Midterm Exam

EC 390 - Development Economics

Fall 2025

Give every question your best attempt.
Best of luck.
You got this!

Name: ANSWER KEY 95#: _____

The maximum amount of points on this exam is 100 points. You have a total of 1h 20min (80 minutes) to complete the exam, unless otherwise noted. The only items allowed on your desk at any time are a pen and/or pencil, scratch paper, a 3x5 note card, and a calculator. Everything else must be stored in your bag underneath your desk. Any form of cheating will result on a zero on the exam.

There are three sections to be completed:

- **Multiple Choice:** 10 Questions
- **Short Answer Questions:** 2 Questions
- **Multi-Part Analysis Questions:** 1 Question (5 parts)

Point totals and question specific instructions are listed for each section. Please ask for clarification if a question is not clear to you.

The exam is a total of 10 pages. There are 8 pages of questions + 2 pages for scratch paper. **Please verify you have all 10 in your exam. If you do not, let me know immediately.**

Multiple Choice - 40 Points

Circle or "X" the answer you think most correctly answers the following questions. If you mark a choice and would like to change it, **clearly indicate which one is your correct answer**.

1. [4 points] Use the table below to calculate the **Gross National Income (GNI)** of Saint Kitts and Nevis

GDP and Incomes	
GDP	$5,000
Income Earned by **Residents Domestically**	$1,000
Income Earned by **Residents Abroad**	$3,000
Income Earned by **Non-Residents Domestically**	$1,000

A. $6,000

B. $4,000

C. $7,000

D. $9,000

2. [4 points] Let a basket of goods be defined as 1 Football, 2 Air Pumps, 1 Pair of Cleats, 2 Gallons of Gatorade. What is the **Purchasing Power Parity** between **Title Town** and **Loser City** ($PPP_{TitleTown,LoserCity}$)?

Item	Title Town	Loser City
1 Football	5.00	3.00
1 Pair of Cleats	20.00	8.00
1 Air Pump	2.00	3.00
1 Gallon of Gatorade	3.50	5.00

A. $36/27 = 1.33$

B. $16.5/17.5 = 0.94$

C. $27/36 = 0.75$

D. $17.5/16.5 = 1.06$

3. [4 points] Suppose that Chile follows the **Harrod-Domar** model of economic growth. What will happen to the growth rate of Chile if an earthquake strikes the country and their **capital efficiency falls**, assuming the **savings rate** does not change?

A. Growth rate ↑, because it now takes more capital to produce one unit of output

B. Growth rate ↓, because it now takes more cpaital to produce one unit of output

C. Growth rate does not change, because the savings rate does not change

D. Capital efficiency does not factor in the Harrod-Domar model

4. [4 points] If **absolute convergence** holds across countries, what does this imply about **relative convergence**?

   A. Poor countries grow faster only when they have similar structural characteristics to rich countries

   B. The ratio of income between poor and rich countries remains constant over time

   C. Rich countries grow at the same rate as poor countries, but from a higher base level

   D. Poor countries grow faster than rich countries, causing income differences to shrink

5. [4 points] Consider the **Two-Sector Lewis Model**. Assume that the agricultural (traditional) sector has surplus labor, and the industrial (modern) sector reinvests all profits. Suppose that **productivity in the agricultural sector rises due to technological improvements**.

   Which of the following statements best describes the dynamic effect of this productivity increase on the process of structural transformation?

   A. It slows the transfer of labor to the modern sector by raising the equilibrium subsistence wage, reducing the modern sector's profit rate

   B. It accelerates the transfer of labor to the modern sector because rural wages remain fixed while agricultural output rises

   C. It delays the Lewis turning point because higher agricultural productivity increases profits in the modern sector, sustaining capital accumulation

   D. It has no long-run effect on structural transformation since labor migration depends only on the savings rate in the modern sector

6. [4 points] Which of the following statements is correct?

   A. When there is perfect inequality in a country, the Lorenz Curve curve is a 45° line

   B. Gini coefficient of 1 for a country indicates perfect equality

   C. Gini coefficient of 0.5 for a country indicates perfect inequality

   D. None of the above

7. [4 points] Which of the following is **NOT** a characteristic of the **Developing world**?

