WWRITTEN PRELIMINARY Ph.D EXAMINATION

Department of Applied Economics
Jan./Feb. - 2010
Trade, Development and Growth

For students electing
Macro (8701) & New Trade Theory (8702) option

Instructions

• Identify yourself by your code letter, not your name, on each question
• Start each question’s answer at the top of a new page
• You are requested to answer a total of FOUR questions
• Answer ONE question from Set One
• Answer THREE questions from Set Two
• You have four hours to complete this examination
SET ONE:
Required Question; Answer ONE Question (I or II but not both)

I. Evolution of trade theory

Over time, four distinctive bodies of literature have emerged, including:
- Traditional Theories of Comparative Advantage
- Factor-Content Theories
- New Trade Theories
- Trade and Multinationals Theories

1. What are the key assumptions of each body of literature?

2. What real-world observations prompted the initiation of each of the four bodies of literature?

3. What are the implications of each body of literature for theory predictions in terms of:
   (a) Gains from exchange
   (b) Patterns of exchange
   (c) Protectionism or liberalization

II. Trade distortion and growth

During the recent financial crises which coincided with a sharp rise in primary commodity prices, India, Russia and several other countries instituted taxes and export quotas on their agricultural exports in order to lessen impacts of higher food prices on consumers. This question asks you to explain how interventions to restrict exports are likely to affect a lower income economy that is a net exporter of agricultural goods and a net importer of industrial goods.

Consider a three sector, small, competitive and open "Ramsey - endogenous savings" economy that produces three final goods (industry, agriculture and services), employing labor and capital to produce the industrial and service sector good, and labor, capital \((k)\) and land \((h)\) to produce the agriculture good. Households hold homothetic preferences and exchange the
services of these resources for wages, rents to capital and land, which they allocate to consumption of the three goods and to savings. The economy is in transition growth with capital stock in period $t = 0$, less than its long-run equilibrium level. For purposes here, let the rate of technological change and the rate of population growth equal zero, let the industrial sector be the most capital intensive sector and let the service sector be the most labor intensive of the three sectors. To capture the effect of the policy to restrict agricultural exports, let the export tax equivalent of a quota on agricultural exports be $\tau > 0$, so that the price faced by agriculture is $p_a = p_a^w (1 - \tau)$ where $p_a^w$ is the world price of the agricultural good. To limit the scope of this question:

1. Characterize the intra-temporal equilibrium conditions for this economy (you need not state the primitives, just their dual counter parts like cost and profit functions)

2. From this characterization, derive/state -in general form- the reduced form equations for wages $w$, the capital rental rate $r^k$, and the three supply functions $y_m$ (industry), $y_s$ (services) and $y_a$ (agriculture).

3. Using the fact that, for an interior solution, the price of home goods can also be expressed as a function of the prices of the two traded goods, $p_m, p_a$ and factor endowments, that is

$$p_s = P^s (p_m, p_a, k, h)$$

and given (1.), (2.), explain why for $\tau > 0$ compared to $\tau = 0$,

(a) the transition of wages is lower $\dot{w} (t) / \dot{w} (t) |_{\tau > 0} \leq \dot{w} (t) / \dot{w} (t) |_{\tau = 0}$

(b) the transition of capital payments is higher $\dot{r}^k (t) / \dot{r}^k (t) |_{\tau > 0} \geq \dot{r}^k (t) / \dot{r}^k (t) |_{\tau = 0}$

(c) the transition of the price of home goods is lower $\dot{p}_s (t) / \dot{p}_s (t) |_{\tau > 0} \leq \dot{p}_s (t) / \dot{p}_s (t) |_{\tau = 0}$

(d) the rate of capital deepening is higher, $\dot{k} (t) / k (t) |_{\tau > 0} \geq \dot{k} (t) / k (t) |_{\tau = 0}$

4. Explain the likely effects of $\tau > 0$ relative to $\tau = 0$, on the

(a) Rental rate of agricultural land
(b) Agricultural supply, and  
(c) the demand for agricultural labor and capital

SET TWO:
Answer THREE of the following four questions (III to VI)

III. Ownership, location, and internalization

The theory of the multinational firm derives its origins from early work by Dunning known as the “eclectic paradigm.” This paradigm provides three explanations for firms decisions about whether and how to service foreign markets: (1) ownership, (2) location, and (3) internalization. Markusen (1995) provides a survey of these concepts. Markusen (1998), Ethier and Markusen (1996), and Horstmann and Markusen (1987) provide theory models which explore these concepts separately and/or jointly. Smith (2000) provides an empirical application of these concepts.

1. Provide brief definitions of the ownership, location, and internalization concepts.

2. Theory studies link ownership, location, and internalization to knowledge capital (or intellectual property). Provide a brief explanation of each of these linkages.

