

# The relationship between inflation and unemployment



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The economic literature on inflation was not vast till the fifties. The major focus of the economists was the relationship between inflation and unemployment. However, following the oil price hike of the seventies, United States saw increasing inflation in the economy. Economists became interested in the subject and a significant amount of research was done to understand the phenomenon of inflation, its causes and costs to the economy. Many theories have been proposed to explain inflation with recommendations to control it. However, bringing inflation to very low levels can damage the macroeconomic environment as much as high inflation rates. In order to understand this dubious nature of inflation, a brief discussion on costs of high and low inflation is mandatory.

## **Economic Costs of Inflation**

In the early debates, economists differed on their views about inflation. Some economists believed that inflation should be totally eliminated from the economy (Gavin and Stockman 1988; Gavin 1990; Howitt 1990 and Selody 1990) while others argued that the costs of reducing inflation would outweigh the benefits of price stability (Lucas 1989, 1990; Fortin 1990; Peters 1990 and Scarth 1990). By the end of the eighties, there was a consensus among the harmful effects of inflation on macroeconomic stability. Concerned about the issue, many economies pursued the agenda of controlling inflation as a primary objective. If inflation rate continues to rise in an economy, it can have several detrimental effects on the economy.

One of the most common perceptions about costs of inflation is that inflation erodes the purchasing power parity of the currency. Mankiw (2009) asserts that this common perception about inflation is a fallacy. He suggests that “  
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inflation itself does not reduce people's purchasing parity". He argues that people fail to understand the concept of money neutrality. When inflation rises, prices of all goods and services go up, including labor. So, the wages also increase to adjust for the rise in prices.

However, in developing countries like Pakistan, wages are not increased at the same rate. The rate inflation is very high while wages rise with a small percentage. Thus, inflation does have a negative impact on the purchasing parity of people. Even if incomes keep pace with the rate of inflation, there are several other negative impacts on the economy.

Inflation acts as a tax on holders of money because it erodes the real value of the currency. In order to avoid this tax, people carry less money and deposit more of their money in the banks. If inflation is anticipated, then people decrease their demand for real money balances (Dowd, 1994). The costs associated with reducing money holdings are known as shoe leather costs. As people deposit more money in banks, they have to travel to banks to withdraw money. This represents a waste of resources like time and also causes inconvenience to the people.

In countries facing hyperinflation, shoe leather costs can rise significantly as people need frequent transactions to meet their money demand. Fischer (1986), McCallum (1989) and Lucas (1981) suggest that the cost of anticipated inflation can be up to 10 percent. Fischer (1986) and McCallum (1989) estimate the cost of inflation to be around 0.3 percent of national income while Lucas (1981) estimates it to be 0.9 percent of national income.

Besides its cost to individuals, inflation also creates problems for firms and businesses. If inflation grows rapidly, the firms and producers have to revise the prices of their products regularly. They face several costs like deciding the new price, advertising, printing and sending the new prices to wholesalers and retailers. These costs of changing prices are called menu costs (Mankiw, 2009). These costs increase total cost of running the business for the firms, which might lead them to charge even higher prices.

Acting as a tax on real money balances, inflation also discourages investment. Cooley and Hansen (1989) and Benanou (1991) assert that agents base their economic decisions on their real money balances. The economic agents respond to inflation tax by reducing any activity that might expose them to it. This also includes investments and capital stock holdings. Thus, inflation has several welfare costs to the economy (Dowd, 1994).

Another macroeconomic concern due to inflation is the instability of output growth. Friedman (1977) suggested that unstable inflation can make economic agents less willing to enter into long term contracts due to uncertainty in the economy. This can eventually lead to a fall in long term growth of output and employment. Due to inflation, the output growth is nominal and it falls in the long run.

From the above discussion, it is clear that the major cost of inflation is uncertainty in the economy which leads economic agents to make decisions which can create deadweight loss for the economy. So, rising inflation is a major concern for macroeconomic stability.

However, disinflation can also have several negative impacts on the economy. Two most important trade-offs of reducing inflation are a fall in output and a rise in unemployment. Phillips (1958) showed that there existed a negative relationship between unemployment and inflation. If inflation is reduced, unemployment will rise. Phillips curve assumes output and expectations to be sticky.

On the other hand, Friedman (1968) and Phelps (1967) suggest that output and employment losses due to a fall in inflation are only transitory. This implies that they will eventually be restored to initial level as the economy restores equilibrium. Dowd (1994) concludes that costs of inflation are much higher than many economists acknowledge them to be while the costs of reducing inflation are not considerable. So, reducing inflation should be the main target of the monetary policy.

