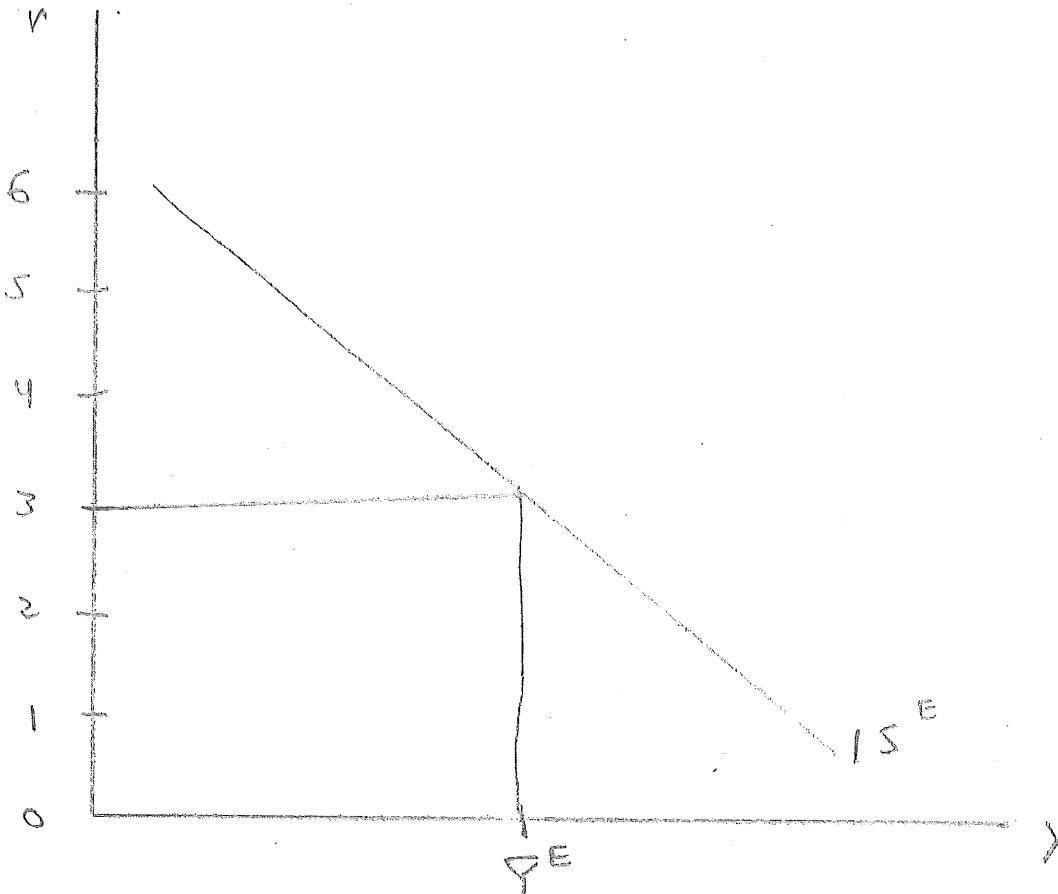


Econ 362, Macroeconomic Theory

Problem set on monetary policy when central bank sets  $r$ , not  $M$

For all the following, assume the Federal Reserve's inflation target  $\pi^T$  is 2%. The natural rate of unemployment or NAIRU  $u^n$  is 5%. The Fed's policy committee (the FOMC) operates by setting a target for the real interest rate, denoted  $r^T$ . Recall that  $r$  is what we use to denote a *real* interest rate, such that  $r = i - \pi^e$ . Thus,  $r^T$  denotes a target *real* interest rate.

1) Suppose that surveys show people in the economy expect future inflation to be 2% ( $\pi^e = 2$ ). The Fed's best forecast for the position of the IS curve is plotted below, along with its guess at the natural rate of output (potential output)  $\bar{Y}$ . On the vertical axis, mark the value the Fed will choose for  $r^T$ .



