



Available Online

## Journal of Economic Impact

ISSN: 2664-9764 (Online), 2664-9756 (Print)

<https://www.scienceimpactpub.com/jei>

### FISCAL AND MONETARY POLICY DILEMMA IN PAKISTAN TO SUPPORT ECONOMIC GROWTH

 Mariam Abbas Soharwardi <sup>a,\*</sup>, Javeria Sarwar <sup>b</sup>, Muhammad Imran Khan <sup>c</sup>, Mariam Miraj <sup>a</sup>
<sup>a</sup> Department of Economics, The Islamia University of Bahawalpur, Pakistan

<sup>b</sup> Department of Economics, Lahore College for Women University, Pakistan

<sup>c</sup> Department of Mathematics and Statistics, University of Agriculture Faisalabad, Pakistan

#### ARTICLE INFO

##### Article history

Received: September 10, 2022

Revised: December 09, 2022

Accepted: December 16, 2022

##### Keywords

Monetary policy

Fiscal policy

Economic growth

#### ABSTRACT

Monetary and fiscal policy are both macroeconomic instruments used to govern and have a large impact on a country's economy, businesses, production and consumption. The objective of the study is to evaluate the comparative analysis of fiscal and monetary policy in Pakistan. For this purpose, an autoregressive distributed lag (ARDL) model was used, which showed the significant impact of monetary and fiscal policy on enhancing economic growth. Data was obtained from World Development Indicator (WDI) from 1990 to 2020. In this study, two models have been estimated using the Gross Domestic Product (GDP) as a dependent variable and Development Expenditures, Gross Fixed Capital Formation, Labor Force Participation, Corruption, Total Tax, Trade openness, Broad Money (M2), Governmental Consumption Expenditure as independent variables. The results showed that Monetary policy positively impacts Pakistan's economy. Also, the study found that fiscal policy affects Pakistan's economy positively. But the study reveals that monetary policy is more powerful in promoting economic growth in Pakistan. So, we will suggest that promoting the monetary policy in the banking sector would provide a suitable investment atmosphere through the maintenance of inflationary rates, interest rates, and lending rates to endorse and confirm economic growth, sustainability, solidity, and progress in Pakistan.

 Email: [mariam.abbas@iub.edu.pk](mailto:mariam.abbas@iub.edu.pk)
<https://doi.org/10.52223/jei4032210>

© The Author(s) 2022.

 This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

#### INTRODUCTION

Public revenue and spending are divided into two categories in Pakistan's federal government budget. Enhancing and maintaining economic growth and, as a result, lowering unemployment and poverty are the primary goals of fiscal policy. The government raised money from the populace by imposing the tax (Tan et al., 2020). The government spends money on things like salaries for public servants, developing projects, social security perks, health care, defense, and education. Pakistan fiscal structure briefly, Pakistan's fiscal structure is characterized by a fragile tax base and an unfair incidence of taxation, mutual with structural rigidities on the payments side (Rickman and Wang, 2020). The reflection of state finances in Pakistan. With one of the least tax GDP ratios in this area, Pakistan's tax effort is still subpar. Since 2003, the economy has grown significantly, yet the tax-to-GDP ratio has decreased to less than 9.5%. First fiscal dominance generally takes the shape of the yearly credit plan, in which the needs of the government budget take preference over those of the remaining of the economy (Yusuf and Mohd, 2021).

Considering that SBP implements monetary policy by focusing on the broader economy as a whole. When accommodating the government's need for credit for a given level of net foreign reserves, reserve money is used as the equipped aim, broad

money is used for a given level of net foreign assets, reserve money is employed as the operational object, and the in-between target to accommodate the government's requirement for credit while limiting the private sector (Batten, et al., 2020). It was simpler to restrict access to the nongovernmental sector under a system of direct monetary control, in which the SBP openly controls the money supply or credit in the economy through a variety of means, including changes to the cash-reserve ratio, SLRs, credit ceilings, and the credit deposited ratio. To state banks' credit, the private sector does not, at least from the middle of the 1990s onward, appear to have been considerably squeezed as a result of the government's accommodation of considerable departures from the initial credit plans' targets for budgetary borrowing. Nevertheless, since the late 1980s, the overall M2 growth targets outlined in the credit plan have constantly been exceeded, severely slowing the central bank's fight against inflation (Tien, 2021).

Fiscal hegemony or monetary policy served as the foundation for development policy in advanced economics for a long time. The use of such scientific notions in the close interplay of monetary and fiscal policy, particularly during a recession, was confirmed by experience. The incoherence of those

policies has gravely negative economic repercussions. Public financial policies are effectively degenerated by well-managed fiscal and monetary control instruments coupled with subpar institutions. Applying them in harmony and complexity while looking at the pertinent tangential linkages is crucial. Fiscal and monetary entities have distinctly different objectives when using their respective functional powers (Wang et al., 2020). Despite this, all parts of public policy are aware of the basic economic policy, which tries to promote public welfare. Financial policy based on various economic theories can be used to measure preparation's effect on validity. Redistributive powers among the authorities allow for the representation of notably various approaches of institutes to the effects of financial mechanisms and twists on the economy, as well as the identification of the main dangers and threats to macroeconomic stability. The monetary policy has a considerable impact on inflation. Other macroeconomic factors include the money supply, employment, gross capital creation, direct investment, and saving. They state that the central bank should have total freedom over creating and implementing monetary policy, but they also have some limitations (Aslam et al., 2018). Additional macroeconomic drivers include the money supply, employment, gross capital formation, direct investment, and saving. They mention that the central bank should have complete discretion over how to formulate and carry out monetary policy but that they still have a responsibility to organize around the fiscal policy. Economic rulers can accomplish the economy effectively in this way (Aslam et al., 2018). To establish a point where future government spending is balanced, strive to lower the inflation and exchange rates (Khosravi and Karimi, 2010). They suggest that by suitably stabilizing interest rates, loan rates, inflation rates, and interest rates in general, the Bank of Ghana's monetary policies should encourage a favorable investment climate (Havi and Enu, 2014). According to Jawaid et al. (2010), the role of monetary and fiscal policy in enhancing economic growth is very supportive. It identifies regions that could benefit from an improvement in the fiscal and monetary framework, increasing employment opportunities and budget revenue in Pakistan. Identifying the long-term connections between fiscal and monetary policy and economic expansion is possible. And demonstrate that Pakistan's monetary and fiscal policies have significantly influenced the pace of economic expansion in that nation.