## **Benefits of Moderate Inflation**

As discussed above, very high or low levels of inflation have a detrimental effect on the growth and stability of the economy. High level of inflation can crowd out investment and aggravate inequalities, while low levels of inflation can be equally devastating as they can hamper growth of the economy. On the other hand, despite the harms of inflation at extreme levels, inflation can be beneficial for the economy at moderate levels.

The review of literature shows that moderate levels of inflation are conducive to promoting growth and stability of the economy. In case of Pakistan, inflation rate of around 3 to 6 percent (Khan, 2005 and Hussain, 2005) is believed to boost economic activity. Similarly, Khan and Schimmelfennig

(2004) suggest an inflation rate of around 5 percent is optimal for Pakistan's growth and stability. These findings suggest that the goal of the central bank should not be to bring inflation to zero, but keep it contained to a sustainable level which does not affect the economy negatively.

In order to achieve this goal, the central bank should have a proper model to predict and control inflation. One such model can be developed by looking at the different determinants of inflation which can be controlled to keep inflation at a moderate level. A brief review of different theories on inflation can provide an insight to the theoretically important variables that affect inflation.

## **Economic Literature on Inflation**

The topic of inflation has been actively debated by various economic schools of thought. Different economic theories have been presented to find out the causes of inflation. Initially, the debate was focused on the quality theory of money and the quantity theory of money. The quality theory of money is concerned with an agent's expectations about the future value of a currency while the quantity theory of money is majorly concerned with the money supply and its role in explaining price level in an economy.

However, the focus of the economists shifted to cost push and demand pull inflation during the post-war Keynesian era. The Keynesian school of thought believes that inflation can be caused by either a demand shock or a supply shock. During the Keynesian era (1945-1973), Keynesian economists asserted that an increase in aggregate demand or aggregate supply causes

an upward pressure on prices. Fiscal policy was considered to be the major policy tool for stabilization.

During the fifties the wages in United States were falling rapidly which led many Keynesians to investigate this issue. Among these economists, Phillips (1958) showed that there existed a negative relationship between unemployment and inflation. This implies that if inflation is reduced, unemployment will rise. Lipsey (1960) and Samuelson and Solow (1960) refined the Phillips curve. The findings of these studies suggest that there is a trade-off between inflation and unemployment in the long run.

Phillips curve has been a subject of interest of economists ever since. Barro (1995) extended the analysis and concluded that there was a long run trade-off between inflation and output. As discussed earlier, these findings established the costs of inflation. The modern extensions of Phillips curve show that a positive relationship exists between output gap, exchange rate and inflation expectations (Schiebe and D. Vines, 2005).

The state of the economy determines how inflation and growth are related to each other. If the productive capacity of the economy is rising at the same pace as its demand, then inflation will not be present in the economy. This relationship suggests that if the actual output exceeds the potential output in an economy, which suggests a positive output gap, then there will be an upward pressure on the prices. However, if the actual output is lower than the potential output, the economy has the ability to sustain demand pressures. So, there will be no upward pressure on price level. This shows that if actual output continues to grow at a faster rate than the potential

output of an economy, there will be adverse effects on inflation and other macroeconomic variables in the long run.

While Keynesian economists were focusing on Phillips curve, another economist, Milton Friedman (1968) was working on a different explanation of inflationary phenomenon. Friedman rejected the Phillips curve and asserted that the policies of Keynesian economists could lead to stagflation. During the seventies, his prediction came true and US economy faced an era of stagflation. This event got many economists interested in Friedman's ideas and the debate on inflation changed its direction to a new idea of "monetarism".

The theoretical foundations of monetarist theory of inflation are based upon the quantity theory of money. Milton Friedman (1968, 1970, 1971) reestablished the classical quantity theory of money and asserted that there existed a positive relation between money supply and price level. This theory was empirically tested and consolidated by Schwartz (1973). The findings of his study showed that monetary policy was a major determinant of inflation.

During this era, another competing school of thought emerged on inflation. Several economists (Sunkel, 1958; Streeten, 1962; Oliveram, 1964; Baumol, 1967 and Maynard and Rijckeghem, 1976) presented a new model of inflation known as the "Structuralist" Model. According to this model, supply side factors are the main determinants of inflation in an economy. Supply side factors like import prices, remittances, food prices and wages etc. can have a direct impact on the price level by affecting the productive capacity or aggregate supply of an economy.



