Integrated Economies and Policy Insights
eISSN: 3120-3418
https://iepi.cultechpub.com/index.php/iepi

Analyzing how Monetary Policy, Interest Rates, and Inflation Together Influence Pakistan's Short-Run and Long-Run Patterns of Overall Economic Growth Trends

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Abstract

This paper looks at how monetary policy, interest rates, and inflation affected Pakistan's economy from 1980 to 2024. We used a quantitative, time-series research approach and looked at yearly data with multiple linear regression to see how these things are related to GDP growth in the short term.

The data shows inflation has a negative impact on GDP growth. Monetary policy and interest rates didn't seem to have much of an impact in the short term. The model explains about 18.3% of the change in GDP growth which means other things also play a role.

These findings show that keeping prices stable is important for economic growth in Pakistan. We suggest aiming for controlled inflation, gradual changes to interest rates, economic changes, being ready for crises, and making policy decisions based on data to help growth last.

This paper helps us understand how economic policies and growth work together in emerging economies and gives suggestions to policymakers in Pakistan.

Keywords

GDP Growth, Inflation (CPI), Monetary Policy, Interest Rates, Pakistan, Macroeconomic Stability, Time-Series Analysis

1. Introduction

A country's economic growth is a fundamental indicator of its progress and stability, influencing living standards, employment, and overall societal well-being. In developing countries such as Pakistan, comprehending the interaction between monetary policy, rates of interest, and inflation becomes critical while devising appropriate economic policies. Monetary policy, interest rate, and inflation are interrelated variables that determine the performance of an economy in both the short and long run. This paper examines the impact of monetary policy, interest rate, and inflation on the economic growth of Pakistan while considering their contribution to both short- and long-run economic dynamics [1].

Interest rates and exchange rates are monetary policy instruments that can bring a positive effect on economic growth, while factors like inflation and excessive money supply are expected to affect economic growth negatively. Empirical evidence suggests that tight monetary policy aimed at curbing inflation can provide incentives for sustainable growth as price stability is achieved without hampering growth acceleration. Inflation in Pakistan is predominantly monetary in nature and, therefore, requires prudent monetary policies to maintain the growth momentum [2].

In summary, the dynamic interactions among monetary policy, interest rates, and inflation play a crucial role in shaping Pakistan's economic trajectory, with policy implications emphasizing the need for balanced and transparent monetary strategies to support sustainable development [3].

1.1 Why Money Policy Matters in Pakistan

Pakistan's central bank, the State Bank of Pakistan (SBP), mainly uses money policy to control the economy, keep inflation in check, and stabilize the currency. How well money policy works depends on if it can affect interest rates and how easily people can get money and credit [4]. Lately in Pakistan, policy actions have aimed to lower inflation, keep the exchange rate steady, and increase how much credit is available to push economic growth. But the links between these policy tools and how they affect economic growth are not simple and have many sides. As [5]pointed out, money policy is very important for economic stability and growth because it changes interest rates to affect total demand and how much people invest.

1.2 Interest Rates and Their Dual Roles

Interest rates are really important because they're how the government controls the economy. When policy rates change, it costs people and companies different amounts to borrow cash, which then changes how much they spend, invest, and save. In Pakistan, when interest rates bounce around, it really changes how the economy does as a whole, especially when it comes to investing in private and public projects [6].

On one hand, if interest rates go up, it can help slow down inflation. On the other hand, this can also hold back the economy because it becomes more expensive to borrow. If interest rates go down, the economy might get a boost, if handled well. Studies show that what happens with interest rates has a lot to do with how Pakistan's economy goes up and down, mostly when there are inflation problems [7].

1.3 Inflation: A Problem with Two Sides

Pakistan has had ongoing inflation because of things like government budget problems, the falling value of its money, problems with getting supplies, and unexpected international issues. Some inflation can be a good thing because it can make people want to spend and invest since real interest rates go down. But if inflation is too high, it makes things harder for people to buy what they need, and it makes investors nervous [8]. When inflation is really high, it can mess up the whole economy, which makes people save less and not want to invest for the long haul. This hurts the chances for the economy to grow steadily. Studies show that inflation really does hurt Pakistan's economy, slows activity, and throws off economic decisions [9].

