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# Fiscal deficit and inflation: New evidences from Pakistan using a bounds testing approach

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ABSTRACT

Leeper (1991), Sims (1994) and Woodford (2001) point out that price level is not independently determined by monetary policy rather it is the result of inter dependence of fiscal and monetary policies. This article aims to test the fiscal theory of price level for Pakistan using an autoregressive distributed lag model framework over the period of 1972–2012. The article finds that fiscal deficit is a major determinant of the price level along with other variables like interest rates, government sector borrowing and private borrowing. On the basis of our findings, the present article suggests that the economy of Pakistan requires an immediate correction of fiscal imbalances.


## 1. Introduction

The proponents of monetarist doctrine, for example McCallum (1999, 2001, 2003) and Niepelt (2004), contradict the fiscal theory of price level developed by Leeper (1991), Sims (1994), and Woodford (2001) which states that government finances must be sustainable for the stable price level in an economy. Earlier, a well-recognized work of Sargent and Wallace (1981) documented that the governments running with persistent deficits have to finance those deficits with money creation thus causing higher inflation. However, Catao and Terrones (2005) do not neglect the importance of other determinants which are important for the fuelling of inflation.

The fiscal view of inflation gets a special attention in the case of developing countries because it is generally accepted that the developing countries have less efficient tax collection, political instability, and a limited access to external borrowing (Alesina and Drazen, 1991; Calvo and Vegh, 1999; Cukierman et al., 1992) and these tend to lower the relative cost of seigniorage and increase dependence on the inflation tax. Specifically, De Haan and Zelhorst (1990), Metin (1998), and Domac and Yucel (2005) conducted their empirical research on developing economies and argue that there is a significant relationship between fiscal deficits and inflation in high-inflation countries.

Theoretical and empirical research has developed many channels through which inflation is affected. The famous statement of Friedman (1956) *inflation is always and everywhere a monetary phenomenon* links the price fluctuation to monetary policy and to money supply specifically. The increase in money supply is positively linked with inflation in many studies including Grauwe and Polan (2005) and Komulainen and Pirttila (2002). But money supply is not independently determined by the central banks rather it is the financial requirements of the fiscal authorities that induce more money supply (Sargent and Wallace, 1988). Thus money supply is endogenous and is mostly the result of seigniorage requirements due to fiscal deficits of the governments.

In most of the developing countries, the fiscal authorities finance their deficits by printing money through central bank and hence central banks are not independent in forming monetary policy. As mentioned earlier, Catao and Terrones (2005) point out that the other sources of financing like imposition of tax have high political cost and are not easy to implement. Moreover the developing countries are already involved in debt servicing that new debt issue internally or borrowing from an external source (internal or external borrowing) stands a low chance and is very costly. Thus this fiscal decision of financing through central bank leads to inflation in the economy. The fiscal theory of price level propagates that price level is influenced by interactions of fiscal and monetary policies. Therefore, the government deficit must be sustainable and inter temporal budget constraint of government must be balanced for stable prices (Leeper, 1991, Sims, 1994).

The main objective of this study is to investigate the underlying determinants of inflation other than just monetary factors. It is also its purpose to see whether the chronic fiscal deficit has any bearing on inflation in Pakistan in the long run and what is the role of other factors in causing inflation. Pakistan is a good candidate for testing the inflation–fiscal deficit nexus because over the last decade the central bank of Pakistan is continuously saying that the budgetary borrowing is the main source of inflation in the country. But, this area is not well researched in the case of Pakistan. Although few studies have shown the monetary policy behind the inflation in Pakistan (Kemal, 2006; Khan and Schimmelpfennig, 2006; Qayyum, 2006) but these papers did not incorporate the fiscal side. There are few studies like Shabbir et al. (1994), Chaudhary and Ahmad (1995), Agha and Khan (2006) which have shown a significant relationship between fiscal deficit and

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inflation. Analyzing the inflation in Pakistan is also important as being a developing country it has suffered inflation that may negatively affect the living standards and purchasing power of the vulnerable segments of society. Inflation also has a political cost as political governments cannot afford to allow undue increase in prices as it would have a negative impact on their vote bank. This has induced the need to find the under lying causes of inflation in Pakistan economy.

The present paper is also an attempt to test the inflation–fiscal deficit nexus in Pakistan by using the data from 1972 to 2012. We find a positive relationship between inflation and fiscal deficit. Therefore, this paper calls for fiscal consolidation to bring down the prices and to depend on less inflationary policies of financing deficit.

The rest of the paper which proceeds as Section 2 is literature review. Section 3 builds the theoretical framework and estimation strategy while Section 4 constructs the variables based on theory. Section 5 presents the empirical results based on econometric models and Section 6 concludes the study along with policy suggestions.

## 2. Literature review

Indeed, Friedman (1956) documents that inflation is a monetary phenomenon but recently Leeper (1991) and Sims (1994) give the idea of fiscal theory of price level (FTPL) which deems inflation to be a fiscal phenomenon. The FTPL attributes interactions of fiscal and monetary policies to influencing price level and suggests that the government deficit must be sustainable and inter temporal budget constraint of government must be balanced. Therefore, the relative dominance of fiscal and monetary authorities is crucial in the inflationary impact of deficit. Importantly, Sims (1994) reinforces that in the most of cases inflation is more of a fiscal phenomenon and is dependent upon the expectations people have regarding fiscal policy and fiscal deficit. However, FTPL is empirically tested for many countries that gave mixed results (Rubio et al. 2009).

