

FISCAL AND MONETARY INTERACTIONS: AN INTERTEMPORAL VIEW

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Introduction

ACTIVE VS. PASSIVE POLICY

- Core issue: there are *limits* or *restrictions* that each policy-setting authority places on the actions of the other
- Analysis so far: the period- t choices of one policy authority **restrict the choices of the other policy authority *in period t***

$$P_t g_t + B_{t-1} = T_t + P_t^b B_t + M_t - M_{t-1} \quad \text{Period-}t \text{ consolidated GBC}$$

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- ❑ A more nuanced view: the period- t choices of one policy authority may **restrict the choices of the other policy authority in period t and/or period $t+1$ and/or period $t+2$ and/or period $t+3$, ...**
- ❑ Emphasizes that the limits may not be realized immediately, but can occur later (in the economy's/government's lifetime)
- ❑ Requires deriving/analyzing the **lifetime (aka intertemporal) consolidated government budget constraint**

DERIVING THE LIFETIME CONSOLIDATED GBC

$$P_t g_t + B_{t-1} = T_t + P_t^b B_t + M_t - M_{t-1} \quad \text{Period-}t \text{ consolidated GBC}$$

↓ Divide by P_t to put in real terms

$$g_t + \frac{B_{t-1}}{P_t} = \frac{T_t}{P_t} + \frac{P_t^b B_t}{P_t} + \frac{M_t - M_{t-1}}{P_t}$$

SEIGNORAGE REVENUE

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 - Abbreviate sr_t
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- **Printing money is a source of income for the government!**
 - Unimportant in the U.S. (less than 1% of government revenue) and other developed countries
 - **But can be important in developing countries (because of poorly-developed tax collection systems and corruption)**
 - Plays an important role in how fiscal-monetary interactions affect exchange rate systems (Chapter 16, which we will not study)

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REAL value of government debt that must be repaid at start of period t

↓ Define $b_t = B_t/P_t$, $t_t = T_t/P_t$, and rearrange terms

$$\frac{B_{t-1}}{P_t} = sr_t + (t_t - g_t + P_t^b b_t)$$

Period- t consolidated GBC

Revenue generated by monetary authority actions

Revenue generated by fiscal authority actions

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$$\frac{B_{t-1}}{P_t} = s r_t + \underbrace{(t_t - g_t + P_t^b b_t)}_{\text{Revenue generated by fiscal authority actions}}$$

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$$\frac{B_t}{P_{t+1}} = s r_{t+1} + (t_{t+1} - g_{t+1} + P_{t+1}^b b_{t+1}) \quad \text{Period-}t+1 \text{ consolidated GBC (same thing, just update subscripts)}$$

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↓ Combine
 ↓ Use Fisher equation
 ↓ Substitute in $t+2$ and $t+3$ and $t+4$, etc.... budget constraints
 ↓ Use Fisher equation
 ↓ Combine

Complete mathematical derivation in Chapter 15

LIFETIME CONSOLIDATED GBC

$$\underbrace{\frac{B_{t-1}}{P_t}} = \sum_{s=0}^{\infty} \frac{t_{t+s} - g_{t+s}}{\prod_{s=0}^{\infty} (1+r_{t+s})} + \sum_{s=0}^{\infty} \frac{sr_{t+s}}{\prod_{s=0}^{\infty} (1+r_{t+s})} \quad \text{Lifetime consolidated GBC}$$

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Present-discounted value of all fiscal surpluses starting in period t

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- ...either period- t *and/or later* fiscal surpluses ($t - g$ is fiscal surplus...recall terminology from Chapter 7)...

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- ...or both
- Both **fiscal surpluses** and **seignorage revenue** are used in the consolidated government budget to repay government debt
 - Question: "Which" authority is "most responsible" for repaying debt?
 - Question: "When" is this authority responsible for repaying it?

Controlled by fiscal authority

Controlled by central bank

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RICARDIAN VS. NON-RICARDIAN POLICY

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- **Definition:** A **Ricardian** fiscal policy is in place if the fiscal authority sets its planned *sequence* of tax and spending policy to ensure that the lifetime consolidated GBC is satisfied
- **Definition:** A **non-Ricardian** fiscal policy is in place if the fiscal authority sets its planned *sequence* of tax and spending policy without regard for whether the lifetime consolidated GBC is satisfied

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- What matters is
 - The fiscal authority’s entire plan for $t_t, t_{t+1}, t_{t+2}, t_{t+3}, t_{t+4}, \dots$
 - The fiscal authority’s entire plan for $g_t, g_{t+1}, g_{t+2}, g_{t+3}, g_{t+4}, \dots$
 - Whether **and** when the monetary authority “reacts” to what the fiscal authority chooses

RICARDIAN CHANGES IN FISCAL POLICY

$$\underbrace{\frac{B_{t-1}}{P_t}}_{\text{REAL value of government debt that must be repaid at start of period } t} = \underbrace{\sum_{s=0}^{\infty} \frac{t_{t+s} - g_{t+s}}{\prod_{s=0}^{\infty} (1+r_{t+s})}}_{\text{Present-discounted value of all fiscal surpluses starting in period } t} + \underbrace{\sum_{s=0}^{\infty} \frac{sr_{t+s}}{\prod_{s=0}^{\infty} (1+r_{t+s})}}_{\text{Present-discounted value of all seignorage revenues starting in period } t} \quad \text{Lifetime consolidated GBC}$$

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- Fiscal authority then changes the precise timing of t collection **but does so in a Ricardian way**
 - i.e., makes sure it changes t collection so as to satisfy the consolidated GBC

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- **Question: What is the impact on monetary policy (i.e., on sr collection)?**
 - **NONE, because fiscal policy is being conducted in Ricardian way**
 - **(The basis for Ricardian Equivalence from Chapter 7...)**

FISCAL THEORY OF INFLATION (FTI)

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- **Money-creation leads to inflation (monetarist link of Chapter 14)**
 - → Terminology "Fiscal Theory of Inflation"

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- **A one-time change in prices, not a sustained increase in prices**

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- ❑ If not, then FTI and FTPL are the two relevant ways that lifetime government budget balance can be brought about
- ❑ **FTI:** Any non-Ricardian changes in fiscal policy announced in period t will lead to inflation in period t *and/or* in future periods
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- ❑ FTI and FTPL differ in their predictions of **when** fiscal pressures have their consequences on economy-wide prices
 - ❑ Immediately: FTPL
 - ❑ In the future: FTI