We shall look at the following question today:

How effective is a change in autonomous expenditure (which contains demand-side factors in it, including those influenced by fiscal policy) in changing the equilibrium level of RGDP?

The answer to this question lies in a concept termed as the ‘Expenditure Multiplier’.

Definition of the expenditure multiplier: It is the amount by which a change in autonomous expenditure is magnified or multiplied to determine the change in equilibrium expenditure and RGDP.

Assertion: Every dollar’s worth of change in autonomous expenditure changes equilibrium expenditure and RGDP by more than a dollar.

Graphical proof: Using the concept of right-angled isosceles triangle. (see diagram drawn in class and Fig. 10.7, Parkin, page 241).

Proof: Let there be an upward shift of the AE curve of the amount ∆A. Using the 45-degree line, we will be able to construct a right-angled isosceles triangle with two of its sides equal to ∆Y. Completing a rectangle in the diagram with ∆A as one of its sides, we will be easily able to prove our assertion, as we shall see that ∆Y > ∆A.

Algebraic proof: Using the expression for equilibrium RGDP.

Proof:

In equilibrium:

\[ Y^* = \frac{A}{(1 - B + m)} \]

So, \[ \Delta Y^* = \frac{\Delta A}{(1 - B + m)} \]

So, \[ \frac{\Delta Y^*}{\Delta A} = \frac{1}{(1 - B + m)} = \frac{1}{1 - (B - m)} \]

But as \((B - m) < 1\), \(1 - (B - m) < 1\).

Hence, \(\frac{1}{1 - (B - m)} > 1\)

Hence our assertion is true.

Thus, in keeping with our definition of the multiplier above, the value of the expenditure multiplier is given by:

\[ Value\ of\ the\ Multiplier = \frac{1}{(1 - B + m)} \]
An example of the multiplier at work: For a change in autonomous investment expenditure of the amount $\Delta I$, $Y^* = \Delta I / (1 - B + m) > \Delta I$.

**Assertion:** The expenditure multiplier is greater as $b$ (MPC) is larger, and lower for higher $t$ (MPT) and $m$ (MPI).

**Proof:**

Note that $(1 - B + m) = 1 - b(1 - t) + m$

Now, as $b$ increases, the value of the denominator term in the multiplier falls (since there is a negative sign before $b$). Given the fall in the denominator term, the value of the multiplier will rise.

Similarly, a rise in $m$ will increase the value of the denominator term hence the value of the multiplier will fall.

Finally, as $(1 - B + m) = 1 - b(1 - t) + m = 1 - b + bt + m$,

Again it is clear that a rise in $t$ will increase the value of the denominator term hence the value of the multiplier will fall.

**What does all this mean for the effectiveness of fiscal policy in affecting the equilibrium level of RGDP?**

A change in the fiscal policy instruments like $G$, $T$, and $\tau$ would change autonomous expenditure. So clearly from our above discussion, changes in fiscal policy would change the equilibrium level of RGDP more for higher MPC, and lower MPI or MPT (the latter itself being a fiscal policy instrument).

**Think:**

1. For a change in $G$, $\Delta A = \Delta G$. So what is $Y^*$?
2. For a change in $T$, $\Delta A = -b \Delta T$. So what is $Y^*$?
3. For a change in $\tau$, $\Delta A = b \Delta \tau$. So what is $Y^*$?

**Aside:**

*Q. What is the expenditure multiplier in a closed economy without income taxes?*

In a closed economy (an economy that does not trade with the ROW), $t = 0$ and $m = 0$, hence the value of the expenditure multiplier is:

Multiplier = $1/(1-b) = 1/\text{MPC} = 1/\text{MPS}$

Thus, as the MPS (marginal propensity to save) of households rise, the value of the multiplier falls.