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EFFECT OF BUDGET DEFICIT ON INFLATION RATE IN VIETNAM

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Abstract: In recent years, Vietnam has achieved a high economic growth rate, so inflation has become a noticeable problem. The relationship between the state budget deficit and inflation is a two-way dialectical relationship. However, within the limit of this article, the authors only study the one-way relationship: the effect of budget deficit on inflation rate in Vietnam. The prolonged budget deficit and the remediation of the state budget deficit by different methods have affected the inflation rate differently. This effect is analyzed both quantitatively and qualitatively and includes five approaches: the impact of fiscal policy inflation, the impact of the state budget deficit level on inflation, the impact of budget deficit funding on inflation, the independence of the monetary policy and its effect on inflation, and the effect of public expenditure on inflation.

Keywords: budget deficit, inflation, monetary policy, fiscal policy, public expenditure

1 Introduction

To quickly narrow the gap with other countries and avoid lagging too far behind economically, the Vietnamese government has prioritized high economic growth. However, this high economic growth has led to high inflation over time in Vietnam. There were many reasons causing the inflation, especially when Vietnam has integrated into the world economy, and the reasons stem from both the inside and the outside. Therefore, finding the causes behind inflation in order to solve it has become a major concern. Together with high inflation, the prolonged and persistent budget deficit would also be mentioned. The question here is: "How has the budget deficit affected the inflation situation in Vietnam?" Studying the effect of the budget deficit on inflation has an importantly realistic significance. This article analyzes this relationship quite comprehensively in terms of both qualitative and quantitative aspects. It also points out the importance of management and use of the state budget and the balance between budget revenues and expenditures in order to control inflation in Vietnam.

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2 Theoretical background and methodology

2.1 Theoretical background

From the monetarist view, the budget deficit causes inflation. According to Hamburger and Zwick (1981), budget deficits can lead to inflation, but only to the extent that they are monetized. Generally, the budget deficit per se does not cause inflationary pressures but rather affects the price level through the impact on money aggregates and public expectations, which in turn trigger movements in prices (Solomon and de Wet, 2004). Many previous empirical studies employed econometric techniques methods to examine the effect of budget deficit on inflation. The most common one uses the single-equation econometric model, treating inflation as a dependent variable and the budget deficit as an independent variable among others (Abizadeh and Yousefi, 1998; Ahking & Miller, 1985; Hamburger & Zwick, 1981; McMillin & Beard, 1982). However, they have shown conflicting results about this relationship. While some results support the hypothesis that the budget deficit causes inflation by a positive statistically significant coefficient of the budget deficit, some yield the inconclusive result by an insignificant coefficient (Solomon and de Wet, 2004).

2.2 Methodology

The research analyzes the qualitative and quantitative effect of the budget deficit on the inflation rate. Five aspects are involved, namely the impact of the fiscal policy, the impact of the state budget deficit level, the impact of budget deficit funding, the independence of the monetary policy and its effect on inflation, and the effect of public expenditure. Previous studies and the reality in Vietnam were used as the basis for this study.

The data were collected from the General Statistics Office (GSO), the Asian Development Bank (ADB) and the Ministry of Finance. These organizations reported the annual information about the deficit and inflation in Vietnam over a long period from 1994 to 2015.

As mentioned above, a common way to examine this relationship is using the econometric model. Solomon and de Wet (2004) employ a model in which the budget deficit, GDP and the exchange rate are treated as exogenous variables and the inflation or Consumer Price Index (CPI) as an endogenous variable.

This study aims to identify the effect of the budget deficit on the inflation rate in Vietnam using the multiple-regression method. The model includes one dependent variable which is the inflation rate and four independent variables

$$\ln Y = \beta_0 + \beta_1 \cdot BD + \beta_2 \cdot \ln E + \beta_3 \cdot GDP_g + \beta_4 \cdot \ln M_2 + \varepsilon$$

where Y is the inflation rate (%); BD is the budget deficit rate (%); E is the exchange rate

(VND/USD); GDP_g is the Gross Domestic Product growth rate (%); M_2 is the money supply (billion VND); β_0 is a constant; and ε is an error term; $\beta_1, \beta_2, \beta_3, \beta_4$ are the coefficients.

