Intermediate Macroeconomics
Midterm Exam I (Closed-Book)
Undergraduate Economics Program, HUST
Tuesday, October/20/2015

Name: _____ **Student ID:**_____

1. (5'×5 =25 points) Consider a closed economy, the **Yujia Village**, that produces and consumes only apples and oranges. In 2000, it produced 500 apples and 1000 oranges, and the prices for apple and orange were ¥2 and ¥1, respectively. In 2014, the economy produced 1000 apples and 2000 oranges, and the prices became ¥5/apple and ¥5/orange. 2000 is taken as the base year.

(a) Calculate the economy's nominal GDP and the real GDP in 2014.

(b) What is the function of the DGP deflator, or say, what does it deflate? Calculate the economy's GDP deflator in 2014.

(c) Suppose the Villagers of the economy did not consume all their products in 2014, but used some preservative technology to keep 200 apples and 400 oranges in the warehouse and planned to enjoy them in the following year. How does this arrangement change your answers in (a)? Explain your answers.

(d) Suppose a typical household in the economy consumes exactly 20 apples and 40 oranges per year. Compute the Consumer Price Index (CPI) in 2014. Is it different from the GDP deflator? Why?

(e) It is known that the unemployment rate of the economy in 2014 was 10%, with a population size of 100 people and a labor force of 80 people. How many people were unemployed in 2014?

2. (5'+5'+5'+10'=25 points) Consider the Cobb-Douglas production function $F(K, L) = AK^{\alpha}L^{1-\alpha}$, with $\alpha \in (0, 1)$.

(a) The production function above exhibits constant returns to scale. Prove it.

(b) The production function above exhibits diminishing marginal product for both labor and capital. Prove it.

(c) If the real wage paid to each worker is the MPL, and the real rental price paid to each owner of capital equals the MPK, then there will be no Economic profit, or say, all the products are totally split between the labor income and the capital income. Prove it.

(d) Consider the model of the Loanable funds in Chapter 3, recall that the equilibrium is determined by $\bar{S} = I(r)$. Suppose the government decreases the tax rates, given other things unchanged, how will this affect the equilibrium real interest rate? Explain your answer using figures as in your textbook and give the economic intuitions behind it.

3. (5' × 5=25 points) The following questions are based on Chapter 4 of your textbook.

(a) Who are creating money in the economy? The central bank, or commercial banks, or both? Explain your answers.

(b) Explain the relationship between the money supply, the money multiplier, and the monetary base. Given the mathematical definition first and then explain the economic intuitions.

(c) Rumors about a computer virus attack on ATMs increase the amount of money people hold as currency rather than demand deposits. How does this affect the money supply?

(d) Suppose it is suddenly believed by the whole population that all banks are going bankrupt, and there is no insurance system for deposits at all. How does this affect the money supply?

(e) An economy has a monetary base of 1000 $1 bills. People hold equal amounts of currency and demand deposits. Banks hold 20 percent of deposits as reserves. What is the money supply?

4. (5'× 5=25 points) The following questions are based on Chapter 5 of your textbook.

(a) What is the quantity equation? According to the quantity theory of money, how does an inflation happen?

(b) Consider the quantity theory of money, Money supply grows at 2% per year, V is constant, real output grows at 5% per year, what is the inflation rate?

(c) What is **seigniorage**?

(d) Explain the **Fisher Effect**.

(e) Consider the equilibrium between the demand and supply of real money balances depicted by $\frac{M}{P} = L(r + E\pi, Y)$, where term $E\pi$ denotes people's expectation of the inflation rate in the following year, as defined in your textbook. Suppose the government announces that it will increase significantly the money supply next year, but hold the money supply this year the same as the preceding year, and the real output always remains the same. Will this announcement change the current year's inflation rate? Is your answer here different from the viewpoint of the quantity theory of money? Why?