

Foreign Trade and the Exchange Rate

ECON 3133

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Answers

1.

a. Endogenous: $Y, C, I, (X - IM), R, E$.

Exogenous: G, M, P, P_w .

b. $Y = C + I + G + (X - IM)$

$$= (220 + 0.63 \times Y) + (400 - 2000 \times R + 0.1 \times Y) + G + [600 - 0.1 \times Y - 100 \times (0.75 + 5 \times R)]$$

$$= 1145 + 0.63 \times Y - 2500 \times R + G, \text{ or,}$$

$$\text{IS: } R = 0.458 - 0.000148 \times Y + 0.0004 \times G.$$

$$M = (0.1583 \times Y - 1000 \times R) \times P$$

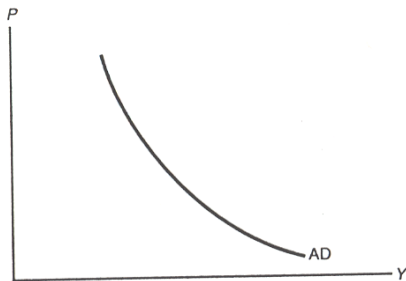
$$\text{LM: } R = 0.0001583 \times Y - 0.001 \times M/P.$$

Solving the IS and LM equations for R and Y gives

$$\text{AD: } Y = 1495.2661 + 1.30591 \times G + 3.26477 M/P.$$

So, if $G = 1200$, $M = 900$, and $P = 1$, then $Y = 6000.65$, $C = 4000.41$, $R = 0.0499 = 4.99\%$, $I = 900.25$, $(X - IM) = -100.02$, and $E = 0.9995$.

c. Use the already derived AD equation above. When $G = 1200$ and $M = 900$, the AD equation becomes $Y = 3062.3581 + 2938.293/P$.



d. If G decreases by \$10 billion, according to the AD equation, national income Y will decrease by \$13.059 billion. So the new level of national income will be $Y = \$5987.59$. Using the LM equation and the new value of Y and remembering that $M/P = 900$, the new value of R can be found. $R = 0.0478 = 4.78\%$. Using the new values of Y and R , the new values of $C, I, (X - IM)$, and E can be obtained. $C = 3992.18$, $I = 903.09$, $(X - IM) = -97.59$, and $E = 0.9892$. Notice that the sum of C, I, G , and $(X - IM)$ is \$5987.68, which is approximately equal to $Y = \$5987.59$. If money supply M increases by \$20, then Y would increase by \$65.30 billion; the new value of Y would be \$6065.95 billion. The value of the remaining endogenous variables can also be calculated. $C = 4041.55$, $R = 0.0402 = 4.02\%$, $I = 926.12$, $E = 0.9512$, and $X = -101.71$. Notice that $C + I + G + (X - IM) = 6065.95$, which is the same as the value of the new Y .

$$2. Y_d = 0.7 \times Y = 0.7 \times 6000.65 = 4200.46.$$

$$S_p = Y_d - C = 4200.46 - 4000.41 = 200.05.$$

$$S_g = t \times Y - G = 0.30 \times Y - G = 1800.195 - 1200 = 600.20.$$

$$S_w = -(X - IM) = 100.02.$$

$$\text{Hence, } S_p + S_g + S_w = 200.05 + 600.20 + 100.02 = 900.27 \approx 900.25 = I.$$

When $G = 1190$ (and $M = 900$), then:

$$Y_d = 0.7 \times Y = 0.7 \times 5987.59 = 4191.31.$$

$$S_p = Y_d - C = 4191.31 - 3992.18 = 199.13.$$

$$S_g = t \times Y - G = 0.30 \times Y - G = 1796.28 - 1190 = 606.28.$$

$$S_w = -(X - IM) = 97.59.$$

$$\text{Hence, } S_p + S_g + S_w = 199.13 + 606.28 + 97.59 = 903.00 \approx 900.09 = I.$$

And when $M = 920$ (and $G = 1200$):

$$Y_d = 0.7 \times Y = 0.7 \times 6065.95 = 4246.17.$$

$$S_p = Y_d - C = 4246.17 - 4041.55 = 204.62.$$

$$S_g = t \times Y - G = 0.30 \times Y - G = 1819.79 - 1200 = 619.79.$$

$$S_w = -(X - IM) = 101.71.$$

$$\text{Hence, } S_p + S_g + S_w = 204.62 + 619.79 + 101.71 = 926.11 \approx 926.12 = I.$$

3.

- a. If Japanese investors expected the value of the dollar (against the yen) to fall by more than 5%, they would prefer holding the Japanese securities.
- b. Certainly, for the same reasons. If the yen is expected to appreciate by more than 5%, then the percentage return in dollars to holding the Japanese securities will exceed 10%.
- c. 0%.

4. Lowering interest rates will lead to a depreciation of the dollar, which increases net exports. Thus a policy which increases M and decreases G will have the desired effect.

