

MONEY SUPPLY AND INFLATION: EVIDENCE FROM SRI LANKA

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Abstract:

This study empirically analyzes vector autoregression and causal relationship of growth rate of money supply, the growth rate of aggregate output, budget deficit and the rate of inflation in Sri Lanka from 1953 to 2012 to estimate the hypothesis of growth in money supply increases inflation. Also, it tests the hypothesis that, a reason for narrow money is the budget deficit of Sri Lanka. This study finds evidence that narrow money supply has positive and statistically significant effect on inflation in Sri Lanka which accepts the thesis statement. Also the study finds evidence that the budget deficit has positive and statistically significant effect on both money supply and inflation which accept the other hypothesis of this study. On the other hand, the study finds the additional evidence that inflation has a significant positive effect on budget deficit which was not a hypothesis of the study. The empirical results suggest that, the expansion monetary policy cause to increase the inflation in Sri Lanka and one reason for the expansive monetary policy is the budget deficit. On the other hand inflation also causes to increase the budget deficit. Therefore, these relationships show a vicious cycle of inflation in Sri Lanka.

Keywords: money supply, budget deficit, inflation

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INTRODUCTION

Real gross domestic product (GDP) and the rate of inflation are two important macroeconomic variables to measure the performance of an economy. While real gross domestic product measures the total income of the economy, the rate of inflation measures how fast prices are rising. Sri Lanka records high inflation rate in the past six decades with the average of 8.09 percent as measured by the GDP deflator. (Central Bank of Sri Lanka Data). Higher rate of inflation severely effect on macroeconomic variables of consumption, savings, investment, and government expenditure. To achieve the sustainable economic development in Sri Lanka, healthy rate of inflation is a necessary condition.

The Sri Lankan economy had to face thirty years prolonged civil war, many civil riots, severe natural disasters, world oil price shocks and hikes, and inefficiency of the tax administration system. Due to these factors the economy recorded a low average of the growth rate of aggregate output (4.51 percent), high average of budget deficit (7.39 percent of the GDP), and high average of growth rate of narrow money supply (11.25 percent) during the last sixty years. (Central Bank of Sri Lanka data).

It is important to investigate the relationship of the high rate of inflation, low growth rate of aggregate output, the high budget deficit, and high growth rate of narrow money supply in Sri Lanka during the last six decades.

The objective of this study is to investigate the relationship and causal structure of expansionary monetary policy (narrow money supply) on the high rate of inflation in Sri Lanka. Other than the main objective, this study investigates the reason for seigniorage motive is the budget deficit of Sri Lanka.

Therefore, this study answers the research question of “Does money supply increase inflation in Sri Lanka?” to examine the hypothesis that growth in money supply increases inflation using vector autoregression (VAR) method under time series analysis. Also, this study examines the other hypothesis of budget deficit increases money supply and inflation.

This paper is organized as follows. The next sections are material and methods, results, discussion and finally concludes.

MATERIAL AND METHODS

The government’s control over the money supply is called monetary policy. Central Bank of Sri Lanka is the authority responsible for the administration, supervision and regulation of the monetary policy of Sri Lanka. Central Bank is governed by the Monetary Law Act No.58 of 1949. Monetary management in Sri Lanka is based on monetary targeting framework. Price stability is the final target of the monetary targeting framework of Sri Lanka.

Fiscal operation has two components; (1) revenue and grants, and (2) expenditure and net lending. Foreign financing and domestic financing are the two main sources of the budget deficit financing sources.

Many empirical studies have done on the theory of this field. Walker (1895) and Laughlin (1924) on quantity theory of money; Friedman (1968), Frisch (1977), Budina, Maliszewski, Menil, & Turlea, (2006), Mankiw and Ball (2011), and Mishkin (2013) on monetary expansion and inflation; Poole (1988), Bernanke and Mishkin (1997), Amarasekara (2008), Wimalasuriya (2008), Hossain (2010), Chinaemerem and Akujuobi (2012), Amisano and Fagan (2013) on monetary policy and inflation; Landon and Reid (1990), Ruge-Murcia (1999) on fiscal deficit and monetary expansion; Kiguel (1989), Lin and Chu (2013) on fiscal deficit and inflation; and Ashra, Chattopadhyay, and Chaudhuri (2004) on fiscal deficit, monetary expansion and inflation.

Many of the empirical studies on monetary policy expansion, inflation, and budget deficit uses the Vector Autoregression model as the method of their studies specially, Wehinger (2000), Stock and Watson (2001), Jacobson, Jansson, Vredin, and Warne (2001), Lastrapes (2006), Birman (2012), Chinaemerem and Akujuobi (2012).

