

14.452. Topic 10. Fiscal policy. Notes

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May 9, 2007

Nr. 1

Motivation, and organization

Standard textbook treatment:

- In the short run: Increases in government spending, or decreases in taxes, increase aggregate demand and output.
- In the medium/long run: Government debt crowds out capital, and leads to a reduction in output. Distortionary taxes may have the same effect.
- Twist (advanced undergraduate texts only...). Fiscal deficits, if associated with the anticipation of large debt increases, may be contractionary. And the reverse.

Explore the issues in three steps:

- Ricardian equivalence or non-equivalence.
- Standard RBC model.
- Standard NK model.

End with implications for optimal policy.

Nr. 2

1. Ricardian equivalence

- Take the budget constraint of a representative consumer.

Assume lump sum taxes, T_t . Assume the consumer can hold his wealth in either an asset A (which can be capital, shares, private bonds,..) and government bonds, B :

$$B_{t+1} + A_{t+1} = W_t N_t + \Pi_t - T_t - C_t + (1 + R_t)B_t + (1 + R_{At})A_t$$

- Consider the budget constraint of the government.

The government collects (lump sum) taxes T_t , spends G_t , and finances the difference by issuing debt:

$$B_{t+1} - B_t = (G_t - T_t) + R_t B_t$$

Replace the government budget in the consumer's budget constraint to get:

$$A_{t+1} = W_t N_t + \Pi_t - G_t - C_t + (1 + R_{At}) A_t$$

Note that the budget constraint depends on G_t but does not depend on either B_t or T_t . This is the Ricardian equivalence proposition:

- For a given sequence of government spending, changes in the timing of lump sum taxes have no effect on the allocation.
- Equivalently: If the government saves less by decreasing T_t , consumers will save more in exactly the same amount. Total saving (private plus public saving) will be unaffected.
- Equivalently: If the government increases the deficit by decreasing T_t and issues debt, consumers will be willing to hold this additional debt at the same interest rate.
- Equivalently: Debt will not crowd out capital accumulation.

The obvious limits of the relevance of Ricardian equivalence.

- Finite horizons. Consider a decrease in T_t . Suppose some consumers do not expect to be there when taxes are increased. Then the decrease in T_t leads to a positive wealth effect.

They will increase consumption and thus not increase saving by as much as the decrease in taxes. Debt will have an effect on the allocation. (Diamond OLG, or Blanchard-Yaari). Empirical importance?

- Liquidity or cash constraints. If for some consumers, $C_t \leq W_t N_t + \Pi_t - T_t$, then clearly changes in taxes will matter.

Need to understand the exact nature of the liquidity constraint.

- Bounded rationality. Tax increases may be far in the future, and not be taken into account. Horizon does matter.
- Distortionary taxes.

2. Government spending in RBC models

Modify the RBC model of Topic 3 to allow for government spending and taxes. Assume lump sum taxes and so Ricardian equivalence, so we can just look at the path of government spending, and look at the central planning problem:

$$\max E\left[\sum_0^{\infty} \beta^i U(C_{t+i}, L_{t+i}) \mid \Omega_t\right]$$

subject to:

$$N_{t+i} + L_{t+i} = 1$$

$$C_{t+i} + S_{t+i} = Z_{t+i}F(K_{t+i}, N_{t+i}) - G_{t+i}$$

$$K_{t+i+1} = (1 - \delta)K_{t+i} + S_{t+i}$$

Note the assumption that government spending does not enter the utility function (does not affect the marginal utility of either consumption or leisure).

Familiar first-order conditions (with usual further assumptions about utility function):

$$v'(L_t) = W_t/C_t$$

$$E[\beta R_{t+1} \frac{C_t}{C_{t+1}} | \Omega_t] = 1$$

Implications:

- Higher government spending implies lower consumption. By how much depends on persistence. (What about investment?)
- Lower consumption, negative wealth effect, increase in labor supply.
- Investment. Suppose G increase is permanent. Investment goes up. Suppose G is very temporary. Investment goes down (to smooth consumption).
- So higher employment, higher output, lower consumption. The more transitory, the smaller the effect on output.

3. Government spending in NK models

Ignore, for simplicity, capital accumulation. And assume Ricardian equivalence.

$$Y_t = C_t + G_t$$

$$E[\beta(1 + r_{t+1}) \frac{C_t}{C_{t+1}} \mid \Omega_t] = 1$$

where r_{t+1} is determined by monetary policy.

- Higher government spending, if not permanent, leads to a less than one for one decrease in consumption.
- It increases output and employment.
- The more transitory, the smaller the decrease in consumption, and the larger the effect on output.
- If Ricardian equivalence fails, and spending is deficit financed, more likely to have an increase in consumption.