Despite the common belief that there is a negative correlation between GDP and government spending, government development spending positively impacts Pakistan's GDP (Arby and Hanif, 2010).

Monetary policy is used to raise the general level of well-being. It helps to stabilize prices, promote economic expansion, control the budget deficit, and reduce unemployment. Monetary policy attracts increasing attention from policymakers since it combines political realities (Gul et al., 2012). While limiting the amount of public spending and determining tax rates, officials in developing countries often make an effort to disclose socioeconomic difficulties like poverty, unemployment, hunger, disastrous investments, and illiteracy. In four countries in South Asia, the effect of fiscal policy on economic growth examined Bangladesh, India, Pakistan, and Sri Lanka were covered from 1980 to 2016. This evidence suggests that neither government spending nor tax revenue significantly affects real GDP growth in south Asian countries. In these countries, there is a strong positive correlation between real investment and real GDP growth (Ali et al., 2008; Jawaid et al., 2011; Benimana, 2020).

The concept is that while monetary policy cannot encourage economic growth by altering broad money, it can do so by utilizing exchange rate policies or by raising interest rates. Despite their potential to impact the level of the current period's money supply by operating that of the previous period, monetary policy cannot regulate the money supply planes by keeping them within the established board (Anwar et al., 2016; Ahmad et al., 2016). Additionally, it has been discovered that a decline in GDP growth is only fleetingly tied to anticipate policy, whereas a decline in inflation is linked to both anticipated and unforeseen aspects of monetary policy with a longer lag of 28 to 36. Everything except for a change in culture, a return to order, greater openness, and an end to corruption. According to the document, for the government to make any significant headway toward fiscal responsibility, some strong pro-stability investors must emerge who can challenge the government's fiscal recklessness (Abata et al., 2012).

### Monetary Policy and Economic Growth

The actions did to govern the amount of money in circulation, as well as the price and accessibility of credit, are referred to as monetary policy, shown in Figure 1.

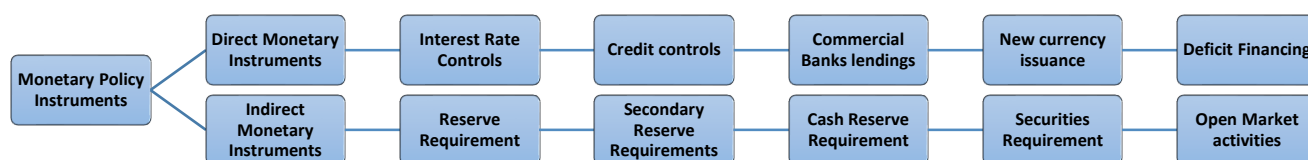


Figure 1. Monetary policy; Source: State Bank of Pakistan.

Additionally, it works in tandem with the banks' lending and borrowing interest rates and the distribution of credit across uses and users. In industrialized nations, monetary policy has been kindly applied as an opposing measure to combat depression and inflation. However, in emerging nations, it must contribute significantly to promoting economic progress. "The moment has come to design a monetary strategy that satisfies economic development needs, which fits properly within its framework," argues Prof. R. Prebisch. The monetary policy must also ensure price constancy and encourage economic growth because high inflation not only has a negative impact on distribution but also prevents the expansion of the economy.

Understanding the distinctions between monetary policy's goals, objectives, and tools. While monetary policy aims, such as price stability and zero unemployment, are its objectives, targets pertain to the variables that will change to achieve these goals, such as the amount of money or bank credit or interest rates. Various monetary policy gears include alterations to the supply of money, adjustments to reserve requirements, alterations to open market operations, interest rates, and discriminatory credit controls. We must discuss the goals of monetary policy in the emerging economy with particular emphasis on the actions made by the state bank. The importance of monetary policy in promoting economic growth in a developing nation like Pakistan must therefore be explained. The economy of Pakistan is currently struggling and hasn't grown significantly for many years. The economy is enduring a difficult period. The outlook is gloomy and dim. Major indicators' performance is not up to par. The severity of the dire economic situation is indicated by poor investment, constant and high inflation, fiscal variations, and low inflows of foreign funds. The ongoing budget deficit, which is a source of disagreement between Pakistan's fiscal authority and state bank, is another significant economic issue. Ongoing budget deficits and government borrowing hinder the creation and implementation of an independent monetary policy. To deter government borrowing from the domestic banking system and non-bank financial entities, mostly from the state bank of Pakistan, the state bank of Pakistan has adopted strict policies. However, even the increased interest rate is unable to halt federal borrowing. There are several causes, but the first and most important one is the Pakistani state bank's cordial demeanor. State banks always cooperate and never reject requests for money from the federal government to close the budget gap.

SBP always lends a serving hand by giving the government the required seignior age. The federal government's casual attitude is another problem. Politicians and the fiscal authority are both unsuccessful in preventing fiscal slippages and are not committed to guaranteeing fiscal consolidation and adjustments. Treasury benches and third positions never permit SBP to act and function independently. For the independence and autonomy of the Pakistani state bank, numerous institutional arrangements have been constructed, and the parliament has passed several laws. For better coordination between monetary and fiscal policy, a coordination board was established in 1994. But over time, a serious lack of coordination has been noted. Only 13 times

between 1966 and 2012 did these authorities work together effectively to accomplish broad macroeconomic objectives.

