International Journal of Research in Economics and Social Sciences (IJRESS)
Available online at: http://euroasiapub.org
Vol. 7 Issue 7, July- 2017, pp. 1~10
ISSN(o): 2249-7382 | Impact Factor: 6.939 | Thomson Reuters Researcher ID: L-5236-2015

THE RELATIONSHIP BETWEEN FISCAL STATUS WITH ECONOMIC GROWTH, INFLATION AND UNEMPLOYMENT IN VIETNAM PERIOD 1996-2016

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Abstract. *The article pays attention to and analyzes the fiscal impulse in order to examine Vietnam's fiscal status in relation to economic growth, inflation and unemployment in the period 1996-2016. The results show that, in relation to output fluctuations, Vietnam has implemented the fiscal policy in the same direction in the period 1996-2007 and in the opposite direction in the period 2008-2016; in relation to unemployment and inflation, although the relationship between fiscal status and unemployment is not really clear, while loose fiscal status is often accompanied by high inflation and vice versa, unemployment has declined somewhat. However, it can be seen that this relationship is more biased than Vietnam's fiscal impact on growth, inflation and unemployment. This shows that Vietnam needs to improve the ability to take the initiative and forecast in the fiscal policy.*

Keywords*: fiscal policy, fiscal impulse, economic cycle, fiscal status, potential output, growth, inflation, unemployment, Vietnam.*

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1. Introduction

The fiscal policy under the school of J.M. Keynes is a concept that refers to the Government's change of spending or taxes to stabilize the macro economy. Reduction of taxes and increase of the government spending are often seen as expansionary fiscal measures and vice versa. However, the impacts on taxes and spending to determine the fiscal status whether it is expanded or narrowed through methods are various. Economists have developed a tool that measures fiscal impulse to examine the fiscal policy of a country's economy in an expanded or narrowed status.

Although there are a lot of approaches and measurements, it is generally understood that the fiscal impulse (FI) is the difference between a change in rate of revenue/GDP and a change in rate of expenditure/GDP during that period of the Government. At present, there are many methods of fiscal impulse measurement, popular with methods such as primary measurement method ΔPRIMARY according to Alesia (1995) [1], method of Blandchard (1993) [2], method of IMF formulated by Hellen and collaborators (1986) [5], method of OECD proposed by Muller, P. and R. Price (1984) [7]. Despite

using different approaches, these methods use the same way of identification that when fiscal impulse is negative, it can be concluded the Government has shown tight control over fiscal situation. The opposite happens when the fiscal impulse is positive.

There are a number of studies in Vietnam that use a approach of fiscal impulse measurement for analysis in different periods from 1991 to 2015, such as the study of Le Quang Tuong (2016) [6], Nguyen Thi Nguyet (2016) [10], Nguyen Anh Phong (2016) [8], Su Dinh Thanh (2009) [13]... These studies all use the method of fiscal impulse measurement formulated by IMF to analyze. The characteristic of IMF's method is that it uses the one-year data chosen by the researcher as the base year for the entire calculation. Therefore, when researchers select five different bases, research results for the same economy in the same period may be different. Also, in the calculation of IMF, the expenditures for the automatic stabilization system of the economy are not updated so they are not excluded from the impulse formula. The determination results of loose or tight fiscal under this method do not reflect the whole of the government's fiscal control status. This fact calls for the application of a deterministic approach to fiscal for consistent results among the studies, as well as a possible reflection of the Government's expenditure status. The fiscal impulse determination method of OCED proposed by Muller, P. and R. Price (1984) [7] is considered to be appropriate for these requirements.

