Impact of monetary policy on gross domestic product (GDP)

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IMPACT OF MONETARY POLICY ON GROSS DOMESTIC PRODUCT (GDP)

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ABSTRACT

This research article focuses on the impact of Monetary Policy on GDP. GDP no doubt is affected by the Monetary Policy of the state. The research papers of various authors have been studied in this regard to prove the Hypothesis and after in depth analysis by applying Regression Analysis technique it has been observed that the relationship between the two exists. The data of past 30 years of Pakistan has been used for driving the conclusion. The study proved that the interest rate has minor relationship with GDP but the Growth in Money Supply greatly affects the GDP of an economy, obviously various unknown factors also affects the GDP. Growth in Money Supply has a huge impact on GDP. The Research study can further be used for developmental projects for the Growth of Economy, Quality improvements, Household production, the underground economy, Health and life expectancy, the environment, Political immunity and ethnic justice.

KEY WORDS: MONETARY POLICY, GROSS DOMESTIC PRODUCT, INFLATION, MONEY SUPPLY.

INTRODUCTION

Monetary policy can be defined as the process by which the government, central bank, or monetary authority of a country controls (i) the supply of money, (ii) availability of money, and (iii) cost of money or rate of interest, in order to attain a set of objectives oriented towards the growth and stability of the economy. Monetary policy rests on the relationship between the rates of interest in an economy, that is the price at which money can be borrowed, and the total supply

of money. Monetary policy uses a variety of tools to control one or both of these, to influence outcomes like economic growth, inflation, exchange rates with other currencies and unemployment.

OBJECTIVES OF MONETARY POLICY

Monetary policy in a country acts as a tool by which the government or central bank, attain a set of objectives oriented towards the growth and stability of the economy. Ina case of Pakistan, Monetary policy management and financial sector stability are two primary roles of State Bank of Pakistan (SBP). Monetary policy and process of its formulation in Pakistan has undergone changes with the evolving economic dynamics within the country and the improved empirical and theoretical understanding of the monetary policy across the world.

One of the important and crucial intermediate target variables of monetary Policy in Pakistan is money supply. The SBP has been using M2 aggregate (i.e., currency + demand deposits + time deposits) for policy purposes on the assumption that the demand for M2 function is stable in Pakistan. Utilizing the estimated money demand function the target rate of growth of M2 is set (Qayyum, 2002).

Monetary policy of Pakistan now for some years has been largely supportive of the dual objective of promoting economic growth and price stability. It achieves this goal by targeting monetary aggregates (broad money supply growth as an intermediate target and reserve money as an operational target) in accordance with real GDP growth and inflation targets set by the Government (Shamshad, 2006).

MONETARY POLICY MANAGEMENT IN PAKISTAN OVER THE YEARS

State Bank of Pakistan (SBP) shifted its reliance from an administered monetary policy regime governed by ad hoc changes in reserve ratio's, directed credit and regulated interest rate policies in mid 1990s to a liberal and market oriented monetary policy management (Shamshad, 2007).

Broad money supply growth has to be consistent with the targets of growth in real GDP and inflation rate. However, if there are excessive demand pressures either because of high fiscal deficit or because of the excessive foreign inflows money supply grows faster than the growth in productive sectors and generates demand pressures which manifests itself in rise in inflation rate. Despite all contests and debates, inflation is primarily a monetary phenomenon. To keep it under

control it is critical that macroeconomic imbalances are kept within the permissible limits. Fiscal wastefulness in the past has resulted in Government's unlimited recourse to low and fixed interest rate financing (State Bank of Pakistan, 2006).

Pakistan's inflation rate for 2009 financial year is expected to be 20 percent which is 40 percent higher than the last year's 12 percent. On the other hand, GDP growth rate of Pakistan for 2009 and 2010 is projected to be 2.8 percent and 4.0 percent respectively (Asma, 2009). Thus there is a need to change the ways monetary policy have been used to guide economy for future.

The Central Bank designs Contractionary policy in order to constrain the growth of money (i.e. increasing inflation) and credit in the economy. In the present international scenario, due to hike in inflation internationally, like most of the countries have adopted contractionary policy, Pakistan recently has also increased interest rate by 0.5 percent and set 10 percent short-term interest rates. On the other hand Expansionary policy is used as a tool by the central bank to broaden the monetary base and credit in the economy by reduction in interest rates and increase in bond prices (Pakistan Defense Forum, 2008).