The studies regarding under developed countries show positive relationships between fiscal deficit and inflation. For instance in their case study of Nigeria Oladipo and Akinbobola (2011) observed a causality running from fiscal deficit to inflation. While in Zimbabwe due to current and non-development expenditures of government, there is persistent fiscal deficit that is covered by seigniorage thus leading to inflation (Makochekanwa, 2011). For the Iranian economy, Mehdi and Reza (2011) concluded that deficit caused inflation significantly because the central bank of Iran is not independent in its decisions. Similarly, fiscal dominance was observed in the case of the Italian economy and there is an evidence of positive relation between fiscal deficits and inflation (Fratianni and Spinelli, 2001). Komulainen and Pirttila (2002) show that fiscal deficit is a weak determinant of inflation in the cases of Bulgaria, Romania and Russia. But, Tekin-Koru and Erdal (2003) find no clear evidence regarding a possible relationship between inflation and budget deficit for the Turkish economy.

A panel data study of selected SAARC countries also rejects FTPL (Nawaz et al. 2012). Although the negative and significant effect of fiscal deficit on prices was observed using a pooled least square method there is no such evidence in fixed and random effects models. Sahan and Bektasoglu (2010) test this relationship for European countries and conclude that there is no standardized relationship however there is a long run co-integrating relationship between deficit and inflation.

A more recent observation is that fiscal deficit is strongly related to inflation in developing countries with a long history of high inflation (Lin and Chu, 2013). Moreover fiscal deficit has an impact on long run inflation in countries with moderate inflation, however there is no long run impact on inflation in developed countries with long history of low single digit inflation. The weak relationship in developed countries is due to greater monetary policy autonomy and credibility. While underdeveloped countries usually lack strong institutions and their modes of financing the deficit are inflationary. Hence there is a dynamic non-linear and heterogeneous relationship between fiscal deficit and inflation (Catao and Terrones, 2005, Lin and Chu, 2013).

Furthermore, the choice of fiscal deficit measure can also be crucial while testing the effect of budget deficit on inflation. Pekarski (2011) was of the view that fiscal deficit can be divided into two parts; one that causes inflationary effect and other that does not. The literature shows that it's the consumption component of government expenditure that leads to fiscal deficit growth in long run while the investment expenditures are more sustainable in long run (Tiwari et al. 2012).

Fiscal deficit is not the only determinant of inflation in existing literature rather the factors like oil prices, food prices, exchange rate, trade openness and growth rate of economy are also considered for affecting the inflation levels. Hanif (2012) investigates the food inflation in Pakistan and observed that it is half as volatile in Pakistan as globally and the poor class is worst affected by food inflation in Pakistan. Coppin (1993) finds that level of tourism, interest rate and imported inflation are the key determinants of inflation in Barbados. Durevall (1998) observes that inflation increases when the rate of devaluation of the exchange rate increases, and inflation decreases when output growth goes up in the case of Brazil. The political instability determines the variation in policy about inflation and the effect of political instability is greater for developing and high inflation countries (Aisen and Veiga, 2008). Trade openness is also regarded as a good policy to control inflation. The negative relationship between trade openness and inflation is suggested by Romer (1993). While the time series analysis showed that along with fiscal and monetary policies as the main determinants of inflation more trade openness is also causing the inflation in Pakistan (Zakariya, 2010). This might be because Samimi et al. (2012) have empirically shown that a conventional measure of trade openness, as used in the study by Zakariya (2010), is positively related with inflation and more openness to trade in fact raises inflation if measured by this trade openness measure.

The high fiscal deficits have caused inflation in Pakistan's economy and these deficits are unsustainable. The existing literature for Pakistan in this regard has more or less similar results (see for example Shabbir et al. 1994, Agha and Khan, 2006).[1] Therefore, there is a need of some fresh evidences in the backdrop of high fiscal deficit and rising inflation in the case of Pakistan.

## 3. Analytical framework and estimation strategy

The classical quantity theory provides an explanation for the fluctuations in prices. For example Fisher (1911) shows that since velocity of money circulation is exogenously controlled, therefore changes in money supply cause changes in prices and any increase in aggregate demand is translated into inflated prices. Consequently, the major determinant of inflation is considered to be the monetary side and fiscal policy has no independent impact on price level. Keynesian theories are considered to be applicable in the short run. Unlike classical theories the demand side policies are considered to be effective in altering the output level. The fiscal deficit arising from increased expenditure or cut in taxes would lead to an increase in aggregate demand. This increased demand would increase output only if economy is below full employment. If economy is already operating at full employment the result will be the increase in price level.

In the Keynesian theory when government finances deficit through borrowing then:

And when government finances deficit by monetizing from central bank.

Hence both channels are showing fiscal deficits that lead to inflation.

[1] However, some studies consider the importance of monetary factors in explaining the inflation of Pakistan (for example Khan and Schimmelpfennig, 2006, Malik and Khawaja, 2006, Qayyum, 2006). These studies demand for tighter monetary policy to control inflation.