UNIVERSITY OF CALIFORNIA AT BERKELEY

Department of Economics

International Economics

Field Exam

August 2014

GENERAL INSTRUCTIONS:

The exam consists of two parts:

Answer **both** questions from **part A**;

Answer **two** of the **four** questions in **part B and C**;

Part A

1. In this question you will derive a formal concept for comparative advantage that is applicable in a setting with many countries, many goods, and trade costs. The model will exhibit a gravity equation, and will lead to a simple expression for the gains from trade. Assumptions: Multiple countries indexed $n, i, j = 1, ..., N$ and multiple goods indexed $s = 1, ..., S$. Each good has a variety per country, as in the Armington model, with CES preferences aggregating varieties with elasticity of substitution σ^s. Trade costs are of the iceberg type: if $\tau_{ni} \geq 1$ units are sent from i one unit arrives in n. Labor is the only factor of production, and productivity in country i for good s is A_i^s.

   (a) Let X_{ni}^s be the imports of good s by n from i. Write an equation for $\lambda_{ni}^s \equiv X_{ni}^s / \sum_j X_{nj}^s$.

   (b) Write a system of equations that determines equilibrium wages under trade balance and full employment.

   (c) Show that if
   $$A_i^1 / A_j^1 > A_i^2 / A_j^2 > ... > A_i^S / A_j^S$$
   then
   $$X_{ni}^1 / X_{nj}^1 > X_{ni}^2 / X_{nj}^2 > ... > X_{ni}^S / X_{nj}^S$$

   (d) Write a formula for the gains from trade in terms of λ_{nn}^s and σ^s for $s = 1, ..., S$.

2. This question concerns the gains from variety.

   (a) Define "love of variety" under CES preferences.

   (b) Briefly outline how the analysis in Broda and Weinstein (2006) differs from an import price index that does not take into account the gains from variety.

   (c) Assume there are both exiting and entering varieties over time. Using their framework, write down the conditions under which the variety-adjusted price index is higher or lower than a standard import price index that does not take into account changes in variety.

Part B

1. Financial contracts are difficult to enforce when the borrower is sovereign. Describe how sovereign borrowing can be supported by direct sanctions or reputational costs. Discuss the role of saving by the sovereign and whether it improves or reduces access to insurance under both types of contracts. Explain in particular how reputational contracts can break down when countries in default have sufficient opportunities to save while lenders are able to commit. Be specific.

2. Consider a two-country discrete-time economy with a complete set of nominal contingent claims. Denote e_t the nominal exchange rate (in log), defined as the domestic price of the foreign currency. Denote further m_{t+1} and m^*_{t+1} (in logs) the domestic and foreign stochastic discount factors, in their respective currencies.

   (a) Derive a relationship between Δe_{t+1}, m_{t+1} and m^*_{t+1} where Δe_{t+1} is the rate of depreciation of the nominal exchange rate ($\Delta e_{t+1} = e_{t+1} - e_t$); Does this relationship hold in expectations, or almost surely (i.e. for all states and periods)? Explain.

   (b) Denote σ_x the standard deviation of variable x, and $\rho_{x,y}$ the correlation between variable x and variable y. Show that the relationship above implies:

$$\rho_{m,m^*} = \frac{\sigma^2_{m^*} + \sigma^2_m - \sigma^2_{\Delta e}}{2\sigma_{m^*}\sigma_m}$$

   (c) Assume agents in both countries have identical CRRA preferences with a coefficient of relative risk aversion $\gamma > 0$. Derive a relationship between ρ_{m,m^*} and $\rho_{\Delta c,\Delta c^*}$, and between σ_m and $\sigma_{\Delta c}$, where Δc and Δc^* denote the growth rate of domestic and foreign consumption (in logs). Typical values are $\rho_{\Delta c,\Delta c^*} = 0.5$; $\sigma_{\Delta c} = \sigma_{\Delta c^*} = 2\%$ and $\sigma_{\Delta e} = 10\%$. For what value of γ would the equation above in part b) be satisfied?

   (d) Should we conclude that this model provides a plausible description of the relationship between depreciation rates and consumption growth? Be specific.

Part C

1. Briefly set out a new Keynesian open economy model and describe the main monetary policy implications. What difference do assumptions on exchange rate pass-through make?

2. What is sterilized foreign exchange intervention and when can it affect exchange rates? Sketch a model based on microfoundations in which sterilized intervention can be effective even when there are no capital controls.