

Study on the Financial Effect of Japan's Consumption Tax Reform

Guowei ZHONG

China University of Political Science and Law, Beijing, 100088, CHINA

Abstract: Since the 1980s, Japanese government has raised consumption tax three times, and its main purpose is to reduce the huge budget deficit which due to sluggish economic growth and rising social security expenditures. In this paper, based on theoretical study, we found that changes of consumption tax will result in fiscal effects through several paths such as enterprise output and household consumption in two aspects of fiscal revenue and expenditure; Experimental test to the financial effects of two former Japanese consumption tax reform through VAR model shown that raising consumption tax rate has positive financial effects in the short term but it is negative in the long term. Therefore, if Japan does not implement thorough reform of social economic structure, raising consumption tax rate would be difficult to resolve Japan's fiscal deficit problem fundamentally on the background what Japanese economy is not out of doldrums.

Keywords: Japan; Consumption tax reform; Enterprise output; Household consumption; Financial effects

1. Introduction

Since the end of 2012, Abe became the prime minister, the Japanese government carried out radical reform, launched the "abonomics" in which the consumption tax reform is the second arrow - an important part of flexible financial policy. This consumption tax reform is the third time of Japan consumption tax reform, it implementation twice: At the first time on April 1, 2014, it increased the consumption tax rate from 5% to 8%; the second was in April 2017 it has further increased the tax rate to 10%. One of the important goal which Japan raised the consumption tax rate is to increase revenue, ease the financial pressure. However, Japan has been increased the tax rate to 3% and 5% through twice consumption tax rate reform in 1989 and 1997, but the debt burden rate is still rising year after year, that is, the positive financial effects of the previous reforms are weak. Thus, the third increase of the consumption tax rate in Japan whether can effectively alleviate the financial pressure has become the focus of attention, this paper is a study around this issue.

2. The Relevant Literature Review

Foreign scholars have in-depth study of the consumption tax from the definition to the economic effects about the financial effect on the consumption tax. About What kind of consumption tax can produce the best financial effect, Bovenberg and De Mooij (1994) has studied from the point of increasing the state revenues, considered that imposing a flat rate for all consumer goods is the best, and the best consumption tax of most polluting goods such as tobacco should reduce with the increase of overall level of taxation. Some scholars have studied the fi-

ancial effect from the perspective of economic growth effects of the consumption tax, but failed to get the same conclusion: Mamatzakis (2005) considered that the appropriate increase in the proportion of indirect taxes can promote economic growth on the basis of the Laffer curve; Blanchard and Perotti (2002) have studied the impact of tax on the postwar US economy through constructing the VAR model, but they considered that the tax has negative effect to increase output.

The research for Japanese consumption tax reform mainly focused on two aspects: one side is about the reasons for the Japanese consumption tax reform. As JinRenShu (2014) considered that the structural imbalance in the financial, economy, population and political the four aspects are the deep-seated reasons of the reform by studying the history of Japanese consumption tax reform. On the other side is about the economic influence of Japanese consumption tax reform. Liu Xinying (2013), Shi Wei Lin and Rothstein (2014) have comparatively studied the previous Japanese consumption tax reform and considered that the increase of the consumption tax rate will impact economic growth in short term, but in the long term this impact will be weakened, and under different model of economic development the impact of the consumption tax reform is also different.

3. The Path Analysis of Financial Effects which Generated from Consumption Tax Reform

3.1. Path of fiscal revenue

Although the consumption tax is transferable, but the manufacturers can not transfer all of the tax burden to

consumers, because it not only reduces the purchasing power of consumers so that will lead to a significant reduction in demand but also could trigger a price war at the beginning of the tax rate increase. Therefore the increase of the tax burden will be shared by consumers and manufacturers, and the shared ratio will depend on the supply and demand elasticity of the most taxable commodities at the beginning of the tax rate increase. In the long term, the consumption tax burden is mainly borne by consumers. Therefore, the consumption tax reform can influence revenue by manufacturers and consumers. On the path of manufacturers, it mainly by changing the prices to affect output and ultimately affect the revenue; however on the path of consumer, it mainly by changing consumer prices to affect household consumption expenditure, thereby affecting aggregate demand and ultimately generate revenue effects.

