Foreign Trade and the Exchange Rate

Additional Homework Problems

ECON 3133

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Answers

1.

a. Endogenous: Y, C, I, (X – IM), R, E.
Exogenous: G, M^S, P, P_w.

b. $Y = C + I + G + (X - IM)$
$= (220 + 0.63\times Y) + (400 - 2{,}000\times R + 0.1\times Y) + G + [600 - 0.1\times Y - 100\times(0.75 + 5\times R)]$
$= 1145 + 0.63\times Y - 2{,}500\times R + G$, or,
IS: $R = 0.458 - 0.000148\times Y + 0.0004\times G$.

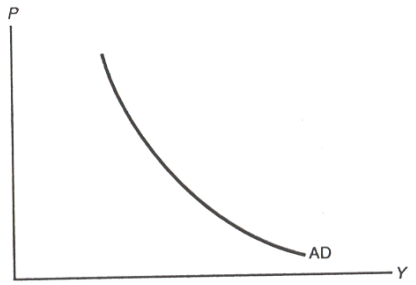
$M^S = (0.1583\times Y - 1{,}000\times R)\times P$
LM: $R = 0.0001583\times Y - 0.001\times M^S/P$.

Solving the IS and LM equations for R and Y gives

AD: $Y = 1{,}495.2661 + 1.30591\times G + 3.26477M^S/P$.

So, if G = 1,200, M^S = 900, and P = 1, then Y = 6000.65, C = 4,000.41, 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^S = 900, the AD equation becomes $Y = 3{,}062.3581 + 2{,}938.293/P$.



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 = $5,987.59. 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 = 3,992.18, I = 903.09, (X – IM) = –97.59, and E = 0.9892. Notice that the sum of C, I, G, and (X – IM) is $5,987.68, which is approximately equal to Y = $5,987.59. If money supply, M^S, increases by $20, then Y would rise by $65.30 billion so that the new value of Y would be $6,065.95 billion. The value of the remaining endogenous variables can also be calculated. C = 4,041.55, R = 0.0402 = 4.02%, I = 926.12, E = 0.9512, and X = –101.71. Notice that C + I + G + (X – IM) = 6,065.95, which is the same as the value of the new Y.

2. $Y_d = 0.7 \times Y = 0.7 \times 6{,}000.65 = 4{,}200.46$.
   $S_p = Y_d - C = 4{,}200.46 - 4{,}000.41 = 200.05$
   $S_g = t \times Y - G = 0.30 \times Y - G = 1{,}800.20 - 1{,}200 = 600.20$.
   $S_w = -(X - IM) = 100.02$.
   Hence, $S_p + S_g + S_w = 200.05 + 600.20 + 100.02 = 900.27 \approx 900.25 = I$.

   When $G = 1{,}190$ (and $M^S = 900$), then:
   $Y_d = 0.7 \times Y = 0.7 \times 5{,}987.59 = 4{,}191.31$.
   $S_p = Y_d - C = 4{,}191.31 - 3{,}992.18 = 199.13$
   $S_g = t \times Y - G = 0.30 \times Y - G = 1{,}796.28 - 1{,}190 = 606.28$.
   $S_w = -(X - IM) = 97.59$.
   Hence, $S_p + S_g + S_w = 199.13 + 606.28 + 97.59 = 903.00 \approx 900.09 = I$.

   And when $M^S = 920$ (and $G = 1{,}200$):
   $Y_d = 0.7 \times Y = 0.7 \times 6{,}065.95 = 4{,}246.17$.
   $S_p = Y_d - C = 4{,}246.17 - 4{,}041.55 = 204.62$
   $S_g = t \times Y - G = 0.30 \times Y - G = 1{,}819.79 - 1{,}200 = 619.79$.
   $S_w = -(X - IM) = 101.71$.
   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.