What will the nominal interest rate be?

$i = 3 + 2 = 5$

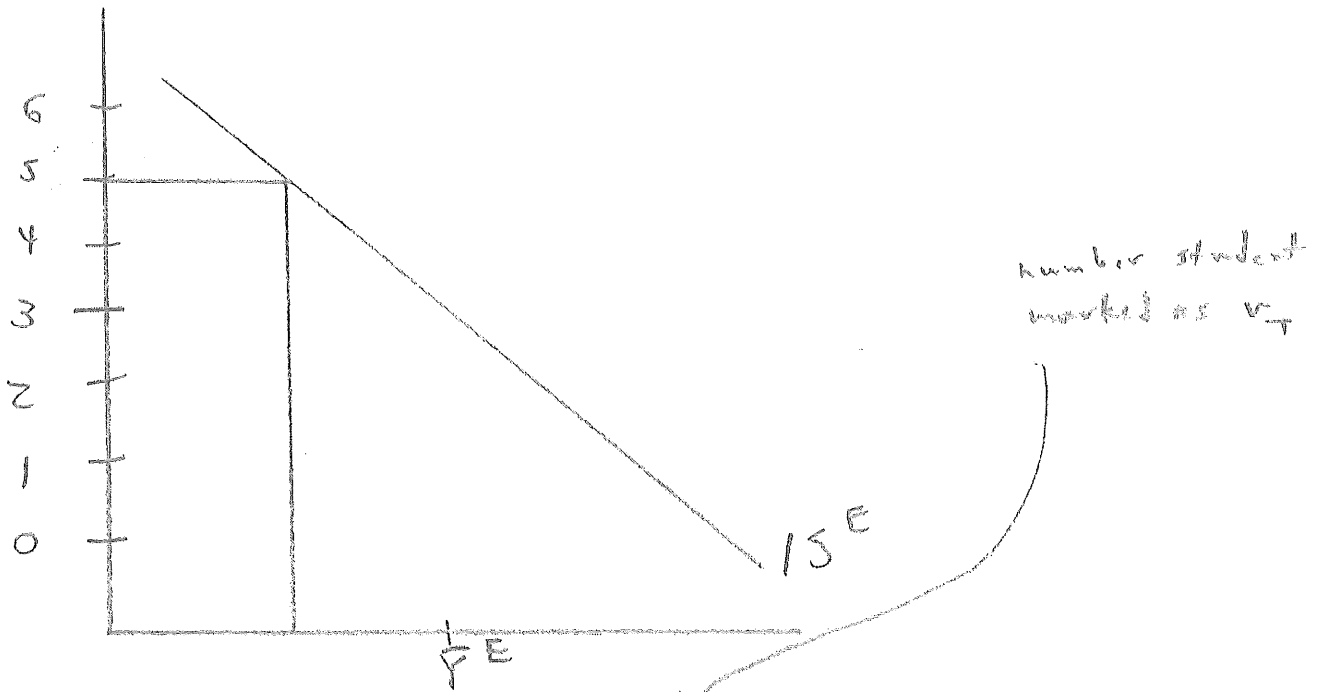
If the Fed's forecasts of the IS curve and  $\bar{Y}$  turn out to be correct, will unemployment turn out to be greater than, less than or equal to 5%?

Equal

will inflation turn out to be greater than, less than or equal to 2%?

Equal

2) Suppose  $\pi^e = 3$ . On the vertical axis, mark a value the Fed might choose for  $r^T$ .



What will the nominal interest rate be?

$$i = \underline{\quad} + 3 = \underline{\quad}$$

If the Fed's forecasts of the IS curve and  $\bar{Y}$  turn out to be correct,

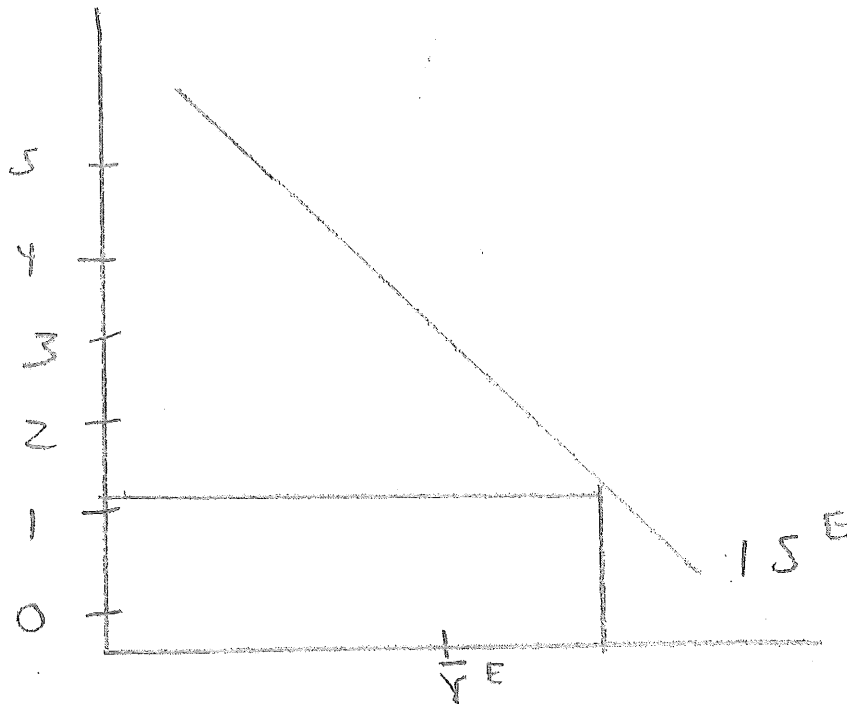
will unemployment turn out to be greater than, less than or equal to 5%?

Greater

will inflation turn out to be greater than, less than or equal to 3%?

Less than

3) Suppose  $\pi^e = 0$ . On the vertical axis, mark a value the Fed might choose for  $r^T$ .



What will the nominal interest rate be?

$$i = \underline{\quad} + 0 = \underline{\quad}$$

If the Fed's forecasts of the IS curve and  $\bar{Y}$  turn out to be correct,

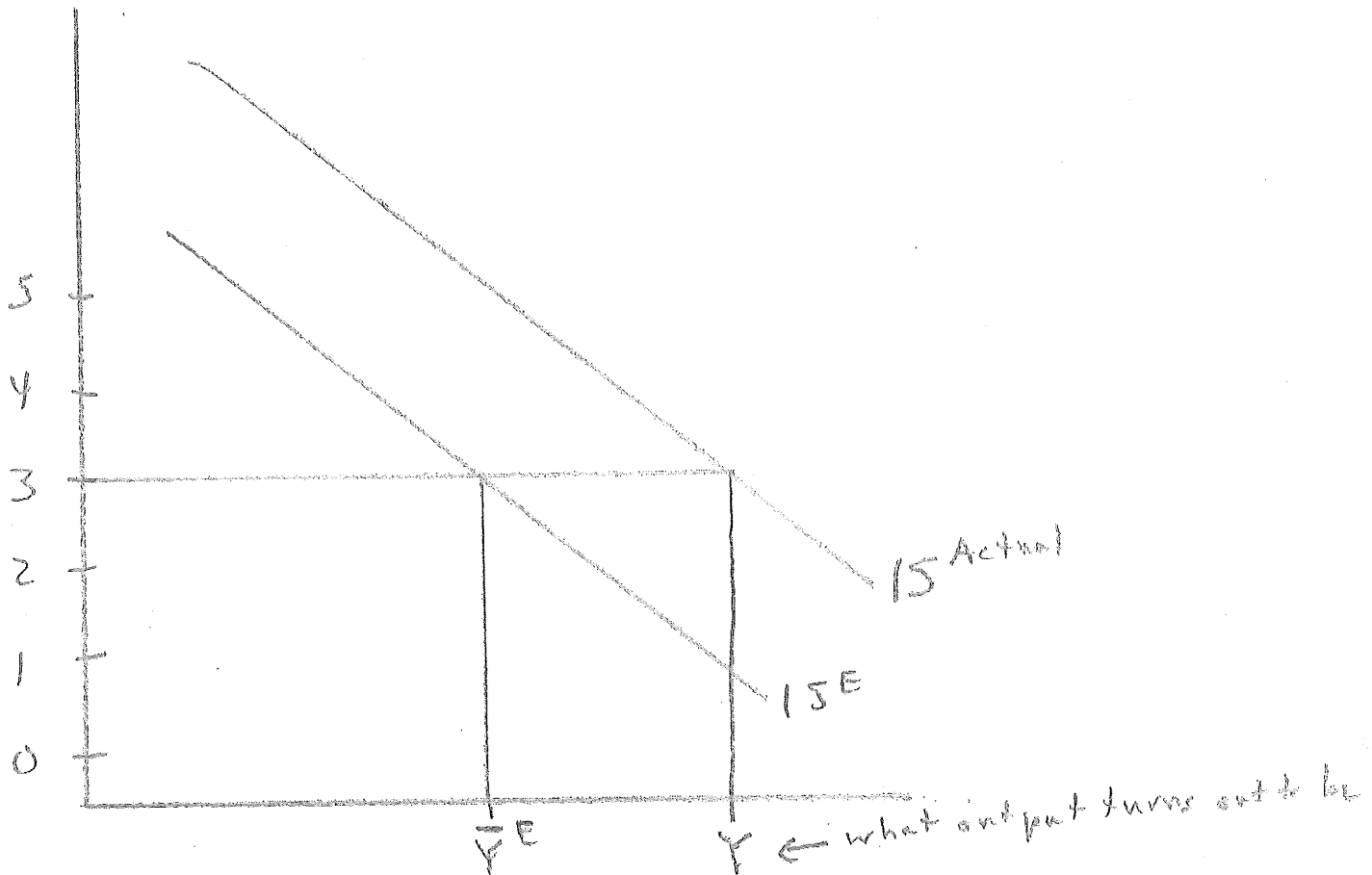
will unemployment turn out to be greater than, less than or equal to 5%?

Less than

will inflation turn out to be greater than, less than or equal to 0%?

Greater than

4) Suppose  $\pi^e = 2$ . Also suppose the Fed's forecast for  $\bar{Y}$  turns out to be correct, but the Fed's forecast for the position of the IS curve turns out to be incorrect as plotted below. On the vertical axis, mark the value the Fed chose for  $r^T$ . On the horizontal axis, mark what output will turn out to be.



