(Box 1) Effects of the Consumption Tax Hikes on Real GDP

The consumption tax hikes will affect the real GDP by (1) generating a front-loaded increase and subsequent decline in demand prior to and after the consumption tax hikes (i.e., an intertemporal substitution effect) and (2) raising prices and reducing households' real disposable income (Box Chart 1 [1]). This Outlook Report re-estimates the former effect on private consumption, based on the revised GDP data for fiscal 2014 and the new data accumulated over time, and makes small revisions to the estimates reported in the January 2016 Outlook Report.

Specifically, a simple consumption function is estimated by regressing real consumption of durable goods, which are most affected by a front-loaded increase and subsequent decline in demand prior to and after a consumption tax hike, on the following variables: real income; real net financial assets; and dummy variables that indicate the period of the front-loaded increase in demand and the period of the subsequent decline (on which coefficient restrictions are imposed such that the total front-loaded increase in demand and the total subsequent decline in demand are equal) (Box Chart 1 [2]). The estimation results reveal that (1) the front-loaded increase and subsequent decline in demand for durable goods with respect to the consumption tax hike in 2014 was more sizable than the estimated effects of the consumption tax hike in 1997, even taking account of the difference in the scale of the tax rate hike, and (2) the subsequent decline in demand after the consumption tax hike in 2014 lasted for about two years, substantially longer than formerly supposed. The reasons for such a sizable front-loaded increase in demand and prolonged subsequent decline in demand with respect to the consumption tax hike in 2014 would be that (1) the expiration of support for some widely used computer operating systems also caused demand fluctuations around that time, and (2) a portion of the front-loaded increase in demand prior to the second tax rate hike from 8 percent to 10 percent, which had been scheduled to take place in October 2015, materialized prior to the consumption tax hike in 2014. Both factors are likely to restrain the front-loaded increase in demand that will arise prior to the consumption tax hike scheduled to take place in 2017.

Based on the regression results, this Outlook Report reassesses the prior recognition of the effects of the consumption tax hikes, mainly on durable goods consumption, as follows: (1) the scale of the front-loaded increase and the subsequent decline in demand prior to and after the consumption tax hike in April 2014 was somewhat larger; (2) accordingly, the scale of the front-loaded increase and the subsequent decrease in demand prior to and after the second consumption tax hike in April 2017 will be smaller; and (3) the subsequent decline in demand is prolonged (Box Chart 1 [1]).[38] As a result, it is estimated that the consumption tax hikes will push up the real GDP growth rate for fiscal 2016 by 0.4 percentage point (0.3 percentage point in the January 2016 Outlook Report), push down that for fiscal 2017 by 0.6 percentage point (0.7 percentage point in January 2016), and push up that for fiscal 2018 by 0.1 percentage point.[39] It should be noted that these estimates are subject to a considerable margin of error, given that (1) the above estimation is significantly constrained by the availability of data and is subject to an estimation error, and (2) the effects of the scheduled consumption tax hike in April 2017 are considerably uncertain because the response of households to the consumption tax hike depends on consumer sentiment at the time, product cycles, and many institutional factors.

[38] Specifically, taking account of the difference in the scale of the tax rate hike, the front-loaded increase and the subsequent decline in demand prior to and after the consumption tax hike in April 2017 would have been two thirds of the estimated effects of the consumption tax hike in April 2014, but this Outlook Report estimates this at about a half instead of two thirds.

[39] The effects of pushing up the real GDP growth rate for fiscal 2016 are estimated to be larger, compared to the estimation in the January 2016 Outlook Report, because the dissipation of the subsequent decline after the consumption tax hike in April 2014 is partly supposed to occur in fiscal 2016, instead of 2015, and its positive effect on the real GDP growth is expected to somewhat exceed the scale of the downward revision of the front-loaded increase in demand prior to the scheduled consumption tax hike in April 2017.

