-June-23; Published 19-June-23

Introduction

In recent years, it has become imperative for Pakistan's economic authorities to tackle the issue of inflation. Therefore, it is imperative to carry out a thorough examination of the factors that influence inflation in order to formulate efficient monetary and fiscal policies. Due to the multifaceted nature of inflation, which is impacted by a diverse range of economic, political, and structural issues, the environment that scholars have to deal with is highly complex. Gathering accurate and thorough economic data is difficult, especially due to the need for a multifaceted approach to unravel the complex network of factors that contribute to it (Hussain et al., 2018; Ahmad et al., 2021). Khan (2019) and Akhtar et al. (2020) have been mentioned as exemplars of these issues. The investigation is complicated by structural challenges such as supply-side constraints and regulatory obstacles (Ashraf et al., 2017; Butt et al., 2019). These issues require a perspective that incorporates multiple disciplines (Farooq et al., 2020; Zaman et al., 2022). The task of synthesizing findings is further complicated by the variation in methodology employed by different researchers (Akbar et al., 2018; Abbas et al., 2020). Furthermore, as stated by Aman et al. (2016) and Zaidi et al. (2021), the continuously changing global economic environment requires the continual adaptation of research techniques to ensure its continued relevance. The objective of this research is to elucidate the elements that govern inflation in Pakistan, thereby offering a comprehensive comprehension of the subject matter. This comprehension will ultimately make a significant contribution to the development of evidence-based economic policies.

Income redistribution is a potential outcome of inflation's impact on the economy. As prices rise and the actual value or purchasing power of savings decreases, it penalizes savers. Assets such as savings accounts, insurance contracts, annuities, and other paper assets that have fixed values see a decline in their real worth due to inflation. Unforeseen inflation benefits borrowers while imposing costs on lenders. Minimal inflation rates are crucial for effective macroeconomic management, particularly in developing economies. Inflation can lead to a multitude of adverse impacts on the economy. Firstly, inflation diminishes the ability of individuals to buy goods and services, hence causing a decline in economic expansion. An inflationary climate generates several uncertainties, resulting in an escalation of macroeconomic instability (Khan & Gill, 2010).

Most research have focused on analyzing the decision to evade taxes using models that assume fixed prices. A recent study has created a theoretical framework for evasion that integrates the overall pricing level (Fishburn, 1981). Due to Fishburn's static analysis, he failed to consider the potential impact of inflation rate on the decision to engage in tax evasion. Nevertheless, the existence of cost-of-living adjustment provisions that are tied to inflation and the potential impact of bracket creep suggest that a connection between the two is quite probable. Regrettably, there has been a lack of research undertaken to examine this theory. The relationship between the inflation rate and evasion should be examined from a policy perspective. It has been asserted that inflation leads to an increase in government revenues, even in the absence of new tax legislation. Nevertheless, if there is a direct relationship between tax evasion and inflation, the overall effect of inflation on tax revenues may not be as significant as commonly believed. Furthermore, a favorable connection could potentially impact tax compliance strategies, as tax authorities may opt to intensify their efforts to ensure compliance during times of inflation, based on the expenses associated with implementation. (Nourzad, 1986).

Most economists agree that instability and excessive inflation have detrimental effects on the overall welfare of society. This insight had a tremendous impact on the field and inspired scholars to diligently strive to fully study the inflationary process in order to attain price stability. While limited in number, studies specifically examining the impact of high inflation rates and high inflation volatility on welfare and growth are often misunderstood. This is the case because greater inflation rates are usually accompanied by increased inflation volatility. Friedman (2002) suggests that if inflation volatility increases, it could lead to a decrease in economic efficiency. This is because it would create more market friction and widen the gap between present relative prices and the prices that would have been determined by market forces alone, without the influence of inflation volatility. Therefore, it is plausible that increased fluctuations in inflation could have a more detrimental impact on the economy compared to simply having high inflation rates. Despite several studies on the factors influencing inflation and its negative impact on GDP, scholars have yet to extensively investigate the origins of inflation volatility. A study has found that central bank independence reduces the volatility of inflation. The reference is from Cukierman et al. (2003). The relationship between inflation volatility and other variables has been established in numerous research studies. A study has found that stable currency rates in emerging nations have the effect of decreasing volatility and inflation. (Bleaney and Fielding, 2002).

Mohammad (2010) conducted an analysis on the factors that contribute to the trade imbalance in Pakistan, both in the long term and the short term. The dataset utilized encompasses the annual data from 1975 to 2008. Johansen co-integration was employed for conducting long-term analysis, while the Vector Error Correction model was utilized for short-term study. The variables evaluated include income from abroad, domestic spending, the actual effectiveness of the exchange rate, and direct investment from foreign sources. The findings demonstrated that every element had a significant influence on Pakistan's trade imbalance, Majeed (2021).

