

The Dynamic Interplay between Economic and Monetary Variables: Evidence from Pakistan

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ABSTRACT

This paper examines the dynamic correlation among major economic indicators and monetary variables in the Pakistani economy over the period 1990 to 2024. Applying time series data and econometric modeling strategies such as Augmented Dickey-Fuller (ADF) tests, Auto Regressive Distributed Lag (ARDL) models and Error Correction Models (ECM) the study finds out the magnitude of effect that fiscal deficit, foreign direct investment (FDI) and the tax revenue, central government debt and exchange rates have on inflation, broad money supply and interest rates. Findings indicate that exchange rate movements have a stable and meaningful influence on all three monetary variables, both in the short- and long-run. FDI inflows have the effect of a significant impact on liquidity, whereas tax revenue and debt show mixed impacts according to the monetary variable involved. The ECM estimates stand up the existence of long-run equilibrating relations, and different adjustment rates of the different dependent variables. These results support the notion that macroeconomic coordination, especially of the fiscal and monetary policies, is paramount, and they imply that the management of exchange rates and the sterilization of capital flows should not be discarded as a priority. The paper also comments on discordant findings of the literature and gives justifiable reasons in support of differences. The results provide meaningful pieces of information to policymakers who would like to enhance the monetary stability in the Pakistani context.

Keywords: Artificial Intelligence, Algorithmic Bias, Fairness, Bias Mitigation, Responsible AI, Automation Bias, Cognitive Bias

1 | INTRODUCTION

The link between economic variables and monetary variables is one of the most basic points that need to be discussed when it comes to macroeconomic research and policymaking. Economy is a complex setup where monetary attributes of inflation, interest rates, money supply, and exchange rate fluctuations are closely linked to fiscal processes, trade, investment patterns and agents of the aggregate demand. The economy of any country is a conglomerate. The effects of these interactions not only lead to the short-run stability and path of macroeconomic activity, but they also determine the long-run development patterns and policy structures which will exist.

As a result of institutional constraints, budget weaknesses, external sector distress and also a probability to endure the exogenous shocks, such as it happens with the developing countries like Pakistan, this relationship turns out to be more crucial than it already appears. Quite often, policymakers in Pakistan have been faced with a dual mandate, i.e. it is apparent that there has been an endeavour to foster growth of the economy, and on the other hand, at the same time maintain the rate of stability of prices and have monetary management. In order to be in a position to come up with macroeconomic policies that are not only efficient but also coordinated, there is therefore need to understand well how the basic economic factors will affect the monetary indicators.

The traditional economic macro-microeconomic theory, monetary aggregates are destabilised by the economic fundamentals which affect the aggregates through a multiplicity of means. [Blanchard and Johnson \(2013\)](#) indicate that a growing budget deficit can usher in a scenario where too much money is borrowed by the central bank, a move that is likely to contribute to more money in the reserve systems and an increase in the quantity of money circulating in the system. This expansion of liquidity may be capable of leading to the demand-pull type of inflation, which will then require the central bank to apply the contractionary monetary policies. On the same note, an imbalance in the trade may lead to a fall in the levels of the exchange rate, therefore, increasing the prices of imports, thereby exerting pressure on the consumer price index (CPI), which is a fundamental variable embedded with monetary characteristics ([Iqbal & Nawaz, 2019](#)).

Moreover, the rise of the GDP serves as a sign of the good health of the economy and influences the inflation expectations, as well as the need for credit. [Ahmed \(2021\)](#) points out that, usually, greater growth in the economy contributes to increased frontloading of the credit by the private sector. In its turn, this often encourages central banks to change the policy rates depending on the needs of the current situation to control inflation and heating up issues. Likewise, substantial foreign direct investment (FDI) or remittances may affect the growth of the money supply and leave a mark on the work of the liquidity management activity of the central bank ([Saeed & Hussain, 2015](#)).

Pakistan Monetary Policy Framework has seen transformation over the last 30 years as compared to the 1990s, direct controls were being used to current instruments that are market-based through all the 2000s. The formation of the Monetary Policy Committee (MPC) as well as the implementation of the inflation targeting as a fundamental goal was a step in the same trajectory of enhancing the independence of monetary policy. Nonetheless, structural problems a country faces today like low tax collections, high costs

of paying the debt, shortages of energy, and political instabilities, have often undermined the success of monetary policies.

A few examples of external variables that could greatly affect the economy of Pakistan right now are oil prices, changes in the interest rates of the world, and changes in the rates of currency. Poor management of the domestic budget is another twist in this matter. Monetization of fiscal deficits in the form of central bank borrowing that was especially strong in 2000s and early 2010s has had achieve inflationary effects, and this has dented the credibility of monetary policy ([State Bank of Pakistan, 2023](#)).

Moreover, high expansion of the programs provided by the International Monetary Fund (IMF) has led to the fact that local factors do not always determine the monetary policy, because it is influenced by the conditions associated with external financing. The plans to establish very tight inflation targets, to raise interest rates, and to decrease fiscal deficits are among such measures, and all of them often come with adverse effects on economic growth and the job market ([Khan & Gill, 2016](#)).

[Chaudhry, Qasim, and Farooq \(2012\)](#) and [Hanif and Arby \(2020\)](#) assert that considerable research has been carried out to determine the monetary policy transmission mechanism in Pakistan. In this research, they are particularly concerned with how changes in interest rates or the monetary aggregates affect inflation and production. Conversely, there remains a serious paucity of studies focusing on the reverse causality i.e., the causal effect of the economic factors on the monetary outcomes in Pakistan in a systematic fashion.

In most cases, monetary variables are not looked at as endogenous variables which are affected by the true economic situation. Most studies treat financial units as explanatory or policy-instrument variables. This poses a problem as monetary policy is not formulated under a vacuum but, in reaction to whatever prevailing fiscal balances, trade flows, and performance of the real sector are. Moreover, the existing empirical evidence concerning this topic and applied to Pakistan is a bit out-of-date or methodologically constrained, and it lacks the dynamic modelling techniques (like the ARDL and VECM), which are nowadays recognised actually to be standard with respect to macroeconomic studies.

In researching this causality relationship, one will need to conduct an in-depth empirical study given the focus on not only short term dynamics but also long term structures. To be more precise, a relative minimum of studies has been done to the features of how the linkage between fiscal expansion and an increase in supply of the money, because of which the inflationary cycles occur, and to how the State Bank of Pakistan (SBP) manages with adjusting interest rates under the influence of the exchange rate fluctuations triggered by the trade deficits. What is more, the way the inflow of remittances and foreign direct investment (FDI) may affect liquidity, currency rates, and the credit situation is not explored sufficiently.

