TA Lecture on the Multiplier

1 WHAT THE MULTIPLIER DOES

Previously we have seen that equilibrium GNP is given by the equation: $Y^* = \frac{a}{1-b} + \left(\frac{1}{1-b}\right)\bar{I}$

This equation says that the autonomous level of consumption, *a,* and the level of planned investment, $\bar{I}$, when multiplied by $\frac{1}{1-b}$ determine the level of equilibrium aggregate demand.

<<What do we mean by *equilibrium aggregate demand?*>> That level of output at which total planned expenditures, *C + I,* equals total production in the goods and services market.

$\frac{1}{1-b}$ is called **the multiplier** presumably because it multiplies the autonomous expenditures in order to produce equilibrium GNP.

Note: for every dollar increase in exogenous expenditure, total expenditures *(= Y)* increase by a *multiple* of that increase. <<Why does this happen?>>

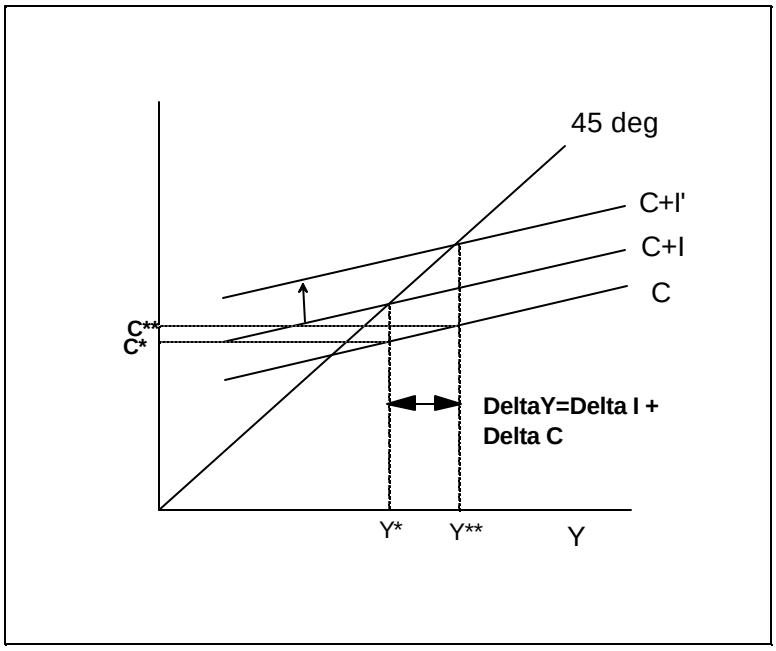
Total expenditures are of two types: **autonomous** and **induced.** Autonomous expenditures rise or fall due to factors not directly included in our economic system: foreign economic events, political changes, weather patterns, wars, psychological shifts in confidence, etc. Our equilibrium equation shows what happens to total expenditures when autonomous expenditures change. It shows that *total expenditure change is a lot larger than autonomous expenditure changes.* The difference is made up by *induced expenditure changes.*

Induced Expenditures are *those expenditures the value of which are determined by the working of the economic system itself.* In our simple model of the world induced expenditures are consumption expenditures only. As national income rises, consumption expenditures rise too ... they are induced to rise by the increase in income!

The total change in expenditures must be equal to the sum of the autonomous and induced expenditure changes.

$\Delta E_{total} \equiv \Delta E_{autonomous} + \Delta E_{induced}$.

Graphically, we can show the effect of the multiplier on equilibrium national income by using our C+I diagram. In equilibrium, the economy is operating at Y^* and C^*. Then, assume that autonomous investment rises. National income rises to Y^{**} and Consumption rises to C^{**}. Of the total increase in national income, some comes from the increase in I and considerably more comes from the *induced increase* in consumption. *Notice that the consumption function has not shifted at all!*



<<How would we show the effect of an rise in autonomous consumption?>> Shift up the consumption function.

2 How the Multiplier Works

<<Why do induced expenditures change when autonomous expenditures rise?>>

Take an increase in investment spending: Businesses buy more equipment, say $1,000 worth. Value added rises initially by $1,000. But households receive this value added as increased income.