Based on the bulk of research, industrialized countries with labor markets known for their strong resistance to increasing wages have the lowest inflationary burdens, especially in the past three decades. In semi-developed nations such as those in Latin America, there appears to be a relatively low level of resistance to changes in real wages in the short term. This means that a significant increase in inflation could lead to substantial changes in real wages. Under these conditions, significant inflation costs are inevitable.

One option, specifically focused on direct measurement, starts with the assumption that individuals believe the government has influence over the economy. If the hypothesis is accurate, it is feasible to examine the correlation between economic fluctuations and individuals' inclination to endorse the government (as assessed through elections or surveys) or their perception of it. A significant percentage of current macroeconomic research on the US trade imbalance has been on singleequation semi-reduced form mono-causal theories Abuselidze 2019. This research primarily focuses on the correlation between trade and budget deficits. It suggests that this correlation can be influenced by the upward movement of interest rates, which then leads to an increase in the exchange rate. There is a scarcity of studies that have investigated the usual connections between macroeconomics, such as the variations in domestic demand and income growth rates between the United States and its main trading partners. According to Krugman & Baldwin (2004), a significant portion of the traded goods can be explained by the difference in demand growth between the U.S. and elsewhere, regardless of the exchange rate swings. However, they fail to explicitly address the impact of the budget deficit on both domestic demand and the trade balance.

The most challenging question to answer when abandoning an exchange rate peg is whether the devaluation will effectively adjust relative prices, specifically the real exchange rate, in the economy. Comparable issues emerge in relation to the exchange rate systems that have been more flexible in the period following the Bretton Woods agreement. Especially during most currency crises, there is concern that the significant depreciation may cause inflationary repercussions, which could complicate the management of the crisis (Borensztein, 1999).

The present study analyzes the impact of internal and external factors on inflation in Pakistan using annual data spanning from 1997 to 2020. The study utilizes high tax rates, political instability, trade deficit, devaluation, policies, and regulations as explanatory factors.

Problem Statement

Pakistan experienced a significant surge in consumer price inflation, reaching 31.5%, during February in 2023. Hence, the objective of this study is to examine the conflicting findings about the causes of inflation. This study examines the intricate and diverse impacts of the factors that contribute to inflation. This research paper examines the influence of inflation on a nation's overall economy. It also explores how many factors, such as high tax rates, political instability, trade imbalance, devaluation, and policies and regulations, might affect inflation within a certain country.

Objective of the Study

The objectives of this research are as follows: To empirically investigate the determinants of Inflation To examine the main sources or factors that cause inflation to occur. (Kartika et al., 2023) examined the link between market competitiveness and

Organization of the Study

This study focused on analyzing the most controversial and current factors contributing to inflation and its underlying causes. This study comprises three primary sections. The initial segment focused on the literature review. The latter portion encompasses the segment dedicated to model specs. The third aspect of this study focuses on the estimating approach, utilizing regression analysis tools to examine the relationship between independent and dependent variables.

Literature Review

The existing body of research on inflation determinants in Pakistan is marked by a plethora of studies that have examined various facets of this complex economic issue. Qayyum and Kemal (2017) and other academics have examined the impact of monetary policy on the dynamics of inflation. However, Malik et al. (2018) and Qayyum, (2005) have focused specifically on the influence of exchange rate fluctuations. Ahmad and Iqbal (2019) conducted a study to examine the relationship between fiscal policy and inflation. Furthermore, the study conducted by (Wakeel, 2013) and Awan in 2020 has shed light on the significance of energy expenditures as a primary contributor to inflation in Pakistan. Nazir and Qayyum (2021) and Khaleequzzaman et al. (2022) have done studies examining the impact of global economic factors on inflation in Pakistan. Furthermore, the analysis has taken into account the investigation of structural concerns that contribute to inflation, including the results of authors such as Iqbal et al. (2016) on supply-side limitations. In addition, authors such as Ali (2019) and Awan 2019 have examined the methodological aspects of inflation research, emphasizing the importance of using strong models and analytical frameworks. This is significant as it underscores the significance of the research. From a worldwide perspective, the works of Khan and Chaudhary (2020) and Butt et al. (2023) have offered comparative analysis on the determinants of inflation in different economies. Abbas and Bilal (2018) have highlighted that research on inflation is characterized by its multidisciplinary nature, drawing on insights from sociology and political science. Several studies, such as those undertaken by Stockman 1981, Rashid (2022), and Haq. (2023), have investigated the adjustment of research methods in response to evolving global circumstances. These examinations were carried out in response to the ever-changing economic environment. This literature review encompasses a diverse range of research studies that collectively enhance our understanding of the elements that affect inflation in Pakistan.