2. Methods of fiscal impulse measurement

There are lots of methods to measure fiscal impulse in different approaches. Table 1 below presents some of the methods commonly used:

Table 1: Some methods of fiscal impulse measurement

1	Method ΔPRIMARY	$FI = (g_t - t_t) - (g_{t-1} - t_{t-1})$
2	Method of Blandchard	$FI = [g_t (U_{t-1})-t_t] - (g_{t-1} - t_{t-1})$
3	Method of IMF	$FI = [(G_t - T_t) - (G_o (1+\hat{y}_t) - T_0 (1+y_t))]/ Y_{t-1}$
4	Method of OECD	$FI = [(G_t - T_t) - (G_{t-1} (1+\hat{y}_t) - T_{t-1} (1+y_t))]/ Y_{t-1}$

In which: g_t, g_{t-1}: Government spending/GDP in year t and year t-1;

t_t, t_{t-1}: Government revenue/GDP in year t and t-1 year;

U_t: Unemployment rate;

G_t, G_{t-1}: Government spending in year t and year t-1, T_t, T_{t-1} Government revenue in year t and t-1 year;

G_0, T_0: Government spending and revenue corresponding to the base year (the year that the potential output is close to the actual output);

$\hat{y}_t$: Nominal GDP growth rate at current prices; y_t: GDP growth rate at current prices; Y_t: GDP at current prices.

ΔPRIMARYmethod takes the previous year as the basis and ignores the cycle causing a fundamental deficit, simply measures the fiscal impulse based on the rate of government expenditures and incomes over GDP at current prices (Table 1). Blandchard method is based on ΔPRIMARY method and adds the unemployment variable U_t to the model (Table 1). However, in the case of Vietnam, this measurement method is ineffective as Vietnam has not yet transferred the government expenditure through the unemployment benefit system. IMF method formulated by Hellen and collaborators is also based on the primary approach, and adds a factor of growth and updates the business cycle into the formula. So this method is considered to be more complete and meaningful. Similar to IMF method, the method of OECD also takes into account other factors that affect the fiscal policy. The fundamental difference between the method of OECD and IMF is the selection of the base year. IMF method uses the base year (year 0) while OECD method uses the preceding year (year t-1) to measure. In the author's view, the method of OECD is better than the method of IMF in terms of updating the revenues and expenditures of the automatic stabilization system, thus indicating more clearly that the Government has controlled loose or tight fiscal.

3. State budget revenue and expenditure status of Vietnam in the period 1996-2016

State budget revenues and expenditures have the strongest impact on the fiscal status of the Government. The state budget revenues and expenditures of the Government in the period 1995-2016 are as follows:

Unit: billion VND

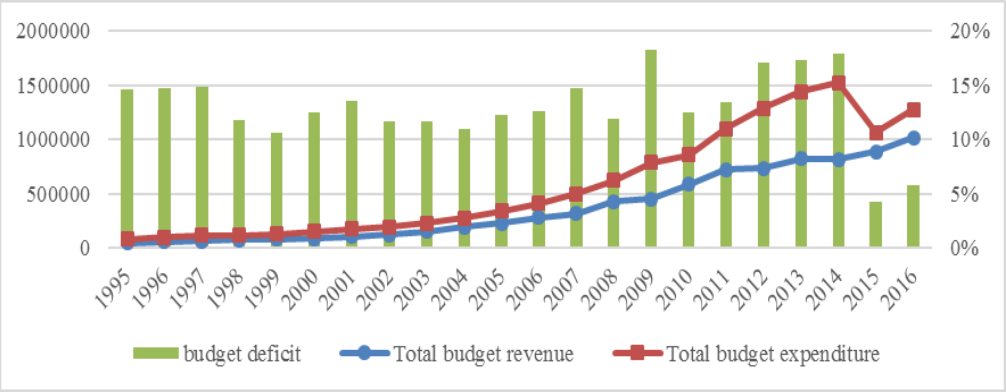

Figure 1. Vietnam's state budget revenue and expenditure status in the period 1995-2016 [15]

In general, during the period 1995-2016, the budget revenues and expenditures increased steadily over the years at relatively similar rates with an average increase for the whole period of approximately 15,5%. Budget revenues were generally unchanged with an average rate of revenue/GDP for the whole period of 22,5% and a rate of expenditure/GDP of 33,4%. Budget deficit has always been positive and fluctuated, but not too large, with an average deficit over GDP in the whole calculation period of 12,9%. In recent years, the Government spending has fallen sharply when the deficit rate over GDP was only 4,3% -5,4% (Figure 1). According to the above analysis, the Government is likely to spend more than the state budget.