Although all these theories provide a good understanding of the causes of inflation, yet none of these is absolute in its explanation of rising price level. Moreover, these theories were mostly developed in developed economies, so they might not be perfect for developing countries in isolation. Most of the economists these days consider both demand side and supply side factors to study inflation.

Recent developments in macroeconomic theory show that aggregate demand can be affected by both monetary and fiscal policy while aggregate supply depends on supply shocks and other supply side factors. Recent studies like Naqvi et al. (1994), Hasan et al. (1995) and Bokil and Axel Schimmelpfennig (2005) have included variables to cover all these aspects to make the models more comprehensive and a better representative of true inflation in Pakistan. As the theoretical explanation of causes and consequences of inflation in economic literature have been discussed, the determinants of inflation in Pakistan can be discussed.

## **Determinants of Inflation in Pakistan**

The problem of inflation has attracted attention of many economists in recent years. A vast literature has been produced in the past two decades on the determinants and dynamics of inflation in Pakistan. However, despite several attempts at finding the true factors affecting inflation in Pakistan, the economists have not reached a consensus due to differing results of the studies. Some economists believe that inflation in Pakistan has been a supply side phenomenon (cost push inflation) while others have found that it is a demand side phenomenon (demand pull inflation).

The structuralist argument for inflation in Pakistan has been debated since the sixties. Porter (1961) analyzed the factors which led to inflation during the fifties. He asserted that there was a strong relationship between price level, demand for real money balances and trends in harvests. He showed that demand for real money balances decreased as food prices went up and inflation coincided with food shortages due to crop failures. The reason for this phenomenon was that Pakistan had a less developed banking system and agriculture remained the major contributor to GDP.

Supply shocks were a major reason for inflation during the fifties but the dynamics of inflation changed after the decade. Azhar (1973), using wholesale price index, asserted that inflation during the period from 1959-60 to 1972-73 was caused by excess aggregate demand. The findings of both studies are limited as the analysis included data for both East and West Pakistan. Studies following the independence of East Pakistan paint a better picture of determinants of inflation specific to West Pakistan. Due to the same reason, the focus of the thesis is on the post-East Pakistan independence era to the current period.

There was no significant work done on the issue of inflation during the seventies while the price level continued to rise during this period. Finally, a government sponsored study by Mangla (1981) tested five hypotheses to see the impact on inflation. Mangla (1981) found a significant relationship between money supply and inflation, and explained that cost push inflation can only persist in the short run. These findings support the monetarist argument that inflation in the long run is a monetary phenomenon.

Following the eighties, inflation became a concern for policymakers, so a significant amount of work was done on the subject. The findings of these studies have suggested several explanatory variables that have caused inflation in Pakistan. Due to the word limitation, the focus of the literature review will be on the variables which are found significant in these studies.

**Monetary Variables.** Monetary policy plays the most significant role in determination of price levels in an economy. Several studies in Pakistan have supported this argument. Bilquees (1988), Khan and Qasim (1996), Hussain (2006), Khan and Schimmelpfennig (2006) and many others have found strong relationship between various monetary variables and inflation.

Among these variables, money supply is the most important theoretical determinant of inflation according to the monetarist school of thought. Several empirical studies have shown a long term relationship between the two variables. Hossain (1990) shows a significant relationship between money and inflation by using data from 1961 to 1988. The same results are produced by Ahmad and Ram (1991) by using annual data from 1960 to 1988. The relationship is tested using three different indicators of inflation; consumer price index, wholesale price index, and GDP deflator.

Quarterly data has also supported this relationship in several studies. Dhakal and Kandil (1993) use a sample of quarterly data from 1970 to 1987 and find a strong relationship between M1 and CPI inflation. Chaudhary and Ahmed (1996), Khan and Qasim (1996), and Nasim (1997) have found M2 significant in explaining inflation by using annual data from seventies to early nineties.

The same results have been produced by Khan and Schimmelpfennig (2005) by using annual and quarterly data from 1998 to 2005.

The findings of Bokil and Schimmelpfennig (2005) also suggest that M2 is significant. All these studies have chosen different periods and timeframe of analysis, but the results have remained consistent. A more reliable study by Qayyum (2006) uses quarterly data from 1960 to 2005 and shows a highly significant relationship between money and inflation.

Although most of the studies have shown a strong relationship between money supply and inflation, a few studies have given the opposite results. Jones and Khilji (1988) and Khan and Gill (2010) have concluded that there is no significant relationship between money supply and inflation. Similarly, Omar and Saqib (2008) using annual data from 1976 to 2006 conclude that there is no significant one-on-one relationship between M2 and CPI inflation.

