Problem Set 8

HE1002 T1 Group 8

Q1. During the heavy Christmas shopping season, sales of retail stores, online sales firms, and other merchants rise significantly.

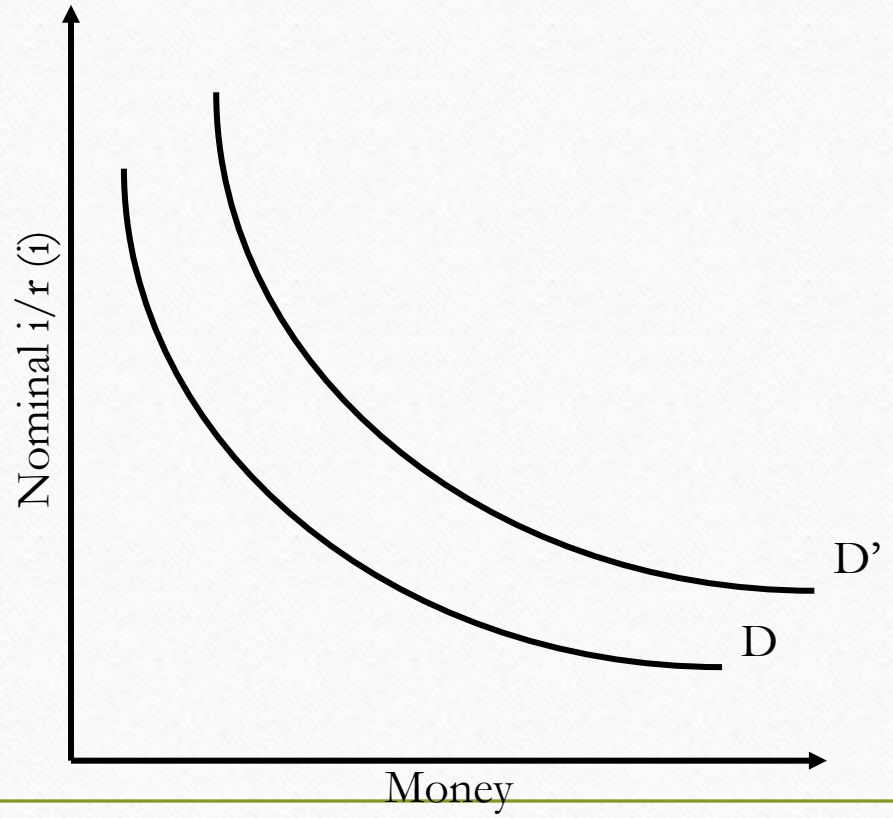
(a) What would you expect to happen to the money demand curve during the Christmas season? Show graphically.

(b) If the Fed took no action, what would happen to nominal interest rates around Christmas?

(c) In fact, nominal interest rates do not change significantly in the fourth quarter of the year, due to deliberate Fed policy. Explain and show graphically how the Fed can ensure that nominal interest rates remain stable around Christmas.

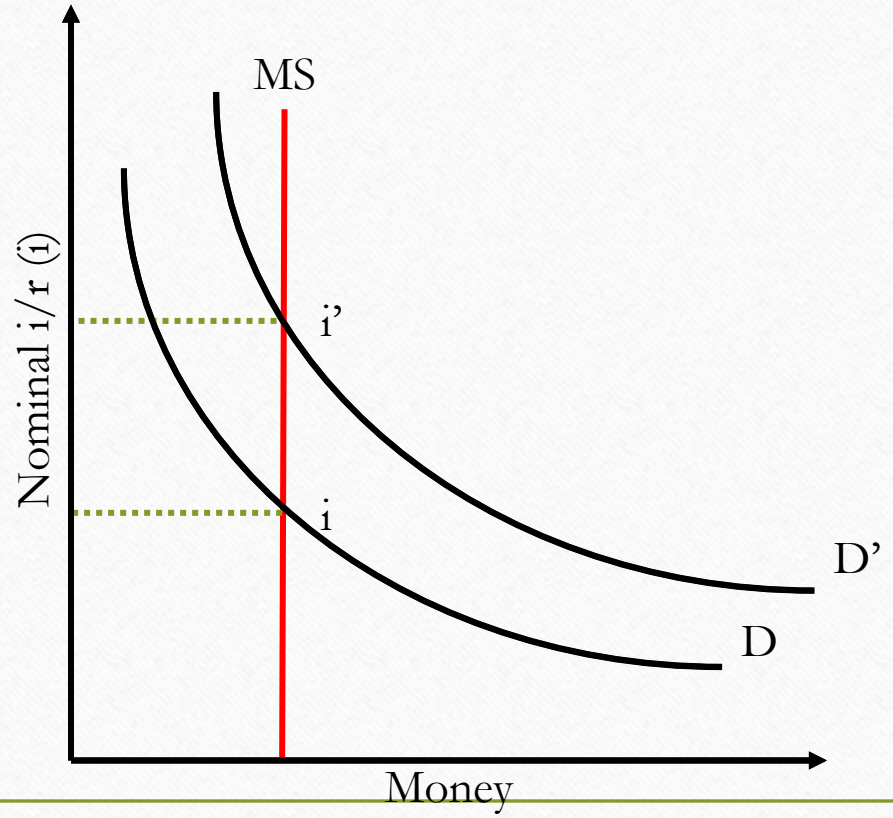
(a) What would you expect to happen to the money demand curve during the Christmas season? Show graphically.

