Econ 333: Economic Development: Spring 2001
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Study Guide for Mid-term Exam

1. Read chapter 2 of Todaro to understand the structure of less developed countries. Comment on the similarities of these characterisitics that you find among the countries within the same income group and the main differences in these characteristics that you find between income groups?

2. Read chapter 2 of Todaro, and Chapter 1 of my notes to understand the problems associated with developing a good measure of development and living standard.

   (a) Comment on the following: *The essence of the argument that per capita income and growth rates can be misleading indicators of development is that these measures ignore the distribution of income.*

   (b) What are the problems of using per capita income as a good indicator of level of development?

   (c) Explain why purchasing power parity (PPP) measures of income levels tend to show a smaller differences in living standards between poor and rich countries.

   (d) Explain other proposed measures of living standards – Human Development Index (HDI), Physical Quality of Life Index (PQLI).

3. What is meant by development? Why do we need a separate discipline as Development Economics?

4. A country's real GNP and population are given below for the period 1779-1789.

Year	GNP	Population
1779	286.5	151.7
1780	330.8	154.3
1781	348.0	156.9
1782	366.8	159.6
1783	366.8	162.4
1784	400.0	165.3

   Calculate the annual average growth rates of GNP, population, and per capita income during 1779-1784.

5. An empirical investigation of a certain country reveals that during the period 1950-1989 its stock of capital and the labor force are exponentially growing at the annual rates 7% and 3% respectively. National income statistics of the country show that the average income shares of capital and labor during the period are .3 and .7 respectively. Assume that capital and labor are the only factors of production, the total productivity is growing at the rate 2% per year, and GNP at time t is given by the production

function $Y(t) = A(t)F(K(t), L(t)$, and F exhibits constant returns to scale. Recall the growth accounting formula:

$$r_Y = r_A + \eta_{FK} \cdot r_K + \eta_{FL} \cdot r_L$$

(a) Compute the contribution of growth in capital and growth in labor to the growth in total income.

(b) At what rate the GNP is growing during the period.

(c) What is the exponential growth rate in per capita income (assume that each person supplies one unit of labor)?

(d) The new supply side economic policy regime encourages higher savings rate. It is expected that as a response to the new policy the capital will grow at the rate of 10% per annum. What will be the new growth rates for GNP and per capita income of the economy?

(e) Suggest at least three government policies that may encourage one to save more. Explain why you think so.

(f) What are the components of "effective" labour hours? Suggest government policies that can increase effective labor hours of the economy through each of these components.

(g) What are the components of total capital investment in an economy? Suggest policies that can increase each of these components and hence the growth in capital of the economy.

(h) What are the various ways the economy can have higher total factor productivity (TFP) growth? Suggest government policies that will be most effective in improving the total factor productivity of an economy.

6. In 1994, China has per capita income of US$530, total population 1.19 billion, and its average exponential growth rate during 1985-1994 is 7.8 percent per annum. In 1994, India has per capita income of US$320, total population 0.913 billion, and its average exponential growth rate of per capita income during 1985-1994 is 2.9 per annum. The US has per capita income of $25,880, total population 0.260 billion in 1994, and the average exponential growth rate of per capita income during 1985-1994 is 1.3 percent per annum

   (a) When in future China and India will have the 1994 US standard of living as measured by per capita income?

   (b) Which year China will overtake US in terms of per capita income? Which year India will overtake US in terms of per capita income?

   (c) Suppose India's population is growing exponentially at the rate of 2.0 percent per year, and China's population is growing exponentially at the rate of 1.2 percent per year. When in future, India will have larger population than China? At what exponential rate the GNP of China and India are growing over time?

7. Examine the table 1 and answer the following questions:

Sources of growth	Japan:1953-1971	Korea:1963-1982	U.S:1948-1973
Output growth	8.81	8.13	3.79
Contribution of			
gr. in labor	1.85	3.31	1.42
gr. in capital	2.10	1.58	0.71
gr. in TFP	4.86	3.24	1.66

Source: Kim and Park [1985].

Table 1: Growth accounting for Korea, Japan and the U.S.

(a) In the light of growth experiences a developing country (Korea) and two developed countries (US and Japan), what could be attributed to the main source of high growth in the developing country. What kind of structural differences between the less developing countries (such as in Korea) and developed countries (such as US and Japan) we can attribute to that will be consistent with the observed sources of growth? (Think about one of the indicators we talked about while discussing the structural differences between developed and developing countries).