This research examines the elements that contribute to inflation and devaluation, which are two challenging and unfavorable economic conditions, along with their socioeconomic characteristics. The study aims to assess the socioeconomic impacts of inflation and devaluation and identify the most efficient strategies to mitigate them. The study investigated the causes of inflation and devaluation, and their impact on individual well-being and national economic growth, in pursuit of research goals. This research analyzes the core principles of anti-inflationary measures and explores the worldwide use of monetary policies in managing inflationary trends.

Research has revealed that tax avoidance is positively correlated with inflation, both through direct and indirect means. The findings also indicate that there was an increase in overall tax evasion when marginal tax rates increased, both in absolute and relative terms (Paldam, 1987). However, tax evasion decreased as the probability of detection, penalty rates, and salary as a percentage of income increased. Furthermore, while absolute evasion rates have risen, they have actually decreased when considered in relation to the growth of real genuine income (Aisen, 2008).

This study examines the impact of political turmoil on the inflation rate in Pakistan. We examine this relationship by employing two distinct models, namely the Generalized Method of Moments, along with data and analysis. The findings of the monetary model indicate that the influence of monetary factors is negligible and is influenced by the political climate in Pakistan. The findings of the "nonmonetary" model unequivocally establish a correlation between political turmoil and inflation. The utilization of interaction dummies in the analysis provides more evidence of a significant correlation between political instability and elevated (above average) inflation.

In Perera's (2015) study, the author investigated how foreign direct investment (FDI), trade, and employment contribute to the economic growth of Sri Lanka. The estimate was based on time series data spanning from 1965 to 2007. The estimation of the variables was performed using an OLS model, which is also referred to as an

ordinary least squares model. The study employed foreign debt as the dependent variable, while the labor force and trade openness were utilized as independent variables. The findings indicate that Sri Lanka's economy is projected to see long-term growth, driven by positive impacts from the labor force, trade openness, and foreign debt.

This study compares statistics on political change and the occurrence of military administrations from 1946 to 1984 in the nations of Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay, and Venezuela with the trend of consumer price inflation. There is a strong correlation between the occurrence of military control and the level of inflation. This can be attributed to two other significant consequences: (i) Military governments have a tendency to exhibit a certain degree of instability. (ii) Inflation tends to increase during civilian regimes and decrease during military regimes, indicating the effectiveness of military governments in addressing inflation. Ultimately, it is demonstrated that only a limited number of governments are able to endure a period characterized by excessive inflation.

The causes of the trade imbalance and its impact on economic growth have been extensively studied in prior studies. Upon reviewing previous studies on the matter, we have condensed the findings into the following concise summary:

In their study, Shawa & Shen (2013) investigated the factors contributing to the trade balance and identified the primary driver of Tanzania's trade imbalance. In order to assess the relationship between variables, the researchers utilized the augmented Dickey-Fuller (ADF) and Phillip-Peron (PP) unit root tests. Variables such as real exchange rates, relative gross national income (GNI), import weighted index, open import weighted index, and actual gross domestic product (GDP) are utilized. The comprehensive test indicates that although the variables were found to be stationary after the first difference, they all exhibit a unit root at the levels.

Zada et al. (2017) conducted a study on the factors influencing Pakistan's export industry. The study employed time series data spanning from 1975 to 2008 to examine the correlation between trade and economic growth. The Ordinary Least Squares (OLS) method was employed to determine the outcome. The findings suggest that Pakistan's exports are very susceptible to variations in worldwide demand and global prices. The study highlighted the importance of demand-side factors, such as global GDP, real exchange rate, and global pricing, in influencing Pakistan's exports.

