Advanced Macro A

Lecture 9 Fiscal Policy

Zhe Li

SUFE

Financing a given stream of government consumption

- If it is "technologically" possible to implement lump-sum taxation, does the timing of these taxes matter? If so, how?
  The Ricardian equivalence tells us that timing of lump-sum taxes does not matter
- If lump-sum taxes are not enforceable, what kinds of distortionary taxes are the best? What can we say about timing of taxation in this case?
  Proportional taxes on labor income, and on capital income

Distortionary Taxes

- Properly chosen welfare measure
- Time consistency
  - Optimal: fully tax initial capital – sunk capital
  - at time t=1, the problem is the same as time t=0

Welfare effects of timing in lump-sum taxation

- Government: the sequence of debt $\{B_t\}_{t=0}^{\infty}$ (one-period loans from the private sector to the government) and lump-sum taxes $\{\tau_t\}_{t=0}^{\infty}$ such that the following budget constraint is satisfied at every t:
- $$g_t + B_{t-1} = q_t B_t + \tau_t, \quad \forall t$$

$$B_{-1} = 0$$

Dynastic Model

- Preferences strongly monotone so that consumers will exhaust their budget constraints at every period
- Consumption goods are provided by an exogenous, deterministic endowment process
- The problem will be formulated sequentially
- Since there is one state of the world for each t, just one asset per period is enough for complete markets to obtain
- In addition to government bonds, agents will be allowed to hold positions in one-period loans; i.e., they will be able to borrow or lend for one period at each t

Consumer's Budget Constraints

- Sequential

$$c_t + q_t B_t + l_t = w_t + B_{t-1} + R_t l_{t-1} - \tau_t$$

l_t net lending/borrowing at the end of period t
w_t endowment
Assume no-Ponzi-game condition holds

- Date-0 formulation

$$\sum_{t=0}^{\infty} p_t c_t = \sum_{t=0}^{\infty} p_t w_t - \sum_{t=0}^{\infty} p_t \tau_t + \sum_{t=0}^{\infty} (p_{t+1} - p_t q_t) B_t$$

p_t is date-0 price of a unit consumption goods at t
Normalize $p_0 = 1$

- $$\frac{p_t}{p_{t+1}} \equiv R_{t+1}$$

Ricardian Equivalence

- Consolidated consumer's budget constraint

$$\sum_{t=0}^{\infty} p_t c_t = \sum_{t=0}^{\infty} p_t w_t - \sum_{t=0}^{\infty} p_t \tau_t$$

- Consolidated government's budget constraint

$$g_t + B_{t-1} = q_t B_t + \tau_t, \quad \forall t$$

$$\sum_{t=0}^{\infty} p_t g_t = \sum_{t=0}^{\infty} p_t \tau_t$$

- Ricardian Equivalence: the timing of taxes is not relevant

$$\sum_{t=0}^{\infty} p_t c_t = \sum_{t=0}^{\infty} p_t w_t - \sum_{t=0}^{\infty} p_t g_t$$