The State Bank of Pakistan has a main objective of achieving price stability and promotes growth. In order to contain inflation within the targeted level set by the government, SBP used money supply as an instrument target. The statistics reveals that Money supply growth exceeded its target level for four consecutive years 2002-2005. Due to easy monetary policy stance to support the growth process, however the expansionary monetary policy results in rapid inflation reaching double digit in 2005-2006. Inflation tax for the year 2005-2006 is estimated at Rs. 61928 million or 0.98 percent of GDP.

GROWTH AND MONETARY PHENOMENON

Before 2005-2006 monetary policy was biased towards supporting growth because inflation was at low level but with the rising inflation from 2005-2006 monetary actions are towards the containment of inflation (State Bank of Pakistan, 2006).

High rates of inflation cause problems, not just for some individuals, but for aggregate economic performance. Not only sustained high rates of inflation can adversely affect the real economic growth in long run but also even moderate level of inflation damage the real economic growth. However, the relationship between inflation and economic growth is non linear. For each one

percent point increase in inflation, in USA, annual growth rate has reduced by 0.223% (Smyth, 1992). At low rates of inflation this relationship is negative but insignificant; however higher rates of inflation have a significantly negative effect on growth.

Inflation not only decreases the growth rate but also induces the uncertainty in economy. Keeping in view this hazardous nature of inflation, world's leading central banks have developed the idea that price stability is the prime function of monetary policy (Blejer , 2000) and more precisely central banks are aimed to keep the inflation rate low (Friend, 2000). Thus maintaining price stability is the responsibility of every central bank and it is responsible for achieving this. It is argued that sufficiently tight monetary policy for longer periods of time can decrease even the extreme cases of inflation (Friedman, 1963).

Cause of inflation in Pakistan has been estimated by a number of researchers (Khan and Qasim, 1996) and it has been established that monetary phenomenon are responsible for the high levels of inflation in long run (Khan, 2006). With persistent high inflation in economy, economic growth of the country suffers and there is no smooth running of the government policies under these high inflation rates. In Pakistan, rise in inflation has been found as the result of excess money supply growth (M2). The money supply growth initially affects the real GDP and then hits the inflation in Pakistan. This may be due to the loose monetary policy adopted by State Bank of Pakistan thus for reduction of inflation, tight monetary policy in Pakistan must be implemented (Qayyum, 2006).

Monetary policy is only one element of overall macroeconomic policy, and can only affect the production process through its impact on interest rates. Contractionary monetary policy raises longer-term real interest rates. The nominal interest rate equals the real interest rate plus the expected inflation rate. If contractionary monetary policy lowers expected inflation or leaves it unchanged, then evidence that it increases the nominal interest rate implies that it must be increasing the real interest rate also (Thorbecke and Zhang, 2008).

Hardouvelis and Barnhardt (1989), Frankel (2008) and others have shown that if monetary policy actions are expected to increase real interest rates they will lower commodity prices and if they are expected to lower inflation they will also lower commodity prices.

The main cause of high interest rates is high inflation, through the expected inflation Premium. Conversely, the best prospect for low interest rates is a stable environment of low inflation. In this context, the relatively high interest rates that may be necessary to achieve a desired disinflation represent "short-term pain for long term gain." SBP, therefore, has a current focus on anti-inflation policy which will ensure steady growth in the long run (Shamshad, 2007).

SCOPE OF STUDY

Present study will attempt to investigate how the changes in the monetary policy effect, through inflation, the economic growth of Pakistan. Inflation is the most researched topic in the modern era because it has very serious implications for growth and income distribution. In case of Pakistan the excess money supply is the main factor responsible for inflation. The topic here clearly emphasizes the monetary policy have a direct link with inflation whether this policy is tight or loose because it had to effect in one way or another. Other monetary phenomenon also impact the overall growth there fore this paper will also determine whether, and how, GDP in Pakistan would respond to a change in money supply (M2), the inflation rate, and interest rate in economy.

REVIEW OF LITERATURE

Before proceeding to review what other researchers have found about relationship of GDP growth and Money supply, interest rate, and Inflation, we first attempt to explain the importance of monetary policy in light of available literature.

