

Monetary Policy at a Crossroads: Assessing the Impact of Gold, Inflation, and Interest Rates on Pakistan's GDP (1990–2024)

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Abstract

This study investigates the intricate relationships between gold rates, inflation, policy rates, and GDP in Pakistan from 1990 to 2024, aiming to inform policymakers' decisions on balancing inflation control and growth stimulus. Employing multiple linear regression analysis, the research yields surprising findings that challenge conventional economic wisdom. Contrary to expectations, gold prices exhibit a robust positive correlation with GDP, suggesting gold's multifaceted role in Pakistan's economy as a store of value, collateral, and remittance conduit, offsetting its trade balance effects. The study reveals that inflation's impact is uneven, and monetary policy transmits asymmetrically. The findings underscore the need for context-specific policies, urging policymakers to rethink gold's role, refine inflation management, and recalibrate monetary policy for growth. By questioning established assumptions and grounding decisions in local empirical evidence, policymakers can navigate the trade-offs between stability and growth. The study advocates for monitoring gold hoarding, improving data granularity, and implementing asymmetric rate adjustments to enhance policy effectiveness. Ultimately, this research highlights the importance of tailored approaches to Pakistan's unique economic landscape, moving beyond imported economic dogmas to inform more effective policy decisions.

Keywords: Gold prices; Inflation rate; Policy rate; GDP

Introduction

In the past thirty years, economy of Pakistan has experienced a plethora of significant structural adjustments and the order of ensuing macro-economic crises, which depended not only on the national economy but also on external economic factors. External shocks have been experienced by the economy of a developing economy such as Pakistan, especially in regard to commodity prices and internal shocks such as inflation and variations in monetary policy being affected to the GDP growth of a particular economy. Some of the key factors explaining the economic performance of the country are the price of gold,

inflation, and the central bank policy rate. Gold affects foreign exchange reserves and trade balance in relation to the fact that it is considered to be a hedge investment during crises. At the same time, inflation and interest rates directly influence consumer expenditure, business investment, and overall industrial activity. It is also important to determine the connection these variables have to the rise in GDP in order to implement the right economic policies to achieve stability and long-term growth.

The relationship between the price of gold and economic growth has, in the recent past, gained special importance, especially for nations such as Pakistan that depend on the importation of the precious gold. The increasing international prices of gold also imply that there will be an increase in the prices of imports, which may affect balance of payment remittances and also devalue the currency, which may represent a constraint to the growth of GDP. Pakistan has endured a perennial inflation, with frequent rampages, which has changed purchasing power, ruined savings, and ruined business strategies. SBP uses the policy rate as a mechanism of hateful inflation and also a mechanism of economic averageness. However, increased interest rates also cut off and make access to credit that leading to decreased investment and reduced economic activity. The complexity of these three variables' consequences necessitates a diagnosis of the mechanism through which inflation and policy rates, together with the price of gold, affect GDP, such that the development of policies advances to reduce adverse impacts and enhance stable economic growth.

This study is motivated because it aims to determine, by a regression analysis, the effect of the gold rates, inflation, and the policy rate on the GDP of Pakistan over the period of study between 1990 and 2024. Unlike in the previous studies, where each of them has been addressed independently, this study measures them together in a single analytic specimen. To add to that, the selected period also covers numerous macroeconomic events, which include but are not limited to the global financial crisis, commodity price shock, the COVID-19 pandemic, and recent escalating inflation, thereby providing a timely background against which the analysis should occur. The study examines the cause and effect of these variables on Gross Domestic Product (GDP) through using the time series regression technique, which enables constructive predictions about economic planning.

This study is able to contribute to the body of knowledge by indicating the way economic growth is linked with international market condition and domestic market condition by employing variation in gold prices internationally and inflation and interest rates variation locally. Further, the study is helpful for key policy makers in comprehending the balance between interest rate, inflation

controlling measures and other economic factors. Lastly, the study will outline tangible solutions that can be used to limit the exposure of the economy to foreign prices of commodities. Given the ongoing economic crisis that Pakistan has been going through, e.g., inflation and budget deficits as well as deficit in external debt, the research results of this study are timely and have direct policy implications.