   A. Developed Markets

   B. Adverse geography

   C. Lingering colonial impacts

   D. Greater social fractioning

8. [4 points] Lorelai values future payoffs more than Rory. This means:

   A. Lorelai has a higher discount rate than Rory

   B. Lorelai has a lower discount rate than Rory

   C. Lorelai and Rory have the same discount rate

   D. Rory is more wealthy than Lorelai

9. [4 points] In the article *"To Do With the Price of Fish"*, access to cellphones led to price stabilization in the market for fish because

   A. Cellphones led to a reduction in the number of fishermen, which increased the price of fish and led to higher profits

   B. Cellphones allowed fishermen to sell directly to customers, rather than sell their fish to intermediaries

   C. Fishermen sold their phones for better fishing equipment, which led to higher profits

   D. Cellphones allowed for fishermen to overcome a coordination failure

10. [4 points] A country has abundant foreign savings and low inflation. However, **private investment remains very low**. Data shows that: (1) Real interest rates are very high; (2) Firms report difficulty obtaining loans despite strong profitability; (3) Returns to education are low and unemployment among skilled workers is high.

    According to the growth diagnostics approach, which of the following is most likely the **binding constraint** to growth?

    A. Low human capital accumulation

    B. Macroeconomic instability

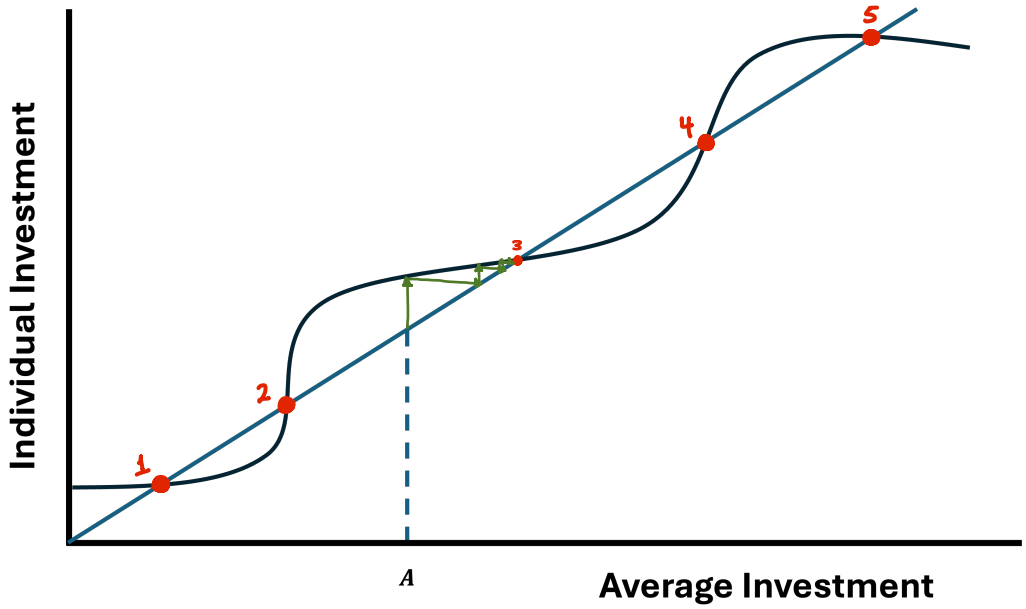
    C. Poor access to finance

    D. Low social returns to infrastructure

Short Answer - 20 points

Answer the following questions to the best of your ability. For full credit, show all of your work and clearly indicate your final solution for each party by circling the answer.

11. Consider the following graph



(a) [8 points] **Identify and label the equilibria points** on the graph. In the space below, **categorize each equilibrium as stable or unstable**.

There are 5 total equilibria. They all have to be identified & labeled in some form

1: Stable

2: Unstable

3: Stable

4: Unstable

5: Stable

(b) [2 points] On the graph, **draw the path that investment takes** (i.e. the dynamics of the investment) if average investment began at A and show where investment would eventually end up.

Steps toward equilibrium 3 on graph

12. In the O-Ring model, output is given by $BF(q_i, q_j) = q_i q_j$; where $0 \leq q_i, q_j \leq 1$ and $B > 0$ is some positive constant.

    (a) [3 points] If a firm has two workers with skills $q_1 = 0.8$ and $q_2 = 0.9$, compute its output when $B = 10$

$$B \times q_1 \cdot q_2$$

$$= 10 \times 0.8 \times 0.9$$

$$= 7.2$$

    (b) [3 points] Suppose the firm replaces the lower-skill worker with **two workers** of skill $q = 0.7$. B remains unchanged. What is the new output?

$$B \times q_1 \times q_2 \times q_3 \quad ; \quad q_1 = 0.7 \quad q_2 = 0.7$$

$$= 10 \times 0.7 \times 0.7 \times 0.9$$

$$= 4.41$$

    (c) [4 points] Based on your results, why does **quality, not quantity** matter for this model?

