Consumption and Investment: Marginal Propensity and Multiplier Theory

February 15, 2019

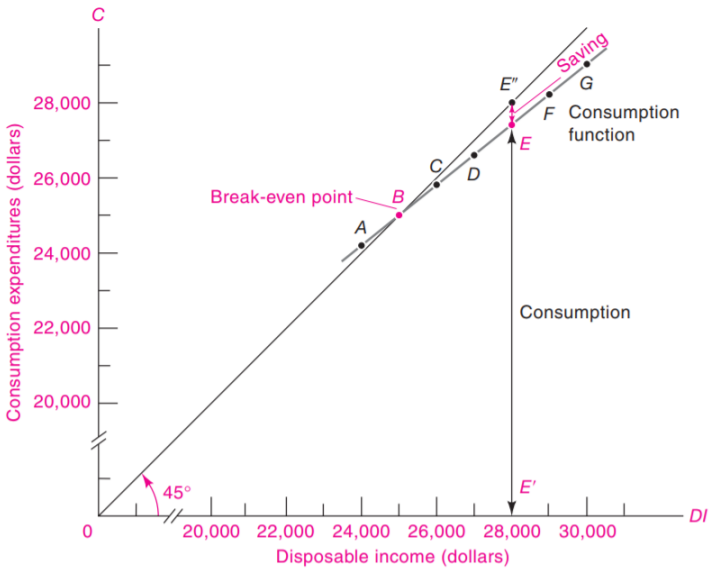

Figure 1: A Plot of Consumption Function

Families with different disposable income usually have different propensities towards consumption, the higher the income it gains, the higher level of consumption it might have.

This relation between consumption and income (as shown in Figure 1) is called **consumption schedule**, or **propensity-to-consume schedule**. The 45°line tells us whether consumption spending is equal to, greater than or less than the level of income. Point B is the **Break-even point**, where consumption expenditure is exactly equal to disposable income: the family is borrowing nothing and on balance saving nothing.

If we view Figure 1 in another way, say, the difference between consumption function and the 45°line, we get **propensity-to-save schedule**, shown if Figure 2.

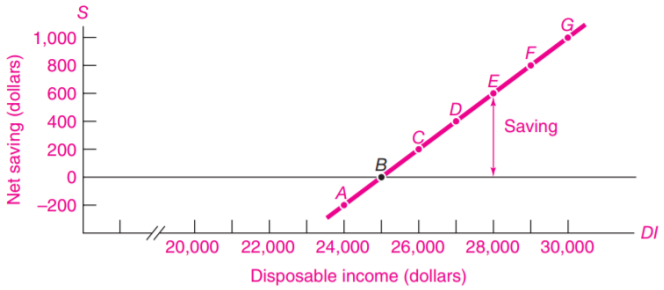

Figure 2: A Plot of Saving Function

To model in what extent people are willing to spend on consumption given an *extra* dollar of income, economists define the concept of "marginal propensity to consume", or MPC. Similarly, the "marginal propensity to save", or MPS, satisfies the restriction $MPC + MPS = 1$ (Consumption + Saving = Income).

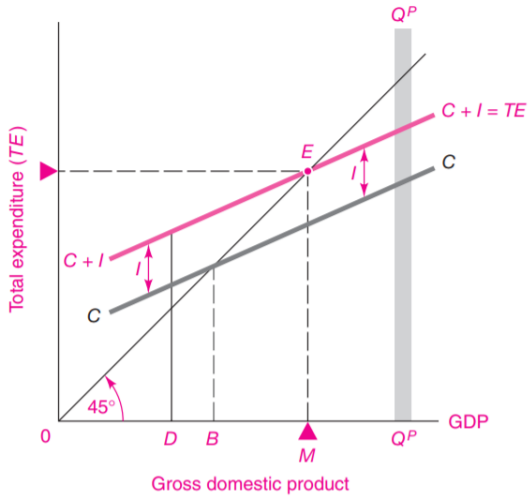

Figure 3: The Equilibrium Level of National Output Is Determined When Total Expenditure (TE) Equals Output

How income is determined? Suppose we ignore government expenditure temporarily and only focus on income and investment. Equilibrium determination

of national income is shown by intersection of the $C+I$ schedule of desired total spending with the 45° line depicting value of total output (shown in Figure 3).

Let us see why the equilibrium income must eventually be at E. The first case is where the system is first at a GDP higher than at E, so that it begins east of E. At such an income level, families are saving more money than business firms will be willing to go on investing. In other words, firms will find their customers too few and their inventories piling up against their wishes. Thus they will cut down their production and lay off workers, leaving the GDP gradually downward. In these scenarios, we call the difference between $C+I$ and 45°line as **Deflationary Gap**. As the country moving back to E, the GDP or the income level of its people also decreases. Later we will see that it must drop by some greater multiple of the original deflationary gap.

The second case is where the system resides westwards of E, in which people are spending more than they can afford. The business will find itself having to sell inventory off its shelves faster than its production line is producing such goods. As a result, they will then expand production and hire new people, leaving the GDP moving back eastward until it gets to E. Economists use **Inflationary Gap** to describe the difference between consumption and GDP. If scheduled investment tends to be greater than full-employment saving, then more goods will be demanded of business than it can produce, and prices will begin to soaring. Economists call this "demand-pull inflation". Unfortunately, an inflationary gap cannot possibly move employment rightward to more than full employment. In fact, the economic system cannot move in real terms very far to the right and enhance GDP. During the Vietnam war, the concept of the inflationary gap was indispensable in indicating the quantitative magnitude of taxation needed to keep decontrolled prices from rising.

In conclusion, the only equilibrium of GDP is at E, where the saving and investment schedules intersect. As for deflationary or inflationary gaps, it then needs the government expenditure (more investment) and taxation (less consumption) to help us reaching the equilibrium point.

Also concluded from Figure 3, the more investment (I in the figure) we have, the higher the pink curve we can get and ending up with a higher level of income. On the contrast, the more we save (or less we consume), the lower the pink curve appears in Figure 3, and a lower level of people's income at last! In other words, *private prudence is socially folly and leads to national poverty.*

So, for what extent can investment help us gaining more income? Economists propose an idea called **Multiplier Theory**.

Modern income analysis shows that an increase in investment will increase national income by a *multiplied* amount – by an amount greater than itself. That is, the money you spend does not end there, people making profits from

your consumption also have the propensity to buy more goods. Suppose we all have the same level of MPC, then the GNP increase is

$$\begin{aligned} GNP\ increase &= investment \times (1 + MPC + MPC^2 + ...) \\ &= \frac{1}{1 - MPC} \times investment \\ &= \frac{1}{MPS} \times investment \end{aligned}$$

Because of this multiplier doctrine, the investment decrease suffered when deflationary gap happens will cause even more slump in people's income.