The same reason dictates that Pakistan provides a suitable case study in examining the impact of economic variables on money outcomes because it has had a diverse economy, and its policies have been unstable over the last 20 years. The country experienced multiple different periods of time between 2000 and 2024, strong economic growth (2003-2007, 2014-z fiscal crisis (2008, 2018), currency depreciation (2008, 2019, 2022), and inflationary spikes ([2010-2011, 2022-2023](#)). The economic shocks that took place during all these periods elucidate the nature in which economic shocks bring about monetary instability. Fiscal imbalance is characterised by long-lasting budget deficits with an average of above five per cent of GDP, which are densely financed by domestic financing ([SBP, 2023](#)). Volatility in inflation is a case study where

there is inflation and the number is in the double digits, and it relates to the world commodities shocks and monetary growth.

A drop in Pakistani Currency characterized by a reduction in the value of the Pakistani rupee, against the US dollar in the year 2023 (approximately PKR 280 to a US dollar) as against the year 2000 (PKR 60 to a US dollar) had a broad impact on the rate of inflation of imported goods. Variables in Growth: There have been disparities in growth between negative and positive, with the lowest GDP in 2020 (COVID-19) at -0.9 per cent and the highest growth being 5 per cent in 2005- 06 and 2017-18. To counter the inflation pressure, the SBP has always been increasing the policy rates, and this has often alienated the credit growth too.

Such tendencies bring out the need to have an analytical model that can address how economic fundamentals can directly or indirectly affect the big monetary controls, which are inflation reins, the rate of interest, money supply regulation, and the stability of the currency. The intention of this research is to address the gaps that have been identified by conducting a study on the following. This study has been conducted to determine the influence of key economic variables (including GDP growth, fiscal deficit, trade balance, foreign direct investment, and government spending) on monetary variables (including inflation, money supply, interest rate, and exchange rate) in Pakistan, both in the long term and in the short term.

The results of this study are extraordinarily relevant to both policy-makers and economists, as well as researchers. A deeper understanding of the causes of monetary stress in the real sector may enable central banks to maximize their capability of making anticipatory policy decisions. The results can provide information to the fiscal authorities that they can use in a better coordination of the allocation of the budgetary funds and inflation management. In the case of scholars, the work is a contribution to a small literature on endogenizing monetary variables in modeling macroeconomics, especially in the South Asian environment.

2 | LITERATURE REVIEW

2.1 | Theoretical Exposition

Understanding the influence of economic variables on monetary aggregates in Pakistan has been the focus of extensive research. This literature spans classical and modern macroeconomic theories and employs various empirical approaches to assess both short-run fluctuations and long-run relationships. The following review synthesizes past findings, categorizing them into five major themes: fiscal deficit and money supply, exchange rate and inflation dynamics, capital flows and liquidity, GDP growth and monetary policy response, and integrated econometric models.

2.2 | Fiscal Deficit and Money Supply

The reciprocally nervous and often ruinous relationship between fiscal imbalance and monetary instability is presented centrally in a good deal of the material that is created in Pakistan. The consistent budget deficits, over-dependence on borrowing by the central bank, and the poor fiscal consolidation steps, among others, in Pakistan make up the fiscal-monetary nexus in Pakistan. The application of these factors together puts a lot of pressure on the monetary authorities. [Malik and Amjad \(2013\)](#) investigated the relationship between chronic budget deficit and inflation by carrying out an analysis on time series data between 1975 and 2010. They demonstrated that the government borrowing money through the State Bank

of Pakistan (SBP) exposes it to excessive creation of reserve money, and as a result, it leads to the increase of broad money (M2), and as a consequence, the inflation rate is created through pressure on the demand side. Their research brought to light the fact that the aspect of fiscal dominance, which can be referred to as the circumstance where the monetary policy area becomes secondary to the fiscal demands, remains a structural issue in achieving the stability of the macroeconomic supplements in Pakistan.

Using this framework, further [Ahmed and Suleman \(2017\)](#) applied a Vector Autoregression (VAR) model, making use of quarterly data, to conclude that fiscal shocks, especially unexpected budgetary deficit, experienced a longer sustained impact on the development of M2 and Consumer Price Index (CPI), which were found to be statistically significant. It was achieved with the help of quarterly data. Their report lends some credence to the idea that financial performance in Pakistan does not occur without dependency, but is heavily influenced by the fiscal activity. This is more so when there are no effective debt sterilizing techniques in place.

The same argument was given by [Kiani and Ahmed \(2019\)](#), according to which the monetisation of the public debt has become a big challenge to the monetary tools used by the SBP. According to the results of their study, it can be said that most of the increase in the monetary base is attributable to internal borrowing as opposed to generation of credit by the private sector. It causes the displacement of good investment and constraints in the efficacy of policy rates as far as transmission is concerned. The findings of their study, which also considers the fiscal reaction functions, explain that fiscal indiscipline compounds inflation volatility and corrodes monetary anchors.

A variety of additional researches have confirmed these findings. Previously, [Akbari and Rankaduwa \(2006\)](#) expressed that one of the greatest aspects in the cause of inflationary cycles in Pakistan in the 80s and the 90s had been the fiscal expansion of the country especially during the time when it was being supported by the central bank credit. [Hanif and Arby \(2020\)](#) have more recently pointed out that the monetary policy in Pakistan is not always ahead of inflationary tendencies that are caused by the lack of control over fiscal spending, but follows the trend. This is especially so when there are election cycles or when there are large-scale government projects undertaken by the government in terms of the masses infrastructure. As indicated by their empirical model, the political requirements and budgetary needs that exist often inhibit the monetary attitude of the SBP.

Moreover, [Qayyum \(2006\)](#) delved into the use of an error correction model through which they found out that huge budget deficits not only led to a rise in the money supply but also tended to destabilize inflation expectations, and therefore, the central bank found it difficult to achieve its objectives of inflation. His research emphasized the significance of expectations, especially in terms of how the system of chronic fiscal slippages works against the credibility of policy, thereby adding to inflationary expectations before any expansion of money actually occurs.

With a slightly broader look at the issue through the eyewear of institutions, [Haque and Montiel \(1991\)](#) and [Pasha \(2011\)](#) both point out that fiscal irresponsibility in Pakistan is not just a cyclic issue but an institutional one that should be traced to insufficient revenue mobilization and highly expansive subsidies alongside the absence of public sector reform. These two writers stressed the point that fiscal mismanagement in Pakistan is not a cyclical thing. They argue that monetary policy will remain a reactive

tool until such time that fiscal space is created via taxes changes and rationalization of spending. They suggest that the monetary policy will not be able to adequately anchor the inflation or volatility of the exchange rates until such time as fiscal space is created.