Model Specification and description of variables

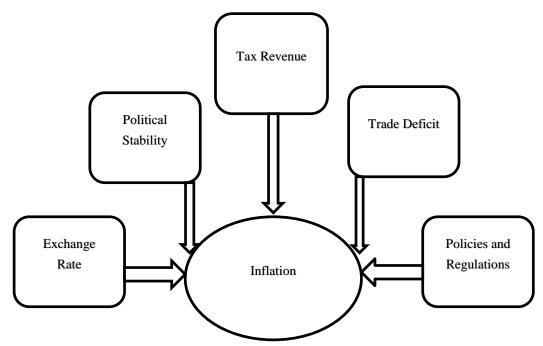
Model Building

Various studies, such as Khan & Schimmelpfennig (2006), Khan and Senhadji (2001), Munir & Riaz (2020), have employed different factors to analyze inflation. However, this particular study distinguishes itself by utilizing five distinct independent variables to examine inflation, as well as employing a unique model specification not previously utilized in prior research. The generic econometric equation for the determinants of inflation is as follows:

 $Yt = \beta 1X1 + \beta 2X2t + \beta 3X3t + \beta 4X4t + \beta 5X5t$ It can also be written in this form. $INFt = \beta + \beta 1(TRt) + \beta 2(DEVALt) + \beta 3(PSt) + \beta 4(TDt) + \beta 5(REG2t) + \in t (1)$

Here INFt is inflation, TRt is the proxy of tax revenue as percentage of GDP, DEVALt is the proxy for devaluation, PSt is the proxy of political stability and TDt is the proxy for trade deficit REGt is the proxy for regulations.

The following graph includes both dependent and independent variables. Tax revenue, currency depreciation, political stability, trade imbalance, and laws and regulations are independent variables, whereas inflation is a dependent variable.



Source: This model is developed by Author.

Sr. No	Variable	Proxy	Description	Data Source
1	Inflation	INFt	A general increase in prices and fall in the purchasing value of money.	WDI
2	Tax Revenue	TRt	The funds collected from taxes on income and profits	WDI
3	Trade Deficit	TDt	The amount by which cost of a country imports exceed its export.	WDI
4	Devaluation	DEVALt	Official exchange rate (LCU per US\$)	WDI
5	Political Stability	PSt	Absence of Violence/Terrorism	WGI
6	Policies and Regulations	REGt	Refers principles, guidance or documents adopted by a government.	WGI

Methodology

_

In order to ensure the stationarity of the data set, this study conducted two distinct forms of testing. Both the ADF and Philip Perron examinations were formulated in 1979, with the ADF examination being the more sophisticated iteration. The ADF evaluation was conducted under the assumption that the residuals could exhibit serial correlation. This test utilized lagged dependent variable values to fit the regression model. The equation for the ADF test is as follows:

 $\Delta INFt = \alpha o + \delta INFt - 1 \alpha 1t + \Sigma \beta tmi = 1 \Delta INFt - 1 + \epsilon t$ (a) Null hypothesis variables are non-stationary Alternative hypothesis variables are stationary Here ϵt is the error term, αo is the intercept and $\delta \alpha 1$ are the coefficients.

This study utilizes the autoregressive distributed lag (ARDL) method to the cointegration technique, after the estimation of the stationarity of the variables. The individuals responsible for developing this methodology are Pesaran, Shin, and Smith (2001). An advantage of the ARDL technique is its ability to accommodate variables that are not required to be integrated in the same sequence. The ARDL approach can be applied at the level and first difference, but not at the second difference. The subsequent expression represents the equation for the initial difference level: $\begin{aligned} \Delta \mathrm{INF}t &= \beta o + \Delta \Sigma \beta 1 i \ q i = 1 \Delta \ (-i \) + \Sigma \beta 2 i \ q i = 0 \Delta \ (\mathrm{TR}t-i) + \Sigma \beta 3 i \ q i = 0 \Delta (\mathrm{ER}t-i) + \\ \Sigma \beta 4 i \ q i = 0 \Delta (\mathrm{PS}t-i) + \Sigma \beta 5 i \ q i = 0 \Delta (\mathrm{TD}t-i) + \Sigma \beta 6 i \ q i = 0 \Delta (\mathrm{R}Qt-i) + \beta 7 (\mathrm{INF}t-1) + \\ \beta 8 \ (t-i) + \beta 9 (\mathrm{TD}t-i) + \beta 10 (\mathrm{PS}t-i) + \beta^{2} 11 (\mathrm{ER}2t-i) \ \beta^{2} 12 (\mathrm{TR}t-i) + ut \end{aligned}$

Where Δ is the initial difference operator, q is the ideal time lag for the variables. βo is the intercept. The $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, $\beta 5$, $\beta 6$ are the short run coefficients and $\beta 7$, $\beta 8$, $\beta 9$, $\beta 11$, $\beta 12$ are the long run coefficients. It is possible to identify the long-term relationship in equation (1) by applying the bound testing strategy using F-statistics for equation (2). The results won't be definitive. The upper bound, if the F statistics results are significant. The null hypothesis will be rejected, and we will embrace the alternative hypothesis, which will demonstrate the long-term link. On the other hand, if the F-statistics value is less than the lower bound, we accept the null hypothesis. It will show that a lasting relationship is impossible.