- People demand more money for transaction
- Money demand curve shifts to the right
- D to D’



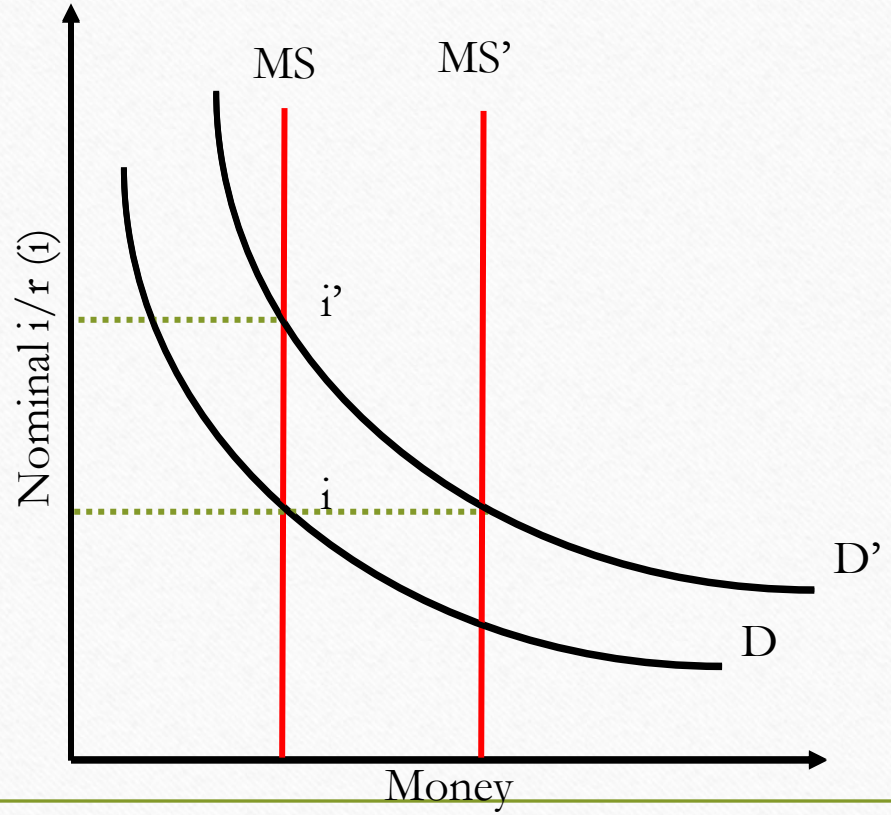
(b) If the Fed took no action, what would happen to nominal interest rates around Christmas?

- No action → no change in money supply, as given by MS
- Nominal i/r will rise from i to i'



(c) In fact, nominal interest rates do not change significantly in the fourth quarter of the year, due to deliberate Fed policy. Explain and show graphically how the Fed can ensure that nominal interest rates remain stable around Christmas.

- Fed can provide increase in MS
- Money supply shift to the right, increasing from MS to MS'
- MS just offset effect of rightwards demand shift



Q2. How would you expect each of the following to affect the economywide demand for U.S. money? Explain.