Empirical evidence

Much of spending and taxes endogenous. Need to find exogenous movements in one or the other.

Conceptually easier than for monetary policy. Other objectives of fiscal policy than macroeconomic stabilization.

Two main approaches.

- Ramey-Shapiro. Look at specific episodes. (Korean war, Vietnam war, Carter-Reagan build up).

Extended to taxes by Romer-Romer. exogenous (non cycle driven changes in taxes)

- SVAR. Identify non-cycle induced changes in taxes, spending. (Woodford Rotemberg, Blanchard-Perotti)

Evidence. Table from BP. Graphs from Ramey.

- Output increases with increases in spending, decreases in taxes.
- Consumption increases. Difference between the two methodologies. Important to settle. Why?

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Table VI: Responses of GDP components on page 1362 in Blanchard, O., and R. Perotti.

“An Empirical Characterization of the Dynamic Effects of Government Spending and Taxes on Output.”

Quarterly Journal of Economics 117, no. 4 (2002): 1329-1368.

Comparison of Identification Methods

VAR shocks in top row; War dates in bottom row

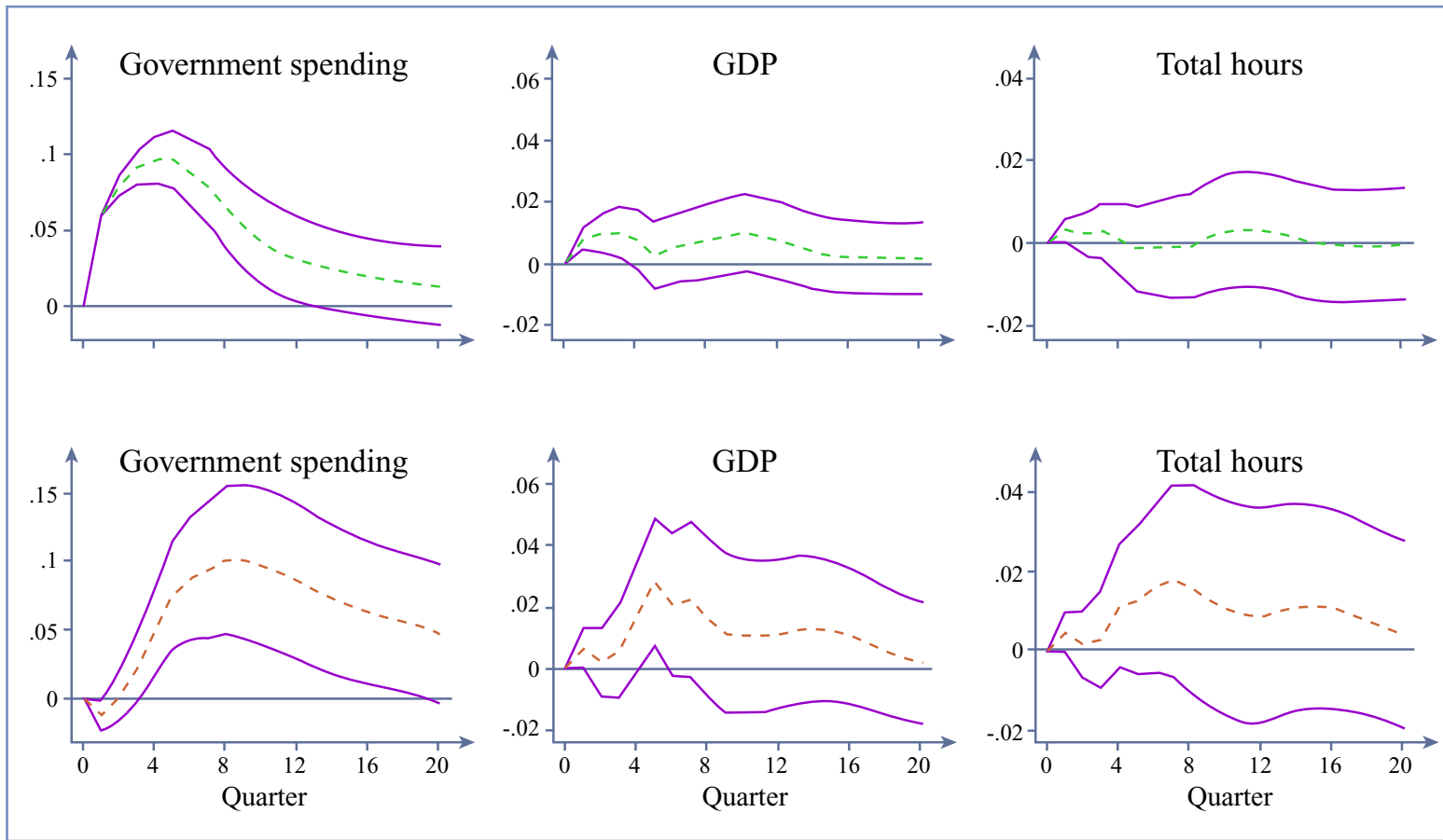


Figure by MIT OCW.

