Econ 333: Development Economics
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Study Guide 2 for Mid-term Exam (written by jenny Shea)

These are extra notes for your exam. Some of these questions are there in the Guide for Mid-term exam. It does not have any material on income distribution, which is also part of your exam. The best strategy is to look at the answer-key for the homework problem sets, and supplement those answers with the notes contained here.

These notes are based on the answers written by a student from one of the past years.

1. **Understand the structure of less developed countries. Comment on the similarities of the characteristics among the countries within the same income group and main differences in the characteristics between income groups.**

   The similarities of characteristics of developing countries include:
   (1) Low quality of life: low incomes, high inequality, poor health resulting in high infant mortality and low life expectancy, low literacy, especially female literacy.
   (2) High percentage of population in the agricultural sector in which much of the labor is under utilized and labor is low productive.
   (3) High rates of population growth and dependency burdens
   (4) Under developed markets, infrastructure, and lack of social insurance to provide insurance against health, old-age disability, and unemployment. Legal system is inadequate to enforce contracts at a reduced transaction costs. Under developed credit and financial markets. Leaving much of these functions to be performed in family and informal institutions.
   (5) Significant dependence on agricultural production and primary product exports.
   (6) Dominance, dependence and vulnerability in international relations.

   It must be noted, however, that these are broad generalizations. There are exceptions to almost all the features listed. i.e. Sri Lanka, is a developing (lower middle income) country with high levels of education, health, and low population growth. Some Arab and African countries are wealthier, but have low human development levels. Unemployment also can be present in high income countries (e.g. Europe). Weakenss in international relations also has exceptions. i.e. there is no doubt that China and India wield more influence than Luxembourgand, Finland.

   The main difference between middle and high income countries is the large difference in income. These two groups are quite similar in terms of basic human development indicators and the structure of the economy. Middle income countries are also distinguished by high inequality. The single most important characteristic of the lowest income group is the very low level of human development.

2. **Understand the problems associated with developing a good measure of development and living standards.**

(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

Per capita income is an average measure of income in an economy. The average value of income does not give us a sense of the quality of life of the people in that country. Suppose 90% of the people learn nothing and are starving, and 10% of the people are like Bill Gates. Such a country, in spite of its widespread poverty and underdevelopment, will have a higher per capita income than a country where everyone gets their subsistence income. In addition, the per capita income is not directly related to the fruits of growth i.e. the quality of life. As stated previously, income is only a mean to an end. The end goal of development is a high quality of life. Certain Arab countries, for example, have a very high income level but are relatively low quality of life. Some other countries like Costa Rica, Cuba, etc., have low income but are relatively high quality of life.

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

- It ignores inequality (distribution of income)
- It measures only the means, but not the end goal (education, health, etc..) of development
- It doesn't account for purchasing power differences not captured by the market exchange rate
- It ignores non-market activities, which can be very large in developing countries (e.g. women's work at home, subsistence farming, etc..)

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

The market exchange rate is determined by the goods and services that are traded internationally. However, many goods and especially services are not traded. For example, labor intensive services such as haircuts, medical and legal services, college education, etc. are not traded much at all. Since most developing countries are labor abundant, these non-traded labor-intensive items are generally much cheaper in these countries (i.e. the law of one price doesn't hold due to high transportation costs). As a result, one can buy many more haircuts with a hundred dollars in India than in the U.S. This means that the true purchasing power (quality of life) in India is underestimated by the per capita income that uses the market exchange rate between dollars and rupees. When purchasing power is accounted for, the per capita income of developing countries is increased relative to that of richer countries such as the U.S.

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

- PQLI is an index that attempts to summarize three variables that indicate the basic level of human development. The three variables are live expectancy, adult literacy, and infant mortality. The index is a simple leverage of these three variables, but since they are in different units that can't be added directly. Each one is translated to a 0-100 index by

rescaling them such that 0 is the value of the worst country and 100 is the value of the best country in terms of that indicator.

- HDI is similar in these sense that it also tries to capture the quality of life dimension of development. However, it includes income as a variable in recognition of the fact that income by itself is a valuable component to the quality of life (it allows us to buy things that we like). In addition, education is measured by a weighted average of adult literacy and school enrollment.

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

- Development is the process by which people and countries achieve a higher quality of life. It is the process by which people who have low levels of health, education, life expectancy and a low quality of life (little leisure, entertainment, productivity, happiness, etc.) attempt to attain better living conditions where they are healthier, more educated, more productive and most importantly, happier. The development process involves the improvement in income by building up capital and labor and increasing productivity (economic growth), the transformation from rural agriculture to urban industry and service oriented economies (structural change) and the improvement of the physical and intellectual quality of life (education, health, cultures, etc.)

- We need a separate discipline of development economics because certain aspects of development are not studied in the context of developed economies. For example, the structural change and rural subsistence economies are a thing of the past in the development world, but still is at the heart of the problems faced by lower income countries. Issues such as why half the people are illiterate in India, why there is starvation in Sudan, and why more than 50% of the population in many countries are engaged in low productivity farming need the attention of a separate discipline of economics that takes into account the unique historical, social and institutional environment of developing countries.

7. (e) Suggest at least three government policies that may encourage one to save more.

- Increasing the interest rate
- Reducing income tax (increase disposable income)
- Increasing sales tax (reduces consumption)
- Stabilizing the investment climate (reduce risks, interest rate volatility, inflation, etc..)
- Encouraging foreign capital flows (relax capital controls etc..)

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

- Components of effective labor (E) are:
  - Number of hours of labor (L)
  - Productivity of each hour of labor (b)

  That is, E=bL

- Effective labor can be increased by increasing L or e

  Ways of increasing L
  - Encourage population growth (incentive to have kids, migration, etc..)
  - Rural to urban migration (e.g. two sector models)
  - Raising wages and benefits
  - Lowering unemployment benefits, welfare, etc..
  - Tax cuts (effect is not clear. Works only if the substitution effect dominates)
  - Improve labor force participation (better roads, public transportation, child care, etc..)