Empirical Results and Discussions

Variables	Inflation	Tax revenue	Official exchange rate	Political stability	Trade deficit	Regulatory quality
Mean	7.775926	10.57083	82.24862	-2.14531	-2.7949	-0.74866
St. deviation	4.28424	1.985816	31.9708	0.505824	5.18571	0.235133
Skewness	1.073389	0.653868	0.963382	0.663835	0.673223	-2.05692

Descriptive Analysis

Calculated by the author

The average values of Inflation, Tax income, and Official exchange rate exceed the standard deviation. This illustrates the uneven distribution of the data, as evidenced by the means of political stability, trade deficit, and regulatory quality being lower than the standard deviation, indicating an excessive spread of the data. In order for the data to be declared normal, it is necessary for both the kurtosis and skewness of each variable to be equal to 3. However, none of the variables in the table above meet this condition, hence the data is not normal. The ADF and PP testing procedures are employed to ascertain the coherence of the data.

Unit Root Tests, ADF and PP approach

Table 1: Test Augmented Dickey Fuller test

Variables	At level		At first difference		
	Intercept	Trend and intercept	Intercept	Trend and intercept	
INFt			-5.675528*	-5.510819*	
TRt			-3.341886*		
TDt			-5.284056*	-5.129783*	
DEVALt			-3.372598*	-2.965874***	
PSt			-10.32958*	-11.05260*	
REGt	-3.102376*			-4.183283*	

Calculated by the author

***, **, * representing 10%,5%, and 1% level of significant respectively.

$\boldsymbol{\tau}$	ab	1.	n .
1	avi	ie	2.

Test	Philip Perron test					
Variables	Atl	evel	At first difference			
	intercept	Trend and intercept	intercept	Trend and intercept		
INFt			-5.724437*	-5.547811*		
TRt			-4.903023*	-5.325010*		
TDt			-5.351975*	-5.205229*		
DEVALt						
PSt			-9.913759*	-11.106152*		
REGt	-3.796726*	-4.488179*	-10.78345*	-10.49897*		

Calculated by the author

***, **, * representing 10%,5%, and 1% level of significant respectively

In table 1 REGt is stationary at level with intercept only. At the 1% level of significance, while INFt, TRt, TDt, DEVALt and PSt are stationary at first level with intercept at the 1% level of significance. INFt, TDt, PSt and REGt are stationary at first level with trend and intercept at the 1% level of significance and DEVALt is stationary at first level with trend and intercept at the 10% level of significance in the ADF test.

In the second table the Philip perron test is used only REGt is stationary at level with the intercept at 1% level of significance, and REGt is also stationary at level with the trend and intercept at 1% level of significance.

While INFt, TRt, TDt, PSt and REGt are stationary at the first difference level with intercept at 1% level of significance and INFt, TRt, TDt, PSt and REGt are also stationary at the first difference level with trend and intercept at 1% level of significance. Since some variables are level-stationary and others are level-stationary in both of their initial difference levels ADF and Philips perron approaches so, this study used the ARDL methodology for examine the association between dependent and independent variables. ARDL (4, 3, 2) has choose based on the Schwarz Bayesian criterion.

Table 3:	Auto-Regressive	Distributed	Lag Model

Dependent variable is INF					
Regressor	Coefficients	Standard errors	T-ratios (prob)		
Intercept	0.791059	0.279671	2.828528(0.0222)		
TR	3.045346***	1.186229	2.567249 (0.0333)		
DEVAL	0.756155***	0.180503	4.189148(0.0030)		
PS	-0.303433**	1.148618	-0.264172(0.7976)		
TD	0.809557***	0.067454	12.00167(0.0000)		
R2= 0.859378	Adj R2= 0.666023 F state (4.444565) D.W state =	= 2.579956		

Calculated by the author

***, **, and represents the significance of variables at 1%, and 10% level of significance respectively.

The ARDL approach shows that all the variables are significant at 1% and 10% significance.

The value of 3.045346 shows the positive relationship between tax revenue and inflation. It means with a 1% increase in inflation the tax revenue increased by 3.045346 units.

One of the tools that governments may think about employing to mitigate the effects of high inflation on the poor, particularly the effects of high energy and food prices, is tax revenue. In an effort to quickly control inflation, there is a risk that tax policy would lead to unintended consequences like increase in inflation in the country.