(a) Competition among brokers forces down the commission charge for selling holdings of bonds or stocks.
(b) Grocery stores begin to accept credit cards in payment.
(c) Financial investors become concerned about increasing riskiness of stocks.

(a) Competition among brokers forces down the commission charge for selling holdings of bonds or stocks.

- Lower cost of converting bonds or stocks into cash, vice versa
- Relatively cheaper to sell asset to obtain money
- Hold less money ➔ decline in demand for money

(b) Grocery stores begin to accept credit cards in payment.

- Pay for grocery through credit card
- Reduce the amount of cash people need to hold on hand for immediate transaction purposes
- Only need to pay credit card once a month
- Reduce demand for money

(c) Financial investors become concerned about increasing riskiness of stocks.

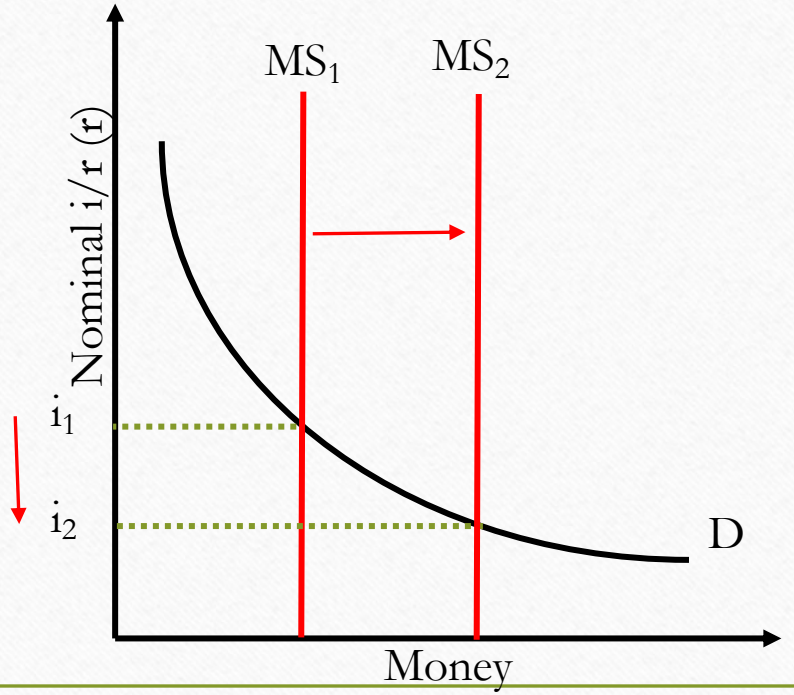
- Demand for riskier assets decreases
- Increase demand for safer assets that will not fluctuate as much, eg. cash
- Demand for money increases

Q3 Using a supply and demand graph of the market for money, show the effects on the nominal interest rate if the Fed takes the following monetary policy actions:

(a) The Fed lowers the discount rate and increases discount lending.
(b) The Fed increases the reserve requirements for commercial banks.
(c) The Fed conducts open-market sales of government bonds to the public.
(d) The Fed decreases the reserve requirements for commercial banks.

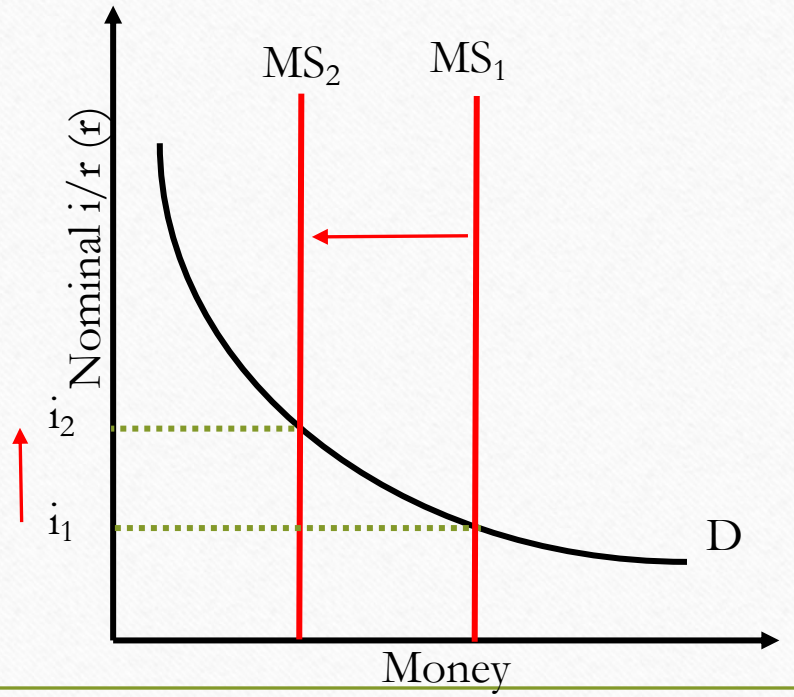
3(a) The Fed lowers the discount rate and increases discount lending.

- Discount window lending means that the government will directly lend to commercial banks at a lower rate.
- Increase in excess bank reserves
- Increases in bank loans to public
- Increase in redeposits
- Increase in money supply
- Lowering the cost of borrowing money
- Lowering the nominal interest rate.



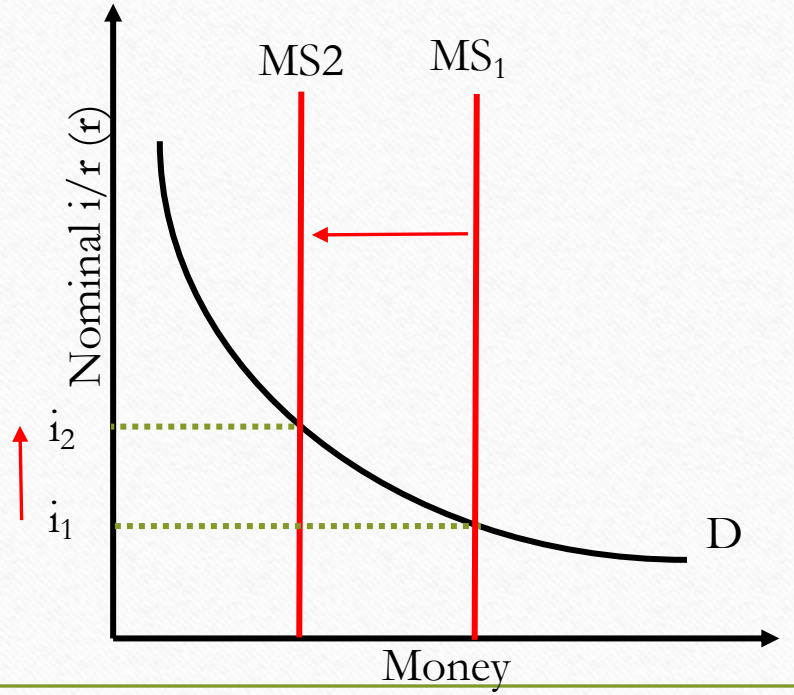
3(b) The Fed increases the reserve requirements for commercial banks.

- Increase in reserve requirements means that commercial banks will have to increase their bank reserves.
- Less deposits available for borrowing
- Decrease in bank loans to public
- Decrease in redeposits
- Decrease in money supply
- Increase cost of borrowing
- Increase nominal interest rates



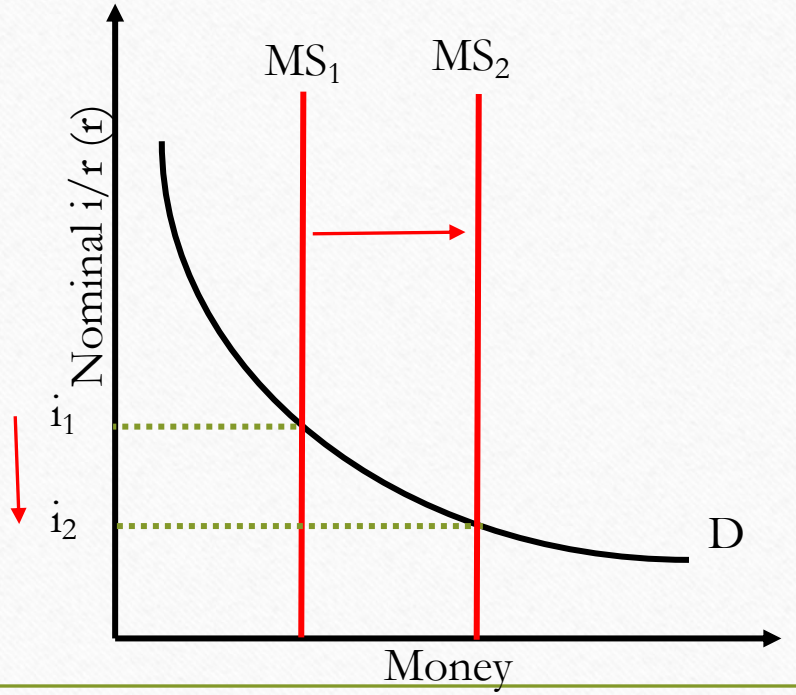
3(c) The Fed conducts open-market sales of government bonds to the public.

- Fed sells government bonds in the secondary bond market
- Money enters the Fed's vault
- Decrease in bank loans to public
- Decrease in redeposits
- Decreases money supply
- Increases nominal interest rates



3(d) The Fed decreases the reserve requirements for commercial banks.

- Decrease reserve requirement (rdr)
- Increase in excess bank reserves
- Increases in bank loans to public
- Increase in redeposits
- Increase in money supply
- Lowering the cost of borrowing money
- Lowering the nominal interest rate.



Q.4

In August 2015, the Chinese central bank decided to reduce China's required reserve-deposit ratio from 18.5 percent to 18 percent. Assuming no change in the amount of cash held by the Chinese public, that commercial banks lend all their excess reserves, and that bank reserves was a constant 4,329 billion yuan both before and after the change, compute the maximum change in Chinese banks deposits as a consequence of the change in the reserve-deposit ratio.

Ans.4

The formula to determine money supply is given by the sum of cash held by the public and total deposits. According to the question, cash held by the public is constant and amount of bank reserves do not change after the reserve-deposit ratio is reduced. So, only change in total deposits will take place which is calculated by bank reserves/reserve deposit ratio.

Total Deposits (Before) = Reserves/ Reserves-Deposit Ratio (Before)

= 4,329 billion yuan/0.185

= 23,400 billion yuan approx.

Total Deposits (After) = Reserves/ Reserves-Deposit Ratio (After)

= 4,329 billion yuan/0.18

= 24,050 billion yuan approx.

Change in deposits = Total Deposits (After) - Total Deposits (Before)

= 24,050 billion yuan – 23,400 billion yuan

= 650 billion yuan

In conclusion, the maximum change in Chinese banks' deposits as a consequence of the change in the reserve-deposit ratio will be approximately 650 billion yuan.

Q.5

The Fed faces a recessionary gap. How would you expect it to respond? Explain step by step how its policy change is likely to affect the economy.

Ans. 5

The Fed is likely to respond to a recessionary gap with an expansionary monetary policy intended to stimulate aggregate expenditure.

1. The first step is an **open-market purchase** of government bonds, this increases the reserves with banks, giving them more lending capacity.
2. As a result, additional money can be put into circulation which is due to the lowered the nominal interest rate.
3. The lower nominal interest rate results in a lower real interest rate in the short run since inflation is slow to change.
4. The lower real interest rate stimulates both consumption expenditure by consumers and investment spending by firms, leading to an increase in aggregate expenditure.
5. Finally, the increase in aggregate expenditure raises short-run equilibrium output (at a faster rate than increase in aggregate expenditure) since output equals aggregate expenditure in the short run.

Q6. An economy is described by the following information:

$C = 2{,}600 + 0.8(Y - T) - 10{,}000r$

$Ip = 2{,}000 - 10{,}000r$

$G = 1{,}800$

$NX = 0$

$T = 3{,}000$

The real interest rate, expressed as a decimal, is 0.10 (that is, 10 percent)

(a) Find a numerical equation relating planned aggregate expenditure to output.

Formula for PAE

PAE = C+ I^P+G +NX

Subbing in the values previously provided

PAE = (2600+ 0.8(Y-T) -10000r) +(2000-10000r)+1800+0

PAE = 2600 +0.8(Y-3000)-10000r + 3800 –10000r

PAE = 6400 – 4400 + 0.8Y

PAE = 2000 + 0.8Y

(b) Using algebra, solve for short-run equilibrium output

Short- run equilibrium output is the level of output where Y=PAE or equivalently Y-PAE=0