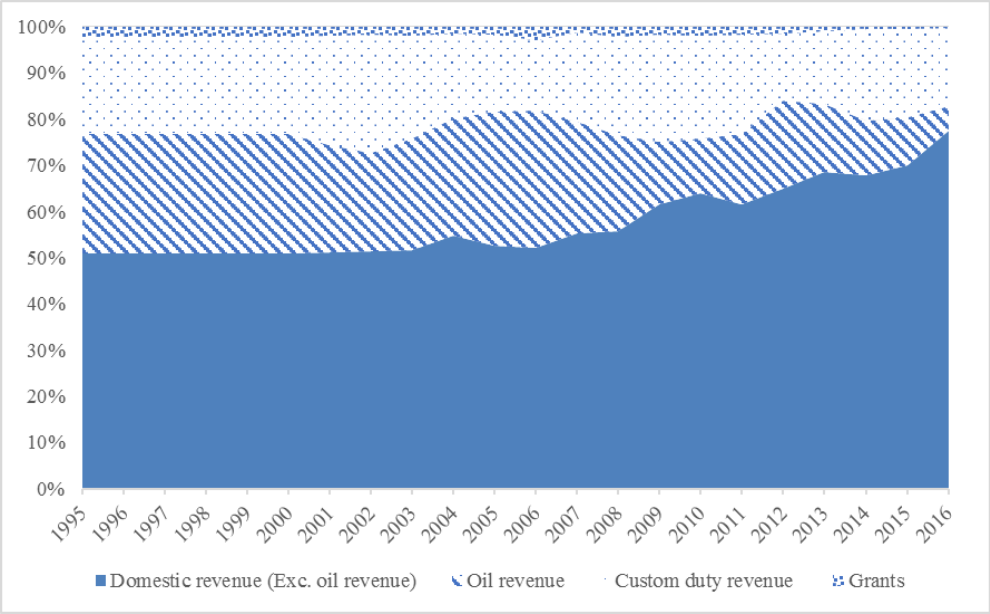

Figure 2. Vietnam's state budget revenue structure in the period 1995-2016 [15]

Regarding the structure of Vietnam's state budget revenues in the period 1995-2016, customs revenues accounted for an average proportion of about 20% (Figure 2). This is not a very small proportion in the state budget revenues, and these revenues fluctuate through different periods, so taxation is an instrument commonly used in the administration of fiscal policy in Vietnam.

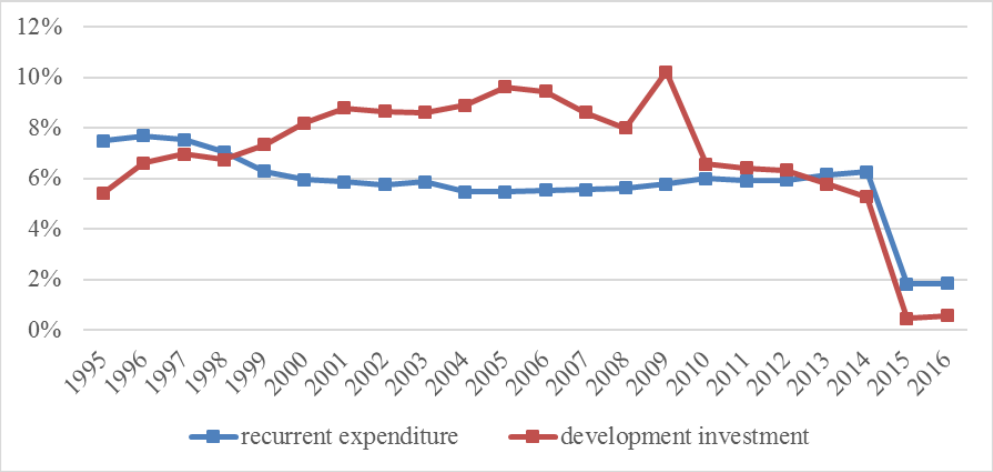

Figure 3. Ratio of normal expenditure and development investment expenditure over GDP of Vietnam in the period 1995-2016 [15]

Considering the structure of Government spending, there are two factors being instruments of the fiscal policy: normal expenditure and development investment expenditure. Generally during this period, the rate of normal expenditure/GDP did not fluctuate too much at the beginning, fluctuating between 5,5% -7,5%; in the period 2015-2016, the rate of normal expenditure/GDP fell sharply to 1.8% (Figure 3). The change comes from the Government's reduction of staff to implement budget savings and waste prevention so as to focus resources on development investment. The Government spending on development investment has mostly expanded over the years at the beginning period and has

gradually declined in recent years.