(b) What are the main sources for Japan's higher growth than the that of the US. In the light of another fast growing developed country's experience, what policies would you recommend for the US to improve its growth rate?

8. Harrod-Domar model of economic growth and development was one of the earliest attempt to give a theory of development. They showed *"under certain assumptions"* that the growth in total output, $\frac{\triangle Y}{Y}$ which we denote as g_Y, is given by

$$g_Y = v \cdot s$$

where s is the saving rate, and v is the output-capital ratio.

(a) Currently India has a savings rate of 20 percent, and the annual growth rate in total output is 4.0 percent per year. First compute what is the value of output-capital ratio. Assuming that the output-capital ratio does not change over time, solve the following problem.

(b) India would like to increase its growth rate of total output from 4.0 percent to 6.0 percent per year, what should be the corresponding savings rate? Recommend three important policies that might help India to increase its savings rate.

(c) According to Harrod-Domar theory of economic development, *the main development concern is to understand how a less developed economy with low savings rate could be made to have a high savings rate, because then the economy will have a sustained high growth and hence development.* Briefly provide the strengths and weaknesses of this view of economic development in the light of economic development processes of the concurrent less developed economies.

9. What are the main assumptions in Lewis model? Explain the main improvements that Lewis model features as compared to Harrod-Domar model as a model of economic development (*economic development in the sense we have discussed in previous classes*)? Give a graphical exposition of the Lewis model, and explain the concepts of "labor surplus", and "labor absorption process" in the manufacturing sector using the Lewis model. In the Lewis model, how does an underdeveloped economy become industrialized? What is the role of agricultural sector in this development process? What are the main criticisms of this model as a model of economic development?

10. In Lewis model, explain what role does population growth play? Take two countries A and B. Country A has higher population growth rate than country B. Otherwise both countries are identical at the current moment, including the population size being the same at the current moment. According to Lewis model, what will be the differences in the rate of growth of income, and the rate of industrialization in countries A and B? Can you construct a criticism of the Lewis model based on your answers, and given the fact that the countries with higher population growth are observed to grow slowly.

11. In Lewis model suppose the capitalist is free to import technology from abroad, or invest in the capital markets abroad. Describe under what conditions, free import of technology and unrestricted investment abroad might slow down the development process of the Lewis type. What government policies would you recommend in those situations?

12. Explain the concepts of "labor saving technology or equipment", and "capital flight" and explain what are the basic assumptions in Lewis model regarding these two, and how would they affect the development process as depicted in Lewis model if the capitalists in the manufacturing sector use labor saving technology or engage in capital flights activities. Under what circumstances, the capitalist may like to engage in labor saving technology choice (show in your diagram) or in capital flights?

13. Suppose during 1996-1999, the country Imagineme's exponential annual growth rates of GNP, labor and capital are respectively 5.54%, 1.71% and 9.13%, and the average shares of labor income and capital income in national income are respectively .652 and .348. Suppose, GNP at time t is given by the production function $Y(t) = A(t)F(K(t), L(t))$. Recall the growth accounting formula:

$$r_Y = r_A + \eta_{FL} \cdot r_L + \eta_{FK} \cdot r_K$$

where, η_{FK} and η_{FL} are respectively the rental income share and labor income share of GNP

(i) Choose the correct answer

Growth in total factor productivity (TFP)

[ ] 1.23121%
[ ] 1.24784%
[ ] 0.01302%
[ ] 0.00001%
none of the above, the correct answer is _____

(ii) Choose the correct answer

The contribution of growth in capital to growth in income

[ ] 6.09340%
[ ] 3.17724%
[ ] 0.02302%
[ ] 0.00103%
none of the above, the correct answer is _____

(iii) Choose the correct answer

The major source of growth in income is

[ ] growth in capital
[ ] growth in labor
[ ] growth in total factor productivity growth
none of the above, the correct answer is _____

(iv) Another country Competeme is currently about at the same level of development as Imagineme, but has been growing its GNP at a faster rate of 7.54 % per year. The country Competeme has the the total factor productivity growth rate of 1.25%, contribution of growth in labor as 1.11% and the contribution of grwoth in capital as 5.18%. In the light of higher growth performance of Competeme, you would like identify a source of growth to focus your policies on. Is it growth in capital, labor or total factor productivity? Suggest at least three government policies that will achive higher growth in the factor that you identify.