3. Briefly discuss the effect of intellectual property protection (or contract enforcement) on ownership, location, and internalization, and thus on firms’ servicing decisions.

4. The theory literature on ownership, location, and internalization is oriented to analyzing North-North or North-South flows. Explain what key assumptions would need to be modified to consider South-South flows.

IV. Debt and financial crises

Consider the case of a country that accumulated external debt because of fiscal deficits caused by spending that had no direct effects on productivity
1. Depict and explain the **short-run** equilibrium of such a country for which the external debt suggests the country is living beyond its means. (You may use graphics for part of your answer to this question). Discuss the effects on the

(a) The domestic terms of trade,
(b) The production of traded and home goods, and
(c) On factor payments.

2. It is often the case (with Argentina and Turkey as prime examples) that some foreign and domestic investors providing increments of new capital investment to the country become aware of the instability of the short-run equilibrium. They respond by withholding new investments, and even engaging in capital flight. That is, they withdraw some of their "capital" from the country and invest in other "safe havens" such as U.S. treasury bills. Discuss how "capital flight" can affect the short-run equilibrium (1.a), (1.b) and (1.c) above.

3. Now, given your answer to 2., suppose foreign creditors are no longer willing to sustain the country’s trade imbalance. Depict and explain the **short-run** equilibrium that could obtain at the depth of the crises. Discuss the effects on the

(a) The domestic terms of trade,
(b) The production of traded and home goods, and
(c) On factor payments, and .
(d) General household welfare.

V. Trade and multinationals

Consider the following changes in the patterns of international trade and investment:

1. Foreign direct investment (FDI) has increased worldwide.
2. Developed countries are the primary sources and recipients of FDI.
3. FDI tends to be horizontal rather than vertical.

4. Intra-firm trade has grown.

5. A large proportion of trade and FDI occurs between relatively similar economies.

6. A large proportion of trade and FDI is intra-industry.

7. FDI has grown faster than trade in recent years.

Use your knowledge of trade and multinationals theory to illustrate and explain five of the above stylized facts. Be sure to discuss key assumptions and features of the models in this literature.

VI. Growth theory

This question draws upon your knowledge of growth theory.

Given the following primitives:

\[
\int_0^\infty \frac{e^{1-\theta} - 1}{1-\theta} e^{(n-\rho)t} dt : \text{present value of utility}
\]

the flow budget constraint

\[
\dot{k} = w + k(r^k - n - \delta) - c
\]

the technology

\[
Y = A \left( K^\alpha \left(e^x L \right)^{1-\alpha} \right)^{1-\sigma} X^\sigma, \text{ where } X = \mu Y.
\]

Note \( \sigma = \) share in total cost of intermediate \( X \)

which, when rearranged and expressed in intensive form by dividing by \( e^x L (t) \) (units per effective work), yields

\[
\dot{y} = A^\frac{1}{1-\sigma} \mu^\frac{\sigma}{1-\sigma} \dot{k}^\alpha
\]

1. State the present value Hamiltonian and

   (a) Derive the Euler condition for this economy, and
(b) Briefly discusses its meaning for the case where \( r^k > \rho + \delta \)

To save time and avoid simple errors, take as given that firms in this economy maximize profits

\[
\max_k \tilde{\pi} = A^{1-\sigma} \mu^{\sigma-\delta} \hat{k}^\alpha (1 - \mu) - \hat{w} - r^k \hat{k}
\]

such that, \( \tilde{\pi} = \tilde{y}^*(1 - \mu) - \hat{w}^* - r^k \hat{k}^* = 0 \) for each \( t \).

2. Use the Euler condition derived in 1. above (which you will need to express in "hat" form), and the budget constraint (1) (which will also need to be expressed in "hat" form), and the maximizing behavior of firms in (3) to derive the two differential equations for this model.

3. Solve for the steady state, more specifically,

(a) Use one of the equations derived in 2. above to solve for the steady state level of \( \hat{k}^{ss} \).

(b) Log-differentiate the equation obtained in 3.a with respect to the scale parameter \( A \), (i.e., to obtain \( \dot{A}/A \)) to show the change in \( \hat{k}^{ss}/\hat{k}^{ss} \), and discuss the role/importance of the cost-share parameter \( \sigma \).

4. Substitute the equation obtained in 3.a into the production function (2)

(a) Explain the meaning of the resulting equation

(b) Log-differentiate the equation obtained in 4.a with respect to the scale parameter \( A \), (i.e., to obtain \( \dot{A}/A \)) to show the change in \( \hat{y}^{ss}/\hat{y}^{ss} \), and discuss the role/importance of the cost-share parameter \( \sigma \).