[Lastly, Soomro et al. \(2025\)](#) provide more up-to-date information through the implementation of the ARDL bounds testing approach and show the existence of a long-run cointegration between the fiscal deficit, inflation and monetary growth. It is what can be concluded based on their contribution. This is because their study that uses data that is updated starting with the year 2000 till the year 2023 supports the widely held view that fiscal profligacy will always act against the transmission vehicle mechanism of monetary policy in such a way that this results in delayed or face value impacts.

Collectively, these studies provide a good empirical and theoretical basis on what a general impact of the fiscal behaviors means to the monetary environment in Pakistan. An argument which they all seem to want to say is that Pakistan will never be able to achieve financial stability without simultaneously adopting fiscal reforms. Such reforms would involve tight restrictions on the number of funds which the central bank will be allowed to acquire, a refactoring of the debt, and the greater institutional state control over the number of funds which are being spent on the budget. Because of this, the problem is posed in the literature not as a monetary problem, but as a more fundamental one of macroeconomic coordination and institutional architecture.

2.3 | Trade Imbalance, Exchange Rate, and Inflation

Monetary aggregates in Pakistan are also sensitive to external sector developments. [Hanif and Iqbal \(2010\)](#), applying ARDL bounds testing, found that exchange rate depreciation had a statistically significant impact on inflation in the long term. The pass-through effect is especially strong in Pakistan due to its reliance on imported energy and commodities. [Siddiqui \(2018\)](#) found current account deficits and trade imbalances to be major drivers of exchange rate volatility, which in turn triggers inflationary pressure. A recent study by [Jamshaid et al. \(2025\)](#) affirmed these findings by showing that negative trade shocks often lead to delayed monetary tightening highlighting lags and inefficiencies in Pakistan's policy responses. These studies point to the structural vulnerabilities of Pakistan's monetary system to external shocks and the weak insulating role of exchange rate management.

2.4 | Foreign Capital Flows and Monetary Dynamics

Given that Pakistan is structurally reliant upon imported petroleum, intermediate merchandise, and capital apparatus, the monetary aggravates of the country are extremely susceptible to happenings towards the outside division. This is more so due to the level of reliance that Pakistan has on these imports. The reason that these imports affect current account balance and also form a very significant part of inputs in the production chain gives rise to a scenario where the inflation is highly vulnerable to alteration in the exchange rate. With the bounds testing model using ARDL, [Hanif and Iqbal \(2010\)](#) indicated that there was a high instance of pass-through in terms of exchange rate depreciation and domestic inflation in the long run. This turned out to be so. Their research results, which used the data of several different regimes, brought out the reality that the inflationary effect of a declining Pakistani rupee had been far more extreme in the period of the intense dependence on imports and the instability in the worldwide commodity prices.

This connection between the exchange rate and the inflation is epitomised as a feature that was well-reported in open economies that lack good monetary anchoring. The situation in Pakistan is actually characteristic of its pass-through effect since the country has limited local production capacity in the trade of energy and other basic products. When depreciation caused there to be an immediate jump in the prices of imports that would later be transferred to the amount paid by consumers, this also led to what is referred to as imported inflation. This type of vulnerability has been given attention in several of the monetary policy reports of the State Bank of Pakistan ([SBP, 2023](#)), and the exchange rate has been found to be a significant risk to inflation forecasts and can result in price pressures. The SBP has recognised this exposure.

Further empirical evidence is provided by Siddiqui (2018), who also performed the analysis of the factors that define changes in the exchange rates with monthly data collected between the year 2000 and the year 2017. Based on the results of his studies, a combination of chronic imbalances in trade and increasing deficits in the current account of the balance of payment proved to be the most important determinant of exchange rate volatility in Pakistan. Not only is the nation prone to crises engendered by balance of payments issues, but it is highly susceptible to such crises because the country is also ravaged by structural trade deficits and relies on foreign cash [remittance, International Monetary Fund help]. In their turn, they generate the distortions of the equivalences in the exchange rates, which also promote a rise in domestic inflation and destabilization of the monetary aggregates.

A more recent study by [Jamshaid et al. \(2025\)](#) re-examines this issue with the help of structural VAR methods. They discovered that the main cause of monetary disruption is trade shocks, which involve experienced speedy downward debacles in exports or upsurge in import prices. The authors argue that although the SBP is not immune to such shocks, it often takes time and does little in response to help curb the SBP because of poor response and this leads to longer inflationary tension. According to their findings, the system that sends monetary payments postpones significantly. One of the factors that could have contributed to these lags could be institutional inertia, forecasting imprecision and the failure to maintain adequate exchange rates buffers.

[Farooq and Shahbaz \(2016\)](#) also tested the volatility of the currency rate, where the managed float type of regime in Pakistan was considered, and the relationship between the exchange rate volatility and inflation volatility was explored. The evidence they present states that in case of mismanagement of currency rate, especially during the period approaching negotiation with the International Monetary Fund (IMF), the rupee should lose lots of its value, which subsequently causes sharp rises in the general rate of inflation. Through this cyclical relationship, this makes a feedback loop where inflation expectations are de-anchored, thus forcing the State Bank of Pakistan (SBP) to initiate a rapid monetary tightening, which is often at the cost of unemployment and production.

There is the need to carry out currency corrections since the external debt settlement aggravates the issue of putting more pressure on the foreign exchange reserves and hence the necessity to make currency adjustments. According to [Iqbal and Nawaz \(2019\)](#), the external debt obligations of Pakistan are slowly rising, which has led to significant changes in the exchange rate of the country. Such changes have, in many cases, led to the rise in the policy rate of the central bank that is aimed at stabilizing the rupee and containing

inflation. Instead, such backward steps can inadvertently curtail lending to the non-government sector, with even more cyclical decelerations being severely aggravated.

As several researchers, such as [Khan and Gill \(2016\)](#), point out, Pakistan lacks an effective system of its currency rate management, which could serve as a kind of financial protection against the influence of external volatility. Their research has revealed that typically, the activities by the State Bank of Pakistan in the foreign currency market involve short-term uses, and they fail to follow a consistent rule-based policy. This causes further speculation and uncertainty. Expectations tend to be unanchored when such forward guidance lacks clarity, and this worsens the inflationary outcomes that arise.

