Intermediate Macroeconomics  
Economics 4353/7353  
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Handout 6 (cont’d.)  
Chapter 4: Consumption, Saving, and Investment  

IV. The Impact of Government Purchases and Taxes on Desired National Saving  

A. Three important maintained assumptions  
1. We continue to work with a closed economy.  
2. Real aggregate output \( Y \) in the current period remains fixed at its full-employment level. Fiscal policy as considered here has no impact on employment, the capital stock, or more generally, the aggregate supply of goods and services in the current period.  
3. The real interest rate is held fixed.  

B. Fiscal policy affects desired current national saving, given by:  
\[ S^d = Y - C^d - G, \]  
in two ways. (Review your class notes and consult pp.37-38 to remind yourself of the details leading to:  
\[ S^d = S^d_{pt} + S^d_{gov} = Y - C^d - G. \]  

1. Fiscal policy affects desired current consumption \( C^d \) by affecting households’ current disposable income and expected future disposable income.  
   On the basis of earlier discussion, you know that simultaneously, desired future consumption and desired current private saving are also affected by such changes in current disposable income and expected future disposable income.  
   Our earlier analysis of this configuration will be helpful in understanding the impact of fiscal policy on national saving.  
2. However, given \( Y \) fixed, the equation above indicates that in the end, for any given value of \( G \) we need look only at changes in the variable \( C^d \) to draw conclusions regarding desired current national saving.  
   Also, with \( Y \) fixed, one can see from the equation above that for any given level of \( C^d \), an increase (decrease) in \( G \) leads directly to a decrease (increase) in \( S^d \).  

C. Changes in government purchases  
1. Case 1: a temporary increase in government purchases, financed completely by an (equal) temporary increase in lump-sum taxes. That is, \( \Delta G = \Delta T \).  
   (a) Step 1: Given total current (gross) income \( Y \), total current private disposable income is reduced by \( \Delta T \).  
   (b) Step 2: \( C^d \) decreases, but not by as much as the current increase in taxes. The marginal propensity to consume is less than one. Therefore, \( S^d_{pt} \) also decreases.  
   This follows from the consumption-smoothing motive. The decrease in current disposable income, together with no change in expected future disposable income, implies a decrease in desired future consumption together with the decrease in desired current private saving.  
   (Suppose, to the contrary, that desired current consumption were to decrease by the full amount of the tax increase, with no change in desired saving. The increase in
taxes is temporary, so that there is no change in (expected) future private disposable income. Therefore, there would be no change in desired future consumption, and the consumption path would have become “less smooth” to the maximum extent possible. Presumably, the smoothing motive would be strong enough such that this would not be an outcome desired by the consumer.)

(c) Step 3: An implication of the analysis in Step 2 is that the amount of the decrease in $C^d$ is less than the amount of the increase in $G$ (which is equal to the increase in $T$). Therefore, $\Delta S^d = -\Delta C^d - \Delta G < 0$.

Note that there is no change in government saving here. All of the decrease in (desired) current national saving is due to the decrease in (desired) current private saving.

Example 1. Suppose that government purchases increase by $20 billion, financed by an equal increase in taxes. Therefore, current household disposable income decreases by $20 billion. Suppose that the mpc = 0.75. Then desired current consumption decreases by $15 billion. Hence: $\Delta S^c = -\Delta C^d - \Delta G = -[(0.75)(-20)] - 20 = -$5 billion. This reduction in (desired) current national saving is entirely a reduction in current private saving, and therefore has the consequence (other things equal) that expected future disposable income decreases by $5 billion, implying a decrease in desired future consumption.

2. Case 2: A temporary increase in government purchases, financed entirely by government borrowing.

(a) Step 1: Presuming that the borrowed funds will eventually be repaid (inclusive of interest), there will be a future increase in taxes equal to the amount to be repaid.

(b) Step 2: Individuals (in the aggregate) being forward-looking, they anticipate the increase in future taxes required to cover the amount that the government will have to repay. That is, households anticipate the future decrease in disposable income due to the future increase in taxes.

The implication of this is that desired current consumption falls despite the fact that there is no change in current private disposable income, only the decrease in expected future disposable income. (Question: What is the behavioral assumption on the basis of which we draw this conclusion regarding consumption behavior?)

Concomitantly, there is an increase in current private saving. (Why?) This increase in current private saving offsets to some extent the decrease in current government saving, with the result that national saving falls but by less than the full amount of the increase in government purchases: $\Delta S^d = -\Delta C^d - \Delta G > -\Delta G$. Using the equation giving national saving as the sum of private saving and public saving:

$\Delta S^d = \Delta S^d_{pvt} + \Delta S^d_{gov} = (-\Delta C^d) + (-\Delta G) > (-\Delta G)$.

Example 2. Suppose that government purchases increase temporarily by $20 billion, and suppose that there is no increase in current taxes. The government finances its additional purchases entirely by means of borrowed funds.