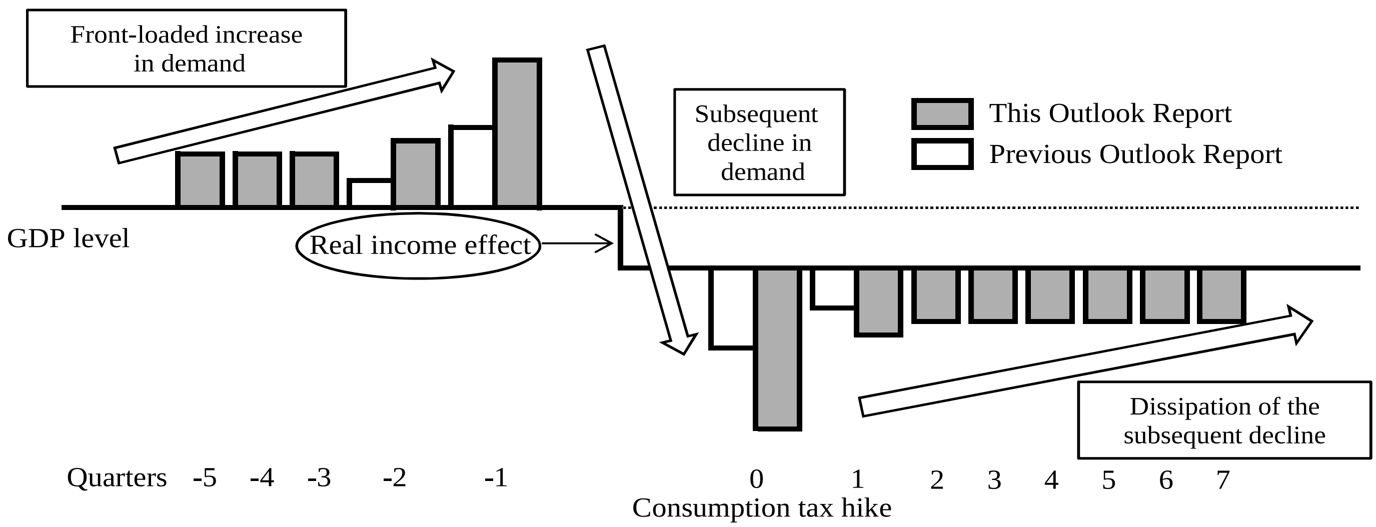
Box Chart 1

Effects of the Consumption Tax Hikes on Real Economy

(1) Effects on Real GDP

(a) Illustration of the Expected Effect of the Consumption Tax Hike on Real GDP

(Effects on the Level of Real GDP; Arrows Represent Effects on Growth Rates)



(b) Estimated Effects of the FY 2014 and FY 2017 Consumption Tax Hikes on GDP Growth Rate

contribution to the real GDP growth rate, % points

	FY 2013	FY 2014	FY 2015	FY 2016	FY 2017	FY 2018
This Outlook Report	0.8	-1.3	0.0	0.4	-0.6	0.1
Previous Outlook Report	0.5	-1.2	0.3	0.3	-0.7	

(2) Estimated Effects on the Consumption of Durable Goods

(a) Estimation Methodology

Regression of real consumption of durable goods (logarithm) on the following variables:

(1) Real income
(2) Real net financial assets
(3) Dummy variable for the front-loaded increase in demand prior to the consumption tax hike
(4) Dummy variable for the subsequent decline in demand after the consumption tax hike

- Coefficient restrictions on the dummy variables are imposed such that the total front-loaded increase in demand and the subsequent decline in demand are equal.

(b) Estimation Results

	Coefficient	t-statistic
Real income	0.2	1.6
Real net financial assets	1.5	23.4
Dummy variable #1 for the front-loaded increase in demand (2013/Q1-2013/Q4)	0.1	1.7
Dummy variable #2 for the front-loaded increase in demand (2014/Q1)	0.2	2.5
Dummy variable for the subsequent decline in demand (2014/Q2-2015/Q4)	-0.1	-2.9
Estimation period	1980/Q2-2015/Q4	

Notes: 1. In the estimation in (2)(b), dummy variables for the front-loaded increase and subsequent decline in demand prior to and after the consumption tax hike in 1997 and a constant are included as explanatory variables in addition to the variables shown in the table.

2. In the estimation in (2)(b), the following coefficient restriction is imposed: 4 * "the coefficient of the dummy variable #1 for the front-loaded increase in demand" + "the coefficient of the dummy variable #2 for the front-loaded increase in demand" = 8 * "the coefficient of the dummy variable for the subsequent decline in demand."

Sources: Cabinet Office; Bank of Japan, etc.