The value of DEVAL is 0.756155, which shows the positive relationship between devaluation and inflation. It shows that with a 1% increase in inflation, devaluation increased by 0.756155 units. If there is a depreciation in the exchange rate, it is likely to cause inflation to increase. Because the Import prices of goods become more expensive, as Pakistan is an import dependent country so if there is devaluation in the local currency as compared to U.S dollar the prices of imports will increase which will cause inflation in the country.

The value of PS is -0.303433 shows the negative relationship between inflation and a political stability. It means with 1% increase in inflation the political stability decrease by 0.303433 units.

The majority of economists agree that the main causes of countries' sustained inflation variability are variations in their monetary and fiscal policies. If the country is not politically stable the monetary and fiscal policies will be changed again and again by different governments which will gives shocks to the country's economy and there will be inflation in the country.

The value of the trade deficit is 0.809557 which shows the positive relationship between inflation and the trade deficit. It means if inflation increases by 1% the trade deficit increase by 0.809557. Increased imports might result in imported inflation, which can exacerbate the current account deficit. A trade imbalance indicates that a country's exports are most likely lower than its imports.

Foreign currency demand would increase since imports are paid for with foreign currencies. Our currency would lose value as a result. Consequently, the cost of items in terms of our currency has increased. This causes inflation to increase.

VIF- TEST

If VIF values of all variables are less than 10, then there is no multicollinearity in the data.

Ho: Null hypothesis if VIF> 10, there is the problem of multicollinearity.

H1: Alternative hypothesis if VIF < 10, there is no problem of multicollinearity. The table below shows the VIF test for all the variables.

	Inflation	Tax revenue	Official exchange rate	Political stability	Trade deficit	Regulatory quality
Inflation						
Tax revenue	1.0786					
Official exchange rate	1.00711	1.16814				
Political stability	1.1294	1.012886	1.20315			
Trade deficit	7.35535	1.58027	1.00578	1.11641		

Table 4: VIF Test

Regulatory	1.14733	1.00078	1.11459	1.03486	1.08863	
quality						

Calculated by the author

The VIF values of all variables are less than 10, so there is no problem with multicollinearity in the data. So, we reject the null hypothesis and accept the alternative hypothesis which will show that there no problem of multicollinearity.

Table 4: ARDL Bound Test

F statistics to checking the presence long term association

F Stat = 10.23713				
Upper bound	Lower bond			
3.17	4.14			
3.79	4.85			
4.41	5.52			
5.15	6.36			

Calculated by the author

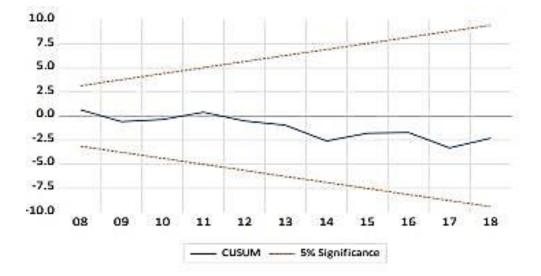


Figure: 2 The sum of the square residual

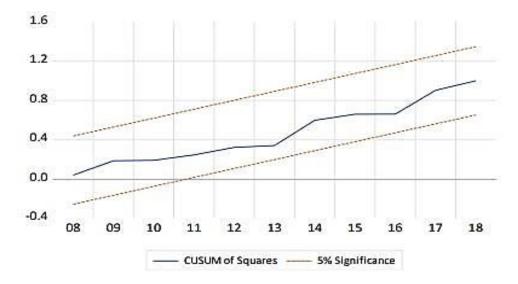


Figure 3 The sum of the square residual

The t ratios and probability value show that there is short relationship between the variable in the ECM. All variables are significant at 1 % and 10 % significance level, and the CUSUM curves show that the model is stable.

Conclusion and policy Recommendations

The widely accepted conventional view is that budget deficits are the primary cause of inflationary pressure. According to the findings of this study, it may be inferred that the budget deficit has no long-term effect on the inflationary pressures in Pakistan. Hence, the government can fund its developmental expenses by procuring funds from several sources through borrowing.

The devaluation of the exchange rate has led to substantial rises in the Consumer Price Index (CPI), Weighted Price Index (WPI), SPI, and GDP deflator. In order to ascertain the rate at which the exchange rate is depreciating, it is necessary to examine the dollar purchases made by the private sector with the intention of converting them for a profit.

Pakistan's inflation indexes have been consistently increasing due to the rising value of imports. The influx of imported goods and services played a substantial role in the overall inflation that had been ongoing for the past 34 years. It is imperative for the country to provide support to industries that offer import substitution as a means to alleviate the challenges posed by such circumstances.

In contrast, the government possesses a range of tactics that it can utilize to manage inflation and maintain economic stability.