Budget deficit rate

As explained previously, the budget deficit affects the price level through the impact on money aggregates and public expectations, which in turn triggers movements in prices (Solomon and de Wet, 2004). However, this relationship depends on the lag effect of the budget deficit and many other factors; so it is expected to have a positive or negative or insignificant coefficient.

Exchange rate

Soros (2003) suggested that the relationship between exchange rates and inflation is not a one-sided relationship but rather a mutual relationship that interferes with one another. Depreciation means that the currency buys less foreign exchange; therefore, imports are more expensive, and exports are cheaper, thus resulting in imported inflation, higher domestic demand and less incentive to cut costs. Therefore, a currency depreciation causes both cost-push inflation and demand-pull inflation (Pettinger, 2017).

GDPg

Fischer (1993), Barro (1995), and Bruno and Easterly (1998) showed that the relationship between growth and inflation is negative. Khan and Ssnhadji (2001), studying inflation in 140 countries in the period of 1960–1998, found the "inflation threshold" of 11–12 % for developing countries and 1–3 % for industrial countries. If the inflation level falls below this threshold, the GDP-growth-inflation relationship is positive and vice versa.

M2

From Friedman's theory of money, inflation is a monetary phenomenon. Growths in the money supply increase the price level. Therefore, a positive coefficient is expected for the money growth.

3 Effect of state budget deficit on inflation rate in Vietnam

3.1 Effect of budget deficit on inflation rate in Vietnam

The fiscal policy (FP) directly affects the aggregate demand and directly or indirectly affects the money supply M2, thereby affecting the money supply-demand balance in the market and ultimately influencing inflation (Su, 2009). The expansionary fiscal policy tends to increase inflation and vice versa, and the contractionary fiscal policy restrains the inflation level. Specifically for Vietnam, where the monetary policy has low independence and heavily depends on the fiscal policy, the amount of public spending is relatively large with low

efficiency, thus influencing the inflation situation in Vietnam in recent years. There were periods when the fiscal policy had a clear effect on inflation, and they are as follows:

Period 1986–1990: Expansionary fiscal policy, high budget deficit, accompanied by high inflation

In the stage of starting the economic renovation, the financial situation was facing many difficulties, expenditure outweighing revenue, and a high budget deficit. Besides borrowing and asking for foreign aid, the government had to issue money to offset the lack. There were many causes of high inflation in period 1986–1990 such as the low labor productivity, the inefficient economic structure, backwardness, the war and the ineffective use of capital, etc. However, financing the budget deficit by issuing money was the most important cause of hyperinflation, especially in the year 1986 with an inflation rate of 774.7 %.

Period 1991–2003: The government tightened control on spending and implemented more prudent fiscal policy, and inflation was controlled.

In this period, the state investment declined gradually. The decline in the amount of money injected into the market led to a noticeable decline in the rate of inflation and the onset of deflation in the year 2000 and 2001. Low inflation at this stage showed that tightening state budget spending in previous years had virtually controlled inflation. In period 1997–2000, the government implemented an expansionary fiscal policy with an investment stimulus, but this was a recession period, and the economy was in the below-potential output, so the implementation of the expansionary fiscal policy did not cause a rise in prices; it, on the other hand, had a positive role to push the aggregate demand of the economy and created a momentum for the economy to move into the development stage.

Period 2004–2011: Expansionary fiscal policy and high inflation

Compared with the previous period, now the state budget deficit rate increased much higher than previous years. The government spent a large amount of capital in transportation, irrigation and education projects which had not yet been included in the state budget. In pursuit of high economic growth, the fiscal stimulus policy had been implemented for a long time; this period experienced a looser fiscal policy than period 1991–2003. The state budget deficit in many years pushed up public debt levels after it fell to the lowest level in the year 2000.

Period 2012–2015: Contractionary fiscal policy and controlled inflation

In this period, the economy was still in a difficult situation. The government implemented a tight fiscal policy, so inflation was controlled and the macro-economy remained stable.

Thus, looking at all the four periods, we can see the effect of the fiscal policy on inflation. With what has happened to Vietnam in recent years, we can objectively conclude that the implementation of the expansionary fiscal policy and the prolonged budget deficit have raised the inflation rate in Vietnam.

3.2 Effect of state budget deficit on inflation

The effect of the budget deficit on inflation will be analyzed in two aspects: the budget deficit

rate and the budget deficit amount.

