ECO402: Intermediate Macroeconomics

Homework 3

Covers Chapters 4

Due: Thursday May 21, 2020 at 5pm

Monika Islam Khan

Department of Economics

University of Kentucky

Last Revised: May 19, 2020

Instructions: Please upload an answer document on Canvas by the due date above, preferably a PDF document or clear pictures of your handwritten assignment. For handwritten submissions, you are not required to print out the questions to submit the answers. You can just use a separate piece of paper.

Total Points: 27

1. Income and financial wealth are both examples of stock variables.(T/F)

2. The demand for money does not depend on the interest rate because only bonds earn interest.(T/F)

3. Suppose a person's yearly income in today's prices is $\$60,000$ and that their money demand function is given by:

$$M^d = P * Y(.35 - i)$$

   (a) What is their demand for money when the interest rate is 5%? 10%?

   (b) Explain how the interest rate affects money demand.

   (c) Suppose that the interest rate is 10% what happens to this person's demand for money if yearly income is reduced by 50%?

   (d) Suppose that the interest rate is 5% what happens to this person's demand for money if yearly income is reduced by 50%?

   (e) What is the effect of income on money demand? In percentage terms how does this effect depend on the interest rate?

4. The central bank can increase the supply of money by selling bonds in the market for bonds. (T/F)

5. The Federal Reserve can determine the money supply, but it cannot determine interest rates - not even the federal funds rate - because interest rates are determined in the financial sector. (T/F)

6. Bond prices and interest rates always move in opposite directions. (T/F)

7. Consider a bond that promises to pay \$100 in one year.

   (a) What is the interest rate on the bond if its price today is \$75, \$85? \$95?

   (b) What is the relation between the price of bonds and the interest rate?

   (c) If the interest rate is 8% what is the price of the bond today?

8. Suppose that money demand is given by:

$$M^D = PY(.25 - i)$$

   Where $PY = \$100$ and the nominal money supply of money is \$20.

   (a) What is the equilibrium interest rate?

   (b) If the Federal Reserve wants to increase i by 10 percentage points (e.g. from 2-12%) at what level should it set the supply of money?

9. Suppose that before ATMs and credit cards a person would go to the bank once every four days to withdraw all the money she needs for all four days and assume that she needs \$4 per day.

   (a) How much does this person withdraw each time she goes to the bank? How much money does this person hold each day of the four day cycle?

   (b) What is the average amount of money this person holds?

(c) Now suppose ATMs are now available and a person can withdraw money once every two days. What is your answer to part (a) now?

(d) What is your answer to part (b) now?

(e) Now credit cards exist. A person does not withdraw any money until the end of the four day period when she withdraws enough to pay for her credit card purchases. What is your answer to (a) now?

(f) What is your answer to (b) now?

(g) What do you think the effect of ATMs and credit cards has been on money demand?

10. Assuming that the public holds no currency, the required reserve ratio is 0.1, and that the demand for money is given by:

$$M^D = PY(.8 - 4i)$$

Initially the monetary base is \$100 billion and PY equals \$5 trillion.

(a) What is the demand for central bank money?

(b) Find the equilibrium interest rate by setting demand for central bank money equal to supply for central bank money.

(c) What is the overall supply of money? Does it equal the overall demand for money at the interest rate from part (b)?

(d) What is the impact on the interest rate if central bank money is increased to \$300 billion?

(e) If the overall money supply increases to \$3,000 billion what will be the impact on i?