Initially, the government possesses the capacity to implement monetary policies that aim to control the quantity of money circulating in the economy. This objective can be accomplished by implementing constraints on the quantity of currency in circulation, regulating interest rates, and modifying the mandatory reserve ratios for banks. By controlling the money supply, the government can curb excessive spending and decrease the demand for goods and services, leading to lower prices.

Expanding the supply of products and services is an additional approach that can be employed to reduce inflation. This can be achieved through various measures, including investing in infrastructure, streamlining business operations, and offering support to small and medium-sized business owners. The government can alleviate pricing pressure and manage inflation by enhancing the economy's capacity to create a greater quantity of products and services.

References

- Abbas, Q., & Bilal, M. (2018). Interdisciplinary Insights into Inflation: A Study Integrating Political Science and Sociology. *Journal of Interdisciplinary Economics*, 30(3), 315-332.
- Abbas, S., et al. (2020). "Inflation Modeling: A Comparative Study of Different Approaches." Empirical Economics, 58(1), 123-150.
- Abuselidze, G. (2019). Modern challenges of monetary policy strategies: inflation and devaluation influence on economic development of the country. Academy of Strategic Management Journal, *18*(4), 1-10.
- Ahmad, N., & Iqbal, J. (2019). Fiscal Policy and Inflation in Pakistan: A Time Series Analysis. International Journal of Economics, Commerce and Management, 7(7), 34-47.
- Ahmad, S., et al. (2021). "Determinants of Inflation in Pakistan: A Structural VAR Approach." International Journal of Economics, Commerce and Management, 9(1), 23-35.
- Ahmad, W., Ullah, S., Ozturk, I., & Majeed, M. T. (2021). Does inflation instability affect environmental pollution? Fresh evidence from Asian economies. *Energy & Environment*, 32(7), 1275-1291.
- Aisen, A., & Veiga, F. J. (2008). Political instability and inflation volatility. Public choice, 135, 207-223.

- Akbar, M., et al. (2018). "Methodological Divergence in Inflation Research: A Literature Review." Journal of Economic Surveys, 32(1), 30-55.
- Akhtar, M. T., et al. (2020). "Assessing the Reliability of Inflation Data: A Case Study of Pakistan." Journal of Economic Studies, 47(4), 911-926.
- Ali, M. A., et al. (2019). Methodological Rigor in Inflation Research: A Critical Review. *Journal of Economic Methodology*, 26(2), 144-168.
- Aman, A., et al. (2016). "Adapting Research Methodologies to Changing Economic Realities: Lessons from Global Trends." Journal of Applied Research in Higher Education, 8(1), 110-127.
- Ashraf, M. S., et al. (2017). "Supply-Side Determinants of Inflation in Pakistan: A Sectoral Analysis." Economic Modelling, 64, 644-660.
- Awan, A. G., & Mukhtar, S. (2019). Causes of Trade deficit and its impact on Pakistan's Economic growth. Global Journal of Management, Social Sciences and Humanities, 5(3), 480-498.
- Awan, R. U., et al. (2020). Energy Prices and Inflation Dynamics: Evidence from Pakistan. Energy Policy, 137, 111109.
- Baldwin, R. E., & Krugman, P. (2004). Agglomeration, integration and tax harmonisation. *European economic review*, 48(1), 1-23.
- Bleaney, M., & Fielding, D. (2002). Exchange rate regimes, inflation and output volatility in developing countries. *Journal of development economics*, 68(1), 233-245.
- Borensztein, E., & De Gregorio, J. (1999). Devaluation and inflation after currency crises. *International Monetary Fund*, 1-34.
- Butt, M. K., et al. (2023). Comparative Analysis of Inflation Determinants: A Global Perspective. International Journal of Finance & Economics, 28(1), 1160-1179.
- Butt, N., et al. (2019). "Regulatory Challenges and Inflation Dynamics: Empirical Evidence from Pakistan." Journal of Business and Policy Research, 14(1), 32-48.
- Crane, S. E., & Nourzad, F. (1986). Inflation and tax evasion: An empirical analysis. The Review of Economics and Statistics, 217-223.
- Cukierman, A., & Gerlach, S. (2003). The inflation bias revisited: theory and some international evidence. *The Manchester School*, 71(5), 541-565.
- Farooq, M., et al. (2020). "Interdisciplinary Perspectives on Inflation: Insights from Pakistan." Journal of Interdisciplinary Economics, 32(1), 20-35.