### Fiscal Policy and Economic Growth

The employment of government spending and taxation for economic influence is known as fiscal policy. The government involves in fiscal policy when it chooses to pay for goods and services, issue transfer payments, or collect taxes shown in Figure 2.

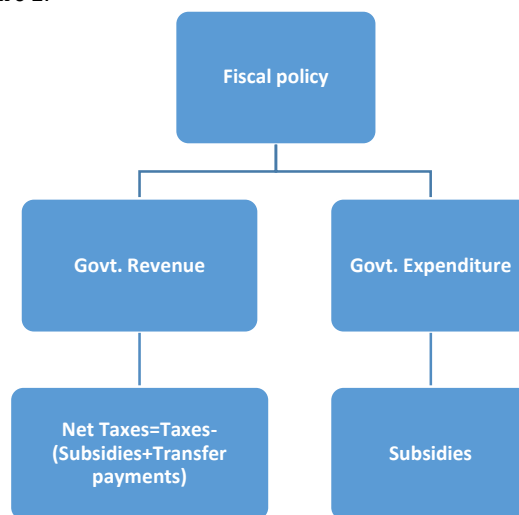


Figure 2. Fiscal policy; Source: Finance division of Pakistan.

A particular set of people feels any change in the government budget's core economic impact; a tax cut for people with children, for instance, increases their income after taxes. When addressing fiscal policy, though, the impact of changes to the government's budget on the bigger economy is typically the main focus. Although adjustments to expenditures or taxes that are revenue-neutral can be considered changes to fiscal policy, they can also impact the overall output level by altering the benefits that people or businesses confront.

"Fiscal policy" is commonly used to describe the outcome of the aggregate economy of the overall levels of expenditure and taxation, and more specifically, the space in between them. When spending is less than revenue, fiscal policy is said to be tense or contractionary and flexible or expansionary when revenue is less than spending. The majority of the time, the deficit's change rather than its size is what is being discussed. Therefore, even though the budget is still in deficit, a decrease in the deficit from two hundred billion dollars to a hundred billion dollars is referred to as contractionary fiscal policy.

Governmental interference in economic activity was minimal before the Great Depression of the 1930s. But in the following decades, particularly after the development of the Keynesian theory of aggregate demand, governments became more involved in regulating employment and output. Government involvement in the economy grew in developing nations to reduce poverty and accelerate economic progress. In most developing nations, government policy aims to hold up market activity by resolving market flaws. Policies to boost production and investment in the public sector have also been well-liked. The fiscal policy describes how a government modifies spending and taxes to achieve particular macroeconomic objectives.

Governments' top macroeconomic priorities include economic growth, price stability, the balance of payments stability, and exchange rate stability constancy. According to Abata et al. (2012) Fiscal policy is important to the health of any economy, as government's authority to tax and spend influences the disposable income of citizens, firms, as well as the global business climate. Depending on the size of the expenditure multipliers, a rise in public spending can boost aggregate demand and increase output. Keynesian economists frequently advise increased public spending on socioeconomic activities and public infrastructure as a way to spur economic growth. According to Abdullah et al. (2000), increasing government spending helps the nation's economy thrive. On the other end, Abu and Abdullah (2010) conclude that raising government spending hinders the nation's economic growth. Investigating the relationship between fiscal policy and national financial growth typically pays less attention to taxes. However, taxes have other economic effects besides acting as a crucial check on spending to keep the budget deficit under control. Therefore, taxation and public expenditure should be considered separately to evaluate fiscal policy's effect on economic growth and economic stability. Developing nations are far less impacted by expansionary fiscal policy than rich nations. However, these writers also discover varying degrees of fiscal policy's effectiveness in affecting aggregate demand and output in developing nations over the short and long term.

### **The Growth efficiency of Both Fiscal and Monetary Policy**

The pursuit of macroeconomic stabilization currently places a high priority on both policies, but the relative weight of these policies has been the subject of a heated discussion Keynesians and monetarists, the two main schools of thinking, are in disagreement. According to monetarists, monetary policy affects economic activity more than fiscal policy does, contrary to the view of Keynesians, who think the opposite. The exchange rate and interest rate are set by the central bank of an economy, which also regulates the total amount of money in circulation. The monetary policy seeks to accelerate economic growth and maintain price stability. It is focused on the techniques employed to regulate the flow of credit and money throughout the economy. Because of this, the monetary policy can regulate both the rate of money circulation and the cost of borrowing.

Though one of the primary goals of monetary policy is to promote economic growth while preventing excessive inflation. The Keynesian school of thought emphasized the limitations of monetary policy, particularly when an economy is trapped in a liquidity trap, and insisted that fiscal policy was the only workable solution. Proponents of the Keynesian theory emphasize the liquidity trap as a highly rare situation in which monetary policy deviates from its intended direction. The interest rate hits its lowest point during a liquidity crisis, and boosting the money supply won't make it go back up. In this situation, public investment cannot be so high as to support spending equivalent to the output of a fully employed workforce. As monetary policy will fall short of boosting investments and restoring full employment, fiscal policy will boost output by increasing government spending. The precise course of action ultimately depends on the level of fiscal

flexibility a government has for new spending programs or tax reductions or, more specifically, on its capacity to restructure its present expenditure or access to extra financing at an affordable price. Because their potential lenders believed that increased borrowing and spending would negatively affect the rate of inflation, the value of the local currency, the rate of exchange, or the recovery process by sapping too many resources from the local private sector, some governments were unable to provide stimulus. Fiscal deficits and public debt ratios have grown dramatically in some countries as a result of the crisis' effects on the GDP and tax income, as well as the rising cost of the fiscal response to the crisis. The state bank's options for monetary policy in these situations are based on how fiscal policy behaves and interacts with monetary policy. When the revenue from money creation is determined by monetary policy, the fiscal policy then modifies this primary surplus to balance its budgetary constraints and stabilize the debt. In such a setting, the central banks of the majority of developed nations adopt an inflation-targeting strategy.