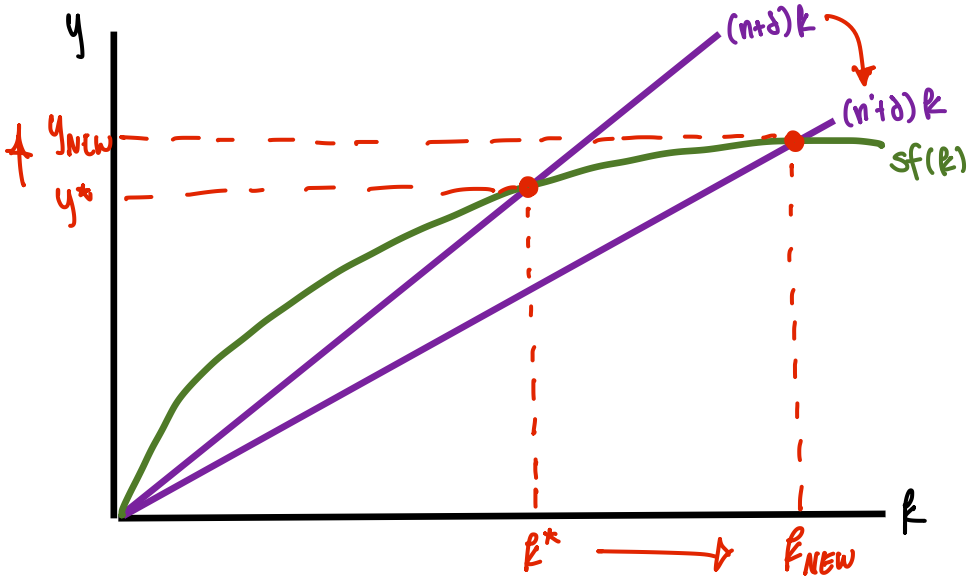
Anything that mentions higher quality workers produce higher quality output

Multi-Part Analysis - 40 points

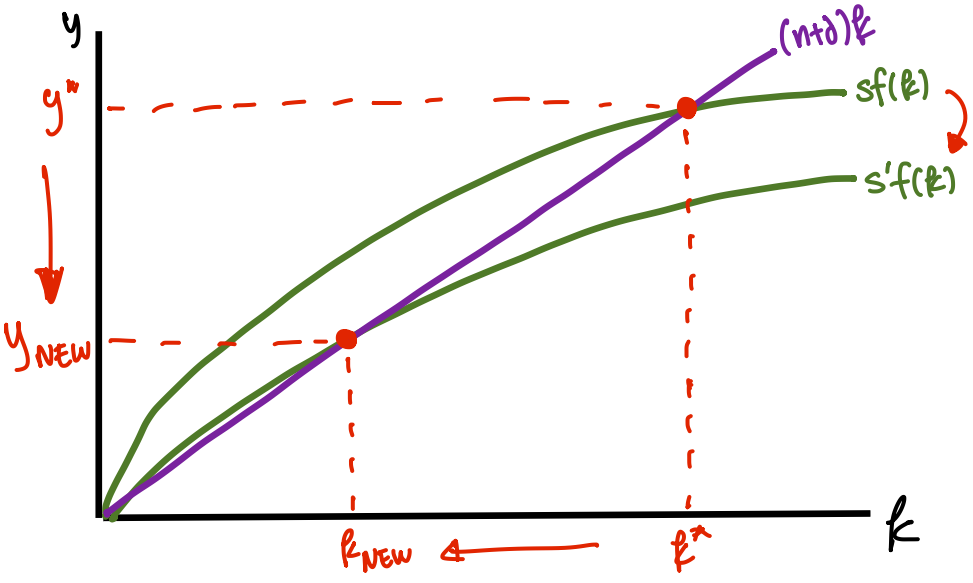
Answer the following questions to the best of your ability. For full credit, show all of your work and clearly indicate your final solution for each party by circling the answer.

13. You are hired by the government of Stars Hollow to analyze economic growth in the country. Taylor Doose, the government official that hired you, wants you to use the **Solow Model** of growth to predict what will occur in the economy under the following scenarios.

    (a) [5 points] What will happen to **capital per worker (k)** and **output per worker (y)** in population growth in Stars Hollow decreases? Show graphically.



    (b) [5 points] What will happen to **capital per worker (k)** and **output per worker (y)** if workers save less of their income? Show graphically.



