

**The Growth and Development of Nations in the Global Economy***Final Exam, Fall 2006***Short Answer Questions: Please answer 3 of 5 Questions (10 points each)**

1. Think back to the expression  $w > (1-\theta)(w+b) + \theta w^0$  where  $w$  is the worker's wage at his current job,  $b$  is a bribe he is offered,  $\theta$  is the probability that he gets caught, and  $w^0$  is the wage he could earn someplace else. Explain this expression. What does it tell you about the effect of worker's wages on their desire to be corrupt and accept bribes? For what values of  $\theta$  do wages have any effect on corruption? What does this suggest is a good policy for reducing corruption?
2. In class, we defined the following measure of 'Rolls Royce' inequality for an economy in time period  $t$ :

$$\Omega_t = \frac{r_t K_t}{w_t L_t} = k_t \left( \frac{r_t}{w_t} \right),$$

where  $r_t$  is the rental rate for capital,  $w_t$  is the wage rate,  $K_t$  is the stock of capital,  $L_t$  is the labor force and  $k_t$  is the capital labor ratio. Imagine first that the economy is autarchic and does not trade with the rest of the world. What would you expect to happen to  $k_t$  and  $\Omega_t$  as the economy grows? Please explain your answer clearly. Suppose now that the economy opens up to the world economy and begins to trade with the rest of the world. Assuming that the country is relatively capital abundant compared to the rest of the world, what would you expect to happen to  $\Omega_t$ ? Please be sure to fully explain the reasoning that underlies your answer.

3. Please explain what is meant by increasing returns to scale that are internal to a firm. Why might there be such increasing returns to scale? Finally, please explain how increasing returns to scale can generate gains from trade between countries that have identical factor endowment ratios.
4. Briefly explain the Lanjouw proposal to deal with shortcomings of the TRIPS agreement. List one advantage and one disadvantage of this proposal. Briefly explain the other proposal discussed in class being pushed by Kremer (we discussed the Kremer proposal in the context of anti-malaria drugs). List one advantage and disadvantage of the Kremer proposal.

5. William Easterly, in his chapter “Leaks, Matches and Traps,” extensively discusses the growth of the Desh Shirt manufacturing company in Bangladesh. Using the story of the Desh Shirt, please explain what is meant by *external* increasing returns. Do you think external increasing returns justify government intervention in the economy? Please explain your thinking clearly. In answering, you may want to draw on the Desh example and, or the Westphal discussion on South Korean industrial policy.

**Long Questions: Please answer 1 of 2 Questions (30 points)**

1. Consider the following data:

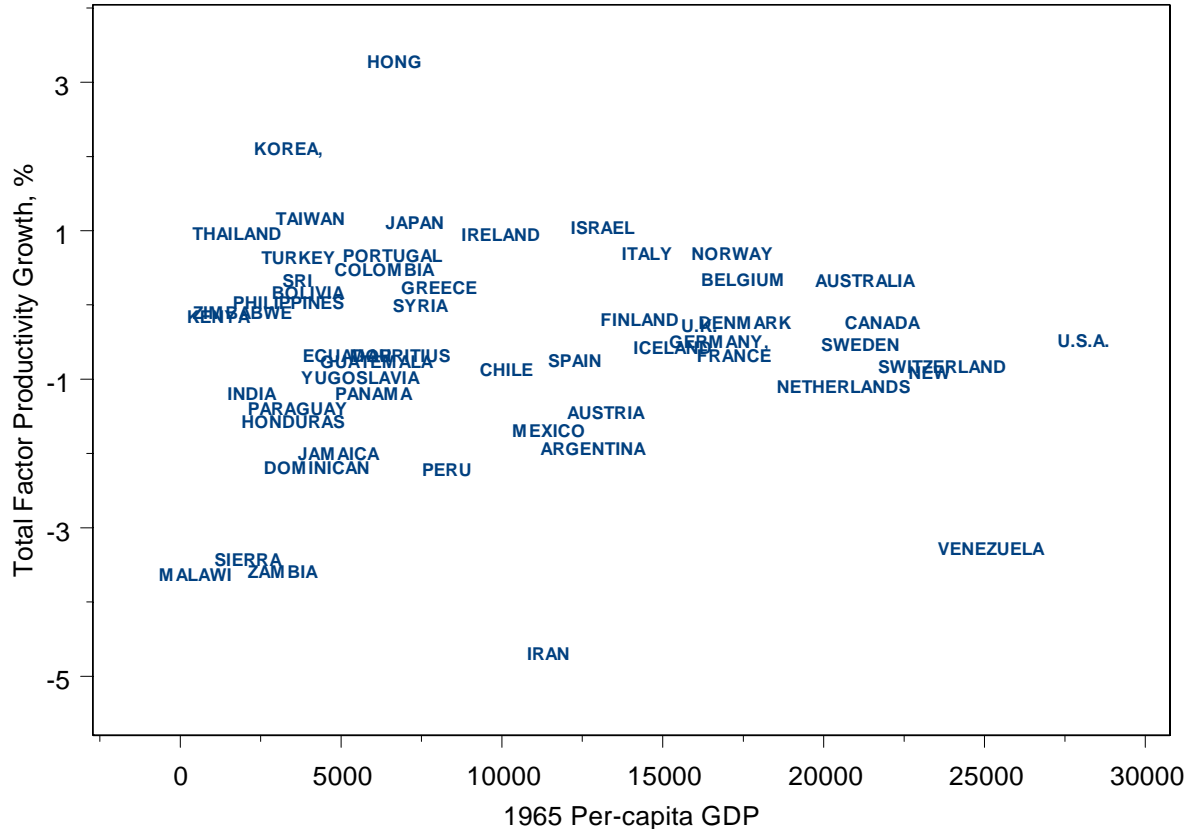
	1960			2000		
	<i>Per-Capita GDP<sup>1</sup></i>	<i>Human Capital<sup>2</sup></i>	<i>Gini Coefficient<sup>3</sup></i>	<i>Per-Capita GDP<sup>1</sup></i>	<i>Human Capital<sup>2</sup></i>	<i>Gini Coefficient<sup>3</sup></i>
<b>Brazil</b>	\$2371	12%	0.53	\$7190	22%	0.60
<b>S. Korea</b>	\$1495	21%	0.33	\$15,875	67%	0.33
<b>United States</b>	\$12,272	60%	0.35	\$33,293	90%	0.44
<b>Zambia</b>	\$1206	0.9%	NA	\$892	11.1%	0.48