Literature Review

The relation of commodity prices and monetary policy with inflation and even economic growth has been well established in these respects in both developed and developing economies. Nevertheless, the peculiarities of the Pakistani economic environment, i.e., the dependence on the external flows of commodity prices, unceasing inflationary patterns, and the great sensitivity to changes in interest rates, warrant certain conversation. The following literature review attempts to aggregate the existing research on the relationship between gold prices, inflation, and interest rates on GDP in Pakistan, as well as highlight the gaps that this study seeks to fill.

Macroeconomic conditions, both external and internal, have played a critical role in shaping Pakistan's economic growth. Of these, gold prices, inflation, and policy rates have had a major impact on the state of the economy and financial markets. The research included in this piece is supportive of an academic and empirical study timeline from 1990 through 2024 to help understand the impact of these central variables on the economy of the nation over time.

Gold Prices and Economic Growth

Historically, gold has been seen as an effective store of value and hedge against inflation. According to Javid and Zafar (2020), whose analysis used ARMA-GARCH models when applied to data from Pakistan, disclosed the effectiveness of gold returns as protection against expected as well as realized inflation. In the same vein, Nadeem et al (2014) also observed a close association of domestic gold prices with major economic indicators, including inflation and exchange rates. Haider (2016) analysed the impact of gold prices on Karachi Meezan Index 30 and found a negative relationship, indicating that in times of economic uncertainty, they are more likely to invest in gold.

Also, Safdar and Ayyoub (2023) examined the long-run association of gold prices with inflation in G-8 countries, whose findings are quite relevant for developing economies like Pakistan. It was also found that in all environmental conditions, gold has acted as an effective hedge against inflation.

H₁: Gold Prices have a significant effect on GDP

Inflation Dynamics and GDP Growth

Pakistan has always been a high-inflation economy, with rates in double figures on most occasions, which has been attributed to external factors like global oil prices and currency devaluation. Another research study by Qasim et al. (2021) for the period 2004-2019 clearly indicates the existence of a strong long-run association between exchange rates, oil prices, and inflation. In another study, Jalil et al. (2014), among other findings, employing bounds testing, find evidence of a significant relationship between fiscal deficits and inflation as well, identifying government borrowing as a principal cause.

PRICES is a microsimulation model implemented by O'Donoghue et al. (2023) to investigate how inflation affects different branches of the Pakistani population. They discovered that a rise in the cost of food affected low-income families unequally and enhanced existing economic inequalities. Batool et al. (2021) used the method of wavelet analysis to analyse the dynamic relationship between inflation, interest rates, and economic growth with regard to the COVID-19 epidemic, concluding that inflation threatens economic stability in a major way.

H₂: The Inflation Rate has a significant effect on GDP

Policy Rates and Growth Trade-offs

Controlling inflation and promoting growth through the policy rate has traditionally been the priority of the State Bank of Pakistan (SBP). Ahmed et al. (2019), using a Vector Autoregression (VAR) framework to analyse changes in the monetary policy, determined that interest rate changes have a significant effect on the prices of commodities and inflation. Based on this Karim and Lohano (2024) applied sentiment analysis (a new practice) on MB statements published by the State Bank of Pakistan. In this study, they exhibited that the “tone” and idea of these statements can have a direct outcome on the market, and as soar and effective policy messaging is decisive.

Similarly, the growth-inflation relationship was studied by Khan and Senhadji (2001) to infer that after a certain level of inflation becomes relevant for countries suffering from the hyper-inflation, like Pakistan, the negative impact of inflation affects growth only. Hossain (2015) further studied while being specifically established in the context of Bangladesh and elaborated understandings on the effects of volatility of inflation and monetary policy intervention with respect to the economies going through the issues and constraints of the similar nature.

H₃: Policy Rates have a significant effect on GDP

In this sense, gold prices, inflation, and the policy rate are interrelated and of great significance for economic conditions. In periods of inflation, gold prices tend to

increase as gold is seen as a protective asset by more investors, and central banks generally respond by increasing interest rates to control the money supply. Regarding capital markets and fiscal policy, these dynamics have been analyzed by Haider (2016) and Fan et al. (2016). Daoui (2023), building on this idea, reviewed the literature on the case of several developing countries and put forward the need to take into account the co-movement of these variables in the design of effective economic policies.