- Fishburn, G. (1981). Tax evasion and inflation. *Australian Economic Papers*, 20(37), 325-332.
- Friedman, B. M. (2002). The use and meaning of words in central banking: inflation targeting, credibility, and transparency.
- Haq, S. M. A., Chowdhury, M. A. F., Ahmed, K. J., & Chowdhury, M. T. A. (2023). Environmental quality and its impact on total fertility rate: an econometric analysis from a new perspective. *BMC Public Health*, 23(1), 2397.
- Hussain, S., et al. (2018). "Multidimensional Analysis of Inflation in Pakistan: A Study Based on SVAR Framework." Economies, 6(3), 45.
- Iqbal, Z., et al. (2016). Supply-Side Constraints and Inflation in Pakistan: An Empirical Analysis. *The Pakistan Development Review*, 55(4), 685-702.
- Khaleequzzaman, M., et al. (2022). Global Economic Factors and Inflation in Pakistan: A Time Series Analysis. International Journal of Economics, Commerce and Management, 10(2), 34-49.
- Khan, A. H. (2019). "Data Quality Issues in Pakistan's Official Statistics." The Lahore Journal of Economics, 24(2), 75-95.
- Khan, A., & Chaudhary, A. R. (2020). Inflation Determinants across Different Economies: A Comparative Study. Economic Modelling, 91, 205-215.
- Khan, M. S., & Schimmelpfennig, A. (2006). Inflation in Pakistan: Money or wheat?.
- Khan, M. S., & Ssnhadji, A. S. (2001). Threshold effects in the relationship between inflation and growth. *IMF Staff papers*, 48(1), 1-21.
- Khan, R. E. A., & Gill, A. R. (2010). Determinants of inflation: A case of Pakistan (1970-2007). *Journal of economics*, 1(1), 45-51.
- Malik, S., et al. (2018). Exchange Rate Movements and Inflation in Pakistan: An Empirical Analysis. Journal of Asian Economics, 57, 1-13.
- Mohammad, M. T. S. H. "Principles of sustainable development in Ibn Khaldun's economic thought." *Malaysian Journal of Real Estate* 5, no. 1 (2010): 1-18.
- Munir, K., & Riaz, N. (2020). Dynamics of inflation and inflation uncertainty in Pakistan. International Journal of Monetary Economics and Finance, 13(2), 130-145.
- Nazir, M. S., & Qayyum, A. (2021). Impact of Global Economic Factors on Inflation in Pakistan: A Structural VAR Approach. *International Journal of Economics, Commerce and Management*, 9(5), 11-25.

- Paldam, M. (1987). Inflation and political instability in eight Latin American countries 1946-83. Public Choice, *52*, 143-168.
- Perera, P. (2015). Modeling and Forecasting Foreign Direct Investment (FDI) into SAARC for the period of 2013-2037 with ARIMA. *International Journal of Business and Social Science*, 6(2).
- 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.
- Qayyum, A., & Bilquees, F. (2005). P-Star Model: A Leading Indicator of Inflation for Pakistan. The Pakistan Development Review, 44(2), 117–129. http://www.jstor.org/stable/41260710
- Qayyum, A., & Kemal, A. R. (2017). Role of Monetary Policy in Controlling Inflation in Pakistan. *The Lahore Journal of Economics*, 22(Special Edition), 233-253.
- Rasheed, T. (2022). Supply Chain sustainability through green practices in manufacturing: A case study from Pakistan: Supply chain sustainability. South Asian Journal of Operations and Logistics (ISSN: 2958-2504), 1(1), 57-71.
- Shawa, M. J., & Shen, Y. (2013). Analysis of the determinants of trade balance: Case study of Tanzania. *International Journal of Business and Economics Research*, 2(6), 134-141.
- Stockman, A. C. (1981). Effects of inflation on the pattern of international trade (No. w0713). National Bureau of Economic Research.
- Wakeel, I., & Ullah, K. (2013). Impacts of budget deficit on output, inflation and balance of trade. Journal of global and scientific issues, 1(1), 40-52.
- Zada, N., & Khan, K. (2017). General Equilibrium Analysis of Pakistan's Free Trade Agreements 'A Global CGE Approach'. In Proceedings of the Pakistan Society of Development Economists (PSDE), 33rd Annual General Meeting and Conference, Islamabad, Pakistan.
- Zaidi, S. A., et al. (2021). "Economic Research in the Face of Global Changes: Methodological Adaptations and Challenges." International Journal of Economics, Commerce and Management, 9(3), 47-62.
- Zaman, K., et al. (2022). "Inflation and Socio-Political Instability: A Cross-Country Analysis." Social Indicators Research, 157(2), 623-648.