Since gaining its independence, Pakistan has been working to strengthen its economy. The main instruments used by any government to boost growth are spending, taxes, trade openness, deposited interest rates, wide money, and corruption. Government can increase productivity through effective spending and effective taxation. One of the policies that can have an impact on a nation's level of productivity is fiscal and monetary policy. Therefore, the research issue that will be covered in the study is crucial, particularly for a country like Pakistan are the main topic of this study. Although there have been other studies on this topic, this one is special because it evaluates the implications of fiscal and monetary policy in detail by concentrating on the effects they have on three important and interconnected economic variables. The current study finds out the role of monetary and fiscal policy in enhancing economic growth in Pakistan.

### **Theoretical Framework**

The theoretical framework for estimating the policy mix and economic growth in Pakistan after examining the available literature to deepen understanding of the topic at hand, identify research gaps, and identify current data trends of the study variables. The theoretical framework is an ordered collection of pertinent concepts and ideas that explains how different variables and theories relate to one another.

### **Traditional Approach**

Before the 1980s, the Solow growth model or, more precisely, the neoclassical growth model played the main role in determining of growth of any economy. These models believe in exogenous stimulation for growth, such as technology or population, according to the fiscal policy, can affect the output level of an economy but does not have any impact on steady-state growth, so all the studies based on neoclassical models limiting the role fiscal variables in the process of growth. It was also difficult to determine the long-run factors of the growth process. Many studies based on Cass (1965) and Koopmans (1965) overlapping generation models explored the relationship between fiscal and monetary variables and growth but concluded that there is only a temporary impact of fiscal

tools on growth. So, all the studies based on the neoclassical approach reduced the role of government intervention.

### **New Approach**

In the 1980s, an era of new growth theory was initiated; this was when Romer and Lucas presented their models known as the Endogenous growth model or new growth theory, which were based on Arrow's work (1962) and Uzawa (1965) respectively. These new growth models make it possible to determine technological progress endogenously that was exogenous in previous models. The main feature that distinguishes new theories from old theories is that the marginal product of input will not increase and does not approach zero even if more and more labor is going to employ. This special feature makes it possible that any policy that assents human and physical capital will have a huge impact on long-term growth. So, in this way, room for fiscal and monetary policy was opened to have their impact on the process growth, and any government can utilize these policies to enhance the progress of the country. There are different models regarding endogenous growth theory. Actually, the technological process has different determinants, and different policies, including fiscal policy and monetary policy, will have an impact on these determinants. By capturing these factors, we can find a way of long-run growth. Romer (1986) emphasized the process of learning. According to this theory, people become more productive because they are learning in the process of learning by exploring more efficient ways of production. The R&D model emphasizes research and development that may increase the progress of the country by introducing new capital but also have (spillover effects) that approach was discussed not only by Romer (1987) but also Barro and Saka-i-Martin (1990).

Barro and Saka-i-Martin (1990) target the growth process by including fiscal variables. He introduced government spending in the model as a determinant of progress and concluded that by increasing productive spending economy would grow. We are concerned with this version of the endogenous model.

According to the theoretical literature on the topic, both monetary and fiscal policies contribute to the explanation of

the actual business cycle, and it is maintained that these macroeconomic measures are equally important for economic growth. Therefore, three important factors will be the foundation of aggregate output modeling. Fiscal and monetary policy can first be explained using the theory of economic growth (GDP growth). Second, there may be a connection between monetary policy and economic expansion. Third, how economic growth, price stability, the balance of payments, and an optimum level of employment for the economy are explained by fiscal and monetary policies (Romer, 1989).

### **DATA AND METHODOLOGY**

Different approaches test all econometric model; here is a brief analysis of the test and techniques we have employed in this analysis. Cointegration between variables can be tested by certain techniques and tests.

#### **Data Description**

The time series data for the 30 years from 1995 to 2021 were used in this study. Data was gathered from the state bank of Pakistan's website and the world development indicators (WDI) database. We have two models that describe the relationship between the dependent and independent variables. Two separate models are constructed to investigate the monetary and fiscal policies and economic growth in Pakistan. Each model emphasizes the separate dependent variable. The first model investigates the influence of monetary variables on the GDP of the country. The second model focuses on the fiscal policy variable's effect on gross domestic product. The description and measurement of the scale of variables are shown in Table 1.

#### *Monetary Policy Model:*

$GDP = f(\text{Broad Money, Exchange Rate, Human Capital, Physical Capital, Trade Openness, Corruption})$

#### *Fiscal Policy Model:*

$GDP = f(\text{Development Expenditures, Exchange Rate, Total Tax, Human Capital, Physical Capital, Govt Consume Exp, Trade Openness})$

Table 1. Measurement scale of data.

Code	Variables	Type of variables	Measurement of data	Data source
GDP	Gross domestic product	Dependent variable	The annual percentage growth rate of GDP at market	WDI
BM	Broad money	Independent variable	% of GDP	WDI
ER	Exchange rate	Independent variable	Official exchange rate	WDI
DEVOP. EXP.	Development expenditure	Independent Variable	% of GDP	WDI
Human Capital	Labor force participation	Independent variable	% of the total population	WDI
Physical Capital	Growth fixed capital formation	Independent variable	% of GDP	WDI
TO	Trade openness	Independent variable	Sum of import and export/GDP	WDI
Taxes	Total taxes	Independent variable	Pakistani rupees	State bank of Pakistan
Corruption	Control of Corruption	Independent variable	Rank	WDI
Govt Consumption Exp.	Total government consumption expenditure	Independent variable	General government final expenditure (current LCU)	WDI

### Unit Root Test

To check the data stationarity is a prerequisite for time series analysis. Because shocks in the data will dissipate rather than be exacerbated when time series data is not stationary, while shocks are eliminated, and the data returns to its mean value when time series data is stationary. The drop in correlogram with increasing lags is a sign of stationarity. However, the autocorrelation plot for non-stationary series would grow. We have the model as;

$$Y = \Omega Y - 1 + \mu \quad (1)$$

Where  $\mu$  = white noise error.

