

Chapter 9

BUILDING THE AGGREGATE EXPENDITURES MODEL

I. Introduction

- A. This chapter and Chapter 10 focus on the development of an analytical model called the aggregate expenditures model. We use the definitions and facts from previous chapters to shift our study to the analysis of the economy. The aggregate expenditures model is one tool in this analysis.
- B. The chapter begins with the historical backdrop to the model.
- C. The focus is on the relationship between income and consumption and savings.
- D. Investment spending, an important part of aggregate expenditures, is also examined.
- E. Finally, these spending categories are combined to explain the equilibrium levels output and employment in a private (no government), domestic (no foreign sector) economy.

II. Classical economics and Say's law

- A. Until the Great Depression of the 1930s, most economists going back to Adam Smith had believed that a market system would ensure full employment of the economy's resources except for temporary, short-term upheavals.
- B. If there were deviations, they would be self-correcting. A slump in output and employment would reduce prices, which would increase consumer spending; would lower wages which would increase employment again; and would lower interest rates which would expand investment spending.
- C. Say's law, attributed to the French economist J. B. Say in the early 1800s, summarized the view in a few words: "Supply creates its own demand."
- D. Say's law is easiest to understand in terms of barter. The shoemaker produces shoes in order to trade for other needed products and services. All the shoes produced would be traded for something, or else there would be no need to make them. Thus, supply creates its own demand.
- E. Reformulated versions of these classical views are still prevalent among some modern economists today.

III. The Great Depression and Keynes

- A. The Great Depression of the 1930s was worldwide. GDP fell by 40 percent in U.S. and unemployment rate rose to nearly 25 percent (when most families had only one breadwinner). The Depression seemed to refute the classical idea that markets were self-correcting and would provide full employment.
- B. John Maynard Keynes (see Last Word) provided an alternative to classical theory, which helped explain periods of recession.
 - 1. Not all income is always spent, contrary to Say's law.
 - 2. Producers may respond to unsold inventories by reducing output rather than cutting prices.
 - 3. A recession or depression could follow this decline in employment and incomes.
- C. The modern aggregate expenditures model is based on Keynesian economics or the ideas that have arisen from Keynes and his followers since. It is based on the idea that saving and investment

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Decisions may not be coordinated, and prices and wages are not very flexible downward. Internal market forces can therefore cause depressions without any external events like droughts, wars, and floods.

IV. Simplifying assumptions for this chapter

- A. We assume a "closed economy" with no international trade.
- B. Government is ignored; focus is on private sector markets until next chapter.
- C. Although both households and businesses save, we assume here that all saving is personal.
- D. Depreciation and net income earned abroad are assumed to be zero for simplicity.
- E. There are two reminders concerning these assumptions.
 1. They leave out two key components of aggregate demand (government spending and foreign trade), but these parts of aggregate demand are affected by other influences outside the market system.
 2. Without government and foreign trade, we can treat GDP as being equal to national income (NI), personal income (PI), and disposable income (DI).

V. Tools of aggregate expenditures theory: Consumption and Saving

A. The level of output and employment depend directly on the level of total or aggregate expenditures. In this chapter (once again) we will look only at the consumption and investment components of aggregate expenditures.

B. Consumption and saving:

1. Disposable income is the most important determinant of consumer spending (See Figure 9-1 in text which presents historical evidence).
2. In Figure 9-1 we see a 45-degree line which represents all points where consumer spending is equal to disposable income.
3. 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.
4. Look at 1994 where consumption was \$4627 billion and disposable income was \$4959 billion. Hence, saving was \$332 billion.
5. The graph also indicates that as disposable income increases the amount of saving also increases.
6. 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.

C. The consumption schedule:

1. Hypothetical consumption schedule (Table 9-1 and Figure 9-2a) shows that households spend a larger proportion of a small income than of a large income.
2. Hypothetical saving schedule (Table 1, column 3) is illustrated in Figure 9-2b.

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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.

