Economics 4021, Spring 2013, Mid-Term Exam

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Do any two of the following three questions in 70 minutes.

1 Question 1 (50%)

(a) A society consists of two people: a rich one with income x and a poor one with income $1 - x$ where $1/2 \leq x \leq 1$. Find an equation that specifies how the Gini coefficient for this society depends on the value of x, that is, a function $G(x)$ such that $G(1/2) = 0$ and $G(1) = 1$.

(b) List from the web (e.g. the World Bank website or elsewhere) 5 countries with very high Gini coefficients and 5 countries with very low ones. Do you see a connection between per capita GDP and income inequality?

2 Question 2 (50%)

A household that lives for two periods has after-tax income $y = 80$ in the first period, $y^f = 120$ in the second one and faces an interest rate equal to zero. The household wants to equalize consumption as much as possible. This desire is captured in the utility function $u = min(c, c^f)$ where $c = $ *current consumption* and $c^f = $ *future consumption*.

(a) Describe the household's optimal consumption plan assuming there are no borrowing constraints.

(b) Suppose now the household faces a borrowing limit of 10 units. How does that change (c, c^f)? What is the drop in household welfare?

(c) Suppose the household's pre-tax income is 100 in the first period and 150 in the second with the government collecting 50 units of income in taxes (20 from first period, 30 from the second period). Can you suggest a change in the tax system that will improve household welfare without lowering tax revenue?

3 Question 3 (50%)

(a) Derive a labor demand schedule for an economy with an aggregate production function $Y = 2(K \cdot N)^{1/2}$.

(b) Find the equilibrium value of the wage rate and employment if the capital stock is $K = 1$ and labor supply is $N^s = w = $ *wage rate*.

(c) If the government imposes a minimum wage $w = 2$, what will happen to employment? Will total wage income go up or down when we raise the minimum wage?

(d) What value of the minimum wage should the government choose if it wants to maximize total wage income?