Finally, the role of the International Monetary Fund (IMF) on the policies of the currency rate in Pakistan has also been the subject of criticism. [Akhtar and Malik \(2014\)](#) observe that sudden currency depreciation that has notable inflationary effects is often the consequence of market-based changes in the currency rates advised by the International Monetary Fund (IMF), even though theoretically they aimed at correcting the external sector. Such outcomes are particularly unfavorable in a low-income country like Pakistan, where inflation has a disproportionate burden on the poorer citizens and doesn't favor the political feasibility of pursuing a restrictive monetary policy.

The overall results of such studies show that the monetary structure in Pakistan is weak in that it is vulnerable to the impact of external world shocks. The economy is so susceptible to the vagaries of the exchange rates because of its weak export base, its dependency on imported goods and its dependency on the worldwide commodities markets. Due to low effectiveness of the Pakistani performance in the management of its exchange rate, and also due to late monetary responses, the ability of Pakistan to achieve and sustain price and monetary stability in cases of external shocks has been devastated. In accordance with the above findings, it is evident that a stronger macroeconomic framework is needed. This structure ought to be a structure of strong fiscal and trade policies coupled with, forward-looking and autonomous, monetary management.

2.4 | GDP Growth and Inflation Linkages

Capital inflows, especially in terms of remittances made by the workers and foreign direct investment (FDI), have constituted part of the external stability in Pakistan over a long enough period. Although the inflows have a positive effect on the balance of payment, they contribute to sustaining foreign exchange reserves and limiting domestic consumption, they also have cost implications that make the management of heightening price stability and exchange rates by the central bank more challenging. Some studies have also been conducted as to how such inflows affect the monetary conditions in the country, such as the money supply, inflation, and the rates that are charged.

[Saeed and Hussain \(2015\)](#) made one of the most promising contributions to this discipline when they indicated that greater remittances boost domestic liquidity by lengthening the money base. This is even more so in economies like Pakistan whereby remittance has been invested heavily in real estates and also consumption. Their study revealed that unless this surplus liquidity is mitigated through a timely process of monetary sterilization i.e. absorption of excess liquidity through other methods like open market operations (OMOs) or raising reserve requirements by the central bank, this surge in liquid can cause further

inflationary pressures. Failure to do this sterilization, could see the demand created by the remittances outpacing the capacity of the productive sector to supply and this will see some parts of the economy overheated.

Through the ARDL and VECM framework, [Ullah et al. \(2025\)](#) presented a more up to date and stronger empirical evidence that has proven these concerns to be true for the first time. They found that when there are high levels of remittance flows especially those of the Gulf countries, this gives a notable increase in the money supply, and this is followed by a decline in the short-term interest rates. This has been the case. To reduce the liquidity crunch, the State Bank of Pakistan (SBP) has the regular practice of intervening with the issuance of the Market Treasury bills (MTBs) and Open market operations (OMOs). However, as the research indicated, there exists a lag between the inflows and the policy response which is a lag in time during which there is a tendency of inflationary expectations to rise at least in urban housing and non-tradable sectors.

[Iqbal and Sattar \(2005\)](#) presented another piece of evidence that supported the use of inflationary channel. They proved the marginal propensity to spend out of remittances in Pakistan is very high as compared to other forms of income. As a result of this higher consumption, aggregate demand is pushed to beyond the limits of supply hence this forms part of increase inflationary rise in urban consumer markets. Their econometric analysis has indicated the fact that, remittances although, they contribute to the stability of the current account, they also lead to the monetary base growth and influence the inflationary volatility.

Also, the volatility of the currency rates that is associated with capital inflows has formed the subject of study within academia. They established that there is correspondence of good remittances with the periods of nominal depreciation of the Pakistani rupee which is potentially bad in export competitiveness. This was observed by [Ahmed and Zaman \(2013\)](#). To avoid this appreciation and its detrimental effects on the yield of the country on the trade balance, the SBP very often purchases foreign reserves to buy foreign currency. This is an unintended growth of the monetary base unless the sterilizing efforts are implemented to counter the effect of an appreciation of this magnitude.

In regards to foreign direct investment (FDI), [Chaudhry and Afridi \(2014\)](#) unveiled that the amount of foreign investment inflow might be low, compared to that of remittances; however, it significantly influences the situation at the money market. This is given the fact that they increase the demand of the currency used in the country and exert a pressure on interest rates to go down. As per the results of the VAR-based analysis, sectors which tap on substantial foreign direct investments (FDI) including energy industry and the telecommunication industry, as the case is, experience patches of localized inflation due to spikes in liquidity caused by inflows of capital. However, foreign direct investment (FDI) often comes with transferring technology and augmenting the capacity of production that can eventually offset the effects of inflation in the long-term perspective.

This has been approached more sensitively by [Malik and Sabiha \(2020\)](#) who distinguish themselves between short-term portfolio inflows and long-term foreign direct investment (FDI). They arrived at the decision that short-term inflows are highly pro-cyclical and become vulnerable to political and economic volatility. They are often negative during the time of crisis, thus leading to instability in the money market. There is however a repatriation constraint on the foreign exchange reserves that are by foreign direct

investment (FDI) and which, in turn, also affects the policy stance of the state bank of Pakistan (SBP) indirectly.

The asymmetric impact of capital inflows on inflation was studied by [Riaz and Mehmood \(2018\)](#) on the other hand. This was another aspect that they explored. Although remittances have greater effects on the core inflation, they demonstrated that the foreign direct investment would have greater probability of affecting the headline inflation, by increasing sector specific prices. The findings of their research provide insight into the complex interconnection that prevails between the composition of inflows, departmental inflation compositions and responses in monetary terms.

Moreover, [Amjad and Arif \(2015\)](#) also focused on the institutional factor and state that Pakistan lacks a full set of policies on how to direct the remittance inflows towards formal investment instruments and emphasized the significance of this element. The high amount of liquidity, instead, is deposited in speculative sectors such as in gold and real estate which undermines the strength of the monetary system and contributes to raising asset values. The inflationary impacts of such inflows are compounded in the lack of organized systems of financial intermediations.

Overall, capitals inflows even though they act as a vital tool against external financing constraints contribute to the trilemma of monetary policy which is the inability of countries to simultaneously pursue all of the following: stable exchange rates, free capital thus the movement of capital, and an independent monetary policy. Pakistan has tried to overcome this trilemma, and many other emerging economies have similarly tried to do this, through the use of managed float regimes and selective capital controls; however, such measures too often prove ineffective in the face of too much volatility.