Using monthly data, Khan and Schimmelpfennig (2006) show that monetary tools have been a major cause of inflation in recent years. However, using quarterly data, (Akbari and Rankaduwa, 2006) conclude that monetary policy shows a weak impact on the domestic price level. The contradictory results of these studies might have been caused by biased results due to omission of significant other variables. As most of the studies support the monetarist hypothesis, it is safe to conclude that M2 is a major contributor to inflation in the long run.

Exchange rate is another important factor that affects inflation. A

depreciation of exchange rate causes a rise in import prices and nominal

prices of domestic goods. Khan, Bukhari and Ahmed (2007) have found that <https://assignbuster.com/the-relationship-between-inflation-and-unemployment/>

exchange rate is statistically significant at 5% level of significance by using annual data from FY1973 to FY2006. Khan and Gill (2010) have also found a positive relationship between exchange rate and inflation. However, Khalid (2005) has found a negative statistical relationship between inflation and exchange rate depreciation using annual data. He justifies the relationship by asserting that exchange rate depreciation “reduced trade gap through higher exports” and led to lower inflation. Hossain (1989), Nasim (1995), Khan and Qasim (1996), Khan and Schimmelpfenning (2005), Khan et. al. (2007), and Khan and Gill (2010) have also found a positive relationship between exchange rate and inflation in case of Pakistan.

While some studies show exchange rate as significant, others have shown no evidence of exchange rate pass through to CPI inflation. Choudhri and Khan (2002) have used annual data from 1982 to 2001 to find the relationship between nominal exchange rate and CPI inflation. They conclude that there is no exchange rate pass through to CPI inflation in Pakistan. Another study by Hyder and Shah (2004) uses monthly data from 1988 to 2003 to study this relationship. They have found “little” exchange rate pass through to CPI inflation. Akbari and Rankaduwa (2005) have also shown that exchange rate pass through effect also appeared to be insignificant using quarterly data. However, due to theoretical importance of the variable and contradictory findings by researchers, the relationship can be tested with annual data.

The third important monetary policy tool is the interest rate. Interest rates have a direct impact on borrowings in an economy. When interest rates are low, people borrow more, thus increasing the demand for money. This increase results in higher money supply and consumption, which can lead to <https://assignbuster.com/the-relationship-between-inflation-and-unemployment/>

a rise in price level. This theoretical relationship implies a negative relationship between inflation and interest rates. Khan and Gill (2010) have found that a 10 percent increase in interest rate decreases the CPI by 2.1 percent. Khalid (2005) has used call money rates as a proxy variable for interest rates and has found a negative relationship between call money rate and CPI inflation.

The various studies discussed above show that inflation in Pakistan is largely a monetary phenomenon and several monetary tools like money supply growth, exchange rate and interest rates can significantly impact price level in the economy.

**Fiscal Variables.** Fiscal policy can directly impact aggregate demand and thus, influence price level in an economy. Fiscal deficit is considered to be one of the most important factors that can lead to inflation. Fiscal deficit refers to the excess of expenditures over government's revenues. In order to finance its expenditures, governments are inclined to borrow internally and externally. If internal borrowing is done from the central bank, money supply increases, leading further to a rise in price level. On the other hand, external borrowing can affect inflation through changes in relative price of domestic and foreign currencies.

In case of Pakistan, some studies have shown a positive relationship between budget deficit and inflation (Khalid, 2005; Chaudhary and Ahmad, 1995) while others have shown no significant relationship between the two variables (Jones and Khilji, 1988; Khan and Gill, 2010). Chaudhary and Ahmad (1995) point out that monetary policy is dependent on fiscal decisions made

by Pakistani government. The authors suggest a cut in budget deficit to control inflation. Shabbir and Ahmed (1994) have also found out a significant positive relationship between CPI inflation and budget deficit.

Agha and Khan (2006) analyze the long run relationship between fiscal deficit and inflation using annual data from FY1973 to FY2003. They assert that fiscal policy has been the major cause of inflation during this period. The authors also suggest that consolidated fiscal deficit is a better indicator for the study of this relationship. Using vector error correction model, the authors conclude that inflation has been a fiscal phenomenon in Pakistan, and the major factor has been “unsustainable fiscal deficit”.