4. Results of calculating fiscal impulse in Vietnam according to method of the OECD

Within the scope of this study, the author examines the fiscal impulse of Vietnam for the period of 1995-2016 in accordance with the method of the OECD. The author uses the data of the General Statistics Office of Vietnam, including the variables: GDP at the current prices; Total state budget revenues and expenditures in the period of 1995-2016. Potential output estimation results are available on Eviews 9.0 software.

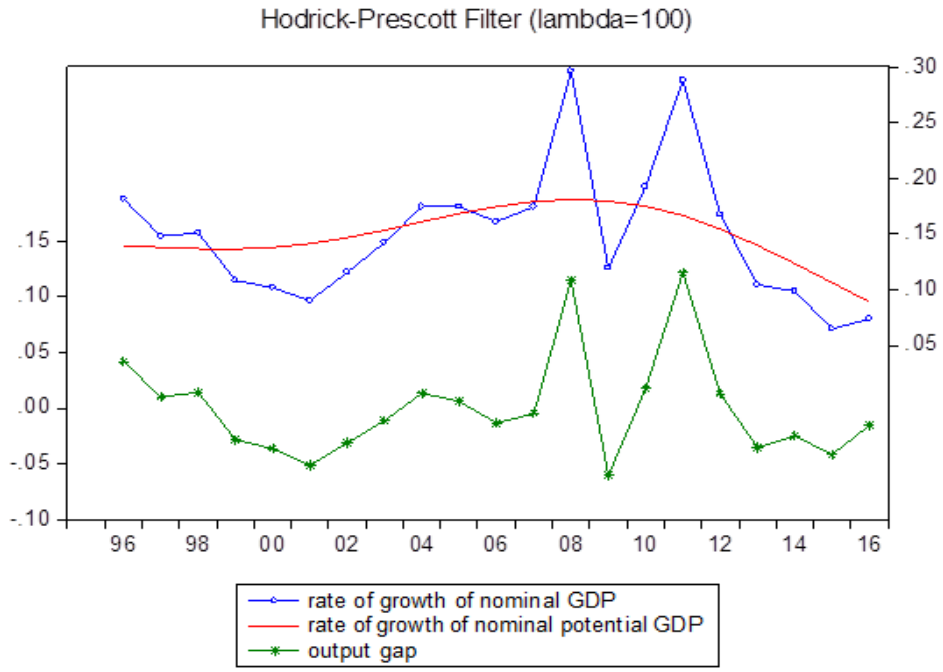

Figure 4. Results estimated of annual potential output at current prices

(Source: Author's calculations from data of General Statistics Office - GSO)

Results of calculating fiscal impulse according to method of the OECD are as follows (Table 2):

Table 2: Results of calculating fiscal impulse in Vietnam from 1996 to 2016 according to method of the OECD

Year	FI (OECD)	Year	FI (OECD)
1996	1,48%	2007	2,21%
1997	0,54%	2008	0,92%
1998	-3,09%	2009	4,91%
1999	-2,15%	2010	-6,19%
2000	0,99%	2011	6,12%
2001	-0,46%	2012	4,67%
2002	-3,14%	2013	-1,11%
2003	-0,42%	2014	-0,35%
2004	-0,37%	2015	-16,05%
2005	1,79%	2016	1,17%
2006	-0,06%	2017	-----

(Source: Author's calculations from data of General Statistics Office - GSO)

In general, according to OECD's fiscal impulse measurement results, there are 10 positive fiscal impulses over the 21-year period, indicating that Vietnam's fiscal policy is not too inclined to expand or tighten.