3.2. Path of fiscal expenditure

Consumption tax generates financial effect by impacting the of fiscal expenditure, that mainly refers to the supporting measures government has taken and the direct or indirect result that is increase fiscal expenditure which the government in order to mitigate the adverse effects of the consumption tax rate increase. It mainly divided into two aspects:

First, the increase in the consumption tax rate will lead to the increase of people's basic living expenses. In order to guarantee the basic livelihood of low-income groups, the government must increase spending on social security for low-income groups, thereby it will increase the fiscal expenditure. For example, in 2014 Abe government raised the consumption tax, at the same time, he increased by 2.9% of the lower premiums standard quota in order to alleviate the pressure of low-income groups.

Second, the government generally implement the supporting direct tax cuts plan in order to offset the negative impact on the economy which the consumption tax rate increase may bring. Although the impact is about revenue, but it can be understood as a disguised financial subsidy for direct tax payers, however this supporting implement substantially has increased the government expenditure. For example, in 2014 Abe government raised the consumption tax, at the same time, he introduced a number of fiscal measures which including a "2013fiscal supplementary budget plan" that the total amount is 5.47 trillion yen .What's more he cutted the corporate tax rate to 35% in April 2014, and introduced a corporate tax cuts policy that the scale is 1 trillion yen.

In summary, the consumption tax reform will generate financial effect by the firm's output, household consumption expenditure, supporting subsidies or tax cuts, etc. in the revenue and expenditure aspects. As for the size of the financial effect, it is needed to use the actual data to test.

4. History Test on the Financial Effect of Japan's Consumption Tax Reform

Based on the theory analysis on financial effect of the consumption tax, added the availability of comprehensive data, this paper has selected variables and methods of empirical tests. On the hand of fiscal income, the changes of consumption tax rate would affect corporate supply and household consumption amount through prices, thereby would affect the government's tax base, which reflected in the macroeconomic variables is GDP;As the tax base of consumption tax has changed except the tax rate, we need to distinguish the amount of tax, divided into the consumption tax named CT and other taxes named ET; On the hand of fiscal expenditure, the expenditure of social security and tax cuts ultimately reflected in financial expenditure named X at macro level. In order to quantify the fiscal effect, this paper used the difference between fiscal revenue (excluding the income on issued bonds) and fiscal expenditure (excluding the expenditure on debt repay) over the same period as the indicator to financial effect, represented by Y.

4.1. Determination of measurement model and method

As the vector auto regression (VAR) model contained lagged terms, it can effectively predict the effect on the dependent variable when the explanatory variables has been impacted. In a word, VAR is an effective model to analyze and predict the impact on other economic variables which resulted from the changes in consumption tax rate. According to the analysis above, this paper establishment the following VAR model:

$$Y_t = \sum_{i=0}^N a_i CT_{t-i} + \sum_{i=0}^N b_i ET_{t-i} + \sum_{i=0}^N g_i X_{t-i} + \sum_{i=0}^N q_i GDP_{t-i} + e_t$$

Where t denotes the period of variable, alpha, beta, gamma, theta is corresponding coefficient, N and I used to represent the lag order of endogenous variables. This article will use Johansen Cointegration method to test the long-term cointegration between variables at the first, if the samples existed cointegration relationship, the can use the impulse response function to analyze the dynamic relationship between variables.

4.2. Cointegration test on variable

Japan in 1989 and 1997 has conducted consumption tax adjustment two times, therefore this paper selected two periods as samples which are 1989-1996 and 1997-2013. All of the variables used quarterly data, in order to reduce the volatility of data, this paper taked the logarithm on all data.

For the sample at the period from 1989Q2 to 1996Q4,lag order number was determined as 1 according to lag test, then this paper implemented Johansen cointegration test-

based on the VaR (1) model, the test result is that trace statistic and the maximum eigenvalue statistics refused the assumption of the amount of existed cointegrated vector is 0, and accepted the assumption of the maximum amount of existed cointegrated vector is 1 at the 5% significance level, which indicated that there existed long-term stabilized dynamic relationship between the variables.

For the sample at the period from 1997Q1 to 2013Q4, lag order number was determined as 2 according to lag test, then this paper implemented Johansen cointegration test-based on the VaR (2) model, the test result is that trace statistic and the maximum eigenvalue statistics refused the assumption of the amount of existed cointegrated vector is 0 and 1, and accepted the assumption of the maximum amount of existed cointegrated vector is 2 at the 5% significance level, which indicated that there existed long-term stabilized dynamic relationship between the variables.