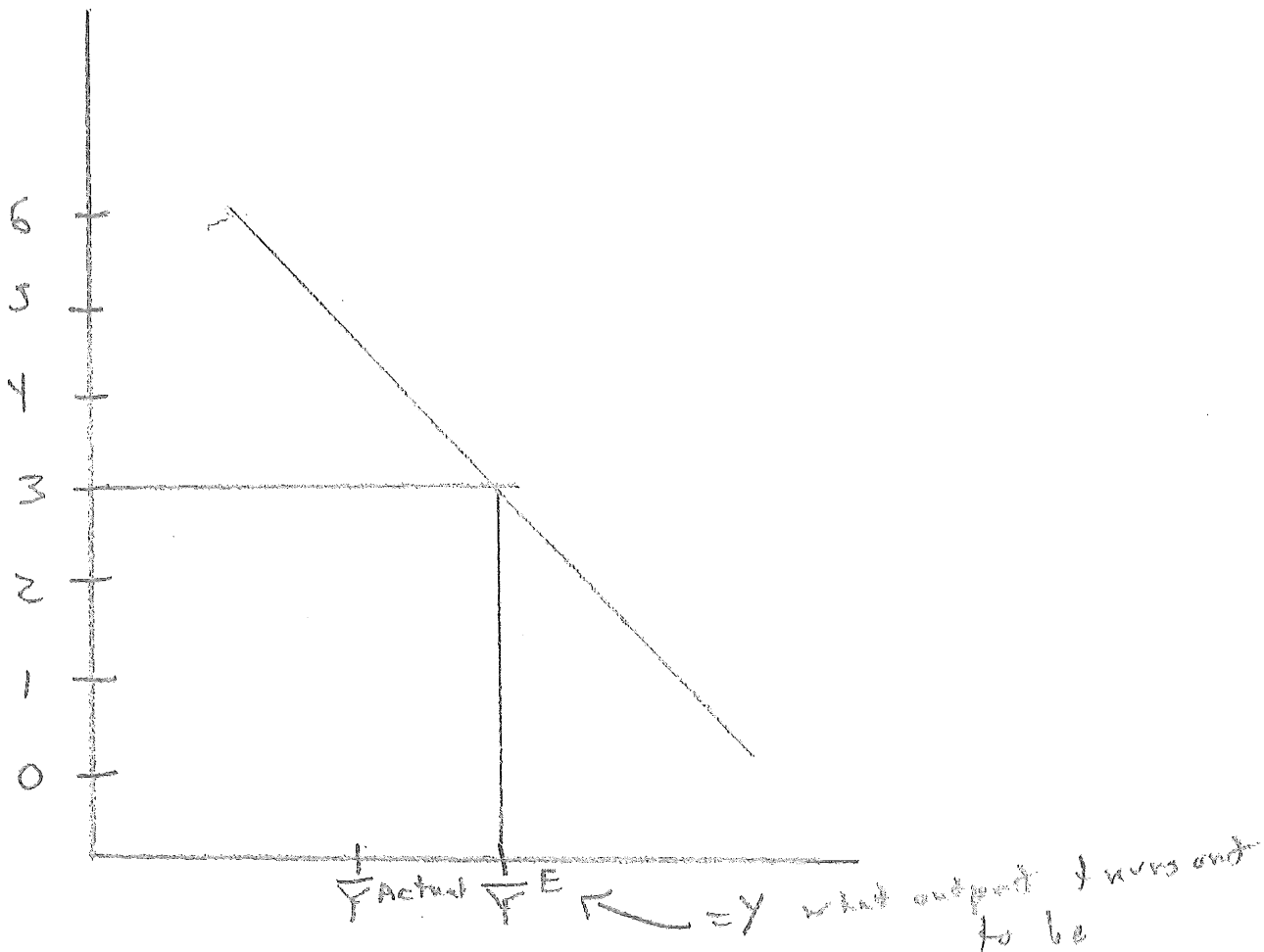
What will the nominal interest rate be?

$i = \underline{5}$

Will unemployment turn out to be greater than, less than or equal to 5%? Less than

Will inflation turn out to be greater than, less than or equal to 2%? Greater than

5) Suppose  $\pi^e = 2$ . Also suppose the Fed's forecast for the position of the IS curve turns out to be correct. But the Fed's forecast for  $\bar{Y}$  turns out to be incorrect. The Fed *overestimates* the amount of output the economy can produce when unemployment is 5% (perhaps because the Fed overestimates the rate of improvement in technology). On the vertical axis, mark the value the Fed chose for  $r^T$ . On the horizontal axis, mark what output will turn out to be.



What will the nominal interest rate be?  $i = \underline{5}$

Will unemployment turn out to be greater than, less than or equal to 5%? Less than

Will inflation turn out to be greater than, less than or equal to 2%? Greater than

Actual output will be greater than the amount the economy can produce at 5% unemployment, so unemployment will be lower than 5%.