Numerical Problems (ch 11)

2. (a) The *IS* curve is found from the equation Y C^d I^d G 130 0.5(Y – 100) – 500r 100 –
500r 100, or 0.5Y 280 – 1000r, or Y 560 – 2000r.

The *LM* curve comes from the equation M/P L, which in this case is 1320/P 0.5Y – 1000r, or Y (2640/P) 2000r.

(b) At full employment, Y 500. Using this in the *IS* curve gives 500 560 – 2000r, which has the solution r 0.03. Plugging the values for Y and r in the *LM* curve gives 500 (2640/P) (2000 0.03), or 440 2640/P, which has the solution P 6. Then consumption is C 130 0.5(Y – 100) – 500r 130 0.5(500 – 100) – (500 0.03) 315. Investment is I 100 – (500 0.03) 85.

(c) If desired investment increases to 200 – 500r, the *IS* curve shifts from IS^1 to IS^2 in Figure 11.11. This can be seen in the equation Y C^d I^d G 130 0.5(Y – 100) – 500r 200 – 500r 100, or 0.5Y 380 – 1000r, or Y 760 – 2000r. In the short run, the price level remains fixed at 6, so the *LM* curve remains at LM^1. With the price level equal to 6, the *LM* curve has the equation Y (2640/P) 2000r 440 2000r. The *IS* and *LM* curves intersect where 760 – 2000r 440
2000r, or 320 4000r, which has the solution r 0.08. At r 0.08, output is given from the
IS curve as Y 760 – 2000r 760 – (2000 0.08) 600. Then consumption is C 130 0.5
(Y – 100) – 500r 130 0.5(600 – 100) – (500 0.08) 340. Investment is I 200 – 500r

200 – (500 0.08) 160.

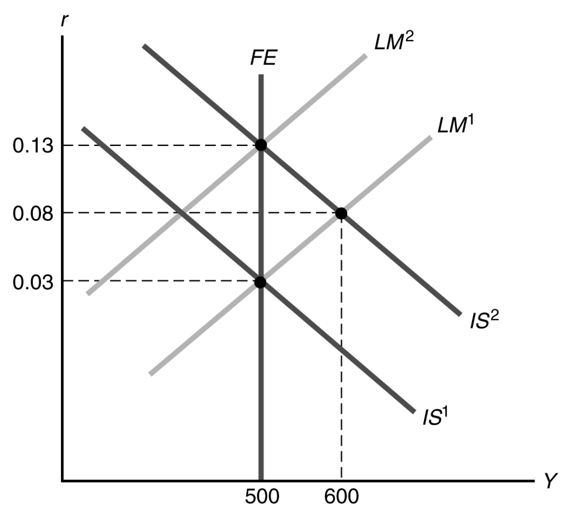

Figure 11.11

In the long run, the price level rises to shift the *LM* curve from LM^1 to LM^2 to restore equilibrium. The *IS* curve is given by the equation Y 760 – 2000r. At full employment, Y 500, so the *IS* curve is 500 760 – 2000r, or 2000r 260, which has the solution r 0.13. The *LM* curve is given by the equation Y (2640/P) 2000r, or 500 (2640/P) (2000 0.13), or 240 2640/P, which has the solution P 11. Then consumption is C 130 0.5(500 – 100) – (500

0.13) 265. Investment is

I 200 – 500*r* 200 – (500 0.13) 135.

4. (a) The *IS* curve is given by *Y* C^d I^d *G* 300 0.5(*Y* – 100) – 300*r* 100 – 100*r* 100 450 0.5*Y* – 400*r*. This can be rewritten as 0.5*Y* 450 – 400*r,* or *Y* 900 – 800*r.*

The *LM* curve is

M/*P* *L,* or 6300/*P* 0.5*Y* – 200*r*.

To find the aggregate demand curve, substitute the *LM* curve into the *IS* curve to eliminate *r*. To do this, multiply both sides of the *LM* curve by 4 to get 25,200/*P* 2*Y* – 800*r,* or 800*r* 2*Y* – (25,200/*P*). Then substitute this in the *IS* curve: *Y* 900 – 800*r* 900 – [2*Y* – (25,200/*P*)]. This can be rewritten as 3*Y* 900 (25,200/*P*), or *Y* 300 (8400/*P*).

(b) With *P* 15, the *AD* curve is *Y* 300 (8400/15) 860. From the *IS* curve, 860 900 – 800*r,* which has the solution *r* 0.05. Consumption is *C* 300 0.5(860 – 100) – (300 0.05) 665. Investment is *I* 100 – (100 0.05) 95.

(c) In the long run, *Y* 700. From the *IS* equation, 700 900 – 800*r,* which has the solution *r* 0.25. The *LM* curve then is 6300/*P* (0.5 700) – (200 0.25) 300, which has the solution *P* 21. Consumption is *C* 300 0.5(700 – 100) – (300 0.25) 525. Investment is *I* 100 – (100 0.25) 75.