The budget deficit affected inflation most clearly in period 1986–1990. In this stage, the budget deficit was severe, and the shortage was mainly offset by money issues, which pushed inflation to a very high level with an average of 232.5 % (Phan, 2008). In period 1991–1995, due to the implementation of the contractionary fiscal policy, the average budget deficit was very low at 2.63 %, and the inflation rate in this period was lower than that of the previous period with an average of 23.46 %.

As shown in figure 1, in period 1996–2000, with the impact of a regional economic crisis and decreased aggregate demand, the average budget deficit rate and the average inflation rate were very low at 3.77 % and 3.36 %, respectively.

In the following years, the state budget deficit rate fluctuated around 5 %, within the government's expectation, but the inflation rate was quite volatile. In period 2001–2015, the average inflation rate was 7.8 %. There were many reasons for this volatility. Moreover, the impact of the budget deficit on inflation was lagging and depended on how the budget expenditure had been structured. For example, in 2009, the budget deficit ratio reached 6.9 %, equivalent to VND 114,442 billion, but the inflation rate was only 6.52 %. In the year 2010 and 2011, the budget deficit still remained at 5.6 % and 4.9 %, but inflation increased rapidly. For example, in the budget structure of 2009, spending on development grew up to 30.78 %, and this did not significantly increased inflation but affected the inflation in the following years. It is clear that the structure of budget expenditures also had a certain effect on the inflation rate. The year with big expenditures on, for example, the salary would experience the increase in inflation rate. Meanwhile, more spending on development investment would cause the lagging effect for inflation in the following years.

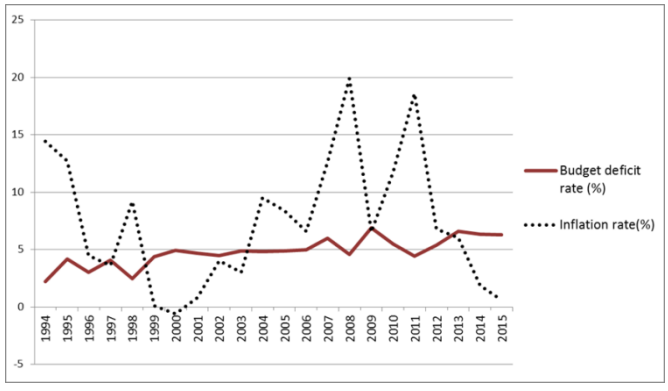

Figure 1. Inflation rate and budget deficit over period 1994–2015

Source: General Statistics Office and the Ministry of Finance, 2016

In terms of budget deficit amount, this value has increased in absolute terms. Figure 2 shows that inflation tended to move together with the budget deficit value. However, there were also periods when they did not move in the same direction.

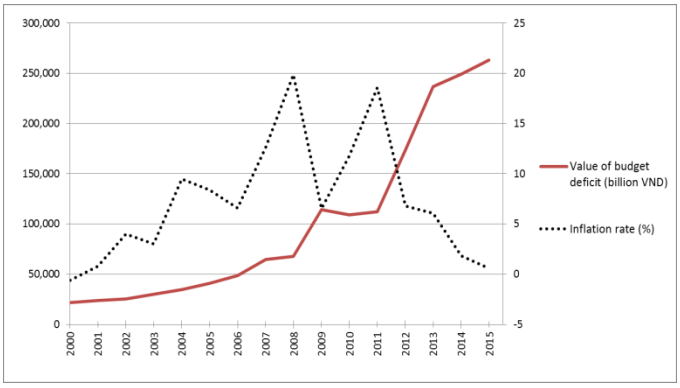

Figure 2. Value of the budget deficit and inflation rate over period 2000–2015

Source: General Statistics Office, the Ministry of Finance and ADB, 2016

A quantitative analysis is conducted using the least square method with 4 independent variables: the budget deficit rate (*BD*), the exchange rate (*E*), the Gross Domestic Product (*GDP*), and the money supply (*M*2); the dependent variable is the inflation rate (*Y*) with 22 observations (data obtained from 1994 to 2015). The result is shown in Table 1.