Government policies, including monetary policy, affect the growth of domestic output to the extent that they affect the quantity and productivity of capital and labor. Monetary policy is only one element of overall macroeconomic policy, and can only affect the production process through its impact on interest rates. There are two main channels of monetary policy. One is through the effect that interest rate changes have on the exchange rate of a currency, and the other is through the effect that interest rate changes have on demand. Therefore monetary policy has an impact on economic activity and growth through the workings of foreign and domestic markets for goods and services (Boweni, 2000)

Although monetary policy is the principal stabilization tool for most economies used by an independent and credible central bank, still there are economists who see important stabilization role for fiscal policy working alongside monetary policy. Even there are economists who say, no matter how independent central bank is, the monetary policy may not be sufficient for determining the price level and there is role for fiscal policy (Hanif and Arby, 2003).

The instrument of monetary policy ought to be the short term interest rate, that policy should be focused on the control of inflation, and that inflation can be reduced by increasing short term interest rates (Alvarez, 2001).

The investigations into the existence and nature of the link between inflation and economic growth have experienced a long history. Originating in the Latin American context in the 1950s, the issue has generated an enduring debate between structuralists and monetarists. The structuralists believe that inflation is essential for economic growth whereas the monetarists see inflation as detrimental to economic progress. There are two aspects to this debate: (a) the nature of the relationship if one exists and (b) the direction of causality (Mallik, 2001).

Although economists now widely accept that inflation has a negative effect on economic growth, researchers did not detect this affect in data from the 1950s and the 1960s (Min, 2005). A series of studies in the IMF Staff Papers around 1960 found no evidence of damage from inflation (Wai, 1959; Bhatia, 1960; Dorrance, 1963, 1966). Therefore, a popular view in the 1960s was that the effect of inflation on growth was not particularly important.

This view prevailed until the 1970s, when many countries, mainly in Latin Americans experienced hyperinflation. Numerous empirical studies were devoted to finding the effects of inflation in high-inflation countries. These studies repeatedly confirmed that inflation had a significant negative effect on economic growth, at least at sufficiently high levels of inflation. Therefore, today, the dominant view regarding the effects of inflation has changed dramatically. It has been found that in developing countries as the inflation rate exceeds a specified threshold, it affects the growth rate adversely (Min, 2005).

Monetary policy plays a key role in determining inflation rates. Various studies provide the empirical evidence on the relationship between inflation and growth. (Lucas, 1973) held that inflation in any economy induces uncertainty in economy and increased economic uncertainty

negatively affect the output growth. Inflation overall effects the growth of the country, the financial sector development and the vulnerable poor segment of the population. There is clear consensus that even moderate levels of inflation, damage real growth.

Kremer' *et al*. (2008) examined the impact of inflation on long-term economic growth for a panel of 63 industrial and non-industrial countries. Their results revealed that inflation obstructs growth if it exceeds thresholds of 2% for industrial and 12% for non-industrial countries. However below these thresholds, effect of inflation on growth remained significantly positive.

Bruno and Easterly (1998) demonstrated that a number of economies have experienced sustained inflations of 20 percent to 30 percent without suffering any apparently major adverse consequences. However, once the rate of inflation exceeds some critical level (which Bruno and Easterly estimated to be about 40 percent), significant declines occur in the level of real activity.

Barro (1995) very precisely examined the five-year average data of 100 countries over the period of 1960-90. His result shows that an increase in average inflation by 10 percentage points per year would slow the growth rate of the real per capita GDP by 0.2-0.3 percentage points per year. He argued that although the adverse influence of inflation on growth appeared small, the long-term effects on standards of living were actually substantial. Nevertheless, some other empirical and theoretical studies argued that the inflation-growth relationship is fragile. Maghyereh (2003) also reported that the effect of inflation rate on the economic growth is strongly negative and statistically significant.

Mundell (1965) and Tobin (1965) predict a positive relationship between the rate of inflation and the rate of capital accumulation, which in turn, implies a positive relationship to the rate of economic growth. They argue that since money and capital are substitutable, an increase in the rate of inflation increases capital accumulation by shifting portfolio from money to capital, and thereby, stimulating a higher rate of economic growth (Gregorio, 1996).

