



Banking Theory and Practice (HS 50011)

Department of Humanities and Social Sciences

Midterm Examination (Autumn 2015)

Answer question number 4 and 5 and any one from question number 1 to 3

1. Consider a two period model with utility function given by $u(c, c_f) = \log(c) + \beta \log(c_f)$, where c is current consumption, c_f is future consumption and $0 < \beta < 1$ is the discount factor. Suppose, current and future income are y and y_f respectively and interest rate is r .

- (a) Determine current and future consumption when borrowing and lending is not allowed. (1 mark)
- (b) Write down the budget constraint and draw it. (1 mark)
- (c) Show that, optimal current and future consumption when individual can lend and borrow at interest rate, r are $c^* = \frac{m}{1+\beta}$ and $c_f^* = \left(\frac{\beta}{1+\beta}\right)(1+r)m$, where m is the present discounted value of current and future income or permanent income. (2 marks)
- (d) Show that, present discounted value of consumption depends on permanent income, m (1 mark)
- (e) Argue that, borrowing and lending improves utility. (1 mark)
- (f) Show that, marginal propensity to consumption with respect to current income is a fraction. (1 mark)
- (g) Show that, as interest rate rises, current consumption rises and future consumption falls. (1 mark)
- (h) What happens to current and future consumption when discount rate rises? Can we say that, consumer is more patient when discount factor rise? Give justification. (2 marks)

2. Suppose, central bank involves in an Open Market Operation where it purchases government security from commercial bank.

- (a) Analyze what happens to the balance sheet of central bank and commercial bank. Also analyze its impact on reserves market money market and bond market when market clearing interest rate is between discount rate and interest rate on excess reserves. (5 marks)
- (b) Do the same when market clearing interest rate equals to the interest rate on excess reserves. (5 marks)

3. Terms Structure of Interest rate:

- (a) What is yield curve? Name the basic theories in the literature to analyze yield curve along with their basic assumptions. (3 marks)
- (b) Derive the fundamental equation of expectation theory that relates interest rate of a n period bond with short term interest rates. What is the demerits of expectation theory? (4 marks)
- (c) Write down the fundamental equation of liquidity premium theory that relates interest rate of a n period bond with short term interest rates. Briefly explain how liquidity premium theory handles the problems of the expectation theory. (3 marks)

4. Baumol – Tobin Model:

- (a) Derive the optimal number of trip and money demand under Baumol -Tobin model. Give a graphical representation of your analysis too. (7 marks)
- (b) Recently, RBI has given permission to different organization to open banks. Analyze the impact of such policy on optimal number of trip and money demand using Baumol -Tobin model. (3 marks)

5. Suppose money demand of an economy is given by, $M^d = P(500 + 0.2Y + 1000i)$, where, P is price level, Y is real GDP, i is nominal interest rate. Also assume total reserves is Rs. 8000 and required reserves is 0.1. There is no currency in circulation and currency deposit ratio is zero.

- (a) Calculate, nominal money supply and price level that equilibrate the money market when $Y = 1000$ and $i = 0.10$. Calculate velocity of money. (5 marks)
- (b) Calculate the price that equilibrates the money market when central bank purchase Rs. 8000 worth of security from commercial bank. What happens to velocity of money? Give economic intuition to your result. (5 marks)