WRITTEN PRELIMINARY Ph.D EXAMINATION

Department of Applied Economics
Jan./Feb. - 2008
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. Trade and multinationals: policy

A primary effort of research on trade and multinationals is to analyze firms’ decisions about how to service foreign markets. These decisions include: trade, foreign direct investment, licensing, and joint ventures. Use Dunning’s concepts of:

1. Ownership
2. Location
3. Internalization

...to explain these alternative servicing decision. Be sure to refer to national policies that can affect servicing decisions via their affects on ownership, location, and internalization advantages.
II. External debt and economic growth

The World Bank’s World Development Report for 2008 is titled Agriculture for Development. It points out that in poor countries, primary agriculture generates on average 29 percent of GDP, employs over 50 percent of the labor force, and accounts for the majority (70%) of a country’s poor. Many of these countries are also incurring relatively high levels of external debt. To take an extreme case, Argentina’s present value of external debt to GDP was 245% in 2005 with debt service to exports of about 21% and short term debt of about 38% of the value of exports of goods and services. This question relates to the economics of agriculture in this process.

Consider an extreme case of a country whose external debt was accumulated because of fiscal deficits caused by spending that did not increase the country’s stock of public goods that might otherwise make private resources more productive. Make assumptions about the relative factor intensity of labor, capital and land in the production of goods in this country and, like most low income countries, assume it is a net exporter of agricultural goods.

1. Depict and explain the short run equilibrium of such a country for which the debt suggests it is living beyond its means. (You may use graphics for this answer)

2. Restricting yourself to the logic of the model, focus on agriculture, and be more analytical.

(a) If the economy is small, competitive and open with agriculture and industry as traded goods, what is the direct effect of the equilibrium in (1.) on agriculture?

(b) Discuss/show the indirect effects the equilibrium discussed in (1.) is likely to have on the returns to agriculture’s sector specific resources

(c) What is the likely effect on the sector’s employment of labor and capital?

(d) Comment on the kind of consumption effects (2.a) it is likely to have on farm households that, for whatever reason, remain in the sector.
3. Now, suppose a readjustment is required where the country must pay-
off its external debt by, for purposes here, imposing lump-sum taxes
on households (or effectively, paying in foreign exchange the difference
between exports and imports). This part of the question relates to
agriculture’s contribution to this adjustment process.

(a) Explain/show how this readjustment is likely to affect agricul-
ture’s supply response

(b) What is likely to be the affect on rural household consumption
and saving decisions of the lump-sum tax (we presume the tax on
each household is equal in per capita terms).

(c) Can you "make a case" for why rural household might be exempt
form the tax (an hence the tax on remaining households increased)
in order to speed up the process of adjustment to long-run equi-
librium

4. To conclude, with time on the horizontal axis and gdp per worker on
the vertical axis, graph what you feel would be the real gdp/worker
transition path of this economy starting with the accumulation of debt,
the debt crises of readjustment, and then back to sustainable long-run
equilibrium. Explain your reasoning.
SET TWO:

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

III. Trade and multinationals: theory.

A dominant feature of models in trade theory is the assumption of a national firm that produces in one location. Yet, this assumption is inconsistent with the stylized fact that many industries are dominated by multinational firms. Recent theoretical research has reconciled trade theory with this stylized fact by endogenizing multinational firms into general equilibrium trade models. Based on the recent theory literature, analyze how equilibrium trade and foreign direct investment depends on:

1. Firm-level economies of scale
2. Plant-level economies of scale
3. Trade barriers (such as tariffs)
4. Country sizes
5. Country relative endowments
6. Knowledge assets
IV. Trade distortion and growth

The IBRD studies directed by Krueger, Schiff and Valdes in the 1980s, and a recently completed update of these studies by Anderson find that protection of the import competing sector remains an implicit tax on agriculture in many of the world’s low and lower middle income countries. This question asks you to explain how trade interventions that protect the industrial import competing sector of an economy are likely to affect the country’s transition to long-run growth (i.e., a steady state for which the interventions remain in place). Make assumptions about the relative factor intensity of labor, capital and land in the production of goods in this country and, assume it is a net importer of industrial goods. Finally, assume that the industrial trade protection is not so extreme as to affect the economy’s underlying fundamental economic forces (e.g., it does not cause some other sector of the economy to close). For purposes here, let technological change $x$ and the growth in the labor force $n$ equal zero ($x = n = 0$).