5. The relationship between fiscal status, economic growth, inflation and unemployment in Vietnam in the period of 1996-2016

To assess the relationship between fiscal status and economic growth, inflation and unemployment in Vietnam in the period of 1996-2016, the study will examine the correlation between fiscal impulse and economic growth, inflation and unemployment in Vietnam through charts and verified by the rank correlation coefficient.

Analyzing the visual relationship through the chart to consider each stage; it can be concluded as follows:

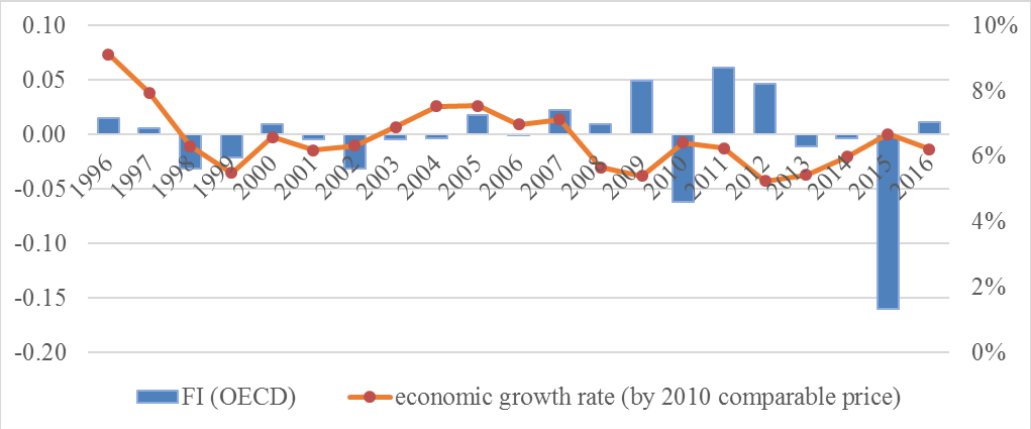

Figure 5. FI and Vietnam's economic growth rate (under GDP at prices compared to 2010) for the period of 1996-2016

(Source: Author's calculations from data of General Statistics Office - GSO)

- In the period of 1996-1997: During this period, Vietnam's economy was beginning to open and integrate into the world, with economic growth of over 8%. The fiscal impulse measured was positive; it shown the government's loose fiscal management with an average FI of 1%.

- In the period of 1998-1999: This period had negative fiscal impulse that reflects the Government's tight fiscal policy. This was a time when the economy was being affected by the ASEAN financial crisis, the economic growth rate was reduced with the fiscal policy tends to narrow.

- In the period of 1999-2000: During this period, the fiscal impulse had a positive value, showing that the government was implementing an expansionary fiscal policy. In general, this period the economy was on the rise, economic growth is increasing.

- In the period of 2001-2004: Negative fiscal impulse value, expressed in this year, the Government's fiscal policy was narrowed, the growth rate in this period was on the rise.

- In the period of 2005-2006: high growth economy was in the previous period but the fiscal policy in this period was expanded. By 2006, there was a fiscal adjustment but not much.

- In the period of 2007-2009: In general, in this period, the government implemented the fiscal policy expanded equally with an average FI of 2,68%. During this period, the economic growth rate decreased sharply, from over 7% in the previous period to over 5% in this period.

- In the period of 2009- 2010: The fiscal impulse in 2009 was positive, but in 2010 the fiscal impulse was negative; it shown a tight fiscal policy. The economic growth rate in 2010 increased compared to 2009.

- In the period of 2011-2012: The economic growth rate tended to decrease, the fiscal policy was expanded with FI> 0.

- In the period of 2013-2015: The economic growth is on track to increase from 2013 to 2015, the fiscal policy was continually narrowed.

- By 2016, the growth rate gradually increased compared to 2015, the fiscal status this year is narrow.

Through analyzing the correlation between economic growth and fiscal impulse measurement results, it can be seen that, in the period before 2007, Vietnam's fiscal policy is mostly in the same direction as the economic cycle. The government has run a loose fiscal policy when the economy achieves high growth and run a loose fiscal policy when the economy achieves low growth. This result is consistent with the results of calculations for developing economies found in many previous studies. The governments of developing countries have loosened their fiscal status when high economic growth and tightening fiscal status in the face of low economic growth. From 2007 onwards, Vietnam has implemented a fiscal policy that is reversed with the economic cycle. Fiscal status is loosened during recession and tightened when the economic growth is recovered.

Fiscal status with inflation and unemployment. In relation to the relationship between the fiscal status and the inflation and unemployment, most of the years that have loose fiscal status have high inflation rate (Figure 6), while the relationship between the fiscal status and the unemployment is not explicitly shown under the rules.

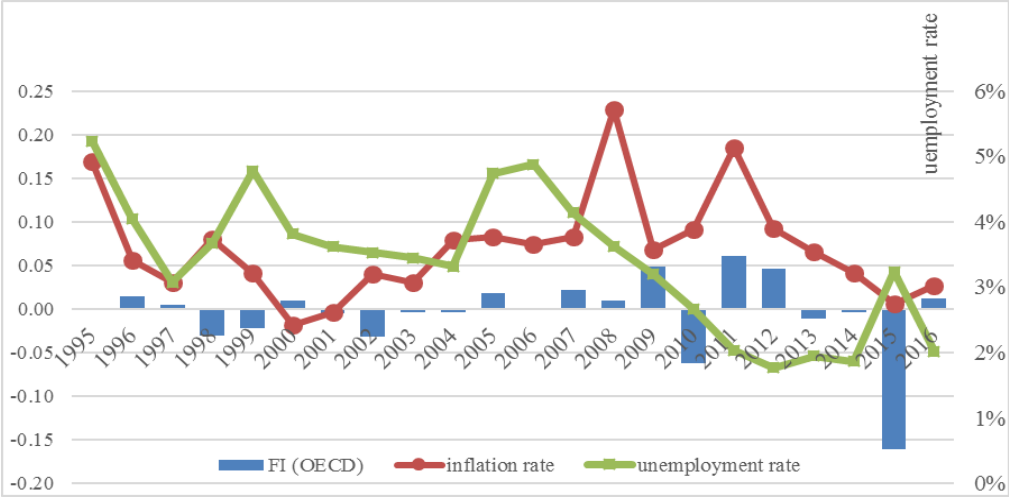

Figure 6: FI, inflation rate and unemployment rate of Vietnam from 1995 to 2016 [15]

The analysis of the fiscal status and the inflation rate shows that the greater the fiscal expansion, the higher the inflation rate. When the fiscal expands, the inflation rate is also rising higher. In some years, the fiscal was constantly narrowed, such as: in the period of 1998-2004, the rate of inflation fluctuated but this fluctuation was only around 4%. In this period, in 2000, the fiscal was not much expanded and the inflation was negative but increasing in 2001. In the period of 2007-2012, the inflation rate in this period was relatively high, the FI also had a value being higher than before the previous period.In 2011, the fiscal was significantly expanded, the inflation rate also reached 18,58%. In 2015, when fiscal was extremely tight, the inflation rate was only 0,63%. However, there are years such as in 2009 and 2012, when the fiscal was expanded, the inflation rate was lowed; in 2010, the fiscal was tightened, the rate of inflation moved up (Figure 6); therefore, it can be seen that the fiscal and the inflation management of the government has a two-way impact; It is not merely the fiscal policy adjusting the inflation rate in Vietnam.

The visual analysis between the fiscal status and the unemployment rate also shows that the relationship between these two factors is not clear. The most obvious years when the fiscal was expanded in 1997, 2009, 2011, 2012, the unemployment rate tended to decrease; or in 1998-2000, 2015, the fiscal was tightened and the unemployment rate was high. However, there are also a few years in the years: 2005, 2007 and 2010, the situation is against the above statement, but in general, the fiscal status in the period has a certain impact on the unemployment rate.

Thus, on the above analysis, it can be seen that the fiscal status of Vietnam is quite passive before the macroeconomic fluctuations and no significant effect between the impacts of the fiscal policy and the rates of the inflation and the unemployment.