Ahmad and Mortaza (2005) evaluated the concept that moderate and stable inflation rates promote the development process of a country, and hence economic growth. Using annual data set on real GDP and CPI of Bangladesh for the period of 1980 to 2005, they demonstrate statistically significant long-run negative relationship between inflation and economic growth for the country as indicated by a statistically significant long-run negative relationship between CPI

and real GDP. Also as a threshold they suggested 6% of inflation above which inflation adversely affects economic growth.

However, Johanson (1967) found no conclusive empirical evidence for either a positive or a negative association between the two variables. Therefore, a popular view in the 1960s was that the effect of inflation on growth was not particularly important. Also Fischer and Modigliani (1978) suggest a negative and nonlinear relationship between the rate of inflation and economic growth through the new growth theory mechanisms (Malla, 1997). They mention that inflation restricts economic growth largely by reducing the efficiency of investment rather than its level.

Fisher (1993) also found negative associations between inflation and growth for a large set of countries.

Dewan and Hussein (2001) found in a sample of 41 middle-income developing countries including Fiji, that inflation was negatively correlated to growth. While examining relationship of inflation and growth in Fiji, Dewan (1999) found that changes in the difference between actual GDP and potential GDP (output gap) had a bearing on Fiji's inflation outcome.

Faria and Carneiro (2001) investigated the relationship between inflation and economic growth in the context of Brazil which has been experiencing persistent high inflation until recent. Analyzing a bivariate time series model with annual data for the period between 1980 and 1995, they found that although there exist a negative relationship between inflation and economic growth in the short-run, inflation does not affect economic growth in the long-run.

Mallik (2001) examine the relationship between inflation and GDP growth for four South Asian countries i.e. Bangladesh, India, Pakistan and Sri Lanka. Their results provided the evidence of a long-run positive relationship between GDP growth rate and inflation for all four countries. They also concluded that moderate inflation is helpful to growth, but faster economic growth feeds back into inflation. Thus, these countries are on a knife-edge.

Kuttner and Mosser (2002) indicated that monetary policy affects the economy through several transmission mechanisms such as the interest rate channel, the exchange rate channel, Tobin's q theory, the wealth effect, the monetarist channel, and the credit channels including the bank lending channel and the balance-sheet channel. But mainly monetary policy plays its role in controlling inflation through money supply and interest rate. Money Supply (M2) would affect

real GDP positively because an increase in real quantity of money causes the nominal interest rate to decline and real output to rise (Hsing, 2005). Taylor (1995) emphasized the importance of the interest rate channel in this regard.

Hsing (2005) examined an annual sample during 1959-2001 to find possible relationships between real GDP for Venezuela and selected macroeconomic variables. According to his study more real M2, more government deficit spending, real depreciation, a higher expected inflation rate, and higher world oil price would help raise real GDP in Venezuela.

Qayyum (2006) investigated the linkage between the excess money supply growth and inflation in Pakistan. Also he examined that is inflation a monetary phenomenon? His results from the correlation analysis indicated that there is a positive association between money growth and inflation. The money supply growth at first-round affects real GDP growth and at the second round it affects inflation in Pakistan. The important finding from the analysis is that the excess money supply growth has been an important contributor to the rise in inflation in Pakistan during the study period. This supports the monetarist proposition that inflation in Pakistan is a monetary phenomenon.

Mohsin and Axel (2005) concluded an inverse relationship between inflation and real per capita GDP of Pakistan. When inflation was 8 percent on average during 1978-1991, per capita growth averaged 3 percent but when inflation rose to 11% during 1992 and 1997 real per capita growth averaged only 1 percent and it further recovered as inflation fell to 5 percent. Further this study concludes that "the direct inflation-growth nexus suggests a threshold in the range of 4 to 9 percent, while the inflation-financial development nexus suggests a lower threshold of 3–6 percent. Based on this, it is further recommended that SBP adopts an inflation target of 5 percent." Paul, Kearney and Chowdhury (1997) also reported a negative relationship between economic growth and inflation for Pakistan.

Fry (1988) and Gleb (1989) find, from pooled cross-economy time series data, a consistently positive and significant relationship between economic growth and the real rate of interest. In order to separate the effects of inflation and real interest rates on growth, World Bank conducted a study. This study provides evidence from a sample of twenty countries, for the impact of the real interest rate and the inflation rate on the growth rate. The real interest rate has a statistically

significant and positive impact on growth. But when inflation is included, the coefficient for the real interest rate is no longer statistically significant, while the negative coefficient on the rate of inflation is. This suggests that the positive relation between real rate of interest and growth was actually reflecting a negative relation between inflation and growth in financially repressed regimes, where nominal interest rates are kept fixed (World Bank 1993).