Pakistan is another recent example of this. Consequently, the inflation rate of the country decreased to 2.4 percent in January 2025, the lowest since 2016, as revealed by Reuters (2024, 2025). In a reaction, the State Bank of Pakistan (SBP) had reduced the policy rate by 22% to 12% to stimulate economic growth whilst keeping prices steady. This was the lowest inflation rate recorded in nearly three years, as it entered single digits largely as a result of a more stable currency and declining prices in food and energy items. As a result, the SBP commenced a series of rate reductions in 2024 that culminated in a 12 % rate by March 2025. But in early 2025, following negotiations with their International Monetary Fund (IMF) and fear of the state of the world economy, another cut on those rates was halted.

The general research supports the established strong correlation of gold prices with inflation and interest rates in the Pakistani economy. Gold retains its value during inflationary environments, interest rates are the critical lever to control the economy, and inflation is a result of fiscal and/or monetary policies. All of these characteristics are informative with regard to the country's economic resilience as well as policy response.

Data and Methodology

This research paper uses the annual time series from 1990 to 2024 to show how the prices of gold, inflation rates, and interest rates have affected the Pakistan GDP. There are four important variables in the dataset:

Dependent Variable: Gross Domestic Product (GDP) (in USD billions): This is the main indicator of the Pakistani economy, obtained in the World Development Indicators provided by the World Bank.

Independent Variables: Gold Prices (USD per ounce)—IMF Primary Commodity Price averages annually, which show short-term worldwide market trends and domestic demand; Inflation Rates—obtained in the SBP Statistical Review; and Interest Rates (%)—the policy rate of the State Bank of Pakistan (SBP), which reflects the tightness of monetary policy.

Methodological Approach

This paper utilizes the analysis using multiple linear regression technique to quantify the linkage between these variables. The regression model equation is as under:

$$\text{GDP} = \beta_0 + \beta_1 \text{Gold Price} + \beta_2 \text{Inflation Rates} + \beta_3 \text{Interest Rate} + \epsilon$$

Where:

- GDP = Gross Domestic Product in the year.
- β_0 = Intercept.
- $\beta_1, \beta_2, \beta_3$ = Coefficients for gold prices, inflation rates, and interest rates, respectively.
- ϵ = Error term.

Results and Discussion

Before moving forward with the regression analysis, the unit root test is applied, the result is as under (table 1):

Table 1: *Results of unit root test*

Variable	Dickey-Fuller	Phillips-Perron
GDP	0.9160	0.5235
	0.9945	0.9851
Gold Prices	8.4390	6.4433
	1.0000	1.0000
Inflation Rate	-1.5675	-1.6355
	0.4879	0.4540
Policy Rate	-2.0222	-0.9212
	0.2764	0.7692

The data in table 1 shows that all the variables are checked for stationarity using the Dickey-Fuller and Phillips-Perron. The results of these tests indicate that all the variables have a p-value greater than 0.05, which means that the series is non-stationary.

Results of the regression analysis is presented in table 2:

Table 2: *Results of the Regression Analysis*

Constant	Gold Price	Inflation Rate	Policy Rate	R-Square	F-Statistics
-462.1686	81.671	-0.162	-65.371	0.967	306.504
(73.6546)	(3.808)	(1.061)	(21.664)		
[-6.2748]	[21.447]	[-0.134]			
0.0000	0.0000	0.8946	0.0052		0.0000

The regression analysis provides meaningful insights into the correlation between the price of gold, inflation, policy rates, and the GDP growth of Pakistan from 1990 to 2024. The model has high explanatory strength, and the exact explanatory power, which is R-squared, is 0.967, where about 96.7% of the change in the GDP can be explained by the independent variables. The adjusted R-squared (0.964) also confirms how robust the model is, and the exceptionally significant F-statistic (306.504, $p = 0.000$) confirms the overall fit of the regression. We break down the findings associated with each variable below and explain the implications.

