

Name: _____
Spring 2015

Economics of Development
Exam 1

Total exam is 30 points. Each question is worth three points. Each sub question is worth an equal share of these three points.

1) Circle to indicate whether the statement is true or false.

Statement	Is the statement True or False?
Solow designed his model to explain the cross country evidence suggesting there is 'conditional convergence' across countries in income per capita over time.	True or False
Sen identifies one of the main themes of the first generation of development economics the mobilization of underemployed labor.	True or False
Neutral technological progress leaves unchanged the marginal rate of technical substitution for a given input bundle, but changes the amount of output produced using that input bundle.	True or False
Domar designed his model to understand long run growth dynamics in industrialized economies.	True or False
The Romer model explains technological progress as an outcome of the average economy-wide stock of capital.	True or False
The net value of remittances is recorded in the current account.	True or False
The "o-ring" model is based on there being strong substitutability of workers in modern production processes.	True or False
Upper middle income countries as defined by the World Bank are categorized as developing countries.	True or False

2) Solow model. Denote k as capital per worker on the x axis, output per worker is defined as $y = \alpha k^\beta$ on the y axis, α represents the stock of technological knowledge, β is the share of national income controlled by owners of capital, n is the population growth rate, δ is the depreciation rate, and s is the national savings rate.

a. Write out the utility maximization problem including the Markov state equation that is the constraint to the Solow model (called the Solow model in full in the notes).

b. How does this model explain long run continued growth in income per capita for an economy?

c. How could this model lead to a prediction of convergence in a cross country comparison?

- 3) There are four workers in the economy who differ in their labor quality as defined by their 'q' value. Q is defined on a scale of [0,1] with higher q being higher quality. Worker one has q=1, worker two has q=0.75, worker three has q=0.5, and worker four is q=0.25. Production takes place using two workers, with output of combining workers i and j defined by $y_{ij} = q_i * q_j$.

a) Fill in the following

Combination 1	Resulting output 1	Combination 2	Resulting output 2	Total output (1+2)
(1, 0.75)		(0.5, 0.25)		
(1, 0.5)		(0.75, 0.25)		
(1, 0.25)		(0.75, 0.5)		

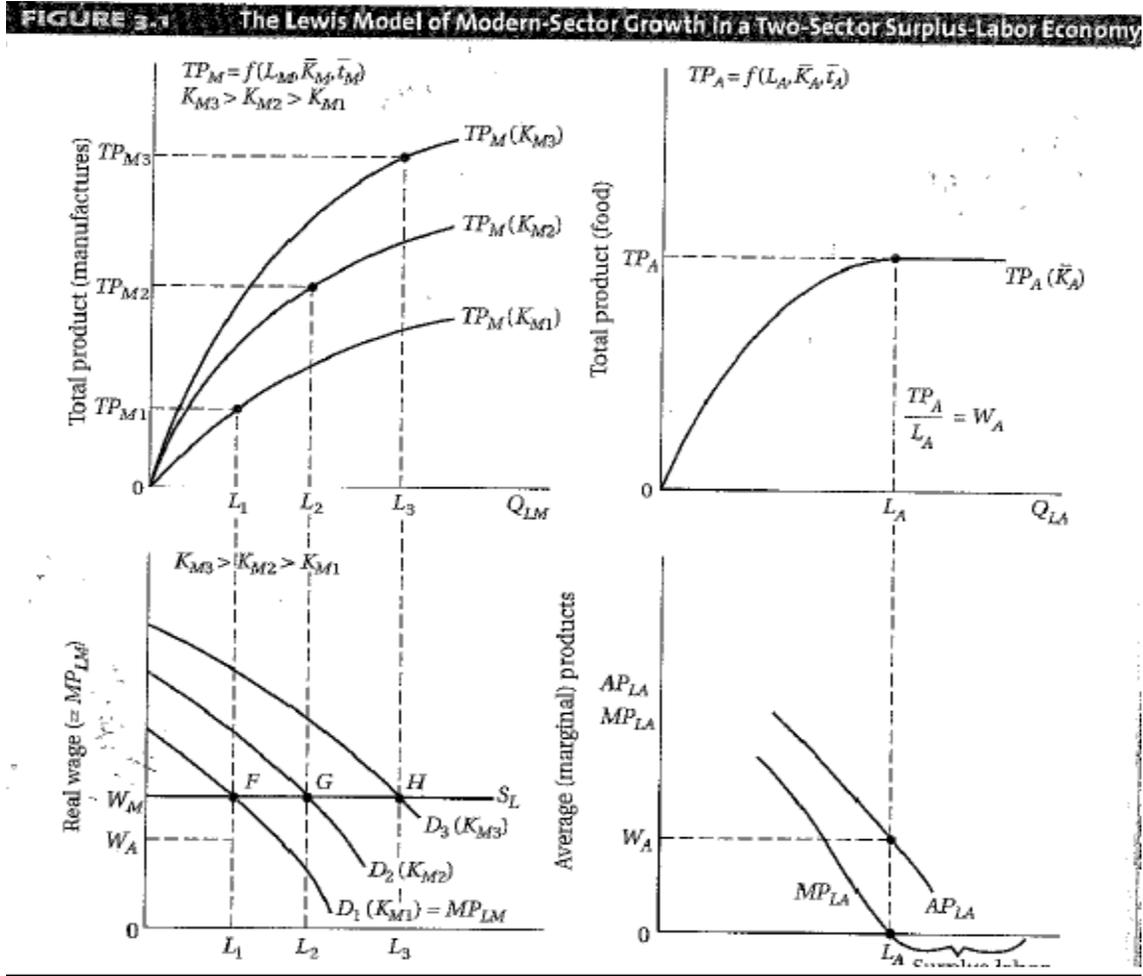
- b) Say production can be increased by paying for training that will increase the q of a given worker. The cost of this training, c, can be expressed in terms of output y. Training that costs c raises the skills of a worker as represented by a 0.15 increase in their q value. As you may recall from class, training will be given to the lower q worker in a given pair so you can just focus on that.