Relationship between inflation, interest rate, and growth has been the consideration of researchers since very long. An examination of this relationship in USA shows that the U.S. inflation of the 1970s and 80s can be fully accounted for by the corresponding increase in M2 (or M1) growth rates, and the return to relatively low inflation rates in the 1990s can be explained by the correspondingly low average rate of money supply growth in that decade. Inflation in the 90s was about 3.5 percentage points lower than its average in the 70s and 80s, and the growth rate of M2 was about 5 percentage points lower (Alvarez, 2001).

The statistics reveal that money supply growth exceeded its target levels for four consecutive years (2002-2005) due to easy monetary policy stance to support the growth process. However, the expansionary monetary policy resulted in rapid inflation reaching double digit in 2005. Since inflation is a tax on money holdings. Inflation tax for the year 2005 is estimated at Rs 61928 million or 0.98 percent of GDP. Before 2005 monetary policy was aimed at supporting growth because inflation was at low level. With the rising inflation from 2005 monetary policy stance has now changed from supporting growth to containing of inflation (State Bank of Pakistan, 2006).

All of the above discussion shows that there is a non linear relationship between inflation and economic growth. However inflation does effect economic growth directly. Monetary Policy variables such as Money Supply M2 and Interest rates along with inflation also effect the economic growth in economy.

RESEARCH METHODS

This chapter has been divided into three parts. First one discusses the data sources and nature of data in detail. Second one discusses the model to be applied to find out the results. And third and last part states the hypothesis to be checked for this study.

DATA COLLECTION

In order to check impact of monetary policy on economic growth of Pakistan, through inflation, comprehensive data has been gathered for the period 1980-2009. Main data source in this regard has been the State Bank of Pakistan. Moreover official websites of ministry of finance and federal statistics bureau has also been visited in this regard. Since data for the period before 1980, for all the variables under study, is not available, we have considered maximum number of years for which data for all required variables is available.

VARIABLES

Description for each variable under study is as under:

Gross Domestic Product (GDP)

In economics, GDP is defined as the value of all goods and services produced within the geographic territory of an economy in a given interval, such as a year. A well known formula for GDP has been stated as the total market value of all final goods and services produced in a country in a given year, equal to total consumer, investment and government spending, plus the value of exports, minus the value of imports.

GDP is the most commonly known measures of national income, output, and growth. GDP is of two types. Nominal GDP is a measure of money spent. Real GDP corrects the gross nominal GDP figure for inflation, making real GDP more useful for historical comparison. Nominal GDP is sometimes called money GDP, and real GDP is sometimes called inflation- corrected GDP or constant price GDP. For purpose of this study data for real GDP for the period 1980-2008 has been considered.

In Pakistan, high GDP growth has been observed over last five years only. After a period of low growth throughout the 1990s, the annual growth figure for Pakistan has been hovering around the 7 percent level since 2003-04. The current growth momentum of Pakistan's economy is largely the result of greater financial and trade integration and the good performance of the services and manufacturing sectors. Recent increase in GDP growth rate has reduced income-poverty ratio in a significant manner and raised the average living standards in Pakistan. However rising inequality in income and non-income group have led to a weaker link between economic growth and poverty reduction in Pakistan. This provides us the basis to check, by

means of this study, the impact of other monetary variables as well on GDP growth in economy collected for the period 1980-2009.

Money Supply (M2)

Money supply is the total amount of money available in an economy at a particular point of time. The importance of an appropriate monetary aggregate can hardly be over emphasized, particularly for those countries that attach their monetary policy to monetary aggregates. The breakdown of stable relationship between monetary aggregates and macroeconomic variables due to structural change in financial markets and emergence of new financial instruments led to frequent changes in the definition of monetary aggregates. In practice more than one monetary aggregate are usually defined in the hope that multiple aggregates may collectively provide more information for the conduct of monetary policy and developments in the economy.

