WRITTEN PRELIMINARY Ph.D EXAMINATION

Department of Applied Economics

Trade, Development and Growth

June 2012

For students electing

APEC 8702 and APEC 8703 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 required 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 Welfare

Answer all parts of this question. Use intuition and relevant models/diagrams to illustrate and support your conclusions. Be sure to write clearly and label your diagrams precisely. Feel free to use abbreviated notation to simplify your answers. Be sure to: (1) note all assumptions that you make, (2) indicate how your conclusions change if you relax these assumptions, and (3) consider both theoretical and empirical analyses/literature.

1. Use your knowledge of the welfare effects of the trade policies to explain why policy makers interested in maximizing national and world welfare support free trade while select agents within countries (e.g., consumers, government, producers, license holders) do not support free trade. Consider and compare policies including: (a) tariffs, (b) quotas, (c) voluntary export restraints, (d) bans, and (e) export subsidies.

2. Analyze how the incidence of the price effects of the above policies (between the importer and exporter) affects the distribution of the welfare effects globally.
QUESTION II: Farmer Effort and Property Rights.

Answer all 5 parts of this question.

Consider a farmer with a given amount of land. Output is a random variable that depends on farmer effort, which is denoted by $e$. Farmer effort ($e$) has a range from 0 to 1. The farmer’s output is as follows:

\[ Y \text{ with probability } e^{1/2} \]
\[ 0 \text{ with probability } 1 - e^{1/2} \]

where $Y$ is a constant.

a) What is the farmer's expected output as a function of his or her effort ($e$)?

b) Assume that there are no labor markets, and that the farmer’s utility function is given by $u(c, \ell) = c + \ell$, where $c$ is consumption and $\ell$ is leisure. Assume that the time constraint is $e + \ell = T$, where $T$ is total time available. Assume also that the farmer consumes all of his or her output (he or she can neither buy or sell the output). What is the farmer’s optimal level of effort ($e$)? Note that the farmer is maximizing expected utility. Assume an interior solution.

c) Suppose that the farmer faces a probability $\tau$ that his or her output will be confiscated by someone after the harvest is in, where $\tau$ is between 0 and 1). What is the optimal effort ($e$) in this case? Briefly explain the intuition for the difference (if any) between your answer here and your answer for part b).

d) Next, suppose the farmer can use some of his or her leisure time to “guard” his or her crop. Denote this labor by $g$, so the time constraint is $e + g + \ell = T$. The probability of confiscation, $\tau$, now becomes a function of $g$. More specifically, $\tau = \tau(1 - \gamma g^{1/2})$, where both $\gamma$ and $g$ must be between 0 and 1. Note that the $\tau$ in this expression is a constant, so that the new expression for $\tau$ is simply $\tau$ multiplied by $1 - \gamma g^{1/2}$. Find the optimal values for $e$ and $g$ in this situation. Assume interior solutions.

e) Suppose that the farmer receives training in martial arts to guard his or her crops. The effect of this is to increase $\gamma$. What is the impact of this increase in $\gamma$ on the optimal amounts of $e$ and $g$ that you found in part d)? Note that your answer for b) gives you an upper bound on $Y$, which may be useful. Finally, give the intuition for your results.
SET TWO:

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

III. Trade-Related Policies

Answer two of the following four parts of this question. Use intuition and relevant models/diagrams to illustrate and support your conclusions. Be sure to write clearly and label your diagrams precisely. Feel free to use abbreviated notation to simplify your answers. Be sure to: (1) note all assumptions that you make, (2) indicate how your conclusions change if you relax these assumptions, and (3) consider both theoretical and empirical analyses/literature.

1. Consider the case of crops such as canola that have been genetically modified to have traits such as pest resistance. Assume that the creators of genetically modified canola file for patent protection. Assume that patents are filed and awarded only in countries with strong patent laws. Analyze the effects of country differences in patent protection on:

   a) trade
   b) technology transfer
   c) research and development

2. Consider a scenario where consumers purchase goods packaged in #3 plastic that is not recyclable and ends up in domestic landfills. Assume that the consumption of these goods creates a negative consumption externality in an exporting country.

   a) Analyze the welfare effects of liberalizing a second best policy (e.g., trade policy)
   b) Analyze the possible effects if this trade liberalization on the environment.
   c) Analyze the possible effects of this trade liberalization on factor prices.