In order to have a short summary, it can be seen through the research literature that foreign direct investment (FDI) and remittance have significant influence on monetary aggregates in Pakistan. They have impacts on inflationary tendencies and they do also contribute to control on money supply and produce sterilizing reactions. Concurrently as to the fact that these inflows are economically beneficial in the sense of accretion of foreign money and concern, they lend to the balance of payments, there are issues facing the monetary policy whenever they are not notched down or when they are integrated into the formal banking system in the wrong way. It is against this reason that the future policy needs to focus on deepening the financial system to expose different sources of investment to the recipients of the remittances and to enhance the timeliness and transparent nature of the intercessions by the central bank so as to minimize the effects of these troubles.

2.5 | Composite Models and Econometric Integrations

A soaring literature on the macroeconomic situation in Pakistan has embraced the concept of a composite econometric structure as well. Such models are the Autoregressive Distributed Lag (ARDL) model, Vector Autoregressive (VAR) methods and Vector Error Correction Models (VECM). These frameworks aim to represent the dynamic and interdependent nature that exists between the economic and monetary variables. These models enable the researchers to distinguish between long-run and short-run uncertainties relations. This leads them to being able to present to their researchers a deeper insight into the temporal causation and feedback impact that prevails between fiscal operations, external sector dynamics, and monetary measures.

To give an example, in an attempt to examine the relationships that exist between fiscal imbalance, inflation, and exchange rate dynamics in Pakistan, [Soomro et al. \(2025\)](#) adopted the test methodology of the ARDL limits, using quarterly data, covering the period between the year 2000 and the year 2023. The results of their research long-run co-integration of budget deficits and inflation and exchange rate volatility are statistically significant and that budget deficits have a lasting effect on inflation and aggravate the instability of the exchange rates. The short run adjustment processes have also been highlighted in their study with analysis being done that the rate at which convergence to the long run equilibrium is often slow, especially during periods of political or external shock. This is one of the issues that they addressed.

Similarly, [Gondal et al. \(2025\)](#) employed a VECM methodology so as to examine how institutional quality affects transmission of monetary policy. By including the political stability indexes in their setup, they arrived at the conclusion that political uncertainty will decrease significantly the effectiveness of monetary instruments. They argued that with institutional fragility, the credibility of the central bank suffers and it becomes harder to anchor the expectations of inflation targeting or the interest rate policy. In scenarios where monetary tools are tuned properly, institutional lapses, unreliable fiscal behaviour and absence in policy take an end-all to possible profits. These findings are consistent with the ones that had been conducted by [Ahmed and Malik \(2014\)](#). They found that, weak institutional structures in Pakistan present noise to the monetary transmission mechanism sought after causing pollution to the direction and extent of policy effects in a typical manner.

More abstractly, other recent studies have supported the view that there should be a more integrative and systemic pattern of macroeconomic management. To show an example, [Hanif and Arby \(2020\)](#) proposed an integration of fiscal and monetary policies with feedback loops and consideration of the heterogeneity of various sectors to be embraced. Their research that was conducted with the help of a structural macroeconometric model that was adjusted to fit Pakistan demonstrated that the monetary tightening process leads to suboptimal results, such as the cases of stagflation, during the instances of fiscal growth. This fact reinforces the premise that macroeconomic instability can be worsened by policy misalignment. It is specifically so during the times of asymmetric shocks, including COVID-19 and global oil price shocks.

Similarly, [Siddique and Qasim \(2023\)](#) applied a Bayesian VAR model in an attempt to examine the effect of fiscal shocks on other reactions, such as a response to inflation and response to interest rates. Their findings were that when the country is faced with conditions of external stress e.g. there is a crisis in the current account or there is a huge reduction in the currency rate then monetary policy is tied hand and foot by the demands of obtaining external financing and the demands of the debt servicing situation. This state often puts the central bank in a reactive stance where it is mandated to respond to economic phenomena that have already past contrary to shaping the results of future happenings.

Despite these improvements in methodology, the current body of research has numerous shortcomings. First, the number of studies is not high enough, considering the changes that have happened in the Pakistani economic structure post-COVID epidemic. Such developments are the elevated level of the debt service cost, remittance shocks, and pandemic driven fiscal expansions. Insufficient research has been done on these evolutions even though it has been observed that it has had great impacts on the monetary aggregates, volatility of inflation and even the credibility of the central banks.

Second, most of the empirical studies continue to rely on unidirectional causation assumptions, which cannot capture appropriately the two-way and dynamic feedback processes existing between the real and monetary sectors. As an example, fiscal deficits are well known to be the main drivers behind inflation and enlargement of the money supply yet inflation can in turn affect the fiscal processes by causing a rise in interest payments on the home debt and therefore creating a feedback system. The intention of the authorities to implement monetary policy measures is to control inflation, but since it causes growth to be stifled, it also causes the funds collected in taxation to decline, as well as increases the negativity of the fiscal situation. Through a Granger causality model, [Rizwan and Waheed \(2017\)](#) underlined the significance of such a circular causation. They found out that changes in inflation and currency rates had reverse impacts statistically significant in having an effect to the fiscal parameters.

Third, quantitative models almost never include institutional factors, which encompass such things as the independence of the central bank, the usage of fiscal rules and the quality of regulatory oversight, despite there being substantial evidence to indicate that they matter. [Khan and Gill \(2016\)](#) set the direction to introduce the governance variables to their model of monetary efficacy early. They found out that the quality of institutions not only influences the effectiveness of inflation targeting but also influences the stability of exchange rate regimes. This was a great finding.

On the last consideration, though a vast number of studies have been effective on finding out co-integrated connections, and large short-run interactions the studies do not have the rigorous predictions to be able to provide pertinent policy simulations. Not many incorporate counterfactual scenarios that are critical to policy planners who conduct their work in an uncertain environment. Consider, for illustration, what would happen were there a twenty percent fall in remittances or a three percent higher government borrowing as a percentage of GDP?

The empirical studies have revealed a mixed situation in this regard whereby the hypothesis central to this study that macroeconomic variables, which include fiscal deficit, trade imbalances, GDP growth and capital inflows, have substantial effects on the significant monetary measures, including inflation, interest rates, exchange rate, and broad money growth, is found to hold true in most cases in the Pakistani case as well. Finally, the hunch has been proved with the help of empirical literature. However, the discipline is still in its early stages, and there are several gaps that are yet to be plugged. Findings available up to date lack the ability to be generalized and lasting because of the lack of post-pandemic data presented in large fragments, the reduction of variables connected to the institutions, and the dominance of linear methods of modeling.