Another important fiscal variable that can affect inflation is output gap. It not only covers the impact of GDP growth but also potential GDP. Schiebe, J and D. Vines (2005) extend the Phillip’s curve and suggest that a positive relationship exists between inflation, output gap, and exchange rate. When the actual GDP exceeds the potential GDP in an economy, it causes an upward pressure on production costs, leading to a rise in prices. In other words, if aggregate demand continues to exceed aggregate supply, price level increases in an economy. The same relationship is believed to exist in case of Pakistan (SPDC, 2006).

Khan et. Al. (2007) have used relative demand and supply as a proxy for output gap. Their findings suggest a significant and positive relationship between output gap and inflation at 5 percent level of significance. Khalid (2007) has also found a significant positive relationship between inflation

and output gap. He suggests that due to this relationship, an expansionary monetary policy can be inflationary.

The current governor of the State Bank of Pakistan, Mr. Shahid Kardar (2010) has also asserted that output gap remains one of the most important indicators of inflation. However, he suggests that aggregate demand alone cannot explain the inflationary phenomenon in Pakistan. It has to be compared with the ability of the economy to meet that demand. Even if the aggregate demand is contained, inflationary pressures can persist in the country due to supply side phenomena. It can be concluded that beside fiscal and monetary variables, supply side variables should also be considered to understand the dynamics of inflation in Pakistan.

Supply side variables. Supply shocks can increase the cost of production in an economy, leading to a higher price level. A rise in food prices due to supply shocks can be an important determinant of cost push inflation.

Bilquees (1988) and Khan and Schimmelpfennig (2006) have found that food prices affect inflation significantly in the short run in Pakistan.

In Pakistan, wheat support/procurement prices are considered to cause inflation. Wheat accounts to 5.1 percent of the total weight in consumer price index. So, any changes in wheat price can have significant impact on CPI inflation. From June 2003 to June 2007, the price of a 10 kg bag of wheat rose from Rs85 to Rs119. It adds up to a cumulative price increase of 40 percent. Then, from June 2007 to June 2010, the price of 10 kg bag of wheat rose to Rs260, which shows a cumulative increase of 120 percent. An



interesting point to note is that wheat price in the international market increased by only 22 percent (SBP, 2010).

This increase in wheat prices can be explained by higher support prices which took shape of a supply shock. A rise in wheat support prices can affect consumer prices, especially food prices which account up to 40 percent of the CPI basket. Several researchers have tested wheat support price as a determinant of inflation. Hasan et. al. (2005) and Khan and Qasim (2006) have found a positive relationship between wheat support price and inflation.

However, Khan et. al. (2007) have tested wheat support price using annual data from FY1973 to FY2006. Their findings suggest that wheat support price has an insignificant relationship with consumer prices (Khan et. al., 2007).

Khan and Gill (2010) have also found that wheat support prices have no long run impact on CPI, WPI or SPI.

Another notable factor that can cause price hike in local markets is a rise in international raw material as well as food and commodity prices. An increase in prices of raw materials can increase production costs for the producers, leading to higher prices. Similarly, higher prices of consumer goods mean more spending in rupees to purchase those goods, which implies a rise in prices. Imports of capital and consumer good raw material imports account up to more than 50 percent of total imports of Pakistan (Pakistan Economic Survey, 2010). So, any change in international prices will have a direct impact on local price level.

Khan and Gill (2010) have found a positive and significant relationship

between imports and inflation in case of Pakistan. Imports show a significant  
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impact on CPI, WPI, and SPI. Khan et. al. (2007) have used Price Index of Imports and tested it as a determinant of inflation. They conclude that import price index has a significant relationship with inflation at a 5 percent level of significance. These findings suggest that import prices are an important determinant of inflation in Pakistan.

Another important structural variable can be the worker's remittances from abroad. Remittances from abroad generally increase the disposable income of households. This increase can lead to higher consumer spending, which can cause an upward shift in aggregate demand and prices. There is very little literature on the relationship between inflation and remittances. So, there is not much evidence whether a strong relationship exists between the two variables or not.

Most of the remittances received from abroad were used for repairing houses, retiring debt or consuming goods till the nineties (Barney, 1988; Kazi, 1988). Arif (1999) suggested that remittances are not used to increase capital stock in Pakistan; the only investment due to remittances is in real estate.

Panhwar (1991) suggests that "redirection of remittances towards public investments, interactions in import-mix and containment in inflation" centers on a strong relationship between these two flows. He also claims that during the time of his research, most of the cash remittances are used for consumption and kind remittances also comprise of consumer durable goods (Panhwar, 1991). Due to their high role in consumption expenditure, remittances can be an important determinant of inflation.