Forward-looking households anticipate the future increase in taxes that will be needed to repay the borrowed funds. What is the implication for desired current
consumption? Will it fall by $20 billion? What is the implication for desired current national saving?

3. **Summary.** Taking output $Y$ and the real interest rate $r$ as given, a temporary increase in current government purchases implies a decrease in desired current consumption and a decrease in desired current national saving.

D. Changes in taxes

1. Suppose that there is a decrease in current taxes, $T$. That is, there is a tax cut. (NOTE: Much of what follows, (that is, as to the general nature of the reasoning), regarding changes in taxes holds for changes in transfer payments also.) Assume that taxes are of the lump-sum variety. Denote the decrease in taxes by $\Delta T < 0$. Assume that the entire time path of government purchases is fixed. (Also: assume that the government and the private sector face the same real interest rate.) Given this, the government must now borrow funds to replace the lost tax receipts.

2. Step 1: Presuming that the borrowed funds must be repaid in the future by means of an increase in taxes in the future, there will be a corresponding decrease in future private disposable income.

   Step 2: Suppose, in line with what we have been assuming regarding households in the aggregate, that households anticipate a future increase in taxes, and therefore a decrease in future disposable income. Thus, there is an increase in current disposable income and a decrease in expected future disposable income. What is the implication for current consumption and current national saving?

   **Ricardian Equivalence.** As assumed above, the path of government purchases is fixed, and all taxes are of the lump-sum variety. As suggested, though not explicitly stated, in Step 1, all government purchases must ultimately be paid for by means of taxes. In particular, the current tax cut being considered here must be offset by future tax increases, (i.e. to pay off the current increased borrowing necessary due to the current tax cut).

   On the one hand, there is the *negative* impact on desired current consumption, (and a corresponding positive impact on desired current private saving), due to the (expected) decrease in future disposable income, the latter due to the anticipated future tax increases.

   On the other hand, there is the *positive* impact on desired current consumption (and a positive impact on desired current private saving) due to the current tax cut.

   The Ricardian equivalence idea is that these two impacts are exactly offsetting, so that there is no change in desired current consumption, hence, no change in desired current national saving. The tax cut goes entirely into an increase in desired current private saving, that exactly offsets the reduction in current government saving, so that there is no change in desired current national saving. Timing of tax liabilities does not matter for consumption or for national saving. Only the overall tax burden matters.

   Why might Ricardian equivalence fail?

   (a) **Borrowing constraints.** Suppose that, as a consequence of time preference for example, an individual would prefer to consume more in the current period than his current income allows. However, no bank is willing to lend to him. Such an individual might consume more of the current tax cut than he would if he could get a loan through
the private sector. The result might be that the positive impact on current consumption due to the current tax cut might more than offset the negative impact due to expected future decreases in disposable income.

(b) The nature of decision-making. If it is true, as some economists argue, that people use rules-of-thumb in making many consumption and saving decisions, and/or if people are myopic in making many decisions of this sort, then they might not take into account, or at least not to a sufficient degree, the implications of current tax cuts for future tax increases.

(c) Finite lifetimes and failure to leave bequests. The simplest case here is the following. Suppose that there is a current tax cut, and that a parent believes with a high degree of confidence that he will be dead at the time when taxes are increased to pay off the funds borrowed corresponding to the current tax cut. Suppose further that he does not care whether his children bear an increased tax burden, and decreased consumption due to that increased tax burden, in order to pay off the government’s borrowing. Then he will increase his current consumption in response to the current tax cut and perhaps also leave no bequest to his children. (There are alternative intergenerational scenarios, such as one where a parent leaves no bequest because he believes that his children will be earning much higher incomes than he.)

(d) Taxes being of a non-lump-sum variety. Non-lump-sum taxes have much more complex incentive effects on household behavior than do lump-sum taxes. The basic theory underlying Ricardian equivalence does not apply. However, there are still cases where the impact on current consumption of a temporary tax cut might be weak or nonexistent. For example, if a current temporary tax cut takes the form of a cut in taxes on returns to private saving, it might be that desired current national saving increases while desired current consumption decreases.

3. Summary. A tax cut in the current period implies either an increase in desired current consumption and a decrease in desired national saving; or, under Ricardian equivalence, no change in either.

Addendum regarding Ricardian equivalence

Here is a slightly different perspective on Ricardian equivalence. This is intended as a supplement to what is already included above.

“Consider the response of a forward-looking consumer to [a] tax cut… The consumer might reason as follows:

The government is cutting taxes without any plans to reduce government spending. Does this policy alter my set of opportunities? Am I richer because of this tax cut? Should I consume more?

Maybe not. The government is financing the tax cut by running a budget deficit. At some point in the future, the government will have to raise taxes to pay off the debt and accumulated interest. So the policy really represents a tax cut today coupled with a tax hike in the future. The tax cut merely gives me transitory income that eventually will be taken back. I am not any better off, so I will leave my consumption unchanged.”