Therefore, the contribution of this paper is that econometrically estimates and tests the theory of inflation by adding the budget deficit to the equation of the theory of inflation.

This study uses the vector autoregression analysis method, Dickey-Fuller test, Granger causality test, and impulse response test as the empirical methodology. To understand the relationship between the price level and money supply, monetary intertemporal model is used as the economic model in this study, and quantity theory of money and theory of inflation are the two main theories use in the study.

Equation (1) is the quantity theory equation, equation (2) is the theory of inflation equation derived from equation (1), and equation (3) is the reduced form equation of this study by adding the budget deficit ratio to the equation (2). Equation (4) is the economic regression model of this study derived from equation (3).

$$M\bar{V} = PY(1)$$

$$\pi = \% \Delta M - \% \Delta Y (2)$$

$$\pi = f (\% \Delta M - \% \Delta Y + \% B)(3)$$

$$\pi_t = \alpha + \beta_1 \Delta M_t + \beta_2 \Delta Y_t + \beta_3 B_t + \varepsilon_t(4)$$

M is money supply, V is velocity, P is price level, Y is aggregate output, π is inflation, vector π_t is the dependent variable of inflation. α is the constant and β_1 , β_2 , and β_3 are the coefficients of the equation. Vector ΔM_t is the growth rate of money supply, ΔY_t is the growth rate of aggregate output and B_t is the budget deficit as a percent of GDP, and ε_t is the error term.

Table 1 shows the summary statistics of this study.

Table 1: Summary Statistics for Inflation, Money Supply, GDP, and Budget Deficit in Sri Lanka (1953-2012)

| Variable | N | Mean | Median | Standard Deviation | Min | Max |
|-------------------------------------|----|-------|--------|--------------------|--------|-------|
| <i>Dependent Variable</i> | | | | | | |
| Rate of Inflation (%) | 60 | 8.09 | 7.80 | 6.14 | -2.00 | 26.70 |
| <i>Independent Variables</i> | | | | | | |
| Growth Rate of Money Supply (%) | 60 | 11.25 | 10.20 | 8.69 | -7.70 | 34.90 |
| Growth Rate of Aggregate Output (%) | 60 | 4.51 | 4.65 | 2.09 | -1.50 | 8.20 |
| Budget Deficit (%) | 60 | -7.39 | -7.00 | 3.25 | -19.20 | 2.20 |

Note: 60 annual observations of 60 years

RESULTS AND DISCUSSIONS

According to the augmented Dickey-Fuller test results the null hypothesis of inflation, money supply, aggregate output, and budget deficits have unit roots rejected at the level of significance at 1%, 10%, 1%, and 10% respectively. Therefore, all four variable data are stationary. According to the Schwarz criterion results lag order 1 is significant at the 5% level with a minimum value of 17.79. Therefore, this study uses the lag order 1.

According to the Granger causality test results of this study money supply and budget deficit Granger cause inflation, budget deficit Granger causes money supply, money supply Granger causes aggregate output, and inflation Granger causes budget deficit at 5% level of significance. Aggregate output does not Granger cause inflation. According to the generalized impulse response results inflation has a positive and significant response to money supply and the budget deficit, money supply has a positive and significant response to the budget deficit, and the budget deficit has a positive response to inflation.

Table 2 shows the Vector Autoregression analysis of this study. This result suggests that the increase in money supply and the budget deficit will increase the inflation, increase in the budget deficit will increase money supply and inflation, and increase in inflation will increase the budget deficit.

Table 2: Vector Autoregression Analysis Test Results

| Independent Variable | Dependent Variable | Level of Significance | Effect |
|----------------------|--------------------|-----------------------|--------------------------|
| Money Supply | Inflation | 5% | Positive and significant |
| Budget Deficit | Inflation | 5% | Positive and significant |
| Budget Deficit | Money Supply | 5% | Positive and significant |
| Inflation | Budget Deficit | 5% | Positive and significant |

CONCLUSIONS

This study finds evidence that narrow money supply has positive and statistically significant effect on inflation in Sri Lanka which accepts the thesis statement, the budget deficit has positive and statistically significant effect on both money supply and inflation, which accept the other assumptions of this study, and finds the additional evidence that inflation has a significant positive effect on budget deficit which was not an assumption of the study.

Thus, these findings suggest that, the expansion monetary policy cause to increase the inflation in Sri Lanka and one reason for the expansive monetary policy is the budget deficit. On the other hand inflation also causes to increase the budget deficit. These relationships show a vicious cycle of inflation in Sri Lanka.

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