1. With the trade protection in place, explain the "economics" giving rise to the transition path of the following endogenous variables (recall that the zero profit conditions will look something like: $C^m(w, r) = (1 + \tau)$, $C^a(w, r) = p_s$ where $\tau$ is the tariff rate (say 0.2) so that the domestic price for manufactures is higher than the world price).

(a) $\dot{w}/w$, $\dot{r}/r$ (factor payments to labor, capital, respectively)
(b) $\dot{p}_s/p_s$, $\dot{\pi}/\pi$ (the price of home goods, and land rental payments)
(c) $\dot{y}_j/y_j$, $j = m$ (manufacturing), $a$ (agriculture), $s$ (home good).
(d) $\dot{gdp}/gdp$ where $gdp$ is normalized by the cost of living, typically taken to be price index $\mu(p_s)$ taken from the expenditure function, $E = \mu(p_s)q$
(e) What is the rate of growth of these values (given assumptions here) in the steady-state

2. Now, suppose the country is in long-run equilibrium (i.e., the steady state) AND trade protection is removed, i.e., $\tau = 0$. Explain the economics of the country’s re-adjustment back to long-run equilibrium.

(a) First, compare and explain briefly the levels of selected variables when the steady state is reached under (2) compared to the case
of (1). (Comment, typically we would choose some point in transition, but for purpose here we use the steady state equilibrium to make the question more clear). The variables are

i. \( (w_{ss})^{\text{protection}} : (w_{ss})^{\text{no protection}} , (r_{ss})^{\text{protection}} : (r_{ss})^{\text{no protection}} , (p_{s,ss})^{\text{protection}} : (p_{s,ss})^{\text{no protection}} \)

\[ \]

ii. \( (y_{m,ss})^{\text{protection}} : (y_{m,ss})^{\text{no protection}} , (y_{s,ss})^{\text{protection}} : (y_{s,ss})^{\text{no protection}} \)

(b) Using a graph with time on the horizontal axis and GDP per worker normalized by the cost of living \( \mu (p) \) (hence, the gdp in question 1. above), chart the \( \text{gdp}^{\text{protection}} \) to some point \( t \) large, and then from this \( t \) (i.e., when reform occurs) to a larger \( t \). For selected endogenous variables of your choice, explain the main "economic" differences in the second compared to the first part of the graph
V. Trade and multinationals: stylized facts.

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

1. Foreign direct investment (FDI) has grown worldwide.
2. Developed countries are the predominant sources and recipients of FDI.
3. FDI tends to be horizontal rather than vertical.
4. Trade within companies (“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 two-way trade in similar products (“intra-industry trade”).
7. FDI has grown faster than trade in recent years.

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

Consider the environment of the three sector, small open economy. For consistency in notation, agents produce and consume three goods, indexed \( j = m, s, a \), at each instant in time at price \( p_j \). The services of labor, \( L(t) \), and capital, \( K(t) \), are employed in the production of all three goods while land, \( H \), a sector specific factor, is also employed in the production of the agricultural good, \( j = a \). The manufactured good, indexed \( j = m \), is both a consumption and a capital good that is also internationally traded. The rural good is also traded internationally. The home good, indexed \( j = s \), is a pure consumption good and only traded within the domestic economy. Labor services are not traded internationally and domestic residents own the entire stock of domestic assets. Households earn income from providing labor services \( L \) in exchange for wages \( w \), earn interest income at rate \( r \) on capital assets \( A \), and receive rents from agriculture’s sector specific resource, land \( H \).

Key primitives:

\[(m = \text{manuf.}, \ a = \text{agriculture}, \ s = \text{service})\]

\[
Y_m = F^m(\text{AL}_m, K_m); \quad \text{Non-farm economy}
\]

\[
Y_a = F^a(\text{AL}_a, K_a, A_a(t) H); \quad \text{Farm economy}
\]

\[
Y_s = F^s(\text{AL}_s, K_s); \quad \text{Service economy}
\]

with the restriction that \( A_a(t) = A(t) L(t) = e^{(x+n)t} \).

Felicity is

\[
q = q^1_m q^2_a q^3_s 1-\lambda_1-\lambda_2
\]

so that the household seek to maximize

\[
\int_{t=0}^{\infty} \frac{q^{1-\theta} - 1}{1 - \theta} e^{(n-\rho)t}
\]

The inter-temporal elasticity of subsitution is unity and the rate of time preference is \( \rho \).

Questions

1. Derive the Euler Equation for the household’s optimization problem.

2. Characterize, the intra-temporal equilibrium of this economy.
3. Show how you would obtain the steady-state solutions for $\dot{w}, r, p_s$ and $k$.

4. Derive the differential equations for this model