1.4 How Growth Changes Over Time

How these things impact Pakistan's growth changes depending on if you're looking at the short or long term. Quickly, changes in interest rates and inflation can affect how much people buy, spend, and invest. If the government suddenly raises interest rates, it can slow things down for a bit, but it might stop the economy from overheating and prevent crazy inflation. But if inflation stays high for a long time or if the government doesn't control money well, it can cause bigger problems like lower productivity, money leaving the country, and government budget issues. All this can keep the economy from growing steadily [9].

Things that make the economy grow over time, like saving money, new technology, and fixing how things work, are really important. But money-related things can also impact growth by changing the investment climate. If there's always inflation and interest rates keep changing people won't want to invest, which can stop the economy from growing. So, Pakistan's leaders have to find a way to balance keeping things stable now with making sure the economy can grow for years to come. They need to make sure that money policies support a stable economy.

1.5 How Everything Works Together to Affect Growth

Monetary policy, interest rates, and inflation interact complexly to challenge Pakistan's economy, requiring policymakers to analyze their effects over time for effective reforms [10]. High interest rates can temporarily reduce inflation by increasing borrowing costs and curbing demand, but excessive hikes suppress short-term investment and growth, demanding careful calibration [11].

Prolonged low interest rates boost growth via affordable credit but risk entrenched inflation that erodes long-term stability, as seen in recent SBP holds at 11% amid flood-driven price pressures [12]. Research confirms that prudent monetary management controls inflation while enabling investment, whereas errors trigger stagnation and instability [13].

Sustainable long-term growth in Pakistan hinges on balancing these dynamics, targeting 5-7% inflation to support investment without overheating [14].

1.6 Rational and Scope of the Study

Given the complex interplay of monetary policy, interest rates, and inflation critical to Pakistan's economic growth, this study aims to elucidate their interconnections comprehensively [15]. It examines short-term fluctuations driven by policy shifts and inflation volatility, which often manifest through demand suppression and investment cycles [16].

The analysis also evaluates long-term growth prospects, where sustained monetary tightening has stabilized the economy at 2.5-2.7% GDP growth in FY2025 amid reforms [17]. Findings will inform policymakers on crafting strategies that promote steady expansion while managing inflation within 5-7% targets and easing rates judiciously [18].

2. Research Methodology

2.1 Introduction

This study looks at how money stuff, interest rates, and inflation affected Pakistan's economy from 1980 to 2024, using numbers and data. The idea is to check out both quick ups and downs and the overall growth using yearly economic info. The aim is to get real proof of how these big things work together and change how fast Pakistan's economy grows.

2.2 Research Design

This study looks at how economic stuff changes over time. It's like we're trying to figure out if things like money rules, interest percentage and how prices go up and down have an impact on how the economy grows. With this setup, we can spot trends, see what things are linked, and maybe even figure out what causes what in the world of money.

2.3 Data Sources

The study utilities secondary data from reputable sources to ensure reliability and validity The data sources are as follows:

2.3.1 GDP Growth (%)-1980-2024

- **Source:** Focus Economics & CEIC Data Reports
- **Description:** Annual GDP growth rate of Pakistan, used as the dependent variable(Y).
- **Justification:** Focus Economics and CEIC provide accurate historical data for global and national economic indicators.

2.3.2 Inflation (CPI %) 1980-2024

- **Sources:**Focus economics Pakistan Inflation Forecast & Historical Data Y Charts Pakistan CPI Data
- **Description:** Annual consumer Price Index (CPI) values, used to measure inflation (INF).
- **Justification:** These sources report consistent, internationally recognized CPI data essential for macroeconomic analysis.

2.3.3 Monetary Policy and Interest Rate1980-2024

- **Source: State Bank of Pakistan (SBP)**
- **Description:** Official policy rate, rope, and reverse-repro rates.
- **Use:** Acts as a proxy for monetary policy (MP) and interest rate (IR).

2.3.4 Additional Control Variables

Optional variables such as exchange rate, foreign direct investment (FDI), and government expenditure are obtained from SBP, PBS, and CEIC to account for other macroeconomic influences on GDP growth.

