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1. 1.1.) $\frac{\Delta Y}{\Delta G} = 5$; $\Delta G = 5$ $\Rightarrow \Delta Y = 5 \times 5 = 25$

1.2.) $\frac{\Delta Y}{\Delta T} = -3$; $\Delta Y = -9$ $\Rightarrow \Delta T = \frac{-9}{-3} = 3$

1.3.) $\frac{\Delta Y}{\Delta I} = \frac{10}{2} = 5$

2. 2.1) $AE = C + I + G$

$Y = AE$

$Y^* = C + I + G$

$Y^* = C_0 + C_1(Y - T) + I + G$

$Y(1 - C_1) = C_0 - C_1 T + I + G$

$\Rightarrow Y^* = \frac{1}{(1 - C_1)} (C_0 - C_1 T + I + G)$

2.2) $AE = C + I + G$

$AE = C_0 + C_1 Y - C_1 T + I + G$

$AE = (C_0 - C_1 T + I + G) + C_1 Y$

as I is injection; $\frac{\Delta Y}{\Delta I} = \frac{1}{1 - \text{slope of AE}}$

2.3) $AE = C + I + G$

$AE = (C_0 - C_1 T + I + G) + C_1 Y$

as G is injection; $\frac{\Delta Y}{\Delta G} = \frac{1}{1 - \text{slope of AE}}$

2.4.) $AE = C + I + G$

$AE = (C_0 - C_1 T + I + G) + C_1 Y$

as T is leakage; $\frac{\Delta Y}{\Delta T} = \frac{-MPC}{1 - \text{slope AE}}$

2.5) BBM: $\frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = \frac{1 - C_1}{1 - C_1}$

2.6) BBM is a change in a agg. output when both G & T increase by 1 unit.

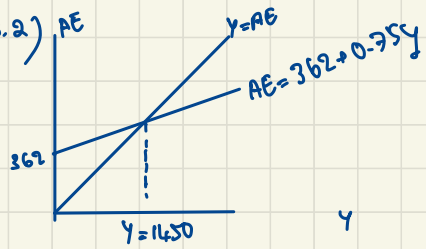
3. 3.1.) $Y = AE = C + I + G$

$= 300 + 0.75(Y - 50) + 50 + 50$

$Y = AE = 362 + 0.75Y$

$\Rightarrow Y^* = 1450$

3.2)



3.3.) $S + T = I + G$ (leakage = injection)

$Y - T = C + S$ (saving function)

$Y - C = S + T$

$Y - C = I + G$

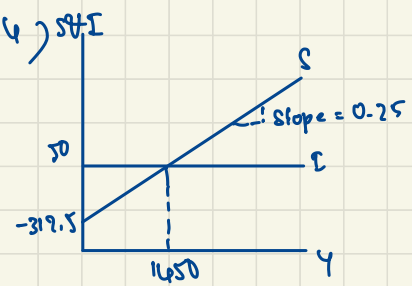
$Y - C = 50 + 50 = 100$

$Y - (300 + 0.75Y_d) = 100$

$Y - 300 - 0.75(Y - 50) = 100$

$0.25Y = 362.5 \Rightarrow Y^* = 1450$

3.4)



Intercept: Saving function. $Y_d = C + S \Leftrightarrow Y - T = C + S$

$\Rightarrow Y - 50 = 300 + 0.75(Y - 50) + S$

$\Rightarrow S = -312.5 + 0.25Y$

3.5) $G_{new} = 50+50 = 100$

$T_{new} = 50+50 = 100$

$Y = AE = C+I+G$

$= 300+0.75(Y-100)+50+100$

$Y = 375+0.75Y$

$\Rightarrow Y^* = 1500$

3.6) $BBM = \frac{\Delta Y^*}{\Delta G} + \frac{\Delta Y^*}{\Delta T} = \frac{1-C_1}{1-C_1} = 1$

. if the government spend and lump-sum tax increase by 1 income will increase by 1.

. Thus, to build more road, Government increase their spending by 50, and tax by 50, So the equilibrium output will increase by 50.

$Y^*_{old} + 50 = Y^*_{new}$

$\Rightarrow Y^*_{new} = 1450 + 50$

$= 1500$

4. 4.1) $AE = C+I+G+X-M$

$Y = AE$

$Y^* = C+I+G+X-M$

$Y^* = C_0 + C_1(Y-T) + I + G + X - (M_0 + M_1 Y)$

$Y(1+M_1-C_1) = C_0 - C_1 T + I + G + X - M_0$

$\Rightarrow Y^* = \frac{1}{(1+M_1-C_1)}(C_0 - C_1 T + I + G + X - M_0)$

4.2) $AE = C+I+G+X-M$

$AE = C_0 + C_1 Y - C_1 T + I + G + X - (M_0 + M_1 Y)$

$AE = (C_0 - C_1 T + I + G + X - M_0) + C_1 Y - M_1 Y$

as I is injection; $\frac{\Delta Y}{\Delta I} = \frac{1}{1-\text{slope of AE}}$

4.3) $AE = C+I+G+X-M$

$AE = (C_0 - C_1 T + I + G + X - M_0) + C_1 Y - M_1 Y$

as G is injection; $\frac{\Delta Y}{\Delta G} = \frac{1}{1-\text{slope of AE}}$

4.4) $AE = C+I+G+X-M$

$AE = (C_0 - C_1 T + I + G + X - M_0) + C_1 Y - M_1 Y$

as T is leakage; $\frac{\Delta Y}{\Delta T} = \frac{-MPC}{1-\text{slope AE}}$

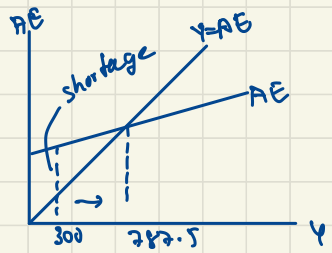
2.5) BBM: $\frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = \frac{1-C_1}{1-C_1}$

