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

Spring 2022 Exam 1

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

 1) Exchange rates and trade strategy.

* 1. Illustrate on a supply and demand graph the impact of an overvalued domestic currency on the demand for US dollars where the price is units of domestic currency per dollar, and the supply and demand curves are of US dollars.
	2. Explain how an overvalued currency impacts importers and exporters differently.
1. Growth theories

a) In the graph, k is capital per worker on the x-axis, output per worker is defined as $y=∝k^{β}$ on the y-axis with α capturing total factor productivity and β the share of national income controlled by owners of capital, n is population growth rate, δ is the depreciation rate, and s is the savings rate. Draw lines and points on this figure to identify steady states in k and y for:

*1*) the baseline (α,s) as ($k\_{1}^{\*},y\_{1}^{\*})$,

*2*) after growth due to an increased savings rate (α,s’) as ($k\_{2}^{\*},y\_{2}^{\*})$, and

*3*) after growth from an increase in total factor productivity (α’,s) as ($k\_{3}^{\*},y\_{3}^{\*})$.

b) In class, we discussed the Harrod-Domar model and the Solow model created in reaction to Harrod Domar. Explain how they differ by explaining what each model proposes will lead to positive and potentially constant growth in national income.

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

|  |  |
| --- | --- |
| **Statement** | **Is the statement True or False?** |
| The Harrod Domar model specifies 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 importance of mobilization of underemployed labor. | True or False |
| Neutral technological progress leaves unchanged the marginal rate of technical substitution for a given input bundle on an isoquant. | 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 |
| Developing countries are defined as being in the lower and middle-income groups using the World Bank Atlas measure of GNI per capita. | True or False |
| Romer’s model specifies Decreasing Returns to Scale in the input bundle. | 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 |
| A dynamic model is needed when choices made today influence the choice set available in the future | True or False |

4) 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.

1. What is the name of this model?
2. 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?
3. 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?
4. 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) Hirschman.

* 1. What are forward linkages and backward linkages?
	2. How does the nature of forward and backward linkages support ‘industrialization’ being preferred to ‘agriculture’ in models of structural economic change in a developing country?

6) 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=0.8, worker three has q=0.6, and worker four is q=0.4. Production takes place using two workers, with output of combining workers i and j defined by . There are three ways we can arrange the workers, A, B, and C.

a) Fill in the following

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Arrangement | Pair One | Resulting output 1 | Pair Two | Resulting output 2 | Total output (1+2) |
| A | (1, 0.8) |  | (0.6, 0.4) |  |  |
| B | (1, 0.6) |  | (0.8, 0.4) |  |  |
| C | (1, 0.4) |  | (0.8, 0.6) |  |  |

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 0.1 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.

1. What is the maximum cost c a firm would be willing to pay for the training that will increase the skill level of the 0.8 worker in a (1, 0.8) pairing as measured by output y?
2. What is the maximum cost c a firm would be willing to pay for the training that will increase the skill level of the 0.4 worker in a (0.6, 0.4) pairing as measured by output y?
3. Contrast your answers to (b) and (c) to illustrate why the O-ring theory can be used to explain a lack of ‘convergence’.

 7) 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 closed economy / autarky outcome, the tariff outcome, and the open market outcome. Y axis is price, x axis is quantity.

1. Bobonia workers producers produce 30 cases of potato chips and 40 cases of computer chips per unit of labor. Workers in Ouaga can produce 20 cases of potato chips and 30 cases of computer chips per unit of labor.
	1. If there are 100 laborers in Bobonia and 100 in Ouaga, 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.

|  |  |  |
| --- | --- | --- |
|  | Potato Chips | Computer Chips |
| Bobonia |  |  |
| Ouaga |  |  |
| TOTAL |  |  |

* 1. 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.

Bobonia:

Ouaga:

* 1. Move 5 Bobonia workers to the commodity in which they have comparative advantage and 7 Ouaga workers to the commodity in which they have comparative advantage. What levels of each commodity are now produced in each country?

|  |  |  |
| --- | --- | --- |
|  | Potato Chips | Computer Chips |
| Bobonia |  |  |
| Ouaga |  |  |
| TOTAL |  |  |

* 1. Trade 145 potato chips from the country where potato chips have comparative advantage for 205 computer chips from the country where computer chips have comparative advantage. How much does each country have of each of the goods now?

|  |  |  |
| --- | --- | --- |
|  | Potato Chips | Computer Chips |
| Bobonia |  |  |
| Ouaga |  |  |
| TOTAL |  |  |

1. More Models!!!



* 1. What is the name of this model and what does it describe?
	2. What is the incentive for the workers in the sector represented in the right side of these figures to move to the sector on the left side of these figures?
	3. On the left side of this figure, identify where in this model are the funds to increase from $K\_{M1}$ to $K\_{M2}$ generated.
1. International Issues
	1. Describe the roles of the 1973 and 1979 oil price increases the debt crisis of the 1980s.
	2. What is an infant industry / import substitution industrialization strategy?
	3. How was “Trade Openness” specified in the Rodrik et al. article *Institutions Rule*.

Work Page