Gold Prices and GDP: A Positive Surprise

However, on the contrary, the coefficient on log-transformed gold prices (81.671, $p = 0.000$) is positive and significant, implying that a 1-percentage point increase in gold prices corresponds to an 81.67 unit increase in GDP. The result does not align with a significant portion of the literature (e.g., Ahmed et al., 2021; Khan et al., 2022), which assumes that gold negatively affects GDP through trade deficits and currency losses. Nonetheless, this is possibly an indication of the unique Pakistani economic setup, in which gold serves not only as an import but also as:

- **A store of value:** During crises, gold holdings may stabilize household wealth, indirectly supporting consumption.
- **A financial asset:** Rising gold prices could boost informal sector liquidity, as gold is often used as collateral in shadow banking.
- **A remittance conduit:** Overseas workers may channel remittances through gold purchases, indirectly fueling economic activity.

More research is required to find out whether this relationship applies at sub-periods, particularly during economic crises (e.g., the 2008 financial crash or the COVID-19 pandemic).

Inflation Rate: Statistically Insignificant Impact

The results challenge the pervasive point of view that growth is debilitated by the inflation as coefficient for inflation rate (-0.142 , $p = 0.895$) is negligible and statistically insignificant. This could suggest:

1. **Offsetting effects:** The demand may be temporarily stimulated as high inflation erodes purchasing power (as per the Phillips Curve).
2. **Measurement issues:** The inflation data relating specifically to Pakistan may not fully capture regional and sectoral variation that hamper growth.
3. **Policy buffers:** The informal and temporary economic adjustments and subsidies granted by the government might palliate inflation's negative impacts.

This result aligns with Hossain's (2015) argument that inflation's growth effects depend on its source (supply-side vs. demand-pull), warranting disaggregated analysis in future studies

Policy Rate: Strong Negative Correlation

The results of the study are consistent with the monetary theory (Batool, S. et al., 2021) as the log-transformed policy rate (-65.370, $p = 0.005$) shows significant inverse relationship with GDP. An increase in the policy rate by 1 percent correlates with a 65.37-unit decline in GDP, which highlights the trade-off between inflation control and growth. The results support the findings by Daoui (2023), that monetary controls in Pakistan inexplicably affects SMEs and private investment. The result underscores:

- **Transmission lags:** Interest rate changes may take quarters to fully impact GDP, suggesting the need for forward-looking policy.
- **Fiscal-monetary conflict:** High fiscal deficits (averaging 6.8% of GDP (Khan & Senhadji, 2001)) may weaken monetary policy effectiveness.

Policy Implications

- **Gold Price Management:** There is a need to monitor and observe the dual role of gold i.e., import vs asset and formalize gold markets policies, potentially taxing speculative holdings while ensuring liquidity for productive uses.
- **Inflation Targeting:** The central bank policies should focus on core inflation (excluding volatile food/energy prices) as insignificant inflation-GDP link suggests to avoid over tightening.
- **Interest Rate Calibration:** The State Bank of Pakistan may adopt asymmetric rate policies like cutting rates aggressively during down turns but raising them cautiously during booms.

Limitations and Future Research

This study is not without limitations. Firstly, there is the timeframe bias. The 34-year span may mask structural breaks (e.g., post-9/11 aid inflows or CPEC investments). Sub-period analysis is advised. Secondly, the limitation of omitted variables. Exchange rates, fiscal deficits, and global oil prices likely interact with the studied variables.

Future research should explore nonlinearities and sectoral impacts as gold prices unexpectedly correlate with higher GDP, monetary policy remains a potent (if blunt) tool for growth management, whereas inflation's role is less clear-cut. This

study provides a foundation for reassessing Pakistan's growth drivers, highlighting the need for nuanced, context-specific policies rather than conventional wisdom.

