1 Exercise based on Corsetti and Pesenti (2005)

Consider the two-country model studied in class. In each country, the size of population is normalized to unity. Households have identical preferences defined by the following utility function:

$$U = \ln C - \kappa \ell$$

where C is consumption and ℓ is hours worked. κC is the marginal rate of substitution between consumption and leisure.

In the closed-economy case, aggregate consumption is given by the following Dixit-Stiglitz aggregator over all varieties produced in the economy:

$$C = \left[\int_0^n C(h)^{\frac{\theta-1}{\theta}} dh \right]^{\frac{\theta}{\theta-1}}$$

where θ is the elasticity of substitution between varieties and n the mass of domestically produced varieties. In the open-economy case, aggregate consumption is given by:

$$C = C_H^{0.5} C_F^{0.5}$$

where C_H and C_F are country-specific Dixit-Stiglitz aggregators of the n and $1-n$ varieties produced in the Home and Foreign countries respectively. Assets markets are complete: agents can fully insure. Firms are monopolistic supplier of one variety of the consumption good. Labor is the only input in production. The labor market is assumed to be perfectly competitive. There are short-run nominal price rigidities: firms preset their price at the beginning of the period, either in their own currency or in the currency of the final consumer. Once prices are set, firms stand ready to meet current demand at this price during the period.

The model can be synthesized by means of three schedules: Aggregate demand, Aggregate supply and the Natural Rate. The AD schedule equalizes nominal spending to the money supply ($PC = \mu$). The AS schedule relates output to total employment (Calling Z labor productivity, $C = Z\ell$ in the closed-economy case and $C_H + C_H^* = Z\ell$ in open-economy). Finally, the NR schedule is a vertical line at constant $\bar{\ell} = \frac{\theta-1}{\theta\kappa}$. In the graphical framework used in class, suppose productivity is constant but that there are shocks to the disutility of labor (κ).

1. Think of a decrease in κ and explain briefly what it does to optimal labor and consumption.

2. In the closed economy, and using the graphs, explain what happens in the case where prices are fully flexible. In the case where prices are fixed, explain why a labor gap opens relative to the optimal level desired by workers. What should monetary policy do to close the gap? Explain the intuition.

3. In the open economy, show graphically and explain what happens in both countries when prices are flexible. What happens to the terms of trade? What is the transmission mechanism?

4. Suppose prices are sticky under producer currency pricing.

a) What happens to the transmission mechanism in the case of the κ negative shock? Show this graphically and explain.

b) What should monetary policy do in this case to shift employment to its desired level? What happens in the foreign country? Show this graphically and explain.

5. Answer the same questions in the case of local currency pricing.