Written exam for M. Sc. in Economics winter 2011 – 2012

International Trade and Investment

Final Exam

21 December 2011

(3-hour closed book)

1. Denmark and Fatanastan are about to sign a free trade agreement (FTA), which would lower bilateral iceberg trade costs between the two countries. This FTA has both extensive and intensive margin effects. Let's discuss the extensive margin. This FTA may or may not change

   (i) the *number* of goods/varieties PRODUCED by Danish firms and

   (ii) the *number* of goods/varieties AVAILABLE for purchase by Danish consumers.

   Discuss the predictions of each of the following models regarding (i) and (ii). If the number of goods/varieties changes, discuss the properties of the new and/or eliminated goods/varieties, relative to the old varieties. You do not need to derive any algebra, but you can always refer to algebra if it helps. Drawing figures may help. Do not assume Fatanastan has the same GDP as Denmark unless stated.

   (a) Dornbusch Fischer Samuelson 1977 with iceberg trade costs.

   (b) Krugman 1980 two-symmetric-country model with a single differentiated sector and iceberg trade costs.

   (c) Melitz 2003 two-symmetric-country model with a single differentiated sector.

2. An assumption of the HOV model is that tastes are homothetic. Let's relax that assumption by supposing the utility in country $j \in \{H, F\}$ for goods 1 and 2 is given by

$$U^j\left(d_1^j, d_2^j\right) = \left(d_1^j - \bar{d}_1\right)^{\beta_1}\left(d_2^j - \bar{d}_2\right)^{\beta_2}$$

where $0 < \beta_i < 1$ and $\beta_1 + \beta_2 = 1$. The term $\bar{d}_i \geq 0$ is the minimum consumption amount of good i. Each good i is produced using capital and labor. Unit factor demands a_m^i are constant and sum to unity $(a_K^i + a_L^i = 1)$ and factor prices are equalized across countries and normalized to unity $(w = r = 1)$. Each country j has L^j workers who are each endowed with a single unit of labor and some capital k^j. We can denote the total capital endowment of country j as $K^j = k^j L^j$. Assume that each consumer's income $I^j = rk^j + w$ is large enough to afford at least $\bar{d}_i$ of each good i.

(a) Show that each consumer's demand for good i is

$$d_i^j = \bar{d}_i + \frac{\beta_i}{p_i}\left(I^j - \sum_{i'=1}^{2} p_{i'}\bar{d}_{i'}\right)$$

(b) Explain why the free trade zero profit equilibrium price $p_i = 1 \forall i$.

(c) Country $j's$ demand for good i can then be written as $D_i^j = L^j d_i^j = \Delta_i^j + \beta_i Y^j$, where $Y^j = L^j I^j$ is the GDP of country j. Write out Δ_i^j in terms of $L^j, \bar{d}_1, \bar{d}_2$ and β_i. What can you say about $\Delta_1^j + \Delta_2^j$? Under what conditions is $\Delta_1^j < \Delta_2^j$?

(d) Suppose good 1 is capital intensive $(a_K^1 > a_K^2)$ and consumers *need* more of good 1 $(\Delta_1^j > \Delta_2^j)$. How does this affect the net capital content of exports, as compared to the standard HOV setup (where $\bar{d}_i = 0 \forall i$)?

TABLE 1—HYPOTHESIS TESTING AND MODEL SELECTION

Hypothesis	Description: Parameters (k_i)	Description: Equation	Likelihood: $\ln(L_i)$	Likelihood: Schwarz criterion	Mysteries: Endowment paradox	Mysteries: Missing trade	Goodness-of-fit: Weighted sign	Goodness-of-fit: $\rho(F, \hat{F})$
Endowment differences								
H_0: unmodified HOV theorem	(0)	(1)	−1,007	−1,007	−0.89	0.032	0.71	0.28
Technology differences								
T_1: neutral	δ_c (32)	(4)	−540	−632	−0.17	0.486	0.78	0.59
T_2: neutral and nonneutral	ϕ_f, δ_c, κ (41)	(6)	−520	−637	−0.22	0.506	0.76	0.63
Consumption differences								
C_1: investment/services/ nontrade.	β_c (32)	(7)	−915	−1,006	−0.63	0.052	0.73	0.35
C_2: Armington	α_c^* (24)	(11)	−439	−507	−0.42	3.057	0.87	0.55
Technology and consumption								
TC_1: $\delta_c = y_c/y_{US}$	(0)	(4)	−593	−593	−0.10	0.330	0.83	0.59
TC_2: $\delta_c = y_c/y_{US}$ and Armington	α_c^* (24)	(12)	−404	−473	0.18	2.226	0.93	0.67

3. Let's revisit Trefler (1995)'s results. Above is the table of his findings.

   (a) Briefly explain the weighted sign test. What would be a "perfect" result for HOV? How well do Trefler's results support the unmodified HOV theorem?

   (b) Briefly explain the Missing Trade Paradox. What would be a "perfect" result for HOV? How well do Trefler's results support the unmodified HOV theorem?

   (c) Briefly explain the Endowment Paradox. What would be a "perfect" result for HOV? How well do Trefler's results support the unmodified HOV theorem?