3 | METHODOLOGY & DESIGN

The Study utilized the data set from 1991 to 2024. The data set is time series data.

Variables:

Variable Names	Abbreviations
FDI Inflow	FDIIn
GDP	GDP
Gross Saving	GS
Government Expenditure	GE

Current Account Balance	CAB
FDI outflow	FDIO
Exchange Rate	ER
Inflation	INF
Broad Money	BM
Foreign Assets	FA
Government Reserves	Re
Interest Rate	Int
industrial production	IP
fiscal deficit	FD
tax revenue	TR
central government debt	GD

Descriptive Statistics:

Table 1:

Descriptive Statistics Results

Variable	Obs	Mean	Std. dev.	Min	Max
FDIIn	34	0.9299618	0.656901	0.309595	3.035719
GDP	34	128656.3	22641.15	98940.27	168259.3
GS	34	15.32936	2.640865	10.4329	21.46648
GE	19	104.8602	10.12811	88.623	122.6833
CAB	34	-4.22E+09	5.42E+09	-1.89E+10	3.85E+09
FDIO	34	7.55E+07	2.01E+08	-8.50E+07	1.16E+09
ER	34	90.46929	64.55541	23.80077	280.3561
INF	34	9.580957	5.735554	2.529328	30.76813
BM	34	44.37595	6.236559	28.6895	54.52639
FA	34	1.62E+11	8.65E+11	-2.48E+12	1.36E+12
Re	34	8.64E+09	5.94E+09	5.27E+08	1.97E+10
Int	34	11.30882	3.397336	6	22
IP	34	96.94118	33.20363	45	150
FD	34	-6.270588	1.306981	-8.5	-3.8
TR	34	10.46471	0.749093	9	11.7
GD	34	67.08824	5.554783	58.5	78

The descriptive statistics present the basic idea of the macroeconomic adjustment in the macroeconomic environment of Pakistan during the period between [1990 and 2024](#). The inflow of the average foreign direct investment (FDI) is zero point ninety three (0.93) per cent of GDP, and with a standard deviation of 0.66, suggesting that the foreign investment experienced is low but has moderate stability in the flow of investment over time. This suggests that Pakistan periodically attracts foreign investors, but on a short-term basis, which is usually for a reform or geopolitical reasons. Conversely, the GDP of the country has performed well, exhibiting positive and consistent growth that averagely at PKR 128,656 billion and ranged that stood between PKR 98,940 billion and PKR 168,259 billion, showing a structural growth of the country of the economy in the long run.

The government expenditure (GE) averaged about 15.33 per cent of GDP, and this variation was probably caused by the fiscal consolidation activities or due to an increase in the demands of defence and development. Nonetheless, government expenditure data (GE) had only 19 observations, implying that the

data reporting was incomplete or irregular classification. The current account balance (CAB) indicated a mean of -4.22 billion USD, which indicates the chronic imbalances in the external sector of Pakistan. The large disparity (-18.9B to +3.85B) indicates being subjected to trade shock and oil prices, plus reversal of capital flows.

Interestingly, the FDI outflows have averaged at approximately 75.5 USA dollars, which was much lower than inflows, and in some years, there were net disinvestments. This poor outward investment spells low internationalization of the domestic companies. The exchange rate (ER) averaged at 90.47pkr to a USD, although its capture of dramatic depreciation between 23.80 to 280.36 PKR/ USD within the sample period indicates that the Pakistani economy was under prolonged pressure of currencies associated with inflation differences, political risks, and current account imbalances.

Average inflation rate (INF) was 9.58% and hit a high of 30.76%, confirming the fact that historically, Pakistan has experienced difficulties in terms of price stability. Extreme volatility is probably due to the impact of energy prices, weakening currency and food shortages. Likewise, per cent of GDP of broad money (BM) was an average of 44.38 per cent and implying moderate financial deepening, with a range and deviation indicating episodes of prolific monetary growth that could be associated with fiscal monetisation.

As far as foreign assets are concerned, the data exhibited very high dispersion, most probably caused by valuation effects, one-off inflows or massive external borrowings. The foreign exchange reserves were merely 8.64 billion USD (on average), and in some years there was even less than 1 billion USD. These kinds of reserves do not normally give proper coverage of imports or defence of the currency, making exchange pressure even worse.

The interest rate at the average of 11.3 per cent indicates a monetary policy framework that is usually aimed at controlling the inflationary pressure and protecting the exchange rate, particularly in IMF-supported programs. The standard deviation refers to the sensitivity of policies to macro shocks. At the same time, industrial production was very variable, with an average index of 96.94 and ranging between 45-150, indicating cyclical performances due to energy supply, prices and security provisions internationally.

The average fiscal balance was (6.27) percentage of GDP, highlighting this constant overspending in comparison with revenues. This is an issue because it may require borrowing or money-making. The average tax revenue as a percentage of the GDP was 10.46 per cent, which shows a low and stagnant tax base that limits the fiscal flexibility. Lastly, the level of government debt was high on average (67.09 per cent of GDP), and much of the increasing level of debt may have been a result of repeated deficits as well as low domestic revenue mobilization.

Summarily, the descriptive macroeconomic variables profile of Pakistan presents a picture of a structurally weak economy fraught with long-running fiscal and external imbalances, low investor sentiment, and a limited revenue base. These basic tenets underline some of the frequent problems of the country to get inflation balanced, interest rates in line, as well as control money supply in a logical macroeconomic plan.

Stationarity Test:

To determine the appropriate econometric technique, we first conducted unit root testing using the Augmented Dickey-Fuller (ADF) test. The test identifies whether a time series is stationary at the level. The results are summarized in the table 2.

Table 2:*ADF test results*

Variable	ADF Statistic	p-value	5% Critical	Stationary (5%)
INF	-2.8437	0.0523	-2.954126991123355	No
BM	-2.2814	0.178	-2.9572185644531253	No
Int	-2.4156	0.1374	-2.9572185644531253	No
FDIIn	-3.0264	0.0325	-2.9572185644531253	Yes
GDP	0.6034	0.9877	-2.954126991123355	No
FD	-1.7322	0.4146	-2.9572185644531253	No
TR	-2.5113	0.1127	-2.9572185644531253	No
GD	-1.9737	0.2982	-2.9572185644531253	No
ER	2.8424	1.0	-2.954126991123355	No
IP	-1.4081	0.5784	-2.9572185644531253	No
CAB	-3.3321	0.0135	-2.9572185644531253	Yes
FA	-2.1557	0.2227	-2.9572185644531253	No

ARDL Model:

The results of the ADF test reveal that the dataset contains variables integrated at different orders some $I(0)$ (stationary at level) and others $I(1)$ (stationary after first differencing). Due to this mixed stationarity, the ARDL (Autoregressive Distributed Lag) framework is particularly well suited. Unlike traditional cointegration methods that require all variables to be integrated of the same order, ARDL can handle a mix of $I(0)$ and $I(1)$ variables.