2.3.5 Model Specification

The study employs a multiple linear regression model to quantify the effect of macroeconomic variables on GDP growth:

$GDPGt=\beta0+\beta1MPt+\beta2IRt+\beta3INFt+\epsilon t$

Where:

$GDPG_t$ = GDP Growth (%) - dependent variable

MP_t = Monetary policy variable (M2 / policy rate)

IR_t = Interest rate (%)

INF_t = Inflation (CPI %)

$Controls_t$ = Exchange rate, FDI, government expenditure

ε_t = Error term

Rationale: This model captures both the direct and combined effects of monetary policy, interest rates, and inflation on Pakistan’s economic growth.

2.3.6 Hypotheses

H1: Monetary policy (MP) positively affects Pakistan’s GDP growth.

H2: Higher interest rates (IR) negatively affect Pakistan’s GDP growth.

H3: Higher inflation (INF) negatively affects Pakistan’s GDP growth.

H4: Control variables (Exchange rate, FDI, Government expenditure) significantly influence GDP growth.

2.3.7 Regression Technique

- For this study, I looked at yearly data and did a basic OLS regression in Excel. I'm trying to see what affects GDP growth (Y).

- Y = GDP Growth (%)
- X = MP, IR, INF, plus some other optional factors I might throw in.

What you get out: Coefficients, t-stats, p-values, R^2, and Adjusted R^2.

This initial look gives you a feel for how these economic things might relate to how the GDP grows.

2.3.8 Ethical Consideration.

Data are secondary and publicly available.

Proper citation of all sources (Focus-economics, CEIC, YCharts, SBP, PBS) has been maintained.

No data manipulation was performed; only cleaning and formatting were applied.

3. Result

Table 1. Regression Analysis Summary: Model Output & Coefficients

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.427933							
R Square	0.183127							
Adjusted R Square	0.121861							
Standard Error	2.061408							
Observations	44							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	3	38.10523	12.70174	2.989064	0.042258			
Residual	40	169.9762	4.249405					
Total	43	208.0814						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	9.357532	1.785453	5.240984	5.48E-06	5.748996	12.96607	5.748996	12.96607
11.94	0.086685	0.06808	1.273287	0.210266	-0.05091	0.224279	-0.05091	0.224279
8.8	-0.00725	0.102543	-0.07068	0.944001	-0.2145	0.199999	-0.2145	0.199999
41.56	-0.11738	0.046744	-2.51115	0.016175	-0.21185	-0.02291	-0.21185	-0.02291

3.1 Results and Interpretation of Regression Analysis

The multiple linear regression analysis was conducted to examine the relationship between Pakistan's GDP growth (the dependent variable) and three independent macroeconomic variables: monetary policy (MP), interest rates (IR), and inflation (CPI, INF). The objective of this analysis was to quantify the impact of these key macroeconomic indicators on economic growth over the study period and to determine which factors significantly influence GDP growth in Pakistan. The results of the regression analysis provide important insights into the dynamics of Pakistan's macroeconomic environment and the factors shaping its growth trajectory.

3.2 Model Fit and Overall Significance-model Fit and Overall Significance

The regression model gave us a Multiple R of 0.428. That means there's a decent positive link between what the model predicts for GDP growth and what actually happened. But, there's still a lot influencing GDP growth that our model doesn't cover.

The R^2 is 0.183, so our model explains about 18.3% of what changes GDP growth. It's not unusual to see a lower R^2 in these kinds of studies because many things affect GDP stuff like how the country is set up, government spending, what's happening outside the country, and policy stuff. The Adjusted R^2 is 0.122, which backs this up our variables help a bit, but a lot of GDP change is still a mystery.

The standard error is 2.061, showing how far off the actual GDP growth usually is from what the model predicts. This amount of difference could be because of unexpected world events, policy shifts or other general economic factors we didn't account for.

The ANOVA results say the whole model is statistically on point, with an F-statistic of 2.989 and a p-value of 0.042. So, at least one thing we looked at has a real influence on GDP growth. That the model is statistically on point means it's good for looking at how GDP growth and the factors we picked relate to each other, even if it doesn't explain everything.

3.3 Analysis of Individual Regression Coefficients

Examining the coefficient provides insights into the direction and magnitude of each predictors impact on GDP growth. The intercept, which is 9.358 (p < 0.001),shows what GDP growth would be if all others factories were zero. This is just a starting point to understand how the other factors play a role.