- i) If the cost of training is below what level of c will a firm decide to pay for increasing the skill level of the 0.75 worker in a (1, 0.75) pairing?

- ii) If the cost of training is 0.1 does it make sense to train the q=0.25 person in the (0.5, 0.25) pair if the training raises the skills of this worker by 0.15 to 0.40? Why or why not?

- iii) Contrast your answers to (i) and (ii) to illustrate why the O-ring theory can be used to explain a lack of 'convergence'.

- 4) Consider the following set of figures taken from the textbook and answer the questions below.



- What is the name usually given to this model?
- What qualitative change in the economy of a country is this model designed to describe?
- How does the model describe the economic forces that lead to the increase in the capital stock from K_{M1} to K_{M2} ?

5) In class, the approach behind the Poverty Reduction Strategy Papers (PRSP) were described as following four core principles: 1) Country driven, 2) Medium to long term in perspective, 3) Comprehensive and results-oriented, focusing on outcomes that will benefit the poor, and 4) Partnership oriented – involving coordinated participation of bilateral, multilateral, NGO, government, and civil society. Describe how each of these principles is a reaction to critiques of development policy as it had been practiced in the era prior to the PRSP era.

6) Define:

a. The Human Development Index.

b. Dumping.

c. Club convergence.

d. Transfer pricing.

7) Exchange rates.

