WRITTEN PRELIMINARY Ph.D EXAMINATION

Department of Applied Economics
University of Minnesota

Summer - 2005

Trade and Development

Instructions

(For students electing Apec 8701 and Apec 8702 option)

• Identify yourself by your code letter, not your name, on each question
• Start each question's answer at the top of a new page
• There are SEVEN questions on this test
• You are requested to answer a total of FOUR questions
• Answer TWO questions from Set One
• Answer TWO questions from Set Two
• You have four hours to complete this examination

Do NOT write on the back of the paper,
Do NOT write in the margins of the paper.

NUMBER YOUR PAGES!!!
SET ONE

Question I: Economic Growth and External Debt

Great Britain's Prime Minister recently met with President Bush to focus on aid for Sub-Saharan Africa. Agreement was reached on the forgiveness of this region's foreign debt. The chart below shows that many of the countries incurring relatively high debt service payments from foreign exchange earnings (i.e., export earnings) tend to have a relatively high share of agriculture in GDP.

Agriculture and foreign debt in Africa

Source: World Development Indicators (World Bank)

The general context of this question is to explain how the forgiveness of external debt is likely to affect the transition growth of these countries. While you may use a graphic analysis to answer this question, use an analytical approach to help clarify key points.

1. Describe the environment of the "modeled" economy that you will use to address this question. In doing so, depict the country's equilibrium in the initial period, $t = 0$ (i.e. prior to debt forgiveness). You may use a graphic analysis to depict this situation. You should also comment on the likely nature of a typical country's transition to long-run growth in the absence of debt forgiveness.

(Question I continued on next page)
2. Now, presume that all external debt is forgiven. Explain/describe:

a) How might debt forgiveness affect the transition path of the economy in the short run relative to the situation discussed in (1.) above.

b) Since agriculture accounts for a relatively high percent of GDP for many of the countries in question, what are the effects of debt forgiveness on agriculture, in terms of resources employed and output?

3. In the long-run, under what circumstances is debt forgiveness likely to be only a short run solution to a country's "problem?"

**Question II: Trade Reform and Economic Growth**

A hoped for result of the current round of trade negotiations under the WTO is that the advanced countries will lower or remove entirely the trade barriers they impose on the agricultural exports from poor countries. Take as given the structure of production in which manufacturing is most capital intensive, followed by agriculture and then home goods. The home good is the most labor intensive, followed by agriculture and then manufacturing. Agriculture also employs a sector specific factor, say land. Thus, treat the developing country as small and open.

**A. In the initial period, i.e., holding the total stocks of labor, capital and land constant,**

1. Explain the likely DIRECT effects of WTO trade liberalization in agriculture on the supply of final goods (manufacturing, services, and agricultural goods)

2. As producers respond to the new price incentives in agriculture, explain the INDIRECT effects of liberalization on the supply of final goods (manufacturing, services, and agricultural goods)

3. What might the nature of these effects discussed in (1.) and (2.) above be on the poor (low income, landless households)? Explain

**B. Now, allow households to respond to these changes, i.e., allow capital to accumulate as might happen in the case of a Ramsey economy. For given world prices,**

1. What is the likely effect on rental rates of labor, capital, and land?

2. What is the likely effect on final good supply?

3. What are the likely changes in the sectoral employment of labor and capital?

**C. In the long-run, will trade reform affect the rate of economic growth? Explain.**
**Question III: Growth Theory**

Echivarria (1995, 1997, 2000), among others, have used the three sector growth model (two traded goods and one home good) as a point of departure to explain structural change (typically meaning how sectors of an economy evolve relative to total GDP) in the process of growth. The general question is to state and explain this basic model in a Ramsey context.

1. Derive the Euler equation that depicts the household's optimal rate of expenditure/consumption over time, **and** briefly discuss the "economic meaning" of this condition.

2. Characterize the intra-temporal equilibrium conditions for this economy.

3. Derive the economy's steady state equilibrium.

4. In the steady state, what is the rate of growth in \( k \) and in \( y_m, y_s, \) and \( y_a \) **per capita**? (note, no hats).

5. Comparative statics; Suppose the manufacturing sector is capital intensive, and services is labor intensive. Agriculture is "in the middle", but more capital than labor intensive. Further, assume \( k(0) < k_{ss} \).
   
   a) "Show" and discuss the evolution of the home good price \( p_s \)
   b) "Show" and discuss the Stroper-Samuelson **like effects** that explain the evolution of factor payments
   c) "Show" and discuss the evolution of the land rental rate.
   d) "Show" and discuss the evolution of output supplies, making special mention of the Rybczynski **like effects**

6. Derive the two key differential equations for this model.

7. Provide an overview of the time elimination method for empirically solving the model's differential equations.
SET TWO

Question IV: Evolution of Trade Theory

The literature on international trade includes bodies of research referred to as: (1) traditional trade theory, (2) factor content theory, (3) New Trade theory, and (4) trade and multinationals theory. Recent research seeks to integrate these four literatures. Use your knowledge of these literatures to answer the following questions:

1. What are the key assumptions of each of the four literatures. In other words, what assumptions are relaxed relative to previous literature(s)?

2. Generally, how do the predictions of the models change as the assumptions are relaxed?

Question V: OLI Concepts

Dunning (1977) introduced the concepts of ownership, location, and internalization (OLI). These concepts have been integrated in the trade and multinationals literature. Use your knowledge of this literature to interpret these concepts:

1. Ownership

2. Location

3. Internalization.

Question VI: Theory and Reality

Use your knowledge of the trade and multinationals literature to explain the stylized facts below.

1. A large proportion of trade and direct investment occurs between relatively similar economies—similar in size and relative endowments. That is, flows tend to be North-North or South-South rather than North-South or South-North.

2. A large proportion of trade and direct investment is two-way trade in similar products (i.e., intra-industry).

3. Direct investment has grown faster than trade in recent years.
Question VII: Theory and Practice

The trade and multinationals literature emerged in order to address the following stylized fact: A sizable portion of intra-industry trade (IIT) is intra-firm trade (IFT). Discuss the data/measurement issues that empirical researchers must address in evaluating IFT and IIT.