Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Economics of Development

Spring 2018 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?** |
| The Harrod Domar model assumes there are diminishing marginal returns to capital in the production of output. | True or False |
| Sen identifies one of the main themes of the first generation of development economics the effort to endogenize total factor productivity growth. | 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 |
| According to the theory of comparative advantage, every country has to have a comparative advantage in the production of at least one commodity. | True or False |
| The ‘Prebisch-Singer’ hypothesis is based on the argument that the income elasticity of demand for manufactured goods is lower than the income elasticity of demand for primary products. | True or False |
| A ‘steady state’ outcome in a dynamic model is a type of equilibrium that is characterized by there being no force internal to the model that leads to further change in the state variables. | 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 |
| The value of exports of goods and services is a component of the current account. | True or False |

2) Growth models

* 1. Contrast the functional form of the Solow model with that of the Romer model in either formulas or words describing the specific formulas.

* 1. Describe the nature of the spillover in the Romer model and why this particular specification can be used to explain a failure to find unconditional convergence.
  2. What part of the Solow model does the Romer model endogenize? How?

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=0.50, and worker four is q=0.25. Production takes place using two workers, with output of combining workers i and j defined by .

a) Fill in the following

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Combination 1 | Resulting output 1 | Combination 2 | Resulting output 2 | Total output (1+2) |
| (1, 0.75) |  | (0.50, 0.25) |  |  |
| (1, 0.50) |  | (0.75, 0.25) |  |  |
| (1, 0.25) |  | (0.75, 0.50) |  |  |

1. 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.
2. 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?
3. If the cost of training is 0.1 does it make sense to train the q=0.25 person in the (0.50, 0.25) pair if the training raises the skills of this worker by 0.15 to 0.40? Why or why not?
4. Contrast your answers to (i) and (ii) to illustrate why the O-ring theory can be used to explain a lack of ‘convergence’.

4) Big Push Model.

Output

MW1

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 modern 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.

1. 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?
2. 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?
3. 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?

5) Exchange Rates

a. Illustrate on a supply and demand graph (supply and demand for foreign currency, price in domestic currency) an overvalued currency.

b. If this currency is devalued, will the prices of exports from the country increase or decrease in world markets? Why?

c. Will devaluation be more likely to increase or decrease the current account balance? Why?

6) Growth models

1. How do you increase the growth rate of an economy according to the Harrod Domar model?
2. Describe Solow’s critique of this explanation.
3. Illustrate using graphs how Solow contrasts income growth from technological innovation with that which results from an increased savings rate.

7) Maxwellia workers can produce 10 units of beans per unit of labor and 16 units of millet per unit of labor. Neighboring Eggersstan workers can produce 9 units of beans and 8 units of millet per unit of labor.

* 1. If there are 100 laborers in Maxwellia and 100 in Eggersstan, 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.

|  |  |  |
| --- | --- | --- |
|  | Beans | Millet |
| Maxwellia |  |  |
| Eggersstan |  |  |
| TOTAL |  |  |

* 1. Identify the crop in which each country has a comparative advantage.
  2. Illustrate by moving 3 of Maxwellia’s workers and 5 of Eggersttan’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.

|  |  |  |
| --- | --- | --- |
|  | Beans | Millet |
| Maxwellia |  |  |
| Eggersstan |  |  |
| NEW TOTAL |  |  |

d. After specializing in the commodity in which each country has comparative advantage identify a way to exchange 32 units of beans for 42 units of millet from the country having a comparative advantage to the other.

|  |  |  |
| --- | --- | --- |
|  | Beans | Millet |
| Maxwellia |  |  |
| Eggersstan |  |  |
| NEW TOTAL |  |  |

1. Illustrate the following:
   1. Place a tariff on the imported commodity such that the selling price with the tariff is higher than the international price but less than the domestic price if no imports are allowed. Show the level of domestic supply, the level of international supply, and the tax revenue generated. Contrast the autarky outcome, the open market outcome, and the tariff outcome. Y axis is price, x axis is quantity.

* 1. The tariff is proposed as a way to develop a domestic manufacturing industry that will become more efficient as the domestic industry ‘learns by doing’. What would ‘learning by doing’ look like on your graph to (a) – what part of the graph would change over time? You can verbally describe the change or draw the change.
  2. Explain how the promise by government to remove the tariff after 10 years and the industry has improved efficiency in the sense of your answer to (b) potentially illustrates “the commitment problem”.

1. Consider the following set of figures taken from the textbook and answer the questions below.



1. What is the name of this model and what qualitative / structural change in the economy of a country is this model designed to describe?
2. Where specifically does the money come from to invest such that the capital stock increases from KM1 to KM2? Shade in the area and describe why this area is profit.

10) Define:

* 1. The Human Development Index.
  2. Dumping.
  3. An “import substitution industrialization” strategy.
  4. Transfer pricing.

Work Page: