ECON 133 "Global Inequality and Growth"
Midterm

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

   (a) The observed disappearance of the gender gap in labor force participation suggests the absence of gender discrimination in the labor market.

   (b) In the U.S., low top marginal income tax rates can explain why top earners (e.g. CEOs) receive very high wages.

   (c) The Pareto coefficient a is $a = 1.7$ in country A and $a = 1.5$ in country B. Therefore, income is more concentrated at the top in country A than in country B.

   (d) The income Gini coefficient in the U.S. decreased from 40.62 in 2005 to 40.46 in 2010. Hence income inequality has decreased in the US during this period.

   (e) Labor market institutions have played a role in the rise of wage inequality in the US. (2 points)

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

Consider a closed economy with two inputs, L and K, and a Cobb-Douglas production function $Y = F(K, L) = K^{\alpha}L^{1-\alpha}$.

(a) Assume that that the rate of return to capital r and wage rate w are equal to the marginal products of capital and labor, respectively. Show that the share of income accruing to capital is α (that is, $Y_K = \alpha Y$). (2 points)

(b) Prove that $\alpha = r \times \beta$. Interpret what this relationship means. Is it relationship true only for Cobb-Douglas production functions? (2 points)

(c) What is the value of the elasticity of substitution σ for the Cobb-Douglas production function? Give an intuitive interpretation. (2 points)

(d) Does the Cobb-Douglas production function accord well with the observed trends in factor shares and wealth-to-income ratios seen since the mid-1970s? Explain your answer. (2 points)

(e) What are the main reasons why the capital share of income has increased since the mid-1970s? (2 points)

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

Consider a Cobb-Douglas production function $Y = F(L_s, L_u) = L_s^\theta L_u^{1-\theta}$ with L_s high-skill labor, and L_u low-skill labor.

(a) What does θ capture? How has θ evolved in the U.S.? (2 points)

(b) Express the skill premium (i.e., the relative wage of high-skill workers) as a function of θ, L_u, and L_s. Interpret. (2 points)

(c) What is the percentage change in the skill premium as a result of a 1 percent *decrease* in the relative supply of skills? (2 points)

(d) How has the skill premium evolved in the US since the 1960s? Does the education race model accurately predict what we see in the data? (2 points)

(e) In the 2016 Presidential election, candidate Bernie Sanders proposed to more than double the federal minimum wage from \$7.25 per hour to \$15 per hour. How would this affect the skill premium derived in part (b)? Based on the evidence discussed in class, what effects could such an increase have on unskilled workers' employment? (2 points)

BONUS (2 points): We tweeted a New York Times article by Tyler Cowen about assortative matching. What is this and how does it contribute to income inequality?