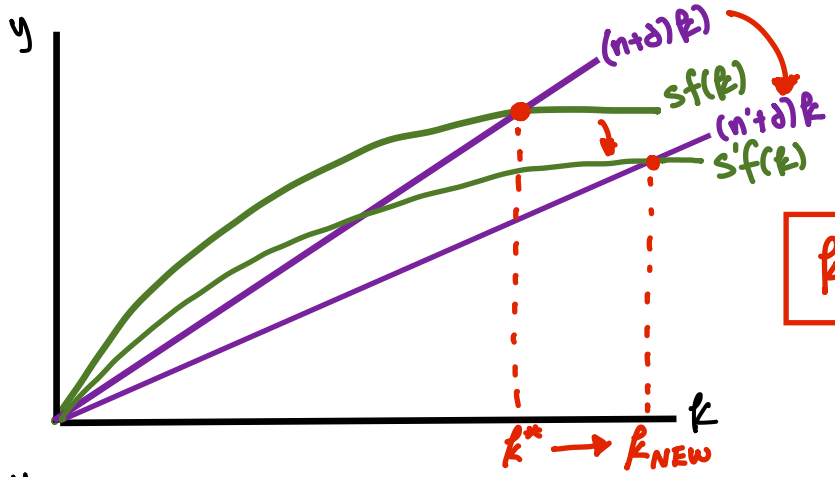
(c) [15 points] Stars Hollow is particularly concerned about one situation: What will happen to **capital per worker (k)** if *both* population growth decreases *AND* the savings rate decreases? Show graphically and explain your answer.

Hint: Draw a large graph to give yourself room to move the necessary curves.

Hint: There may be multiple cases to analyze - be sure to discuss each one.

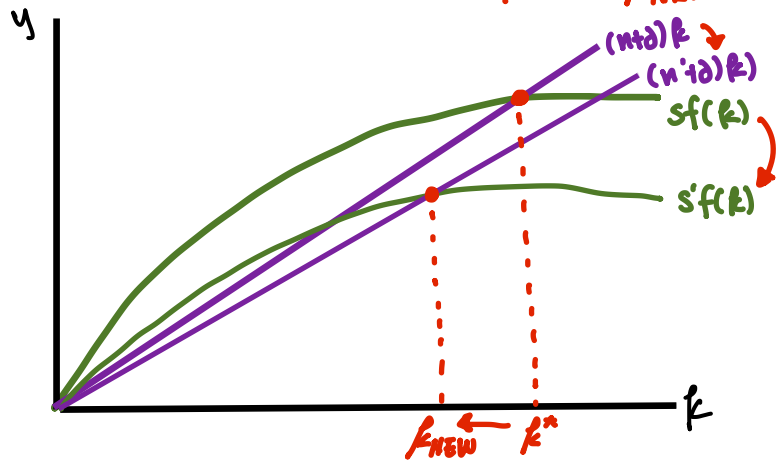
The cases depend on the magnitude of the changes ($n\downarrow$ & $s\downarrow$)

Let $n\downarrow > s\downarrow$



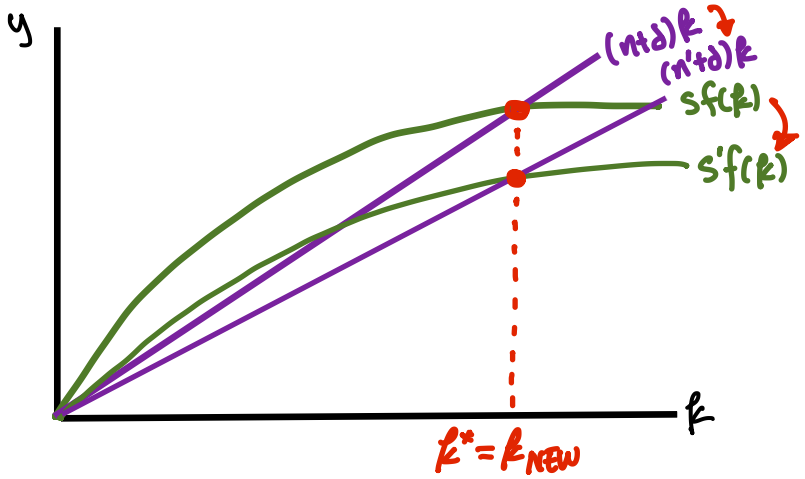
k increases

Let $s\downarrow > n\downarrow$



k decreases

Let $s\downarrow = n\downarrow$



k remains the same

(d) [5 points] Stars Hollow always competes with Hartford, a neighboring country. The Solow model predicts that countries with the **same savings rate and population growth** should converge to the same **income per worker (y)**. Why would it be the case that **convergence between** Stars Hollow and Hartford may not occur?

The Solow Model assumes away other characteristics of the economy that may clearly differentiate them.

Even with the same rates, they could be at different levels.

(e) [10 points] Models of economic growth that emphasize savings have been shown to consistently overestimate economic growth in developing countries. **Identify the key assumption(s) of savings**. Explain how the failure of the critical assumption(s) in these models result in an overestimate of economic growth.

The key assumption is savings = investments

Failure would mean that investments are only a portion of savings.
This would make these models overestimate how much investment exists.
Because investments → capital → growth, there is an overestimate of growth.