Spring 2019

Student name: _____

Student ID number: _____

ECON 133 "Global Inequality and Growth" Midterm

Instruction: Please write with a pen, not a pencil. Write your answers in the boxes: nothing outside of the boxes will be graded.

1. **True False Statement/Questions (10 points)**
   Explain your answer fully based on what has been discussed in lecture and in section. No more than 5 lines per question. All the credit is based on the explanation.

   (a) Global income inequality should always be measured using PPP exchange rates rather than market exchange rates.

   (b) Global inequality would be lower than today if average income was the same across countries.

(c) The equation $\alpha = r \times \beta$ is true whatever the elasticity of substitution between capital and labor.

(d) If income is Pareto-distributed with a Pareto coefficient a equal to 3, the average income above \$1 million is \$3 million.

(e) A country that receives positive net foreign income necessarily has a positive net foreign asset position.

2. **Exercise 1 (10 points)**

Consider the following wealth accumulation equation: $W_{t+1} = W_t + s_t Y_t$, where W_t is wealth in year t, s_t is the saving rate, and Y_t is national income. Assume that the growth rate of national income is g_t for period t.

(a) What assumption does this equation make about the sources of wealth accumulation? (1 point)

(b) Express β_{t+1}, the wealth-income ratio for period $t+1$, as a function of β_t, s_t and g_t. (2 points)

(c) Show that in steady state, $\beta = \frac{s}{g}$. (2 points)

(d) How useful is this relationship in understanding China's current saving rate? (1 point)

(e) Assume that in steady state, $s = 12\%$, $g = 1.5\%$, and the average rate of return to capital is $r = 4\%$. What are the implied values for β and α in steady state? Explain. (2 points)

(f) How has the wealth-income ratio β evolved in rich countries since 1970? In countries like France and the U.K., how do today's wealth-income ratios compare to the wealth-income ratios of the 18th-19th centuries? (2 points)

3. **Exercise 2 (10 points)**

Consider a CES production function $Y = F(L_s, L_u) = (A_s(L_s)^\rho + A_u(L_u)^\rho)^{\frac{1}{\rho}}$ with L_s high-skill labor, and L_u low-skill labor, A_u and A_s are two separate technology terms and ρ is a constant $\in (-\infty, 1)$.

(a) Give the definition of the skill premium (1 point).

(b) Show that in this model, the skill premium is equal to $\frac{A_s}{A_u}\left(\frac{L_u}{L_s}\right)^{1-\rho}$. (2 points)

(c) What does $\frac{A_s}{A_u}$ capture? How has this ratio evolved in the U.S. since the 1960s? (2 points)

(d) What does $\frac{L_s}{L_u}$ capture? How has it evolved in the U.S. since the 1960s? (2 points)

(e) In fact, $\rho = \frac{\sigma-1}{\sigma}$ where σ is the elasticity of substitution between skilled and unskilled labor. Discuss how changes in $\frac{L_u}{L_s}$ affect the skill premium depending on σ. (2 points)

(f) Some politicians have advocated in favor of making it harder for big corporations to merge. How would such policy affect the skill premium? (2 points)

Bonus (2 points): We tweeted a The Guardian article about the gender gap. What policy does the article discuss? Name an approach that has proven to be effective within the firms that improved their gender gap.