The condition of stationarity will be  $\Omega \leq 1$ . If it is not, the time series would be non-stationary. So, the hypothesis will be  $\Omega = 1$  (series has a unit root).

Where the alternative hypothesis will be  $\Omega \geq 1$ .

Nonstationarity data leads to spurious results. Such results indicate good results with significant t-ratios and high R2, but actually, there will be no relationship between variables. So, detecting stationarity is the first and foremost condition in time series analysis. A special test is designed to check the stationarity of the data.

### Auto Regressive Distributed Lagged Model (ARDL)

As mentioned previously, long-run association among variables can be tested through various tests and techniques available in applied econometrics. These are the most commonly used techniques, but there are certain problems and complications in these techniques. Such as all these tests require that all variables must be integrated into the same order. Secondly, the estimation of small data samples becomes difficult under these tests. To overcome these problems, a new technique of estimation was introduced by Pesaran et al. (1999). This test is superior to all tests mentioned above. Because this technique is more suitable for the small data sample, and variables involved in this type of regression are not required to integrate into the same order. It is easy to handle the problem of endogeneity by ARDL. The inclusion of lagged variables provides a shield against the problem of serial correlation.

### Error Correction Model

Y and X must be co-integrated if we have two variables. Then, we may define their relationship to the ECM standard as;

$$Y = + 1 X - t + et \quad (2)$$

This ECM equation currently has information on both short- and long-term relationships. Where the adjustment factor is,

and the impact multiplier is 1. The impact multiplier describes the immediate impact of a change in X on a change in Y. However, the adjustment factor demonstrates how much of the prior period's instability has been corrected for in the present. So, in this way, the long-run impact is also added to the model. There is a number of advantages of the ECM model. This model quantified the disequilibrium of a previous period which is the corrected period. Because of this quality, the ECM model has the advantage in economic theory, and every variable included in ECM should be now stationarity at the first difference such models abolish the trend from the data and, as a result, would not be spurious. ECM model can more easily fit general to the specific approach.

### Reliability and Stability of the Model

The reliability of the empirical results can determine by the diagnostic test and the stability of the model. And in econometric modeling stability of the model is very important. Instabilities in the model make it difficult to understand the intercept. Several tests can be used to detect instability, such Chows breakpoint test (1960) and the Chows predictive failure test (1960). Another important test formulated by Brown, Durbin Evans (BED) (1975) and the test id CUSUM and CUSUM square test. The first test shows the stability in the intercept of the model, while the second test checks the stability in the variance of the error term. Both tests involve recursive estimation. The stability of the model can be judged by separate stability tests of each variable involved in the model. This test is a recursive coefficient stability test the only difference between the cusum and separate analysis of each variable is that the latter test is a standardized test (Niku et al., 1982; Wheaton et al., 1977).

### RESULTS AND DISCUSSION

Descriptive statistics are used to characterize the basic properties of the data in a study. The sample and the metric both have straightforward summaries available. It's common to distinguish between inferential statistics and descriptive statistics in Table 2. Gross domestic product and broad money are stationary at level, according to the results of the unit root test, whereas other variables are integrated at the first difference presented in Table 3. Therefore, the ARDL estimation of this model is completely warranted. No variable is integrated at the second difference or higher, ensuring the accuracy of the ARDL results.

Table 2. Descriptive analysis.

Variables	Std Dev	Mean	Maximum	Minimum
GDPPC	2.093195	1.334873	5.095223	-2.875946
Broad money	7.361178	50.45574	62.37815	34.79942
Corruption	1.295401	30.70370	33.00000	27.00000
Development Expenditures	0.333745	1111.217	1356.668	943.9818
Exchange Rate	8.222607	105.7402	121.4556	96.48612
GFCF	3.32648	1.36489	2.09643	1.753298
Govt Exp.	3.889987	88.53815	94.53474	82.62579
LFP	1.235426	53.18815	55.08000	50.50000
Tax	562059	522108.4	2051945	16348.00
TO	284847	9.89543	5.485372	1.695497
Total Reserve	10.42604	20.02000	37.36803	4.379973

Table 3. Unit root test for monetary policy and economic growth.

Variables	At level (Intercent)	At 1 <sup>st</sup> difference (Intercent)	Result
GDP	-2.42723 (0.1448)	-4.446197 (0.0018)	1(1)
Broad money	-0.94460 (0.7572)	-4.185940 (0.0034)	1(1)
Human capital	-0.40932 (0.8913)	-3.778535 (0.0112)	1(1)
Physical capital	-2.22596 (0.2035)	-4.734155 (0.0009)	1(1)
Exchange rate	-0.39177 (0.8967)	-4.786901 (0.0008)	1(1)
Corruption	-3.42543 (0.0200)	-3.69400 (0.0107)	1(0)
TO	0.391771 (0.8967)	-4.78869 (0.0008)	1(1)

Table 4. Monetary Policy and Economic Growth.

Variables	Coefficients	T- Statistics
GDP (-2)	0.5409	1.9255
Broad Money	0.0673	0.5948
Corruption	0.2671	0.3372
GFCF	2.05439	0.6779
LFP	2.1574	4.4493
Exchange rate	-0.3198	-4.6832
Trade openness	-4.4058	-0.8847

R square = 0.945304  
Adjusted R sq = 0.835912  
F- stat = 0.002163  
D.W stat = 2.705699

Table 5. F Statistics.