Conclusion and Recommendation

This paper focused on the regression analysis of how the GDP of Pakistan is influenced by the price of gold, the inflation rate, and the policy rate, between the period 1990 and 2024. It was found that there are a few insights that were quite significant, as they revealed the traditional assumptions of economics and a new perspective on the macroeconomic situation in Pakistan. However, to the contrary, the prices of gold showed an extraordinarily positive dependence on GDP, which indicates that the role of gold in the Pakistani economy is not as straightforward as the use of gold as an import-based drain of foreign reserves. This result suggests that the negative effects of a negative balance of trade of gold could be counterbalanced by its use as a store of value, pledging in informal lending, and remittances conduits.

Surprisingly, the inflation rate did not have any statistically significant effect on the increase in GDP, contrary to most of the literature in which these effects are expected to be negative and inversely correlated. This finding proposes that the economy of Pakistan might have acquired informal methods of coping or that the overall rate of inflation is covering counterbalancing sectoral impacts. In the meantime, the policy rate was strongly, negatively correlated with GDP, which supports the classical perspective that monetary tightness has a restrictive effect on economic growth, especially in such a country as Pakistan, where access to credit through credit providers, especially the banks, is already restricted.

The substantial explanatory power of the model ($R^2 = 0.967$) also proves that these variables jointly influence the economic trend of Pakistan. The evidence provided by the Durbin-Watson statistic of mild autocorrelation, though, is that other variables: exchange rate changes, fiscal policy alterations, or other external shocks may also moderate these associations. All these findings collectively point to the benefit that a more detailed interpretation of the relationships between macroeconomic variables in developing economies such as Pakistan is necessary, where the informal sectors, remittance flows, and structural limitations generate particular transmission mechanisms.

Recommendations

Based on the findings of the research the authors would like to recommend 1) the rethinking Gold's Role in Economic Policy. Taking into consideration the unexpected positive correlation between gold prices and GDP, Pakistani policymakers ought to:

- Make the gold market formal by launching gold-backed financial instruments that are regulated (e.g., gold savings certificates) to redirect the gold Jim Crowables own to productive investment.
- Monitor speculative hoarding either with taxes on transactions or with large-gold-purchase reporting (so price surges from a real rather than an artificial scarcity).
- Grant mining companies the access to gold by negotiating long-term contracts with their supplier nations to limit the effects of price volatility on foreign reserves.

Second, there is a need of refining inflation management strategies. The insignificance of the relation between inflation and GDP indicates that blanket policies based on inflation-targeting can be unproductive. Instead, authorities should:

- Implement core inflation targeting (excluding food and energy price increases) that prevents excessive response to temporary supply shocks.
- Make social safety nets (e.g., targeted subsidies) harder to defend low-income households against food/energy inflation without distorting aggregate price signals.
- Publish price indices by sector to deepen the understanding of what price increases are actually damaging growth.

Third, the adverse effect of the policy rate on the GDP is very strong, and a more balanced monetary tightening strategy is required:

- Use asymmetric rate movements- Use rate cuts during recessions but increases at a slow pace during booms to ensure weak recoveries are not stifled.
- Establish alternative, monetary instruments (e.g., reserve requirement ratios, liquidity injections on behalf of SMEs, etc.) to bring inflation under control without over-utilization of any single policy, i.e., interest rates.
- Improve fiscal policy coordination to make sure deficit financing does not compromise monetary tightening (e.g., using the tax overhaul as an excuse to stimulate aggregate demand).

Future Research Directions

In order to expand this paper, scholars need to:

- The effects of disaggregated gold: the effects of disaggregated gold as an asset and not as an import may be calculated with the help of the firm-level or household survey data.

- Test the threshold model of nonlinear inflation in order to determine certain inflation rates that trigger growth slumps.
- Additional variables such as exchange rates, fiscal deficits, and international oil prices would then be added to a vector-autoregression (VAR) model to measure more extended interactions.

In conclusion to this discussion, it is important that the economy of Pakistan needs policies that reflect its structural peculiarities, such as gold hoarding cushions against crisis, asymmetrical impacts of inflation, and asymmetrical transmission of monetary policy. Policymakers will be in a better position to cope with the reality of trade-offs between stability and growth by going beyond standard frames and accommodating context-based solutions. Paradoxical findings in this study eventually underscore the need to challenge the common assumptions and basing of decisions on local empirical evidence instead of relying on imported economic dogmas.

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