Moreover, the ARDL model is preferred for small samples, as it provides more reliable estimates in short time series. Pakistan's macroeconomic data from 1990 to 2024 consists of just 34 observations, making ARDL ideal. The framework also enables simultaneous estimation of short-run and long-run dynamics. Once a long-run relationship is established, the Error Correction Model (ECM) is derived to assess how quickly the dependent variable adjusts to equilibrium after a shock. A significantly negative coefficient on the lagged error correction term confirms the presence of a stable long-run relationship.

This framework allows us to evaluate both short-run and long-run relationships among macroeconomic indicators, as outlined by studies such as [Malik and Amjad \(2013\)](#), [Ahmed and Suleman \(2017\)](#), and [Kiani and Ahmed \(2019\)](#).

Table 3:

ARDL Test Results for Inflation

Variable	Coefficient	Significance
GD (L0)	-0.903	$p < 0.01$
ER (L0)	+0.257	$p < 0.01$
ER (L1)	-0.214	$p < 0.01$
FD (L1)	-2.115	$p = 0.011$

The ARDL model estimation for inflation in Pakistan reveals strong short-run dynamics shaped by fiscal and external sector variables. Exchange rate movements have an immediate and statistically significant impact on inflation, where depreciation increases price levels, validating the exchange rate pass-through hypothesis in a highly import-dependent economy. Interestingly, the lagged effect of exchange rate is negative, suggesting a partial correction or reversal, perhaps due to policy responses or market stabilization. The role of fiscal deficit emerges with a negative lagged coefficient, indicating that fiscal expansions may take time to exert their inflationary impact or may even reduce inflation in the short term if financed non-monetarily. Most notably, central government debt has a significant and negative contemporaneous effect on inflation. This could reflect market expectations that rising debt levels prompt future fiscal austerity or tighter monetary conditions, aligning with recent findings by [Kiani and Ahmed \(2019\)](#). The overall model supports the notion that Pakistan's inflation is tightly coupled with macro-fiscal behavior and currency valuation, reinforcing the need for integrated policy coordination.

Long-Run Multipliers

The long-run coefficients were computed from the ARDL model using the standard formula: $\beta_{\text{long}} = (\text{sum of lag coefficients}) / (1 - \phi)$, where ϕ is the coefficient on lagged inflation.

The following table summarizes long-run effects:

Table 4:

Long Run multipliers test results for Inflation

Variable	Long-Run Coefficient
FD	-1.8590
GD	-0.9029
ER	0.0430
FDIIn	0.0000
TR	0.0000

Error Correction Model (ECM)

To examine short-run dynamics and speed of adjustment to long-run equilibrium, a manual ECM was estimated. The coefficient on the error correction term was -0.98 ($p < 0.01$), indicating that 98% of disequilibrium is corrected each year. Short-run exchange rate effects remain significant and positive, while debt exerts deflationary pressure in the short term as well.

Table 5:

ECM test results for Inflation

Variable	ECM Coefficient	Std. Error	p-value
const	52.0218	5.1870	0.0000*
dFD	0.2676	0.6686	0.6920
dGD	-0.8653	0.2181	0.0005*
dER	0.2554	0.0244	0.0000*
EC_lagged	-0.9802	0.0955	0.0000*

ARDL and ECM Model: Broad Money

The ARDL model for Broad Money includes FDI inflows, fiscal deficit, tax revenue, central government debt, and exchange rate as explanatory variables. As the dependent variable includes its lag, the model is suitable for deriving both long-run relationships and an error correction mechanism. The selected model suggests that Broad Money dynamics in Pakistan respond notably to changes in FDI inflows and tax revenue.

Long-Run Multipliers: Broad Money**Table 6:***Long-run Multipliers test results for Broad Money*

Variable	Long-Run Coefficient
FDIIn	4.4179
FD	0.0000
TR	-2.8033
GD	0.4440
ER	0.0000

In the long run, FDI inflows significantly increase Broad Money, indicating that foreign capital contributes to domestic liquidity expansion. Tax revenue, however, has a deflationary impact, potentially reflecting sterilization or fiscal consolidation. Central government debt slightly expands Broad Money, consistent with monetization effects. Fiscal deficit and exchange rate coefficients were effectively zero, implying no direct long-run association in this specification.

Error Correction Model: Broad Money**Table 7:***ECM test results for Broad Money*

Variable	ECM Coefficient	Std. Error	p-value
const	10.5299	5.8609	0.0840*
dFDI	4.3523	1.5320	0.0086*
dFD	-0.2000	1.3064	0.8795
dTR	-3.9116	2.6419	0.1507

dGD	0.4537	0.4068	0.2749
dEXR	-0.0109	0.0468	0.8169
EC_lagged	-0.2598	0.1501	0.0953*

The ECM coefficient (EC_lagged) is negative and marginally significant at the 10% level ($p = 0.095$), suggesting a modest adjustment toward long-run equilibrium. Notably, FDI inflows significantly affect Broad Money in the short run, affirming the liquidity effect of capital inflows. Other short-run variables do not significantly influence Broad Money, highlighting structural inertia and lagged responses in monetary expansion processes. The overall R-squared of 0.378 indicates moderate explanatory power.

ARDL and ECM Model: Interest Rate

The ARDL model for Interest Rate uses the same set of macroeconomic explanatory variables to evaluate their long-run and short-run influence. These include FDI inflows, fiscal deficit, tax revenue, central government debt, and exchange rate.

Long-Run Multipliers: Interest Rate

Table 8:

Long-Run Multipliers test results for Interest rate

Variable	Long-Run Coefficient
FDIIn	0.0000
FD	-0.4520
TR	0.0000
GD	-0.3241
ER	0.0315

In the long run, the interest rate is positively influenced by exchange rate movements, indicating external price pressures may influence monetary tightening. Fiscal deficit and government debt appear to reduce interest rates, possibly due to counter-cyclical monetary responses. FDI and tax revenue show zero long-run influence in this model.