5. 5.1). $Y = AE = C+I+G+X-M$

$= 200 + 0.7(Y-50) + 75 + 75 + 50 - (50 + 0.1Y)$

$\Rightarrow Y + 0.1Y - 0.7Y = 315$

$0.4Y = 315 \Rightarrow Y^* = 787.5$



At $Y = 300$; $Y < C+I$; there is a shortage.

Inventory inclines, push to increase more production.

5.2. $\frac{\Delta Y^*}{\Delta I} = \frac{1}{1-C_1+M_1} = \frac{1}{1-0.7+0.1} = 2.5$

$\frac{\Delta Y^*}{\Delta T} = \frac{-C}{1-C_1+M_1} = \frac{-0.7}{1-0.7+0.1} = -1.75$

$BBM = \frac{\Delta Y}{\Delta G} + \frac{\Delta Y}{\Delta T} = 2.5 - 1.75 = 0.75$

$\frac{\Delta Y}{\Delta G} = \frac{1}{1-C_1+M_1} = \frac{1}{1-0.7+0.1} = 2.5$

5.3. $\frac{\Delta Y}{\Delta I}$: when investment increase by 1, output will increase by 2.5

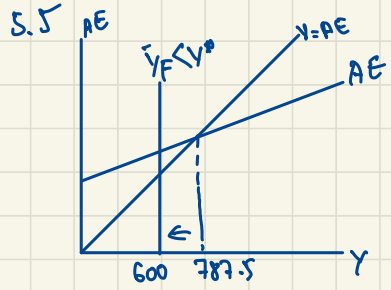
$\frac{\Delta Y}{\Delta G}$: when government spending increase by 1, output will increase by 2.5

$\frac{\Delta Y}{\Delta T}$: when tax increase by 1, output will decrease by 1.75

BBM: when government spending of tax increase by 1, output will increase by 0.75.

5.4 Unemployment rate is below the natural rate of unemployment, which mean, we are in inflation gap. The economy is growing too fast of overcrowd the solution is the policy to raise tax or cut down govt spending. $Y^* \to Y_F$

5.5



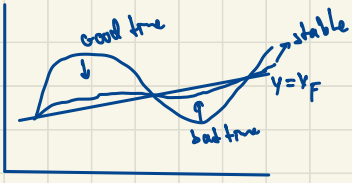
5.6 $\frac{\Delta Y^*}{\Delta G} = 2.5 \Rightarrow \Delta G = \frac{-187.5}{2.5} = -75$ (G spending should decrease 75)

5.7 $\frac{\Delta Y^*}{\Delta T} = -1.75 \Rightarrow \Delta T = \frac{187.5}{-1.75} = 107.192$ (T should increase by 107.192)

5.8. $\frac{\Delta Y^*}{\Delta I} = 2.5 \Rightarrow \Delta I = -75$ (I should decrease by 75)

5.9. $\frac{\Delta Y^*}{\Delta G} + \frac{\Delta Y^*}{\Delta T} = 0.75$ (decrease both by 250)

6. Role of automatic stabilizer is to reduce the fluctuation of economy.



- During good time → High Y, AE
- govt should raise tax or reduce govt. spending to help slow econ down.
- During bad time → low Y, AE
- govt should reduce tax or raise govt. spending to help boost the economy.

7. 7.1 Leakage = injection (Eqlm)

Saving = Investment

$-200 + 0.5y = 50$

$\Rightarrow Y^* = 500$

7.2 Saving $= -200 + 0.5Y^*$

$= -200 + 0.5(500)$

$\Rightarrow S^* = 50$

7.3 People save more 100

$\Rightarrow S_{new} = 100 + S$

$= 100 - 200 + 0.5Y$

$= -100 + 0.5Y$

$\cdot S = I$

$-100 + 0.5Y = 50$

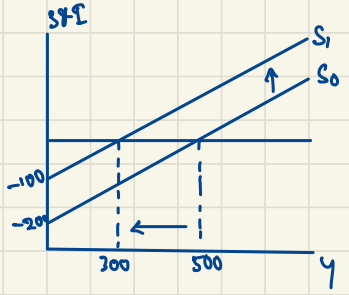
$\Rightarrow Y^* = 300$

7.4 Saving $= -100 + 0.5Y^*$

$= -100 + 0.5(200)$

$\Rightarrow S^* = 50$

7.5.



Paradox of thrift: People save more → Economy slow down

↳ less income (Y↓)

People save more by 100 ($S_0 \rightarrow S_1$)

Output decrease by 200 ($500 \rightarrow 300$)