Table 1. Quantitative results of research model

Independent variables	**Estimated coefficients**	$p > \|t\|$
Intercept	489.3406**	0.017
Budget deficit (*BD*)	–5.2900***	0.001
GDP (*GDP*)	0.0127	0.989
ln exchange rate (ln*E*)	–63.7187**	0.011
ln money supply (ln*M*2)	11.9553***	0.001
R^2	0.5739	
Adjusted R^2	0.4736	
N	22	

Note: p-values are in asterisk (***) denote significance at the 1 % level

Source: calculation data obtained from General Statistics Office and ADB, 2016

According to the data, 57.39 % of the variation in inflation is explained by the model. The coefficient of the budget deficit is negative statistically significant at 1 %, which conflicts with the theory mentioned above. The reason could be the lag effect of the budget deficit on inflation and the budget expenditure structure, i.e. how much and when the government spends the

budget in each sector. It is very complicated to determine this lag effect because it depends on each period, and this effect is also affected by other factors through multiple mechanisms. Therefore, this study suggests that there should be a more comprehensive research about this lag effect and its mechanism, and how the budget affects the inflation.

Among 3 other variables, only *M*2 has a positive statistically significant coefficient at 1 %, and this is consistent with the monetarist (and neo-classical) models "changes in the inflation rate closely depend on changes in the money supply" (Solomon and de Wet, 2004).

3.3 Effect of sources of finance budget deficit on inflation

In addition to increasing the use of revenue and cutting unnecessary spending, there are two methods to offset the budget deficit: issuing money and borrowing money.

Money issuing

The impact of this method was clearest in period 1986–1990. This was a period of economic difficulty with lack of funding sources and high level of budget deficit. The state mainly used the money-issuing tool to compensate for the deficit, which caused an increase in the money supply and resulted in an imbalance between money and goods, leading to a very high inflation rate (Nguyen & Nguyen, 2011). Inflation reached an average of 232.5 % during this period. Because of these consequences, the money issues method is rarely used to offset the budget deficit.

Table 2. Source of the budget deficit's finance for period 1986–1990

Year Content	1986	1987	1988	1989	1990
Budget deficit (billion VND)	37.20	135.70	1,093	2,203	2,250
Amount of money issued to offset budget (billion VND)	22.90	89.10	450	1,655	1,200
Percentage of money issues (%)	61.56	65.66	41.17	75.12	53.33
Percentage of borrowings and aids (%)	38.44	32.10	32.60	24.88	46.67
Others (%)	–	2.24	26.23	–	–

Source: general Statistics Office

Borrowing money

Domestic borrowing

Borrowing money is the main method to finance the budget deficit, especially domestic borrowing in the form of issuance of Government securities. The government authorizes the State Treasury to issue securities that may take in the form of treasury bills, treasury bonds or project bonds.

According to Vu (2013), domestic borrowing allows the government to control the budget deficit without increasing its currency base or reducing its foreign reserves. Therefore, it is a quite effective measure that would mobilize temporary idle money, avoid the risk of a foreign debt crisis and easy to conduct. However, this measure may restrain the development of business activities in the non-state sector.

Moreover, in Vietnam, bonds are mainly sold to credit institutions and are often discounted by commercial banks at the State Bank. Along with that, the large domestic debt of State Bank has pushed up interest rates. If the State Bank wants to achieve the goal of monetary policy, it has to pump money into the economy to stabilize the interest rates and promote business. The issuance of credit or buy-in transactions on open market of the State Bank would have the effect of increasing money supply and putting pressure on inflation.

Foreign borrowing

In addition to domestic borrowing, the government may borrow money from foreign governments and financial institutions such as the World Bank, the International Monetary Fund (IMF), the Asian Development Bank (ADB), intergovernmental organizations and international organizations, etc. Foreign borrowing can be in the form of issuing hard foreign currency bonds abroad and credit borrowing.

Foreign borrowing would increase debt repayment obligations, potential exacerbation of the debt crisis, dependence on foreigners both economically and politically, reducing excessive foreign exchange reserve, and the national storage would lead to an exchange rate crisis. At the same time, foreign borrowing would increase the supply of foreign currency in the market, causing pressure on the domestic currency. To maintain the stability of the exchange rate, the State Bank intervenes by increasing the domestic money supply in the market, and if the market does not absorb promptly, this increase would raise the inflation rate.

In conclusion, the funding source for the budget deficit could affect the inflation directly or indirectly. It could affect immediately if the government uses the money issues measure or impact with a certain lag through multiple channels and mechanisms of action such as the borrowing method.