Error Correction Model: Interest Rate

Table 9:

ECM test results for Interest rate

Variable	ECM Coefficient	Std. Error	p-value
Const	9.1725	4.8746	0.0711*
dFDI	-0.4964	0.9573	0.6085
dFD	1.8140	0.8908	0.0520*
dTR	-2.3977	1.5845	0.1423
dGD	0.3108	0.2300	0.1883
dEXR	0.0727	0.0308	0.0259*

EC_lagged	-0.3400	0.1743	0.0620*
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The ECM coefficient (-0.34) is negative and marginally significant at the 10% level, suggesting that 34% of disequilibrium in interest rates is corrected each year. In the short run, exchange rate changes significantly raise the interest rate, while fiscal deficit exerts upward pressure as well. The R-squared of 0.495 indicates a moderate degree of explanatory power.

Diagnostic Tests

To ensure the robustness of the ARDL and ECM models, we conduct a series of post-estimation diagnostic tests. These include tests for serial correlation, heteroskedasticity, and stability of the model. For serial correlation, we employ the Breusch-Godfrey LM test, while heteroskedasticity is tested using the Breusch-Pagan test. Model stability is evaluated through CUSUM and CUSUMSQ charts. These tests confirm that the residuals from the models are white noise, homoskedastic, and that the models are structurally stable over the sample period. This validates the reliability of our statistical inferences and confirms that the ARDL and ECM frameworks used in this study are well-specified.

Table 10:

Diagnostic Test results

Monetary Variable	Serial Correlation (p-value)	Heteroskedasticity (p-value)
Inf	0.253	0.448
BM	0.098	0.607
IR	0.304	0.932

Serial Correlation (Breusch–Godfrey Test):

All p-values are above 0.05, indicating no evidence of autocorrelation in the residuals for any of the models. This suggests that the models are dynamically well-specified and not missing lagged effects.

Heteroscedasticity (Breusch–Pagan Test):

Again, all p-values are significantly above 0.05, suggesting homoskedastic residuals i.e., the variance of the error terms is stable across observations. This supports the use of standard errors and statistical significance.

6 | CONCLUSION

This paper has examined the relationship among the main economic indicators of Pakistan: fiscal deficit, foreign direct investment (FDI), tax revenue, public debt and the exchange rate and monetary performance: inflation, broad money, and interest rate in 1990-2024 of Pakistan using ARDL and ECM estimation techniques. Its results verify the short run dynamics and long run equilibrium relationships, which provide firm empirical insights to the prevailing macroeconomic discussion.

The findings validate those conclusions of earlier literature that support the fact that exchange rate volatility dominates on the process of causing inflation. Weaker exchange rate pass-through is reflected in studies like [Hanif and Iqbal \(2010\)](#) and [Jamshaid et al. \(2025\)](#) that indicated a high level of the exchange rate pass-through to inflation, especially energy and import-comprehensive economies like Pakistan.

These results support those that have been captured in this literature, particularly when compared to empirical studies that have attained substantial short-run and long-run coefficients of the exchange rate on inflation and interest rate. Also, findings [confirm Ullah et al. \(2025\)](#) and [Saeed and Hussain \(2015\)](#) in establishing the fact that remittance and FDI inflows also increase the liquidity level as our findings also support that the effect of the FDI impacts in a significant way the broad money.

In the same vein, the study supports [Ahmed and Suleman \(2017\)](#) and [Kiani and Ahmed \(2019\)](#) who contend that Fiscal imbalances undermine the monetary policy stance. In this model the two fiscal variables of fiscal deficit and public debt show considerable effect on inflation and interest rate, which underlines the argument that monetary policy in Pakistan is more of a reactive force to fiscal conditions instead of being independent.

Nonetheless, there are also a number of deviations to the previous findings. To illustrate, although Malik and [Amjad \(2013\)](#) came up with consistent positive correlation between fiscal deficit and inflation, there is an negative long-run correlation in our study. Such an aberration can be attributed to possible over time shifts in the fiscal financing devices, specifically, the loss of central bank borrowing after 2008. In addition, inflationary pressures during the past decades were probably suppressed by external funding of fiscal deficits and attachment of international donors.

Moreover, [unlike Gondal et al. \(2025\)](#), who discovered political instability to be such an important moderator of the effectiveness of the monetary policy in their investigation through VECM model, we do not explicitly consider institutional or political aspects in our model. The lack of the governance indicators might be the reason which may result in the difference between our finding and theirs. This points out at a possible restriction and further research on partially combining institutional variables to further model institutionally.

Moreover, even some classical literature sources such as [Siddiqui \(2018\)](#) stressed out the presence of current account deficit and trade imbalances as the leading causes of inflation. Although our outcomes indicate exchange rate effects also, we did not interpret the magnitude of trade balance directly because of the unavailability of data, which may leave room for divergence of short-run inflation responsiveness.

In spite of such differences, there are unwary consistency of the theoretical framework: the monetary performance of Pakistan is greatly interconnected to the internal fiscal activity as well as the external sector volatility. The outcome obtained by the ECM confirms the existence of long-run cointegration, and further indicates that the adjustment of inflation is swift, on interest rate and broad money more slowly.

Despite providing meaningful empirical evidence on the interaction between fiscal and monetary indicators in Pakistan, this study has certain limitations. The use of annual data from 1990–2024 may conceal short-term dynamics and policy transmission lags that higher-frequency data could capture more effectively. Moreover, the ARDL–ECM framework assumes linear relationships and therefore does not account for potential nonlinearities or asymmetric effects, particularly in exchange rate pass-through to inflation.

The model also excludes institutional and political variables, such as governance quality and policy credibility, which may influence monetary effectiveness and partly explain deviations from earlier studies. Additionally, due to data constraints, external sector indicators like the current account and trade balance are not explicitly incorporated, potentially limiting the assessment of trade-driven inflationary pressures.

The findings suggest that macroeconomic stability in Pakistan requires stronger coordination between fiscal and monetary policies. The pronounced impact of exchange rate volatility on inflation highlights the need for policies aimed at exchange rate stabilization through export diversification, reserve accumulation, and reduced dependence on short-term external borrowing. The significant influence of fiscal deficit and public debt on inflation and interest rates underscores the urgency of fiscal consolidation, tax base expansion, and improved public debt management to enhance monetary policy independence.

Furthermore, while FDI inflows contribute to liquidity expansion, effective sterilization and channeling of investment into productive sectors are necessary to prevent inflationary pressures. Overall, a coherent policy framework that aligns fiscal discipline with monetary objectives is essential for sustainable price stability and long-term economic growth in Pakistan.

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