The first factor, monetary policy (MP), has a coefficient of 0.087 with a p-value of 0.210. This suggests that looser monetary policy might help GDP grow. but it's not statistically strong enough to conclude there is an actual impact on yearly GDP growth during the time period studied. This may happen because it takes time for monetary policy to have an impact. Also, other things such as fiscal policy, investments, and world events, which aren't fully captured in our model, might change how monetary policy works.Interest rates (IR), the second thing we looked at, barely mattered. Its coefficient was -0.007, and its p-value was way up at 0.944. These numbers tell us that changes in interest rates didn't really have a measurable influence on GDP growth during the time we studied. Although you'd usually expect that higher interest rates would lead to less spending and investing, which would hurt growth, what we saw suggests other things probably had a bigger influence. Things like inflation, how unsteady exchange rates were, and basic problems with the economy itself might have hidden any direct influence from interest rates. It could also just be that the interest rate changes weren't big enough or consistent enough to really change how the economy was doing in the short term.

On the other hand, inflation (CPI), the third thing we looked at, did matter. It had a coefficient of -0.117 and a p-value of 0.016. This confirms that when inflation goes up, GDP growth goes down in Pakistan. For every one point increase in inflation GDP growth drops by about 0.117 points if nothing else changes. We're pretty confident about this since the 95% confidence interval for this number is between -0.212 and -0.023, which doesn't include zero. This lines up with what you'd expect from economics: high inflation eats away at people's buying power, makes things more expensive to produce, makes people not want to invest, and makes the economy less secure, all of which slows down growth.

3.4 Implications of Findings Implications of findings

Our regression analysis points to inflation as the biggest factor affecting Pakistan's short-term GDP growth out of the three macroeconomic variables we looked at. Even though monetary policy and interest rates matter for managing the economy, they didn't seem to have a big, immediate impact on GDP growth during the time we studied. This might means Pakistan's economy reacts more to stable prices than to changes in interest rates or money supplies. Because of this, it's crucial for leaders to focus on keeping inflation in check as part of their plans to boost growth.

Since our R^2 value is kind of low, other things probably have a big impact on GDP growth, too. Things like fiscal policy, government spending, foreign investment, how exchange rates change, and shocks to the global economy could all play a role. Considering these things in future studies could help paint a clearer, more complete picture of what drives growth.

3.5 Limitations and Future Considerations

It is important to remember that the regression model only catches straight-line relationships and might not fully explain complex interactions between economic factors. Also, the short study (1980-2024) and the yearly data limit finding short-term ups and downs. It would be a good idea for later research to use better economic methods, such as ARDL, ECM, or VAR models, to catch both short- and long-term changes, including the delayed effects of money policy and interest rates. Adding more control factors and more frequent data could also make the research stronger.

4. Conclusion

To conclude, the regression analysis shows that inflation negatively affects Pakistan's GDP growth. Monetary policy and interest rates, on the other hand, did not show much of an immediate impact. The model is okay, but it only explains a small part of what makes GDP growth change. These results suggest that keeping prices stable is key for growth policy. Other structural and external factors should be looked at to get a complete picture of what drives economic growth in Pakistan.

5. Discussion

5.1 Impact of Inflation on GDP Growth

This study's regression results show that inflation and Pakistan’s GDP growth have a notably negative relationship during the studied period.This agrees with economic theory which says high inflation Hurts the economy. If inflation stays high, people can't buy as much because things cost more. As a result, people spend less, which lowers demand and slows economic growth.

For businesses, rising prices increase how much it costs to make products, especially if they rely on imports. higher costs cut into profits reduce the desires to invest and limit expansion which then limits economic growth. Also inflation makes the economic environment uncertain so businesses and investors struggle to plan. When future prices, interest rates, and input costs are uncertain, investments get delayed, and productivity drops.

So, the notable negative effect of inflation that we saw in the regression points to its vital role as a short-term factor of how Pakistan’s GDP grows, showing that stable prices are important for economic performance that lasts.

