

CHAPTER EIGHT

BASIC MACROECONOMIC RELATIONSHIPS

I. Introduction—What Are the Basic Macro Relationships?

- A. Previously we identified macroeconomic issues of growth, business cycles, recession, and inflation. Here we begin to develop tools to explain these events.
- B. This chapter focuses on the three basic macroeconomic relationships.
 - 1. Income and consumption, and income and saving.
 - 2. The interest rate and investment.
 - 3. Changes in spending and changes in output.
- C. **Learning objectives** – In this chapter students will learn:
 - 1. How changes in income affect consumption and saving.
 - 2. About factors other than income that can affect consumption.
 - 3. How changes in real interest rates affect investment.
 - 4. About factors other than the real interest rate that can affect investment.
 - 5. Why changes in investment increase or decrease real GDP by a multiple amount.

II. The Income-Consumption and Income-Saving Relationships

- A. Disposable income is the most important determinant of consumer spending.
- B. What is not spent is called saving.
- C. Figure 8.1 represents graphically the recent historical relationship between disposable income (DI), consumption (C), and saving (S) in the United States.
 - 1. A 45-degree line represents all points where consumer spending is equal to disposable income; other points represent actual C, DI relationships for each year from 1983-2005.
 - 2. If the actual graph of the relationship between consumption and income is below the 45-degree line, then the difference must represent the amount of income that is saved.
 - 3. In 1992 consumption was \$4385 billion and disposable income was \$4751 billion. Hence, saving was \$366 billion. Notice that in 2005, consumption (\$9072.1 billion) *exceeded* disposable income (\$9038.6 billion) – personal saving was a *negative* \$33.5 billion!
 - 4. Some conclusions can be drawn:
 - a. Households consume a large portion of their disposable income.
 - b. Both consumption and saving are directly related to the level of income.
- D. The consumption schedule:
 - 1. A hypothetical consumption schedule (Table 8.1 and Key Graph 8.2a) shows that households spend a larger proportion of a small income than of a large income.
 - 2. A hypothetical saving schedule (Table 8.1, column 3) is illustrated in Key Graph 8.2b.
 - 3. Note that “dissaving” occurs at low levels of disposable income, where consumption exceeds income and households must borrow or use up some of their wealth.

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- E. Average and marginal propensities to consume and save:
1. Define average propensity to consume (APC) as the fraction or % of income consumed ($APC = \text{consumption}/\text{income}$). See Column 4 in Table 8.1.
 2. Define average propensity to save (APS) as a the fraction or % of income saved ($APS = \text{saving}/\text{income}$). See Column 5 in Table 8.1.
 3. Global Perspective 8.1 shows the APCs for several nations in 2006. Note the high APCs for the U.S., Canada, and the United Kingdom.
 4. Marginal propensity to consume (MPC) is the fraction or proportion of any change in income that is consumed. ($MPC = \text{change in consumption}/\text{change in income}$.) See Column 6 in Table 8.1.
 5. Marginal propensity to save (MPS) is the fraction or proportion of any change in income that is saved. ($MPS = \text{change in saving}/\text{change in income}$.) See Column 7 in Table 8.1.
 6. Note that $APC + APS = 1$ and $MPC + MPS = 1$.
 7. Note that Figure 8.3 illustrates that MPC is the slope of the consumption schedule, and MPS is the slope of the saving schedule.
 8. Test Yourself: Try the Self-Quiz below Key Graph 8.2.
- F. Nonincome determinants of consumption and saving can cause people to spend or save more or less at various income levels, although the level of income is the basic determinant.
1. Wealth: An increase in wealth shifts the consumption schedule up and saving schedule down. In recent years major fluctuations in stock market values have increased the importance of this wealth effect. A “reverse wealth effect” occurred in 2000 and 2001, when stock prices fell dramatically. **Consider This ... What Wealth Effect?**
 2. Expectations: Changes in expected future prices or wealth can affect consumption spending today.
 3. Real interest rates: Declining interest rates increase the incentive to borrow and consume, and reduce the incentive to save. Because many household expenditures are not interest sensitive – the light bill, groceries, etc. – the effect of interest rate changes on spending are modest.
 4. Household debt: Lower debt levels shift consumption schedule up and saving schedule down.
- G. Other important considerations: See Figure 8.4.
1. Macroeconomic models focus on real domestic output (real GDP) more than on disposable income. Figure 8.4 reflects this change in the labeling of the horizontal axis.
 2. Changes along schedules: Movement from one point to another on a given schedule is called a change in the amount consumed; a shift in the schedule is called a change in consumption schedule, and is caused by *nonincome* determinants of consumption..
 3. Schedule shifts: Consumption and saving schedules will always shift in opposite directions unless a shift is caused by a tax change.
 4. Taxation: Lower taxes will shift both schedules up since taxation affects both spending and saving, and vice versa for higher taxes.

5. Stability: Economists believe that consumption and saving schedules are generally stable unless deliberately shifted by government action.