Interest Rate

The term interest rate usually means any bank lending rate. However, the rates don't always move rapidly because they are driven by different forces. Rates on longer-term loans are driven by 3 months, 6 months, and 12 months treasury bills in Pakistan. On treasury notes, like any loan, the interest rates are fixed. However, Treasury notes are auctioned to the highest bidder. Depending on the demand at auction, the note could cost more or less than face value. However, at the end of the note's term, the Government pays back full face value to the bidder. In effect, bidders are loaning the bid amount to the Government. In return, they get the interest rate and the full face value.

Inflation Rate

Stable inflation is recognized as an integral component of sound macroeconomic policies. Inflation refers to the persistent rise in general price level. Inflation affects the distribution of both income and wealth. Nominal incomes of some individuals tend to increase with inflation, while those of others remain constant thus causing a change in the distribution of income in favor of the former group. Complex and multidimensional problem of inflation needs a systematic and scientific understanding, examination, investigation and analysis.

The excess money supply growth and inflation in Pakistan are positively associated with each other. The money supply growth at first-round affects real GDP growth and at the second round

it affects inflation in Pakistan. The important finding is that the excess money supply growth has been an important contributor to the rise in inflation (Qayyum, 2006). This provides the basis to examine the impact of monetary policy by controlling inflation on economic growth.

Four different price indices are published in Pakistan: the consumer price index (CPI), the wholesale price index (WPI), the sensitive price index (SPI) and the GDP deflator. In Pakistan, the main focus is placed on the CPI as a measure of inflation as it is more representative with a wider coverage of 375 items in 71 markets of 35 cities around the country. Also it most closely represents the cost of living. So this study assumes annual CPI for the period 1980 to 2009 as an indicator of inflation in economy.

HYPOTHESIS

On the basis of literature review, following hypothesis have been devised for the purpose of this study:

H_1: Interest rate has relationship with GDP.

H_2: Growth in money supply has relationship with GDP.

RESULTS AND DISCUSSION

This chapter covers the estimation and analysis of data for the period 1980-2009 to check out the impact of monetary policy through inflation on growth rate of Pakistan.

Regression analysis

Model Summary (b)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.900(a)	0.811	0.797	947743.736	0.342

Dependent Variable: Growth in GDP Independent Variable: Interest Rate, Money Supply From the results of the SPSS regression model, It has been observed that R was **0.900** that indicates that the strength of relationship was strong, and the Coefficient of Determination (R^2) was **0.811** which means that the **81.1** percent of the model was explained & the remaining was

explained by unknown factors. So we reject null hypothesis and the relationship among the variables exists. Durbin-Watson test value was **0.342** which was less than **2** which means that the relationship among the observations does not exists

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	sig.
1	(Constant)	-11172412.15	3169327.12		-3.525	0.002
	Compute ln_MS =LN(moneysupply)	1556639.592	145579.655	0.907	10.69	0.000
	Compute ln_IR =LN(interestrate)	-3187208.635	1148787.77	-0.235	-2.774	0.010

Model: Growth GDP = -11172412 + 1556639.6 (money supply) – 3187209 (interest rate)

Interpretation:

Constant was -11172412 which means even when the Interest Rate was Zero still GDP was -11172412, the **B1** was 1556639.6 which indicate that with one unit increase in money supply the GDP increased by 1556639.6 and vice versa, and the **B2** was – 3187209 which indicate that with one unit increase in money supply the GDP increased by – 3187209 and vice versa.

Model Fit Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
0.55	0.307	0.227	442226.118	1.06

Furthermore to improve the model, Autocorrelation has been applied on the data and at Final Iteration 10 the Durbin Watson was improved from 0.342 to 1.060.

CONCLUSION

Monetary policy for any country plays a key role in its overall economic growth. The institutional framework for monetary policy in Pakistan is set out in the State Bank of Pakistan Act of 1956 and its subsequent amendments. The Act specifies that the Central Board of

Directors of the State Bank of Pakistan (SBP) shall "secure monetary stability and the soundness of the financial system". Monetary policy of Pakistan now for some years has been largely supportive of the dual objective of promoting economic growth and price stability. It achieves this goal by targeting monetary aggregates (broad money supply growth as an intermediate target and reserve money as an operational target) in accordance with real GDP growth and inflation targets set by the Government (Shamshad, 2006). In this scenario, present study is an attempt to discover how much money supply, interest rate and inflation impact the overall growth of GDP in Pakistan.

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