Notes

1. GDP measured in constant purchasing power adjusted US dollars.
2. Human Capital measured as the percent of population over age 25 with at least some secondary school education or higher.
3. Gini Coefficients may not be for the exact year reported.
  - a. Imagine that you initially had access to the 1960 data only. From the perspective of the Kuznets’ “inverted-U” hypothesis, what would you have expect to happen to income inequality between 1960 and 2000 for the different countries? From this Kuznets perspective, what are the biggest surprises shown by the 2000 data?
  - b. The table above includes information on human capital in each country. Why might human capital be more important than other factors of production in the contemporary global economy? What forces might explain the different levels and changes in the human capital stocks shown in the table above?
  - c. Based on the human capital data given in the table, why might we expect US income inequality to have decreased between 1960 and 2000? Please explain why US income inequality actually increased over this time period.
  - d. Finally, please explain what is meant by a “virtuous circle” linking economic growth and income inequality. Are the data above consistent or inconsistent with the notion of a virtuous growth-inequality circle? Please explain your answer.

2. The following graph shows the annual average rate of Total Factor Productivity Growth (TFPG) for a sample of countries plotted against their levels of per-capita GDP in 1965.

Average Annual Rate of Total Factor Productivity Growth, 1965-1990



- a. Recall that Total Factor Productivity Growth is defined as:

$$\hat{A} = \hat{y} - \alpha \hat{k} - \beta \hat{s}$$

where the underlying production function is  $Y = AK^\alpha S^\beta L^{1-\alpha-\beta}$  (or in per-capita terms:  $y = Ak^\alpha s^\beta$ ), and a '^' over a variable indicates a growth rate (for example,  $\hat{y}$  is the rate of growth of per-capita GDP). Please verbally explain what TFPG is. Why is total factor productivity growth important? In particular, if the rate of TFPG is zero, what does the Solow model predict will be the long run rate of growth for an economy?

- b. Under the standard Solow model assumption that all countries have access to the same set of technologies and that the rate of technological progress is exogenous, what would you expect the above graph above to look like?

- c. Why might the rate of TFPG vary so substantially across countries? A good answer to this question will draw on both theoretical arguments as well as on specific historical examples (hint: you may want to draw on Westphal's discussion of South Korean industrial policy and, or the Nelson & Wright analysis of US technological leadership).
- d. Based on the evidence in the above graph and your understanding of it, would you advise a now poor country to selectively employ trade or industrial policies to boost the effective rate of incentives for some industries? Please fully explain the logic behind your advice, including what policies (if any) that you would suggest that the country adopt.