Therefore

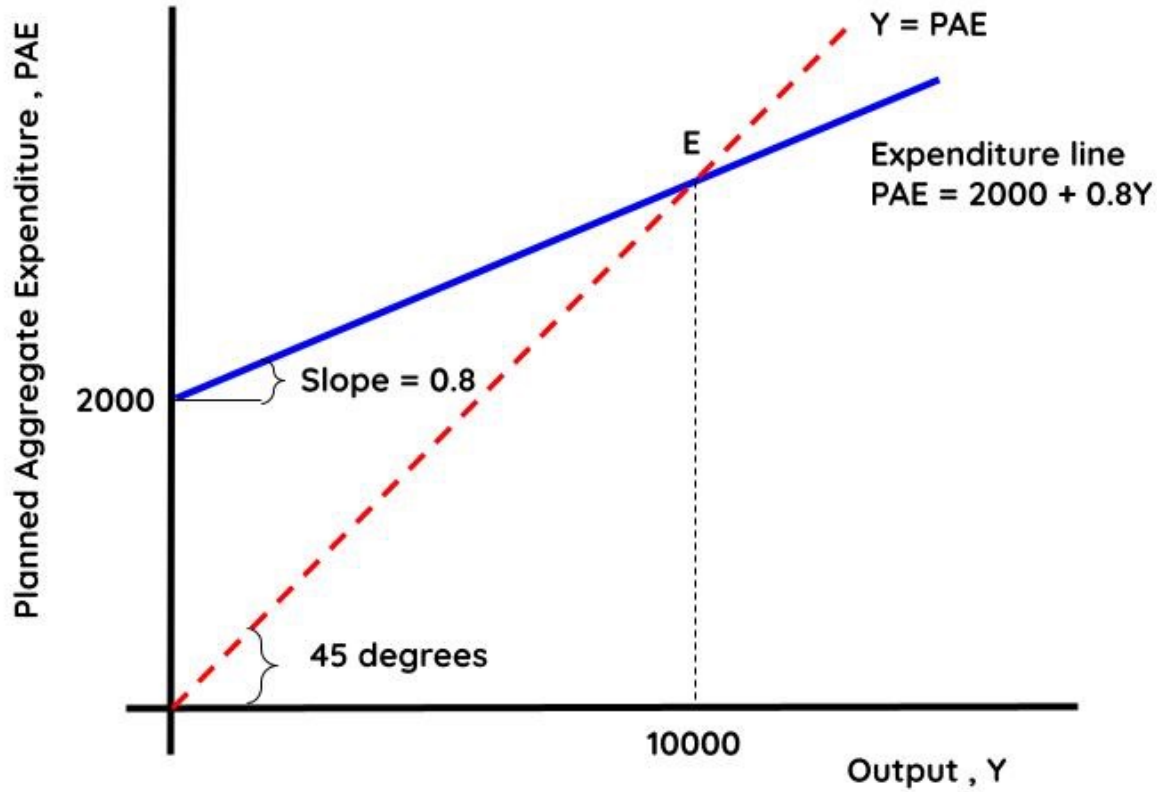
Y = PAE

Y = 2000 +0.8Y

0.2Y = 2000

Y = 10000

Show your result graphically using the Keynesian-cross diagram.



Q7. An economy is described by the following information:

$C = 14{,}400 + 0.5(Y - T) - 40{,}000r$

$I^P = 8{,}000 - 20{,}000r$

$G = 7{,}800$

$NX = 1{,}800$

$T = 8{,}000$

$Y^* = 40{,}000$

(a) Find a numerical equation relating planned aggregate expenditure to output and to the real interest rate

Planned aggregate expenditure (PAE) is given by:

PAE= C+I^P+G+ NX

PAE= [14,400+ 0.5(Y-8,000)-40,000r] + (8,000-20,000r) +7,800+ 1,800

PAE= 28,000- 60,000r + 0.5Y

(b) At what value should the Fed set the real interest rate to eliminate any output gap?

To determine the real interest rate that the Federal Reserve should set to bring the economy to equilibrium at full employment, Y, we need to find the real interest rate at which PAE= Y'.

$$40{,}000 = 28{,}000 - 60{,}000r + 0.5(40{,}000)$$
$$40{,}000 = 48{,}000 - 60{,}000r$$
$$-8{,}000 = -60{,}000r$$
$$r = 8{,}000/60{,}000 = 0.1333, \text{ or } 13.33\%$$

The Fed hence has to set the real interest rate at 13.33 percent to bring the economy to equilibrium at full employment.

Thank You !