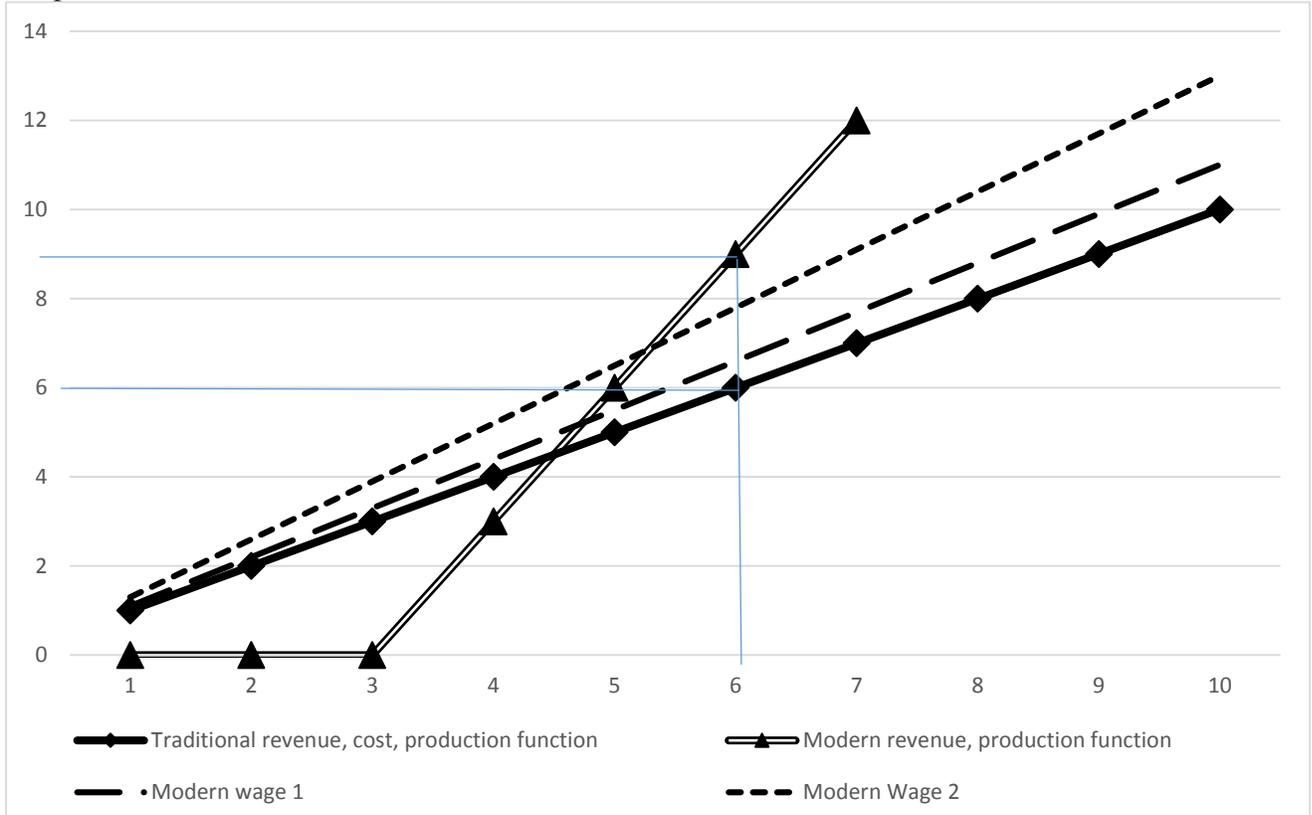
a. Illustrate on a supply and demand for foreign currency graph the impact of an overvalued official exchange rate.

b. In a country with an overvalued official exchange rate, are importers or exporters in the country likely to be harmed if the currency is devalued to the market determined exchange rate? Explain briefly.

c. How does an overvalued official exchange rate create an incentive for black market exchange of the currency?

8) More models

Output



The x-axis is labor in one of N sectors of the economy measured in hundreds. 600 workers are currently employed using traditional technology, and they make 600 units, where output is measured in hundreds as well. Each worker is paid 1 per unit of work and each unit of output produced sells for 1 in the traditional sector. The line with the diamond markers is the traditional revenue, cost, and production function. The double line is the modern revenue and production function. It costs the equivalent of 300 workers to bring in the technology, but each worker is more productive with the modern technology than the traditional technology. Possible cost curves reflecting different wages in the modern sector are represented by the dashed lines.

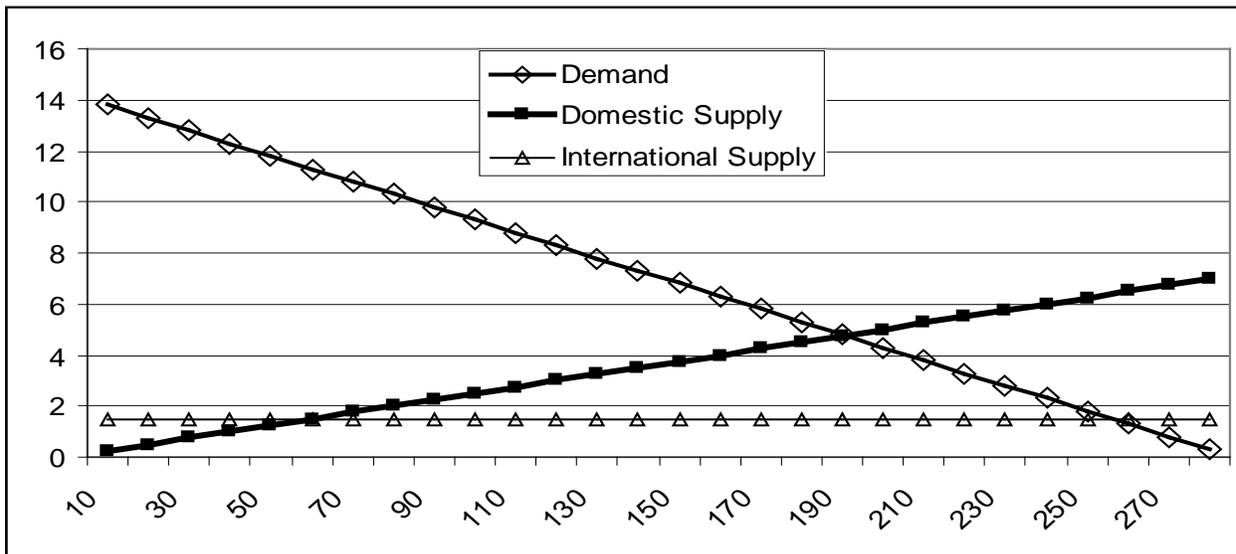
- a. What is the name of this model?
- b. Will coordination be needed to have all N sectors in the economy modernize if the modern wage is represented by modern wage 1? Why or why not?

- c. Will coordination be needed to have all N sectors of the economy modernize if the modern wage is represented by modern wage 2? Why or why not?
- d. What is the nature of the spillover benefit to the other $N-1$ sectors of the economy of the sector represented in the figure modernizing?

9) Import Substitution Industrialization

a. How could the Prebisch Singer hypothesis be used to justify an import substitution industrialization strategy?

b. Illustrate how this strategy works on the graph below. Place a tariff on the imported commodity such that the selling price with the tariff included is 3. Show the level of domestic supply, the level of international supply, and the tax revenue generated. Y axis is price, x axis is quantity. Contrast the domestic and international supply amounts under the tariff, under autarky and under fully open trade. Label all these points.



c. This policy is sometimes based on the idea that this is an 'infant industry'. Over time it is argued the industry will learn by doing and become more competitive. Describe what part of the graph above would change and how it would change if this argument is correct.

10) Maffegerte workers can produce 5 units of peanuts per unit of labor and 10 units of millet per unit of labor. Neighboring Kazingumu workers can produce 10 units of peanuts and 25 units of millet per unit of labor.

- d. Write out the production functions for each good in each of the two countries with units of output as a function of units of labor ($y=f(L)$ takes what form for each product in each country).

	Peanuts	Millet
Maffegerte		
Kazingumu		

- e. Identify the product in which each country has a comparative advantage and explain why this is the product in which they have a comparative advantage.

- f. If there are 100 laborers in Maffegerte and 100 in Kazingumu, describe the level of production of each commodity in each country in autarky if each country divides up their labor force with half of the work force allocated to each commodity.

	Peanuts	Millet
Maffegerte		
Kazingumu		
TOTAL		

- g. Illustrate by moving 20 of Maffegerte's workers and 9 of Kazingumu's workers to the commodity for which they have comparative advantage how it is possible to increase total production of the two goods without using any new resources.

	Peanuts	Millet
Maffegerte		
Kazingumu		
NEW TOTAL		

- h. Illustrate how Maffegerte and Kazingumu can both be better off than they were in autarky if they trade 95 units of peanuts for 205 units of millet.

	Peanuts	Millet
Maffegerte		
Kazingumu		
NEW TOTAL		