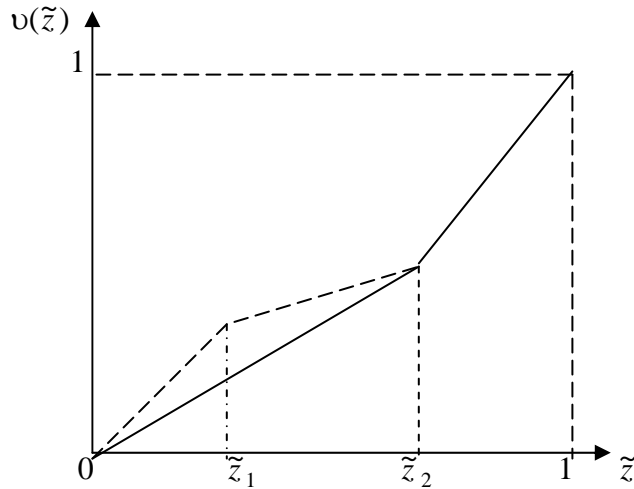


Economics 507A (International Trade)
Second Problem Set
 (due Monday, October 8, 2007)

1. In the Dornbusch, Fischer and Samuelson (1977) model, suppose the $v(\tilde{z})$ function changes for all consumers from the solid curve to the broken curve below. (Recall that this function indicates the fraction of total income spent on goods with index $z \leq \tilde{z}$.)



- a) At unchanged prices, for which goods, if any, has demand increased and for which goods has demand decreased.
- b) Determine the effect of this change on free trade equilibrium prices of all goods relative to labor in both countries and on the pattern of specialization and trade. Assume, in the initial equilibrium, that \tilde{z}_2 marks the division between exports and imports.
- c) Repeat part (b), letting \tilde{z}_1 be the initial division between exports and imports.

2. Prove that consumers who choose consumption to maximize $U = \int_0^1 b(z) \ln[C(z)] dz$, subject to $Y = \int_0^1 P(z)C(z) dz$, spend the fraction $b(z)$ of their income on good z , regardless of prices (Assume that $b(z) \geq 0$ and $\int_0^1 b(z) dz = 1$.)

Note: If you want to use a Hamiltonian to maximize the integral, and you don't quite remember how they work, see the [control theory review](#) I have posted.

3. Suppose consumers choose their consumption bundles to maximize $U = \left(\int_0^1 C_j^\rho dj \right)^{\frac{1}{\rho}}$ subject to $Y = \int_0^1 P_j C_j dj$.

i) Show that their demand for good j can be written as $C_j = \frac{P_j^{-\sigma} Y}{\int_0^1 P_i^{1-\sigma} di}$, where

$$\sigma = \frac{1}{1-\rho}.$$

ii) Show that $\sigma = \frac{1}{1-\rho}$ is the elasticity of substitution between any two products.

4. In their multi-country Ricardian model, Eaton and Kortum (2001) assume that production requires only labor and intermediate inputs. How might capital be added to the model without changing its basic features?