F-statistic	Lower bound	Upper bound
49.5611	2.3822	3.7626

Significant at 95%

### Long-run association among variables included in the model

As ARDL is a bound test so next important step finds to the lower and upper boundaries and check the F statistic because the F statistic will prove that either there is a long-run association between the variables or not given in Table 5. In the case of our first model, because the value of f-statistic lies above than upper bound, so the null hypothesis of no level effect is rejected, and this test proves a co-integration between variables shown in Table 4.

### Long Run Estimates

Long-run estimates of ARDL estimation prove that monetary policy variables are significantly affecting the growth of Pakistan. It is demonstrated how monetary policy affects GDP is given in Table 6. The corrected R2 has a value of 97%. This figure indicates that labor, capital, and government spending account for around 97% of all variation in economic growth. The other elements' value is 3%, which the growth equation did not take into consideration. This increased R2 value demonstrates how effectively the multiple regression model describes the data. The multiple regression equation for the association between fiscal policy and economic growth is

statistically significant overall because the p-value of the F-statistic is zero, which is less than 0.05. The DW statistics have a value of 1.82. This number is in the range of 1.5 and 2.5. This demonstrates that the data do not support autocorrelation.

### Error Correction Model

Short-run dynamics that can be explained by the error correction model also support the earlier-mentioned results in Table 7.

The corrected R2 has a value of 97%. This figure indicates that labor, capital, and government spending account for around 97% of all variation in economic growth. The other elements' value, which the growth equation did not account for, is 3%. This improved R2 value further indicates that the multiple regression model fits the data quite well. Since the p-value of the F-statistic is zero, which is less than 0.05, the multiple regression equation for the relationship between fiscal policy and economic growth is statistically significant overall. The DW statistics have a value of 1.82. This number is in the range of 1.5 and 2.5. This demonstrates that there is no proof of autocorrelation. The outcomes of multiple regression are reasonable.

Table 6. Long run estimates.

Variables	Coefficient	t-statistic	Prob
Broad Money	0.3963	0.9085	0.000
Corruption	0.4246	4.7754	0.000
GFCF	0.1684	-3.6112	0.001
LFP	0.9481	2.4763	0.547
TO	0.9621	2.2769	0.000
ER	-0.7933	-2.8792	0.000
C	-3.3885	-1.9391	0.000

Table 7. Error correction model.

Variables	Coefficients	t-stat	P value
GDP	-0.4409	-1.9255	0.007
Broad Money	0.2673	2.6948	0.000
Corruption	0.2671	4.9378	0.000
GFCF	0.3643	0.5372	0.771
LFP	0.1574	3.4493	0.000
Exchange rate	-0.2198	-3.6835	0.000
Trade openness	-0.1637	-3.8847	0.000
R Squared	0.979592		
Adjusted R Squared	0.974882		
F - Statistic	207.9984		
Prob(F-statistic)	0.000000		

Table 8. Estimate the unit root test.

Variables	At level (intercept)	At 1 <sup>st</sup> difference (intercept)	Results
GDP	-2.42723 (0.1448)	-4.446197 (0.0018)	1(1)
Devp exp	0.251315 (0.9705)	-3.181514 (0.0333)	1(1)
Govt cons exp	-1.257004 (0.6335)	-6.612655 (0.0000)	1(1)
L.F.P	-0.40932 (0.8913)	-3.778535 (0.0112)	1(1)
GFCF	-2.22596 (0.2035)	-4.734155 (0.0009)	1(1)
To	0.391771 (0.8967)	-4.78869 (0.0008)	1(1)
Tax	-1.88364 (0.3343)	-5.10035 (0.0004)	1(1)

### Fiscal Policy Model and Economic Growth

Gross domestic product and development expenditure is stationary at the level, according to the results of the unit root test, whereas other variables are integrated at the first difference in Table 8. Therefore, the ARDL estimation of this model is completely warranted. No variable is integrated at the second difference or higher, ensuring the accuracy of the ARDL results. Long-run estimates of ARDL estimation prove that fiscal policy variables significantly affect Pakistan's growth.

### Long-run association among variables included in the model

The cointegration among the variables is demonstrated by the F statistic. Because the F-statistic value is greater than the upper bound. Therefore, it is determined that cointegration does not exist in Table 9.

### Long Run estimators

Investigating the long-run estimations comes after demonstrating the long-term associations between the model's variables. ECM can also assess the model's short-run dynamics. This also demonstrates how much of the former state of disequilibrium may be changed in the present in Table 11.

Table 10 shows the impact of monetary policy on RGDP. The corrected R2 has a value of 99%. This figure indicates that labor, capital, and money supply together account for around 99% of the total variation in economic growth. The value of the additional economic aspects that this method does not account for is 1%. This result further indicates that the fit of the multiple regression is excellent.

Additionally, the F-p-value statistic of 0.0000, or less than 0.05, indicates that the multiple regression equation for the relationship between monetary policy and economic growth is



statistically significant overall. Additionally, the DW statistics value is 1.69, which is between 1.5 and 2.5.

#### **Error correction model**

The corrected R2 has a value of 97%. This figure indicates that labor, capital, and government spending account for around 97% of all variation in economic growth. The other elements' value, which the growth equation did not account for, is 3%. This improved R2 value further indicates that the multiple regression model fits the data quite well. Since the p-value of the F-statistic is zero, which is less than 0.05, the multiple regression equation for the relationship between fiscal policy and economic growth is statistically significant overall. The DW statistics have a value of 1.82. This number is in the range of 1.5 and 2.5. This demonstrates that there is no proof of

autocorrelation. The outcomes of multiple regression are reasonable.