4.3. Result of impulse response

The result of Johansen cointegration test shows that there exist cointegration relationship among the variables of the two consumption tax reform in 1989 and 1997. So impulse response function can be used to reflect the dynamic relationship among the variables. The impulse response results of the financial effects of Japan's consumption tax reform were shown in Figure 2 and figure 3, horizontal axis in figure represents the lag phase of impact (unit: quarter), vertical axis represents the degree of response, and the dotted line represents plus or minus twice of the deviation to standard deviation.

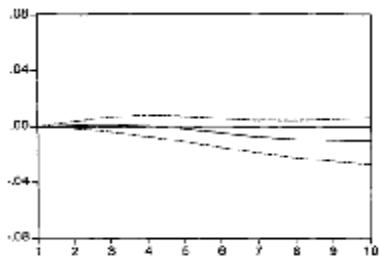


Figure 1. The response of the financial effect to consumption tax in the tax reform of 1989

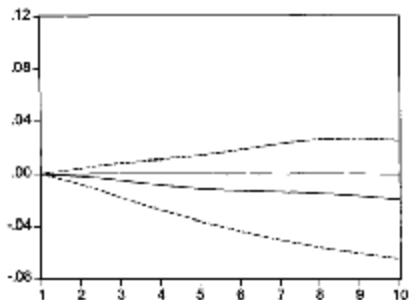


Figure 2. The response of the financial effect to consumption tax in the tax reform of 1997

4.4. Preliminary summary

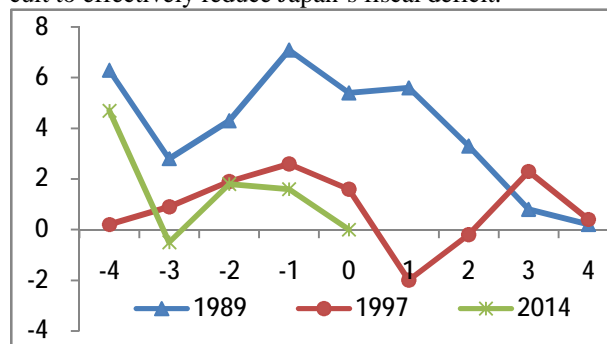
In the consumption tax reform of 1989, the increase of Consumption tax produced positive financial effect at the first four period, after the fourth stage which is negative; and in the consumption tax reform of 1997, the financial effect of the consumption tax is not significant in the first 2 periods after tax increased, after the second stage there appeared obvious negative effects on Finance and the negative would continue to strengthen along with the increase of lag period.

The positive financial effect in the consumption tax of 1997 is weaker than 1989, and the negative effect is stronger than 1989.

5. Outlook for the Financial Effect of Third Japan's Consumption Tax Reform

Based on the history test on the financial effect of Japan's consumption tax reform, we can draw a conclusion that the financial effect of the consumption tax depends on the macro economic situation; In addition, the financial effects of raising consumption tax rate is different in the short and long term.

As mentioned above, the size of finance effect is highly correlate with the macroeconomic situation. Abe government launched the third consumption tax reform, financial effect of it also depended on the macroeconomic situation. Since the implementation of Abe-economics, Japanese economy has made more significant improvement, the nominal GDP of 2013 and 2014 has increased 1.1% and 1.6% year-on-year respectively. While compared with the tax reform of 1989 and 1997, the growth rate of Japan's real GDP is still relatively low (as Figure 3), Japan did not get rid of the long-term economic downturn. It can be predicted that Japan's third consumption tax reform will result more negative financial effect in the downturn of the economic situation. So the third tax reform launched by Abe government is equally difficult to effectively reduce Japan's fiscal deficit.



Note: The horizontal of figure 3 and figure 4 present year, "0" presented which year has implemented consumption tax reform, "- 1" presented which year before the year of tax reform.
Source: Japan's Cabinet Office

Figure 3. The growth rate of GDP year on year in previous consumption tax reform (%)

6. Conclusion

The changes of consumption tax rate can produce finance effect in two aspects of fiscal revenue and expenditure through enterprise output and household consumption expenditure. Based on the historical examination of the finance effect of Japan's first twice consumption tax reform we can know that raising consumption tax produced positive financial effect in the short term and negative effect in the long term, and financial effect of the consumption tax depends on the macro economic situation. Therefore, raising the consumption tax rate is difficult to effectively reduce the Japanese fiscal deficit in the downturn of the economic situation, and which may in-

crease the risk of financial crisis, because the nature of the reasons for Japan's huge budget deficit is the structural imbalances in economic and social. In order to solve the financial problems in Japan, it must carry out a thorough reform of society and economy.

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