3.4 Effect of public expenditure on inflation

Vietnam's economic growth has been still largely based on the capital factor, of which the government has a high proportion of the investment capital. As shown in figure 4, in period 1995-2012, the investment capital for state sector fluctuated from 35% to 60%. Despite the large proportion of investment, the contribution of state sector to GDP was not adequate and was always lower than 40% (figure 5). In period 2000–2011, the average state capital investment ratio

was 46.55 %, but this sector contributed an average of 36.89 % in GDP over this period (To, 2012). This partly shows that the public investment was not efficient with higher losses than that of other economic sectors.

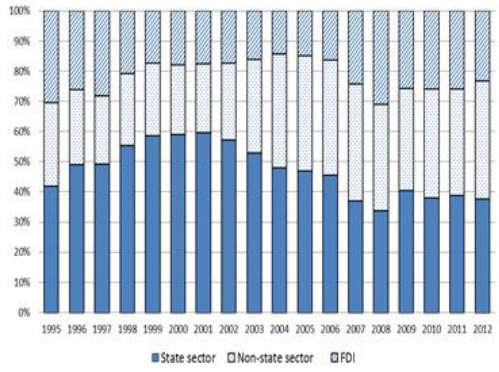

Figure 3. Structure of investment capital by economic sectors

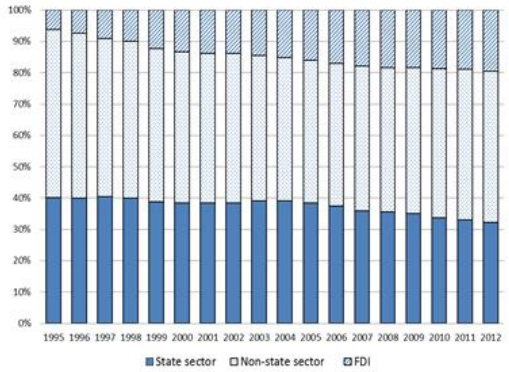

Figure 4. Structure of GDP by economic sectors

Source: General Statistics Office

The state sector had a large proportion of investment but high losses that led to the state budget deficit. The budget was always in a state of deficit mainly due to large public investment, but the public investment did not create the corresponding value of goods. There was an imbalance of payment, causing high inflation. Therefore, improving the efficiency of public spending would be a measure to control inflation.

3.5 Independence of monetary policy and its impact on inflation

There have been numerous studies demonstrating that the independent central bank model has a good impact on controlling inflation and budget deficits. There are four independence levels of the central bank: the highest level is "Independence in goal setting"; the second level of independence is "Independence in setting performance criteria"; the third level is "Independence in the choice of operating instrument"; and the lowest level of independence is "Limited independence or even no independence" (Solomon & De Wet, 2004). The State bank of Vietnam is currently at the lowest level of independence. This has had a certain impact on the State bank's capacity building. Vietnam's monetary policy is still serving economic growth and the government's purpose, not as independent as in other countries.

The central bank has low independence and accordingly is in the context of a persistent budget deficit; it must be responsible for advancing the state budget and handle the budget deficit. This amount has not usually been paid in time and is non-guaranteed, and the money supply, therefore, also has been influenced and then partly affected the inflation.

4 Conclusions and solutions

Both quantitative and qualitative analysis of many aspects of the impact has proved that the persistent budget deficit, the low independence of central bank, and the ineffective public expenditure are the main reasons for high inflation in Vietnam. Therefore, in order to control inflation, the government should:

First, control the state budget deficit actively rather than passively deal with the consequence of the high budget deficit, manage the budget revenue well to create sustainable and stable revenue sources during the period of economic growth, control revenue sources and reduce tax loss, etc., and manage public spending and prevent losses and waste.

Second, deal with the relationship between investment expenditures and regular expenditures, central budget and local budgets, closely manage and supervise borrowing loans, limit the use of budgetary advance, exploit other sources of revenues and control borrowing in such a limited amount that its effects are predictable.

Third, enhance the independence of the State Bank, secure foreign exchange reserves, further administrative reforms, combine harmoniously the fiscal policy and the monetary policy, pay attention to the wage reform and raise the quality of forecasting, boosting domestic production and labor productivity.

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