#### **Bound Test Result**

An effective statistical method for estimating level relationships when the underlying property of the time series is I(0), entirely I(1), or jointly co-integrated is the Autoregressive Distributed Lag Model (ARDL) Bounds testing approach. When it is uncertain whether the data-producing process underlying a time series is a trend or first difference stationary, bound testing, an extension of ARDL modeling, uses F and t statistics to examine the significance of the lagged levels of the variables in a univariate equilibrium correction system in table 12. Here, the ARDL model is used to investigate the relationship between variables over the short and long terms.

Table 9. A long-run estimate of ARDL.

Variables	Coefficient	T statistics
GDP	0.0903	0.3207
DEVP EXP	-0.0417	-2.450
GFCF	6.4735	1.8027
Govt Consumption Exp.	-0.2383	-1.8626
LFP	1.6230	1.1821
Tax	-8.9053	-1.0517
TO	3.8072	1.21777

R-squared = 0.951488  
Adjusted R- squared = 0.833673  
F- statis = 8.076147(0.004617)  
Durbin-Watson stat = (1.637120)

Table 10. Estimation of long run.

Variables	Coefficient	t-stat	Prob
Develop. Exp	-0.0364	-3.3279	0.000
GFCF	-0.1754	-0.5193	0.002
Govt. cons. Exp	0.1714	1.9393	0.000
LFP	3.6044	3.9498	0.5482
TAX	-0.1569	-3.1177	0.0000
To	0.1537	-4.0273	0.0000
C	-1.6412	-3.7983	0.0000

Table 11. Error correction model.

Variables	Coefficient	t-statis	P- value
GDP	0.4847	1.9721	0.007
Develop. Exp	-0.0417	-2.4540	0.002
GFCF	0.1257	1.8027	0.000
Govt Consumption Exp.s	-0.2383	-1.0969	0.777
L.F.P	1.6230	-2.1009	0.000
Tax	-0.0362	-3.0517	0.000
TO	0.1863	3.2177	0.000
CointEq(-1)	-1.3944	-5.0650	-164.122

Table 12. Bound test.

Test Statistics	Value	K
F-Statistics	3.616295	7
Critical Value Bonds		
Significance	Lower Bound	Upper Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

### Diagnostic Tests

Regression results' dependability is crucial. Even if the data indicate a positive and significant correlation, it is still feasible that the regression will disqualify some diagnostic tests. Several diagnostic tests can indicate whether or not an empirical discovery is accurate. These tests are related to the fundamental assumption of the classical linear regression model. Such as homoscedasticity, no autocorrelation, normality, and specification problems. First, a very common test about autocorrelation is the Durbin-Watson test. The acceptable value of this test is 2. But this test deals with only the serial correlation of the first order. Another test that can check serial correlation is above than first order (such as 12 orders for a monthly data set), and this test is the serial correlation test stands on the Lagrange multiplier. This test is preferable to the traditional D.W. test. Another problem that makes regression results unreliable is the problem with the functional form. If the functional form is incorrect, results would also be incorrect. The third diagnostic test is related to the distribution of residuals. And this test proves whether the residual series is normally distributed or not. Suppose this test indicates the distribution problem the problem of distribution. In that case, separate tests can be run to detect the distribution, such as the Jarque-Bear test, the value of skewness and Kurtosis, and the Histogram. For detecting the problem of heteroskedasticity (if the variance of the error term is not constant), another diagnostic test can be used. The entire test having a probability above 0.05 or 0.10 (decided bounder) will prove that our results are reliable in Tables 13 and 14.

Table 13. Diagnostic test of a model for monetary policy.

Serial correlation	1.6251(0.213)
Functional form	0.32197(0.5750)
Normality	0.078687(0.9614)
Heteroscedasticity	0.2756 (0.600)

Table 14. Diagnostic test of a model for fiscal policy.

Serial correlation	1.6418 (0.215)
Functional form	1.715 (0.293)
Normality	0.440919 (0.815)
Heteroscedasticity	1.4409 (0.240)

### CONCLUSION AND POLICY RECOMMENDED

The study's goal was to determine whether either monetary or fiscal strategy was more successful at promoting economic growth in Pakistan by comparing their respective effects. The investigation covered the years 1990–202–2021. The ARDL estimation approach was used in this study. The results of the two multiple regressions were free of erroneous information. The study discovered that the Pakistani economy benefited from monetary policy. The study also found that fiscal measures had a positive effect on the economy of Pakistan. According to the study's ultimate finding, Pakistan's monetary policy had a stronger influence on economic growth. According to the results, to support and assure economic growth, economic stability, economic sustainability, and economic development in Pakistan, the bank of Pakistan's

monetary policy should stabilize interest rates, lending rates, inflation rates, and exchange rates as needed. The growth rate of current expenditures is rising while equity is suffering. Therefore, this expense head needs to be properly planned. Development costs have no bearing on the growth process; the primary cause is that it reflects political influence. Consequently, political influence must reduce. When it comes to income distribution, development spending is a major factor. Hence, its share should not be decreased. The economy is suffering from a fiscal imbalance in every way, so it must be reduced. Revenues are helping to accelerate growth. Hence new strategies for raising tax revenues must be developed. A more open economy ensures greater growth and higher levels of productivity. Government should therefore take action to boost imports and exports. The study's findings also show that while the money supply has a negative short-term impact on economic growth, it has a large long-term positive influence. Similarly, the exchange rate has a long-term positive effect on economic growth but a short-term negative effect. Therefore, it can be tentatively stated that while monetary policy has a short-term negative influence on economic growth, it has a long-term beneficial effect. In the short and long term, government spending has a large and favorable effect on economic growth. However, tax rates also have long-term and short-term favorable effects on economic growth. Based on macroeconomic trends and goals at the proper stage of social development, the government's financial strategy offers a variety of scenarios for formulating and implementing regulatory actions. To sustain macroeconomic stability and strengthen its endogenous development factors, the sensibly coordinated employment of fiscal and monetary instruments is appropriate. Priorities of the modern financial strategy combine sensible institutional restraints with favorable fiscal, monetary, and investment conditions for sustainable economic growth.