3. Consider the case where a multinational software firm sets up subsidies in multiple locations. Assume that countries have adopted bilateral investment treaties that include foreign investment quotas. Analyze the effects of this policies arrangement on:

   a) foreign direct investment
   b) welfare

4. Analyze the consequences of cross-country differences in labor standards on trade.
IV. Trade and Institutional Arrangements

Answer two of the following three parts of this question. Use intuition and relevant models/diagrams to illustrate and support your conclusions. Be sure to write clearly and label your diagrams precisely. Feel free to use abbreviated notation to simplify your answers. Be sure to: (1) note all assumptions that you make, (2) indicate how your conclusions change if you relax these assumptions, and (3) consider both theoretical and empirical analyses/literature.

1. There are many types of administrative, technical and regulatory policies.
   a) Define three types of such policies and discuss their effects on trade.
   b) Why, where, and to what extent are such policies a barrier to trade?

2. Consider the economic efficiency argument for free trade.
   a) Use diagrams to demonstrate the economic efficiency argument from a world perspective.
   b) Use Political Economy considerations to explain why governments use trade policy to transfer income rather than more efficient means.

3. Consider institutional arrangements for trade liberalization.
   a) Consider a world comprised of three regional "power" blocks (Europe, North American, and Asia) and the remaining "excluded" countries. Evaluate the effects of liberalization within the "power blocks" on the "excluded" countries.
   b) Are preferential trade agreements a "building block" or a "stumbling block" to multilateral trade liberalization?
   c) Do multilateral agreements increase international trade?
V. Economic Consequences of R&D

*Answer all four parts to this question.*

Using standard welfare surplus approaches (and *clearly* and *carefully* labeled graphs) answer, illustrate and explain the following:

a) With a parallel research induced shift in supply, producers are always better off. True or false, explain.

b) When supply and demand elasticities are of equal but opposite signs, producers and consumers share equally in the benefits from R&D. True or false, explain.

c) In a large country-in-trade setting, *absent international transfers of technology*, consumers and producers in *importing* countries that do not innovate are both made worse off by research-induced supply shifts elsewhere in the world. True or false, explain.

d) From a national perspective, a large-in-trade, innovating country that *exports* is better off overall if its research results spillover to other countries. True or false, explain.
QUESTION VI: Inequality, Poverty and Migration in Developing Countries.

Answer all 5 parts of this question.

Here is a table of incomes in rural and urban areas of a developing country for 2 years:

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Residents:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 1</td>
<td>50</td>
<td>55</td>
</tr>
<tr>
<td>Person 2</td>
<td>80</td>
<td>110</td>
</tr>
<tr>
<td>Person 3</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td>Person 4</td>
<td>130</td>
<td>143</td>
</tr>
<tr>
<td>Urban Residents:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Person 5</td>
<td>75</td>
<td>90</td>
</tr>
<tr>
<td>Person 6</td>
<td>110</td>
<td>192</td>
</tr>
<tr>
<td>Person 7</td>
<td>160</td>
<td>132</td>
</tr>
<tr>
<td>Person 8</td>
<td>195</td>
<td>234</td>
</tr>
</tbody>
</table>

a) Consider the distribution of income in Year 1. Is inequality in rural areas higher or lower than inequality in urban areas? Explain your answer referring to one or more properties that any “good” inequality measure should have. Please be brief.

b) Next, compare the distribution of income in Year 1 with the distribution of income in Year 2. Suppose that you are using a measure of income inequality that is additively decomposable. Recall that such decomposability implies that, for G mutually exclusive groups:

\[
I(y) = \sum_{g=1}^{G} w_g I(y_g) + I(\bar{y}_1', \bar{y}_2', \ldots \bar{y}_G')
\]

where the first term is the within-group component and the second term is the between-group component. Is inequality in year 2 higher or lower than inequality in year 1? Or is it unclear without specifying a precise measure of inequality?

c) Consider the population in rural areas in Year 1. Suppose that the poverty line is 90. You have 10 in cash to distribute in those rural areas. If you want to minimize the headcount measure of poverty, to whom will you give the money? Does your transfer increase, decrease, or have an ambiguous impact on inequality in rural areas, as measured by Lorenz dominance?

d) Suppose instead that you want to minimize the squared poverty gap index. To whom will you give the 10 in cash? Will this increase, decrease, or have an ambiguous impact on rural area inequality as measured by Lorenz dominance?

e) Finally, consider the overall distribution of income in year 1 again. Suppose that anyone who migrates from a rural area to an urban area has a 2/3 probability of earning the income of person 5 and a 1/3 probability of earning the income of person 6. Assuming that rural residents want to maximize their expected income, and there are no moving costs, which rural individuals will move to urban areas? Assuming a poverty line of 85, what is the expected poverty rate for the whole country both before and after they move? Express your answers as fractions.