Carnegie Mellon Tepper SCHOOL OF BUSINESS

73-240 – Practice Final

Sample Short Questions

Question 1

Consider the household that lives for two periods in an endowment economy. The household receives exogenous income y and y' in period 1 and 2 respectively. The household faces a proportional tax τ_y on its exogenous income in every period. Write down the household's lifetime budget constraint.

Question 2

State the conditions under which Ricardian Equivalence holds.

Question 3

Suppose the firm lives for two periods. Let the production function be given by $Y = zK^{\alpha}N^{1-\alpha}$. Show that optimal labor demand in period 1 is only a function of current period variables and parameters of the model.

Question 4

Consider the consumption-savings problem of a household who lives for 2 periods. Assume the Household has utility given by $U(c, c') = u(c) + \beta u(c')$. The household gets exogenous net income $y - t$ and $y' - t'$ in periods 1 and 2 respectively where t, t' are the lump-sum taxes. Suppose the interest rate rises. What can you say about the change in the household's c, c', s when the household is a borrower?

Question 5:

Consider the **2 period production economy**. Write down the definition of a competitive equilibrium for this economy. In your answer, state what are the exogenous variables and which are the endogenous variables.

Question 6:

Consider the goverment in a two period economy. Write down its first period budget constraint, second period budget constraint and lifetime budget constraint.

Question 7:

Consider the **2 period production economy**. Write down what aggregate output demand is equal to in terms of each of its components. Show analytically that aggregate output demand is decreasing in the interest rate.

Question 8:

Consider the two period household problem. Suppose the household has utility given by $U(c, c') = \ln(c) + \beta \ln(c')$. Assume that the household receives exogenous income every period and pays zero lump-sum taxes every period. Assume $\beta = 1/(1 + r)$. Suppose the household has a decreasing income stream, show whether optimal savings is positive or negative.

Sample Long Questions

Problem 1: Inheritance

Consider the household that lives for 2 periods in an endowment economy. Suppose households care about the future of their children and would like to leave behind an inheritance for them. Denote the bequests left for their children once the household dies as x. Let the household's utility be given by:

$$U(c, c', x) = \ln c + \beta \ln c' + \gamma \ln x$$

where $0 < \beta < 1$ and $0 < \gamma < 1$. Assume that there is a government that has to spend exogenous G and G' , and finances its lifetime government spending by only collecting a proportional inheritance tax, τ.

a Write down the period by period government budget constraints. Write down the lifetime government budget constraint

b Write down the household's lifetime budget constraint

c Solve for optimal c today given τ, y, y', r. If the inheritance tax is lowered, how does that affect consumption today?

Problem 2: Good news about the future

Consider the 2 period production economy. The stock market is typically seen as a leading indicator of the business cycle; market analysts typically view a strong stock market as indicative of good news about future business conditions in the future. Given this information, a student argues that a strong stock market can actually stimulate economic activity today. Using graphs, show what happens to the key economic variables, Y, C, I, N, w and r when z' increases. State, if any, which variables might have an ambiguous outcome. Given your answer, argue if the student's statement is right or wrong.