Analysis through Spearman correlation coefficient: After verifying the FI series, we can find that the series are not normally distributed, so it is not possible to compute the sample correlation coefficient with the remaining variables. Therefore, for quantitative analysis of the correlation between FI and growth, inflation and unemployment, this study uses rank correlation coefficient.

First of all, to find evidence of the difference between fiscal status and growth in the two periods before and after 2007, the author calculates the correlation coefficient of each period individually.

-In period 1996-2007: r_1=0,741. From this result it can be concluded that in the period before 2007, the fiscal status is in line with the growth rate. If the fiscal expands, the growth rate is also high. This is consistent with the above chart analysis. A period lag r_{11} = 0,069, two-period lag between the FI variables and the growth rate r_{12} = -0,426, three-period lag r_{13} = -0,440. This proves that the positive effect of fiscal status on growth over this period only lasted a period of time.

-In period 2008-2016: r_2 = -0,483 shows that the relationship between FI and growth in this period is reverse. This is also consistent with the chart analysis: in the post-2007 period, the fiscal status expands while the growth decreases. Taking a growth variable with aperiod lag of r_{21}=

-0,375 or a two-period lag of r_{22}= -0,342 and three-period lag of r_{23}= -0,086 shows that during this period, the opposite relationship between the fiscal status and growth laststhree periods, but the effect is decreasing.

- Spearman correlation coefficient between FI and inflation rate: r_3= 0,304. We see that r is positive, showing that the relationship between these two quantities is positive, when the fiscal expands; the growth rate is also high, and vice versa. The absolute value of r is also relatively low and close to zero, so the relationship is not tight. Taking the correlation coefficient between FI and inflation rate lagin different periods, the results include: a period inflation rate lag of r_{31} = 0,278, two-period inflation rate lag r_{32}= -0,412, three-period inflation rate lag is r_{33}=0,006; the inflation rate lag for three periods or more is corresponding to the very small values of rank correlation coefficient, indicating the effect in the same direction of fiscal status on the inflation rate lasts only one period.

-Spearman correlation coefficient between FI and unemployment rate r_4= -0,207. We see that r is negative, indicating that the relationship between these two quantities is reserve, when the fiscal expands, the unemployment rate is low, and vice versa. Like the two values of r above, the absolute value of r is also relatively low and close to zero, so the relationship is not tight.

The correlation between FI and unemployment rate lag in different periods, the results include: a period unemployment rate lag of r_{41}= -0,396, two-period lag r_{42}= -0,977, three-period lag is r_{43}= -0,523. This reflects the adverse effect of fiscal status on unemployment rate more clearly after two-period lag.

The results of the correlation coefficient analysis are similar to the previous analysis, generally in the whole period, the fiscal status is in reverse relationship with the growth rate and the unemployment rate but in positive relationship with inflation rate.

6. Conclusions

The results of fiscal impulse measurement according to the method of OECD in Vietnam from 1996 to 2016 indicate that the negative and positive values are approximately equal. Use the value of fiscal impulse to determine whether the fiscal policy is loosen or tight, while analyze the relationship with growth, unemployment and inflation of each economic period, the author concludes that Vietnam's fiscal policy is in the same direction to the economic cycle in the period before 2007, which is quite similar to many other developing countries: expanding at high growth and narrowing at low growth. In the post-2008 period, the fiscal policy reversed, the fiscal position reversed with the economic cycle. The relationship between fiscal status and inflation is in the same direction, but not very clear. The relationship between fiscal status and unemployment is reserve and its effect is strongest with two-period lag.

From the above analysis, the author makes some recommendations to implement the fiscal policy more effectively, the Government should be more active in using fiscal instruments in regulating the macro economy. Firstly, it is required to be active in measuring, forecasting, monitoring closely the fluctuations of the economic cycle, especially the basic elements of the macro economy such as growth,

inflation and unemployment. Secondly, it is required to actively balance the budget, always prepare the provisions to use, ensure not to fall into the case of often "tighten the belt" when the economy is in a state of recession (while expand the fiscal to strengthen the economy). To do this in the best manner, as the economy grows, the Government should save the budget, make provisions instead of expanding fiscal and spending more when the budget is feasible.

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