

PROBLEMS

(1) Use the following data, where Y =real output and C =personal consumption expenditures, and assume that $I_p=15$:

Y	C
540	540
560	555
580	570
600	585
620	600
640	615
660	630

- (a) What is the value of equilibrium Y ?
- (b) When $Y = 560$, how much is unintended investment?
- (c) What is the value of the MPS?
- (d) What is the value of the multiplier?

(2) If nominal income is \$15,000 and the CPI is 118, what is the value of *real* income?

(3) If the CPI is 250 in year 1 and 275 in year 2, what is the inflation rate for year 2?

ANSWERS

(1a) To determine Y_e , use equilibrium condition:

$$Y = AE (= C + I_p)$$

- the table gives C , and you are told that $I_p = 15$

\Rightarrow add \$15 to C for every value of Y to get AE

$\Rightarrow Y_e$ occurs where $Y = AE$

Y	C	I_p	$AE=C+I_p$
540	540	15	555
560	555	15	570
580	570	15	585
<u>600</u>	<u>585</u>	<u>15</u>	<u>600</u>
620	600	15	615
640	615	15	630
660	630	15	645

Exercise: if I_p now rises from 15 to 30 find the new Y_e

(1b) Use the table: when $Y = 560$, we have:

Y	C	I_p	$AE=C+I_p$
560	555	15	570

So, when $Y=560$, $AE=570 \Rightarrow AE > Y$

\Rightarrow too much spending to sustain this Y

The difference between AE and Y is unintended investment (I_u):

$$\begin{aligned} I_u &= Y - AE \\ &= 560 - 570 \end{aligned}$$

$I_u = -10$ since negative \Rightarrow unintended **dis**investment

(1c) From the data, get the $MPC = \Delta C / \Delta Y$

here: $MPC = 15/20 = 3/4$

USE: $MPC + MPS = 1 \Rightarrow$ **$MPS = 1 - MPC$**

So, $MPS = 1 - 3/4 = \underline{1/4}$

(1d) Multiplier formula: $k = 1/MPS = 1/(1 - MPC)$

Using the values from (1c):

$$k = 1/(1/4) = 1 \times (4/1) = \underline{4}$$

(2) Real Income = (Nominal Income/CPI) · 100

$$= (\$15,000/118) \cdot 100$$

$$= \underline{\$12,712}$$

(3) Formula: Inflation Rate = $\% \Delta \text{CPI}$

Year	CPI
1	250
2	275

$$\begin{aligned} \text{Inflation Rate for Year 2} &= ((275 - 250)/250) \cdot 100 \\ &= (25/250) \cdot 100 \\ &= 10\% \end{aligned}$$

KNOW THE FORMULAS FOR BOTH:

CLOSED ECONOMY MULTIPLIER:

$$k = 1/\text{MPS} \text{ or } k = 1/(1-\text{MPC})$$

OPEN ECONOMY MULTIPLIER (WITH FOREIGN TRADE):

$$k = 1/(\text{MPS} + \text{MPM}) \text{ where MPM is the marginal propensity to import}$$

Note: both the MPS and MPM represent leakages, which make up the denominator of the multiplier