

Question #66481

a) LM curve for open economy

$$R = \frac{k}{h} \cdot Y - \frac{1}{h} \cdot \frac{M}{P}$$

$$Y = \frac{l}{k} \cdot \frac{M}{P} + \frac{h}{k} \cdot R$$

IS curve for open economy

$$R = \frac{a+e+g}{d+n} - \frac{1-b(1-t)+m'}{d+n} \cdot Y + \frac{1}{d+n} \cdot G - \frac{b}{d+n} \cdot T_a,$$

$$Y = \frac{a+e+g}{1-b(1-t)+m'} + \frac{l}{1-b(1-t)+m'} \cdot G - \frac{b}{1-b(1-t)+m'} \cdot T_a - \frac{d+n}{1-b(1-t)+m'} R,$$

Now having above mentioned equations we can represent the relation between two sectors with help of the following equation for open economy.

$$Y = h \cdot \frac{a+e+g+G-b \cdot T_a}{k(d+n)+h[1-b(1-t)+m']} + \frac{d+n}{k(d+n)+h[1-b(1-t)+m']} \cdot \frac{M}{P}$$

b) we have the following IS-LM model equations system

$$C = 200 + 0.65YD,$$

$$I = 150 + 0.25Y - 1000i,$$

$$G = 250,$$

$$T = 200,$$

$$Md/P = 2Y - 8000i,$$

$$M/P = 1600$$

For equilibrium interest rate or Y, we should use the main macroeconomic expression $Y = C + I + G$. For IS side we should put all above equations to the expression $Y = C + I + G$, it will give as the first equation for the system. To illustrate the LM side we can just use $M/P = 2Y - 8000i$. So the IS-LM equilibrium system will be this one:

$$\begin{cases} 1600 = 2Y - 8000i \\ 200 + 0.65Y - 130 + 150 + 0.25Y + 1000i + 250 = Y \end{cases} \rightarrow$$

$$\rightarrow \begin{cases} 1600 = 2Y - 8000i \\ 470 = 0.10Y + 1000i \end{cases}$$

Now we can solve this system for Y

The result will be that equilibrium Y^* is equal to 1914.3, the equilibrium i^* is equal to 0.28%: C^* can be found from the equation $C = 200 + 0.65(Y - T) = 200 + 0.65 \cdot 1714.3 = 1314.3$, so $C^* = 1314.3$, then we can calculate I^* from $I = 150 + 0.25Y - 1000i$, so $I^* = 150 + 0.25 \cdot 1914.3 - 1000 \cdot 0.28 = 150 + 479 + 280 = 348.6$.

c) Then we can put all this in the equation $Y = C + I + G = 1314.3 + 348.6 + 250 = 1912.9$.

d) The increase of M/P to 1840, will cause to the change of the equilibrium level of Y^* , C^* , i^* and I^* . So we will have $Y^* = 2000$, $C^* = 1170$, $i^* = 0.27$ and $I^* = 380$. The result is rise in level of Y and I , interest rate has changed very little and consumption level has fallen down.

e) The increase of the G level from 250 to 400, will lead to increase of equilibrium Y^* to the level of 2343, equilibrium interest level will rise to 0.39 and equilibrium consumption level will be 1593, which is higher than the consumption expenditure for G level equal to 250.