### REFERENCES

- Abata, M.A., Kehinde, J.S., Bolarinwa, S.A., 2012. Fiscal/monetary policy and economic growth in Nigeria: A theoretical exploration. *Int. J. Acad. Res. Econ. Manag. Sci.* 1, 75.
- Abdullah Yousuf Akhond, M., Abul Hossain Molla, M., Obaidul Islam, M., Ali, M., 2000. Cross compatibility between *Abelmoschus esculentus* and *A. moschatus*. *Euphytica* 114, 175–180.
- Abu Nuredin, A., 2010. Government expenditure and Economic Growth in Nigeria, 1970-2008: A disaggregated Analysis–*Business and Economic Journal*.
- Ahmad, D., Afzal, M., Ghani, U., 2016. Impact of monetary policy on economic growth empirical evidence of Pakistan. *Int. J. Appl.* 4, 2345–5721.
- Ali, S., Irum, S., Ali, A., 2008. Whether fiscal stance or monetary policy is effective for economic growth in case of South Asian Countries? *Pak. Dev. Rev.* 791–799.
- Anwar, A., Mohsin, A.Q., Saboor, A., 2016. Impact of Monetary Policy on Economic Growth in Pakistan: Evaluation and Analysis. *Pakistan J. Soc. Sci.* 36.

- Arby, M.F., Hanif, M.N., 2010. Monetary and fiscal policies coordination-Pakistan's experience. 3-13.
- Arrow, K.G., 1962. The Economic Implications of Learning by Doing. *Rev. Econ. Stud.* 29, 155-173.
- Aslam, M., Awan, A.G., 2018. Impact of monetary policy on economic growth: Evidence from Pakistan. *Glob. J. Manag. Soc. Sci. Humanit.* 4, 89-109.
- Barro, R.J., Sala-i-Martin, X., 1990. Economic growth and convergence across the United States. National Bureau of Economic Research Cambridge, Mass., USA.
- Batten, S., Sowerbutts, R., Tanaka, M., 2020. Climate change: Macroeconomic impact and implications for monetary policy. *Ecol. Soc. Technol. risks Financ. Sect.* 13-38.
- Benimana, V., 2020. The Impacts of Fiscal Policy on the Economic Growth in Rwanda. Available SSRN 3666901.
- Cass, D., 1965. *Studies in the Theory of Optimum Economic Growth*. Stanford University.
- Gul, H., Mughal, K., Rahim, S., 2012. Linkage between monetary instruments and economic growth. *Univers. J. Manag. Soc. Sci.* 2, 69-76.
- Havi, E.D.K., Enu, P., 2014. The effect of fiscal policy and monetary policy on Ghana's economic growth: which policy is more potent. *Int. J. Empir. Financ.* 3, 61-75.
- Jawaid, S.T., Arif, I., Naeemullah, S.M., 2010. Comparative analysis of monetary and fiscal policy: A case study of Pakistan.
- Jawaid, S.T., Qadri, F.S., Nasir, A.L.I., 2011. Monetary-fiscal-trade policy and economic growth in Pakistan: Time series empirical investigation. *Int. J. Econ. Financ. Issues* 1, 133-138.
- Khosravi, A., Karimi, M.S., 2010. To investigation the relationship between monetary, fiscal policy and economic growth in Iran: Autoregressive distributed lag approach to cointegration. *Am. J. Appl. Sci.* 7, 415.
- Koopmans, T., 1965. On the concept of optimal growth, *The Econometric Approach to Development Planning*. Econom. Approach to Dev. planning, 1st edn. North Holland, Amsterdam 225-287.
- Niku, S., Schroeder, E.D., Haugh, R.S., 1982. Reliability and stability of trickling filter processes. *J. (Water Pollut. Control Fed.* 129-134.
- Pesaran, M.H., Shin, Y., Smith, R.P., 1999. Pooled mean group estimation of dynamic heterogeneous panels. *J. Am. Stat. Assoc.* 94, 621-634.
- Rickman, D., Wang, H., 2020. US state and local fiscal policy and economic activity: do we know more now? *J. Econ. Surv.* 34, 424-465.
- Romer, P.M., 1986. Increasing returns and long-run growth. *J. Polit. Econ.* 94, 1002-1037.
- Romer, P.M., 1987. Growth based on increasing returns due to specialization. *Am. Econ. Rev.* 77, 56-62.
- Romer, P.M., 1989. What determines the rate of growth and technological change? World Bank Publications.
- Tan, C.-T., Mohamed, A., Habibullah, M.S., Chin, L., 2020. The impacts of monetary and fiscal policies on economic growth in Malaysia, Singapore and Thailand. *South Asian J. Macroecon. Public Financ.* 9, 114-130.
- Tien, N.H., 2021. Relationship between inflation and economic growth in Vietnam. *Turkish J. Comput. Math. Educ.* 12, 5134-5139.
- Uzawa, H., 1965. Optimum technical change in an aggregative model of economic growth. *Int. Econ. Rev. (Philadelphia)*. 6, 18-31.
- Wang, S., Zeng, Y., Yao, J., Zhang, H., 2020. Economic policy uncertainty, monetary policy, and housing price in China. *J. Appl. Econ.* 23, 235-252.
- Wheaton, B., Muthen, B., Alwin, D.F., Summers, G.F., 1977. Assessing reliability and stability in panel models. *Sociol. Methodol.* 8, 84-136.
- Yusuf, A., Mohd, S., 2021. Asymmetric impact of fiscal policy variables on economic growth in nigeria. *J. Sustain. Financ. Invest.* 1-22.

**Publisher's note:** Science Impact Publishers remain neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made. The images or other third-party material in this article are included in the article's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this license, visit <https://creativecommons.org/licenses/by/4.0/>.