<<What do households do with the increased income if the marginal propensity to consume is, say, 0.8?>> They spend $800 and save $200.

But that extra $800 in spending shows up in the next round as $800 additional income to the household. <<What do they do next?>>

Spend $640 and save $160.

This keeps happening until the entire $1,000 eventually leaks out of the circular flow as saving. *However, in the process an additional $4,000 worth of*

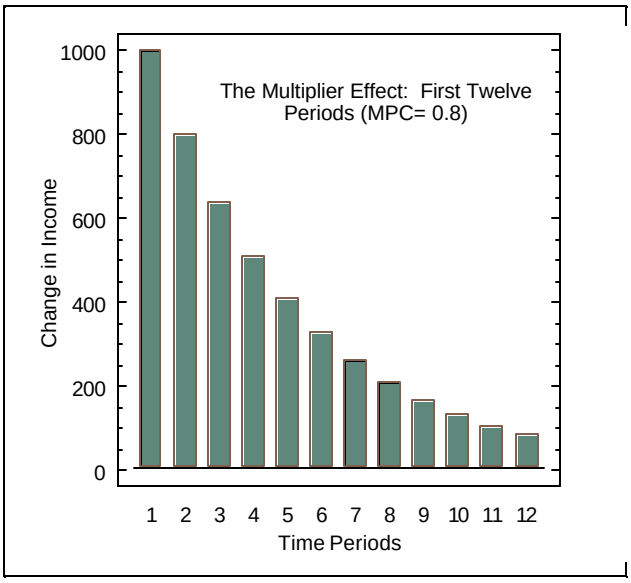
consumer spending has been added to the economy. Total national income has risen by the original $1,000 plus an additional $4,000 in induced consumption: Net multiplier effect = $5,000! The 29 iterations shown below represent the $1,000 increase in income from the original investment increase + $3,992.26 in induced spending, or 99.8 percent of the total induced spending.

Rnd	Ch. Income	Ch. Consumption	Rnd	Ch. Income	Ch. Consumption
1	1,000	800	16	35.18	28.15
2	800	640	17	28.15	22.52
3	640	512	18	22.52	18.01
4	512	409.6	19	18.01	14.41
5	409.6	327.68	20	14.41	11.53
6	327.68	262.14	21	11.53	9.22
7	262.14	209.72	22	9.22	7.38
8	209.72	167.77	23	7.38	5.9
9	167.77	134.22	24	5.9	4.72
10	134.22	107.37	25	4.72	3.78
11	107.37	85.9	26	3.78	3.02
12	85.9	68.72	27	3.02	2.42
13	68.72	54.98	28	2.42	1.94
14	54.98	43.98			
15	43.98	35.18			

$\sum \Delta Y_i = 4990.33$ after 28 time periods

<<How long does it take for the full multiplier effect to work out?>> We don't know how long each time period is. Many macroeconomists attempt to determine how long it takes for the main multiplier effect to actually occur. This has major

implications for the conduct of fiscal and monetary policy as we shall see later.

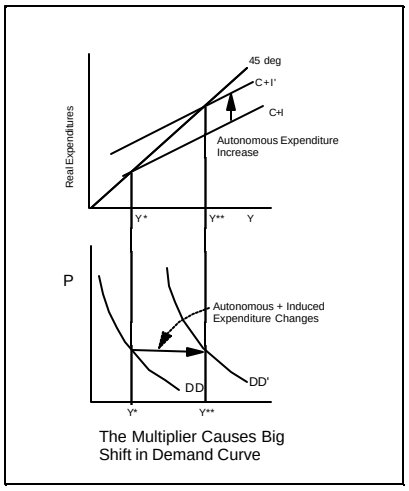


$$ME = \Delta I + \sum_{i=2}^{\omega} 0.8(\Delta Y_i)$$

3 THE MULTIPLIER AND THE AGGREGATE DEMAND CURVE

The multiplier shows us how much the aggregate demand curve will shift for any given change in an exogenous spending component. *At a given price level* the rightward shift in the aggregate demand curve must equal the total change in national income (Y^{*} to Y^{**}) resulting from the changed autonomous

expenditure and the induced consumption changes.



The Multiplier Causes Big Shift in Demand Curve