  Ways of increasing e
  - Improve education (invest in schools, etc..)
  - Improve job skills (on-the-job training)
  - Improve health care conditions
  - Introduce good work incentive schemes (bonuses, stock options, etc..)

7. (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 economy.

- Components of total capital investment in an economy
  - Private investment
  - Government investment
  - Foreign investment (net imports)

- Private capital can be mobilized by encouraging private savings. The government can also give private firm tax incentives to invest. Government investment can be improved by raising taxes or borrowing. But, government investment usually tends to crowd out private sector investment by raising interest rates. The third way of increasing investment is by attracting foreign capital, either as direct investment or as portfolio investment. This can be done by raising interest rates, lowering investment risks, or lowering the exchange rate.

7. (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.

- TFP includes technology, scale economies, management, etc..

- Government policies that address TFP growth include
  - Investment in basic science and management studies (universities)
  - Promoting research and development (tax incentives)
  - Strengthening intellectual property rights (patents)
  - Promoting competitiveness (trade policies, anti-trust laws, etc..)
  - Promoting international technology transfers (multi-nationals, collaborations)
  - Improving infrastructure (highways, ports, internet, telecommunications)

9. Examine table 1 and answer the following questions:

(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 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 the developed and developing countries.)

- In the developing country, Korea's large part of growth came from growth in labor. Reasons are:
  - Higher population growth
  - Structural change from agriculture to manufacturing (labor surplus was absorbed)
  - Large advances in human capital (education, health, skills)
- The developed countries cannot depend on labor growth because they have completed the demographic transition (low population growth) and the structural change (excess labor is absorbed already). In addition, the scope for improving human capital is also limited because health, education, etc.. is already very high.

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

The main source of growth in Japan was TFP growth. Policies in the U.S. can adopt to foster TFP growth include tax incentives to firms that invest in R&D, direct investment in research centers and universities, strengthening the patent system, increasing competitiveness (breaking up monopolies, reducing tariffs, etc..). The U.S. can also increase capital investment by encouraging savings, foreign capital flows, etc.. The scope for increasing labor is rather limited.

10. (b)Ways to increase the savings rate include:

- Lowering income tax, since S=s(Y-T)
- Increasing sales taxes (make consumption costly)
- Raise interest rates
- Capital gain tax breaks
- Improve tax collection, reduce government spending (increase government savings)

10. (c)Briefly provide the strength and weaknesses of Harrod-Domar view of economic development in the light of economic development processes of the concurrent less developed economies.

- **Strengths**
  - Highlights the importance of savings or investment and capital accumulation
  - Easy to understand and gives clear policy prescriptions

- **Weaknesses**

- Lack of empirical support, high savings rate doesn't always lead to high growth
- Too narrow view of growth: ignored labor, technology, and substitution of inputs, concern only with capital
- Ignores diminishing returns to capital, unrealistic production function

11. 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?

- The Harrod-Domar model assumes a one-sector economy, presumably the modern industrial sector. It focuses on capital accumulation but overlooks the process by which labor is incorporated in production.
- A particularly interesting issue in development is the transformation of labor from the agricultural to the modern sector. Lewis model explicitly studies this phenomena by arguing that the capital accumulation of the Harrod-Domar type (given a Leontief production function) can occur only if there is a large surplus of labor in the rural sector that can be transplanted in the modern sector.

- Lewis proposes a self-sustaining process of growth that is driven by the existence of surplus labor in the rural sector, which allows capitalists to reap profits (due to low wages) that are then reinvested in the modern sector creating a cycle of job creation and labor absorption as long as the labor surplus exists. Lewis model, as a result, explains the structural change in developing countries where labor has moved rapidly from agriculture to manufacturing and services.

- The problem of economic development is to understand the process how an underdeveloped economy characterized by predominate agriculture, low standard of living measured in terms per capita income and human development indicators is transformed into an industrialized economy characterized by predominate industrial and service sector and higher standard of living. Lewis model is one of the first models to explicitly model this development process.

- **Criticism?**

12. In the 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.

- In the Lewis model, industrialization and growth occur as long as there is a labor surplus in the rural sector.

- Higher population growth in country A leads to a larger labor surplus. Since the marginal product of this labor is zero, the average product in agriculture declines lowering the subsistence wage the industrial sector has to pay to absorb labor. This increases capitalist's profits and speeds up industrialization and growth. This kind of painless growth can occur in country A for longer because the labor surplus lasts longer. (One important point Lewis model ignores is that food production per capita declines with population growth, so there must be some kind of technological change in agriculture to sustain the increasing population).

- The conclusion of the Lewis model is that the country A with higher population growth has a higher rate of growth and industrialization. This of course is not consistent with the real world. All you have to do is look at countries like India, Pakistan, and Kenya on the one hand and Japan, U.S., and Singapore on the other.

12. In the 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?

- Free import of technology will slow down development of the Lewis type if this technology is labor saving, so that labor absorption slows down. Unrestricted investment abroad will also slow down development because capital flight will lead to a slow build up of domestic capital, the key factor in the Lewis type growth process.

- Government policies to restrict import of labor saving technology
  - Direct controls of technology flows
  - Tax incentives for the development of capital saving technology
  - Policies making wages more competitive (removing minimum wage, weak unions, etc..)

- Government policies to restrict capital flight
  - Direct capital controls (exchange controls, laws, etc..)
  - Taxes on capital outflows
  - Higher domestic interest rates
  - Policies to improve the domestic financial environment (low risks, stability, etc..)