Overview

- A small open economy facing a constant rate of return and subject to foreign demand shocks.

- Two sectors of production: basic goods - b, and consumption goods - s.

- A competitive search friction in the consumption goods market and idle resources in the production of basic goods.

- Question: Can government expenditure alleviate recession caused by a decrease in a foreign demand?

- Moreover, Can the multiplier be higher than 1?

Preferences and Technology

$$u(c, d, n, G) + \beta.....$$

- Assumption about preferences: c and n are complements.

$$F^b(K^b, N^b), \qquad K^b \text{ is a fixed factor.}$$

- Basic goods can be used for export or publig good purposes,

$$F^s(K^s, N^s, M) \qquad K^s \text{ is a fixed factor, } M \text{ is imports.}$$

- Services require search. The basic good no.

$$P^b[N^b(z), \theta^*, G]$$

- Foreign and domestic demand (public) for Basic good.

Households

- Aggregate states: foreign demand θ^*, domestic wealth A. Government Expenditures G. Let $z = (\theta^*, G, A)$.

- Individual state: individual asset position a.

- Numeraire: price of imported intermediate good m.

$$V(z,a) = \max_{c,n,d,a'} u(c,d,n,G) + \beta E\left[v(z',a')\right] \qquad \text{s.t.}$$

$$P^s(z)c + a' = Ra + w(z)n + \Pi^s(z) + \Pi^b(z) - T(z)$$

$$c = d \ \Psi_d\left[D(z)\right] \ F^s(N^s, M)$$

$$A' = H(\theta^*, A).$$

- Solution: $c(z,a), d(z,a), n(z,a), a'(z,a)$.

Production: Basic Goods

- Managers of unit of K^b solve:

$$\pi^b(z) = \max_{n^b} \ F^b(1, n^b) \ P^b[N^b(z), \theta^*, G] - w(z) \ n^b$$

where n^b is a labor input.

- Agregation yields

$$\Pi^b(z) = K^b \ \pi^b(z)$$

Production: Services

- Owners of one unit of K^s solve:

$$\pi^s(z) = \max_{n^s, m} \ F^s(1, n^s, m) \ P^s(z) \ \Psi[D(z)] - w(z)n^s - m \qquad (1)$$

- n^s is labor,

- m is an imported intermediate good,

- $P^s(z)$ is the price of the good.

- $\Psi[Ds(z)]$ is the probability that the firm will sell given the market tightness.

- Agregation yields

$$\Pi^s(z) = K^s \ \pi^s(z)$$

An Equilibrium is

(i) Aggregate allocations $\{N^b, N^s, M, A', D, C, T\}$, function H and prices $\{P^s, P^b, w\}$ as functions of z

(ii) $\{c, d, n, a', v\}$ as functions of z, a

(iii) $\{n^b, \Pi^b\}$ and $\{n^s, m, \Pi^s\}$ as functions of z

such that

(1) Households and producers solve theiir problems.
(2) Representative agents conditions hold.
(3) Market clearing

$$
\begin{aligned}
C(z) &= D(z) \ \Psi[D(z)] \ F^s[N^s(z), M(z)] \\
G + \theta^* &= F^b[N^b(z)] \\
N(z) &= N^b(z) + N^s(z)
\end{aligned}
$$

(5) Government budget is balanced: $G = T(z)$

Recession and fiscal policy

- Suppose there is a drop in a foreign demand: $\theta^* \downarrow$.

- Adjustment of both: price and quantity produced in sector b. In particular $N^b \downarrow$. By complementarity $C \downarrow$ and economy goes into recession (GDP decreases).

- Government can increase G to boost the demand for a good b. Two effects: direct increase in a utility from public good and an increase in GDP through increase in N^b and complementarity with C.

- The effect of higher tax T is partially offset (depending on the elasticity of demand in sector b) by increase in Π^b.