III. The Interest Rate – Investment Relationship

- A. Investment consists of spending on new plants, capital equipment, machinery, inventories, construction, etc.
 1. The investment decision weighs marginal benefits and marginal costs.
 2. The expected rate of return is the marginal benefit and the interest rate – the cost of borrowing funds – represents the marginal cost.
- B. Expected rate of return is found by comparing the expected economic profit (total revenue minus total cost) to cost of investment to get *expected* rate of return. The text's example gives \$100 expected profit on a \$1000 investment, for a 10% expected rate of return. Thus, the business would not want to pay more than 10% interest rate on investment. Remember that the expected rate of return is not a guaranteed rate of return. Investment carries risk.
- C. The real interest rate, i (nominal rate corrected for expected inflation), determines the cost of investment.
 1. The interest rate represents either the cost of borrowed funds or the opportunity cost of investing your own funds, which is income forgone.
 2. If real interest rate exceeds the expected rate of return, the investment should not be made.
- D. Investment demand schedule, or curve, shows an inverse relationship between the interest rate and amount of investment.
 1. As long as expected return exceeds interest rate, the investment is expected to be profitable (see Table 8.2 example).
 2. Key Graph 8.5 shows the relationship when the investment rule is followed. Fewer projects are expected to provide high return, so less will be invested if interest rates are high.
 3. Test yourself with Quick Quiz 8.5.
- E. Shifts in investment demand (Figure 8.6) occur when any determinant apart from the interest rate changes.
 1. Greater expected returns create more investment demand; shift curve to right. The reverse causes a leftward shift.
 2. Changes in expected returns result because:
 - a. Acquisition, maintenance, and operating costs of capital goods may change. Higher costs lower the expected return.
 - b. Business taxes may change. Increased taxes lower the expected return.
 - c. Technology may change. Technological change often involves lower costs, which would increase expected returns.
 - d. Stock of capital goods on hand will affect new investment. If there is abundant idle capital on hand because of weak demand or recent investment, new investments would be less profitable.
 - e. Expectations about future economic and political conditions, both in the aggregate and in certain specific markets, can change the view of expected profits.

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- F. Investment is a very unstable type of spending; I is more volatile than GDP (See Figure 8.7).
 - 1. Capital goods are durable, so spending can be postponed or not. This is unpredictable.
 - 2. Innovation occurs irregularly.
 - 3. Profits vary considerably.
 - 4. Expectations can be easily changed.

IV. The Multiplier Effect

- A. Changes in spending ripple through the economy to generate even larger changes in real GDP. This is called the *multiplier effect*.
 - 1. Multiplier = change in real GDP / initial change in spending. Alternatively, it can be rearranged to read Change in real GDP = initial change in spending x multiplier.
 - 2. Three points to remember about the multiplier:
 - a. The initial change in spending is usually associated with investment because it is so volatile, but changes in consumption (unrelated to income), net exports, and government purchases also are subject to the multiplier effect.
 - b. The initial change refers to an upshift or downshift in the aggregate expenditures schedule due to a change in one of its components, like investment.
 - c. The multiplier works in both directions (up or down).
- B. The multiplier is based on two facts.
 - 1. The economy has continuous flows of expenditures and income—a ripple effect—in which income received by Grant comes from money spent by Battaglia. Battaglia's income, in turn, came from money spent by Mendoza, and so forth.
 - 2. Any change in income will cause both consumption and saving to vary in the same direction as the initial change in income, and by a fraction of that change.
 - a. The fraction of the change in income that is spent is called the marginal propensity to consume (MPC).
 - b. The fraction of the change in income that is saved is called the marginal propensity to save (MPS).
 - c. This is illustrated in Table 8.3, and Figure 8.8 that is derived from the Table.
- C. The size of the MPC and the multiplier are directly related; the size of the MPS and the multiplier are inversely related. See Figure 8.9 for an illustration of this point. In equation form Multiplier = $1 / \text{MPS}$ or $1 / (1 - \text{MPC})$.
- D. The significance of the multiplier is that a small change in investment plans or consumption-saving plans can trigger a much larger change in the equilibrium level of GDP.
- E. The simple multiplier given above can be generalized to include other “leakages” from the spending flow besides savings. For example, the actual multiplier is derived by including taxes and imports as well as savings in the equation. In other words, the denominator is the fraction of a change in income not spent on domestic output. (Key Question 9)

V. LAST WORD: Squaring the Economic Circle

- A. Humorist Art Buchwald illustrates the concept of the multiplier with this funny essay.
- B. Hofberger, a Ford salesman in Tomcat, Va., called up Littleton of Littleton Menswear & Haberdashery, and told him that a new Ford had been set aside for Littleton and his wife.

- C. Littleton said he was sorry, but he couldn't buy a car because he and Mrs. Littleton were getting a divorce.
- D. Soon afterward, Bedcheck the painter called Hofberger to ask when to begin painting the Hofbergers' home. Hofberger said he couldn't, because Littleton was getting a divorce, not buying a new car, and, therefore, Hofberger could not afford to paint his house.
- E. When Bedcheck went home that evening, he told his wife to return their new television set to Gladstone's TV store. When she returned it the next day, Gladstone immediately called his travel agent and canceled his trip. He said he couldn't go because Bedcheck returned the TV set because Hofberger didn't sell a car to Littleton because Littletons are divorcing.
- F. Sandstorm, the travel agent, tore up Gladstone's plane tickets, and immediately called his banker, Gripsholm, to tell him that he couldn't pay back his loan that month.
- G. When Rudemaker came to the bank to borrow money for a new kitchen for his restaurant, the banker told him that he had no money to lend because Sandstorm had not repaid his loan yet.
- H. Rudemaker called his contractor, Eagleton, who had to lay off eight men.
- I. Meanwhile, Ford announced it would give a rebate on its new models. Hofberger called Littleton to tell him that he could probably afford a car even with the divorce. Littleton said that he and his wife had made up and were not divorcing. However, his business was so lousy that he couldn't afford a car now. His regular customers, Bedcheck, Gladstone, Sandstorm, Gripsholm, Rudemaker, and Eagleton had not been in for over a month!