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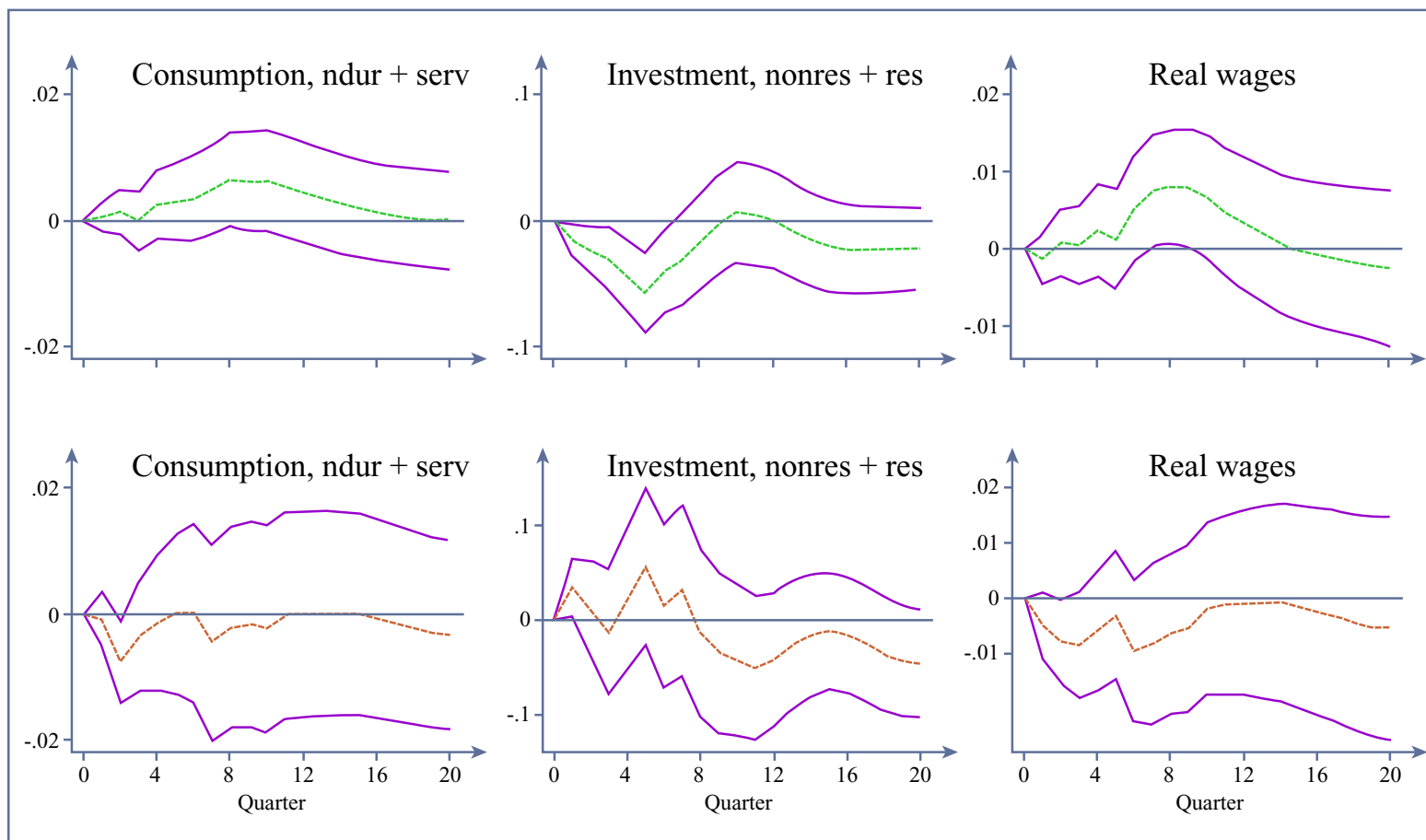


Figure by MIT OCW.

Many other issues. A partial list.

- Optimal fiscal policy in RBC models.
Optimal financing of government spending if there is only distortionary taxation.
Optimal labor and capital tax rates.
Tax smoothing and the potential role of contingent debt
Time consistency, and the potential role of contingent debt.
Relative roles of fiscal and monetary policy.
- Optimal fiscal policy in NK models.
Same plus
Relative stabilization roles of fiscal and monetary policy
Fiscal dominance of monetary policy