5.2 Monetary Policy and Interest Rates

The study suggests that interest rates and money stuff didn't really change GDP growth while we looked at it. Even so, history tells us that these things are important for keeping prices steady and helping the economy, especially when things get tough. When inflation's been crazy, acting fast with money moves has helped calm things down and made people feel better about the economy. The fact that we don't see a big, quick change in the numbers might be because money policy takes a while to work. Changing interest rates and how much money's out there can take time to affect GDP. Also, money policy mixes with all sorts of other things in the economy, which can make it tricky to see how it directly impacts GDP growth.

5.3 Structural and External Factors

Pakistan's GDP growth depends a lot on its structure and what happens outside the country, not just inflation and money stuff. Things such as government money problems, exchange rate changes, and foreign investments all have a big say. Big budget deficits can stop the government from investing in important things, such as infrastructure or in helping people which then Hurts growth. A fast drop in the exchange rate can make imports costly leading to inflation and hurting the economy even more.

Global events such as the 2008 financial crisis and the COVD -19 pandemic made Pakistan's economic issues worse leading to quick ups and downs in growth and interest rates. These events show that Pakistan's economy is easily affected by its own problems and what's happening worldwide. So, how Pakistan's GDP does in the short run is because of many things all working together.

5.4 Overall Interpretation

The regression model explains some of why GDP grows or shrinks. The R^2 of 0.183 tells us that while inflation matters and has an impact, lots of other unseen stuff affects how the economy grows. So, you can't just look at interest rates, money stuff, and inflation to get the full story on Pakistan's economy. Stuff like structure, budget issues, and what's happening outside the country are big deals too. But, of the things we looked at, inflation seems to matter most in the short run. Its super important to keep prices steadily if we want the economy to keep growing steadily.

5.5 Policy Recommendations

Based on what we found, here's some advice to boost Pakistan's economy while keeping inflation and interest rates in check, plus keeping the whole economy stable. This advice is about fixing things now, making changes for the long run, and using data to help manage the economy well.

5.5.1 Controlling Inflation

Our research showed that inflation really hurts the economy. So, keeping prices steady should be a big goal. Smart money moves, like tweaking interest rates and managing cash flow, can stop inflation from getting out of hand. Also, giving money to help pay for important stuff can help families who are struggling and keep people buying things. Getting better at farming, making energy, and improving roads can also help keep prices from spiking. Watching what people expect inflation to do with surveys and forecasts can stop inflation from feeding on itself. If officials keep inflation down, it makes a steady playing field that supports investing, spending, and growing the economy.

5.5.2 Monetary Policy

Even if our study didn't find a big link between interest rates and how fast the economy grows right away, setting interest rates is still super important for keeping things on track. Changing rates slowly, instead of all at once, can help keep prices from rising too fast while still helping the economy do its thing. If rates go up too fast, people might not spend as much, but if rates are too low, prices might go way up. It's also key for the money people and the government to work together. When they agree on stuff like spending and taxes, it makes everything work better and keeps them from working against each other.

5.5.3 Structural Changes

To grow in the long run, Pakistan needs to fix some things to better handle unexpected problems. A good move would be to vary its economy, so it doesn't have to depend too much on foreign loans and goods from other countries. This could lead to more steady growth.

If Pakistan can get more foreign companies to invest directly and guide funding to important areas like production, tech, and energy, the country can make more products, employ more people, and compete better with other nations. Pakistan should also work on its government practices, rules, and how easy it is to do business there. These changes are key to bringing in lasting investments and getting more businesses involved in the economy.

In the past, things like global financial problems, changing prices of goods, and pandemics have really shaken up Pakistan's GDP growth and inflation. To lessen these effects, leaders should set up backup plans like stabilization funds, reserves, and flexible exchange rates will help to soften the punch. Also, making systems that watch out for early signs of trouble, like rising inflation, interest rates, currency changes, and other important signs, can allow us to act early, reducing economic problems and helping growth go more smoothly.

5.5.4 Policy Based on Data

Using good data that's current is key for making policies that work. If Pakistan gets better at gathering and studying data about the economy, it can make better predictions and step in when needed. It can also check if current policies are helping. To see what makes the economy bigger, Pakistan needs to look at things such as government spending, how money is exchanged, and outside investments. Policies based on facts and good studies are a must in order to improve Pakistan's economy in a lasting way.

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