E. Average and marginal propensities to consume and save:

1. Define average propensity to consume (APC) as a fraction of income consumed or consumer spending divided by income ($APC = \text{consumption}/\text{income}$).
2. Define average propensity to save (APS) as a fraction of income saved or saving divided by income ($APS = \text{saving}/\text{income}$).
3. Global Perspective 9-1 shows the APCs for several nations.
4. Marginal propensity to consume (MPC) is the fraction or proportion of any change in income that is consumed. $MPC = \text{change in consumption}/\text{change in income}$.
5. Marginal propensity to save (MPS) is the fraction or proportion of any change in income that is saved. $MPS = \text{change in saving}/\text{change in income}$.
6. Note that $APC + APS = 1$ and $MPC + MPS = 1$.
7. Also, Figure 9-3 illustrates that MPC is the slope of the consumption schedule, and MPS is the slope of the saving schedule.

F. There are nonincome determinants of consumption and saving, which can cause people to spend or save more or less at various income levels.

1. Wealth: Increase in wealth shifts the consumption schedule up and saving schedule down, but since wealth does not change greatly from year to year, it won't account for large shifts in the schedules.
2. Expectations: Expected inflation or shortages in future will shift current consumption schedule up.
3. Consumer debt: Lower debt level shifts consumption schedule up and saving schedule down.
4. Taxation: Lower taxes will shift both schedules up, if they are originally plotted against before-tax income and vice versa for higher taxes.

G. Shifts and stability:

1. Terminology: Movement from one point to another on a given schedule is called a change in amount consumed; a shift in the schedule is called a change in consumption schedule.
2. Schedule shifts: Consumption and saving schedules will always shift in opposite directions unless a shift is caused by a tax change.
3. Stability: Economists believe that consumption and saving schedules are generally stable unless deliberately shifted by government action.

VI. Investment

A. Investment is the second component of private spending.

1. Expected rate of net profit will be a determinant.
2. Interest rate will be the other major determinant.

B. Expected rate of net profit is found by comparing the expected economic profit (total revenue minus total cost) to investment cost to get expected rate of return.

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- C. The real interest rate, i (nominal rate corrected for expected inflation), is the cost of investment.
1. Interest rate is cost of borrowed funds.
 2. Interest rate is also cost of investing your own funds, since it is income forgone.
- D. Investment demand schedule, or curve, shows an inverse relationship between the interest rate and amount of investment.
1. Based on expected profit (see Table 9-2 example).
 2. Rule: Invest up to the point at which the expected rate of net profit equals the interest rate (because cost should not exceed net profit).
 3. Figure 9-5 shows the relationship when the investment rule is followed. Fewer projects are expected to provide high net profit, so less will be invested if interest rates are high. Shifts in investment demand: Any factor that increases expected net profit will shift investment demand to the right and vice versa (leftward shift) for any factor that decreases expected net profit.
- E. Causes of shifts in investment demand:
1. Acquisition, maintenance, and operating costs of capital goods may change.
 2. Business taxes may change.
 3. Technology may change.
 4. Stock of capital goods on hand will affect new investment.
 5. Expectations can change the view of expected profits.
- F. Investment and income: It is generally assumed that investment decisions are independent or autonomous of the level of current income, but curves may be slightly upward sloping, as illustrated in Table 9-3 and Figure 9-6.
1. Higher income may be expected to generate higher profit.
 2. Lower income may mean more excess capacity and, therefore, less new investment needed.
- G. Investment is a very unstable type of spending.
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.
- VII. Equilibrium GDP: expenditures-output approach
- A. Look at Table 9-4, which combines data of Tables 9-1 and 9-3.
- B. Real domestic output in column 2 shows ten possible levels that producers are willing to offer, assuming their sales would meet the output planned. In other words, they will produce \$370 billion of output if they expect to receive \$370 billion in revenue.
- C. Ten levels of aggregate expenditures are shown in column 6. The column shows the amount of consumption and planned gross investment spending ($C + I_g$) forthcoming at each output level.

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1. Recall that consumption level is directly related to the level of income and that here income is equal to output level.
 2. Investment is independent of income here and is planned or intended regardless of the current income situation.
- D. Equilibrium GDP is the level of output whose production will create total spending just sufficient to purchase that output. Otherwise there will be a disequilibrium situation.
1. At \$410 billion GDP level, total expenditures ($C + I_g$) would be $\$425 = \$405(C) + \$20(I_g)$ and businesses will adjust to this excess demand by stepping up production. They will expand production at any level of GDP less than the \$470 billion equilibrium.
 2. At levels of GDP above \$470 billion, such as \$510 billion, aggregate expenditures will be less than GDP. At \$510 billion level, $C + I_g = \$500$ billion. Businesses will have unsold, unplanned inventory investment and will cut back on the rate of production. As GDP declines, the number of jobs and total income will also decline, but eventually the GDP and aggregate spending will be in equilibrium at \$470 billion.
- E. Figure 9-8 (Key Graph) is a graphical representation of this information. At \$470 billion it shows the $C + I_g$ schedule intersecting the 45-degree line which is where output = aggregate expenditures, or the equilibrium position.
1. Observe that the aggregate expenditures line rises with output and income, but not as much as income, due to the marginal propensity to consume (the slope) being less than 1.
 2. A part of every increase in disposable income will not be spent but will be saved.

VIII. Leakages-injections approach

- A. Equilibrium GDP can also be analyzed using another approach, the "leakages-injections" approach. It is less direct, but it states that equilibrium GDP is where saving (S) = planned gross investment (I_g).
1. Since part of income is saved rather than spent, saving represents a leakage from the income-expenditures stream.
 2. Business spending on investment goods, on the other hand, can be considered an injection into the income-expenditures stream because it is spending above that from household earnings.
 3. If the leakage is greater than the injection, then aggregate spending will be less than GDP and this level of GDP is too high to be sustained.
 4. Conversely, if the injection of investment exceeds the leakage of saving, then aggregate expenditures will exceed planned GDP and GDP will be driven up.
 5. To recap: Only where $S = I_g$, where the leakage of saving is just offset by the injection of investment will aggregate expenditures equal real output, and this is equilibrium GDP.
 6. In general, a leakage is any use of income other than its spending on domestically produced output, which would also include income "leaks" to import spending and tax payments.
 7. In general, any supplement to consumer spending on domestic production is an injection. Injections also include export earnings and government purchases.
 8. Looking back at Table 9-4, it can be seen that at equilibrium GDP of \$470 billion, saving and planned investment are equal at \$20 billion.

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9. Looking at Figure 9-9, this can also be seen graphically. Only at \$470 billion do businesses and households invest and save at the same rates.

B. Planned vs. actual investment

1. It is important to note that in our analysis above we spoke of “planned” investment.
2. Actual investment consists of what is planned plus (or minus) any unplanned changes in inventory investment. The unplanned investment acts as a balancing item which always equates actual investment to the actual amounts saved.
 - a. If aggregate spending is less than equilibrium GDP, then businesses will find themselves with unplanned inventory investment on top of what was already planned.

This unplanned portion is reflected as a business expenditure, even though the business may not have desired it, because the total output has a value that belongs to someone - either as a planned purchase or as an unplanned inventory.

- b. If aggregate expenditures exceed GDP, then there will be less inventory investment than businesses planned as businesses sell more than they expected. This is reflected as a negative amount of unplanned investment in inventory. For example, at \$450 billion GDP, there will be \$435 billion of consumer spending, \$20 billion of planned investment, so businesses must have experienced a \$5 billion unplanned decline in inventory because sales exceed that expected.
3. Summary: At above-equilibrium GDP, saving exceeds planned investment, but actual investment will equal actual saving because there will be unplanned increase in inventories. At below-equilibrium GDP, saving is less than planned investment, but actual investment will equal actual saving because there will be an unplanned decrease in inventories.

C. Achieving equilibrium:

1. A difference between saving and planned investment causes a difference between the production and spending plans of the economy as a whole.
2. This difference between production and spending plans leads to unintended inventory investment or unintended decline in inventories.
3. As long as unplanned changes in inventories occur, businesses will revise their production plans upward or downward until the investment in inventory is equal to what they planned. This will occur at the point that household saving is equal to planned investment.
4. Only where planned investment and saving are equal will there be no unintended investment or disinvestment in inventories to drive the GDP down or up. (Key Question 11)

IX. LAST WORD: John Maynard Keynes (1883 - 1946)

- A. He is regarded as the originator of modern macroeconomics.
- B. His book, *The General Theory of Employment, Interest, and Money* (1936), revolutionized economic analysis.

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C. Personal characteristics:

1. Was the son of an eminent English economist.
2. Had many diverse roles in lifetime.
3. Amassed a personal fortune through investments.
4. Was a member of famous British intellectual "Bloomsbury group".

D. Prolific scholarship is his most important contribution.

1. *General Theory* is his most important work. He suggested that recessions were not self-correcting.
2. His recommendation for government spending is to induce more production was revolutionary at the time.