Learning Objectives

1. Differentiate between desired expenditure and actual expenditure.
2. Explain the determinants of desired consumption and desired investment expenditures.
3. Define equilibrium national income.
4. Explain how a change in desired expenditure affects equilibrium income, and how this change is reflected by the multiplier.

1 Desired Aggregate Expenditure

The National Income and Expenditure Accounts (NIEA) divide actual GDP, calculated from the expenditure side, into its components: C, I , G, and NX(=X-M)

Total desired expenditure on domestically produced goods and services can be divided into similar categories:

- desired consumption (C),
- desired investment (I),
- desired government purchases (G), and
- desired net exports (NX).

The sum of these components is called desired aggregate expenditure, or more simply Aggregate Expenditure (AE).

$$AE = C+I+G+(X-M)$$

Components of aggregate expenditure that do not depend on national income are called autonomous expenditures.

Components of aggregate expenditure that do change in response to changes in national income are called induced expenditures.

What Does "Desired" Really Mean?

"Desired" expenditure is not just a list of what consumers and firms would buy if they had no constraints on their spending — it is much more realistic than that. Desired expenditure is what consumers and firms would like to purchase, given their real-world constraints of income and market prices.

Desired Consumption Expenditure

There are only two possible uses of disposable income: consumption (C) or saving (S).

The factors that influence consumption or saving are given in the consumption function and the saving function.

In the simplest theory, consumption is determined primarily by current disposable income (Y_D).

In more advanced theories of consumption, individuals are explicitly forward looking, and current income is less important than some measure of "permanent" or "lifetime" income.

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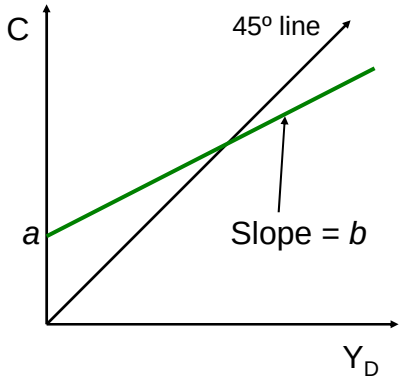
The simple consumption function is written as:

$$C = a + bY_D$$

where **a** represents autonomous consumption expenditure and $\mathbf{bY_D}$ represents induced consumption expenditure.



Notice that the slope of the 45º line is one. The slope of the simple consumption function is less than one.

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The marginal propensity to consume (MPC) relates the change in desired consumption to the change in disposable income that brings it about — it is the slope of the consumption function.

$$MPC = \Delta C/\Delta Y_D$$

In the previous diagram, the MPC is the same at any level of income.

The average propensity to consume (APC) is equal to total consumption divided by total disposable income. The APC falls as the level of income rises.

$$APC = C/Y_D$$

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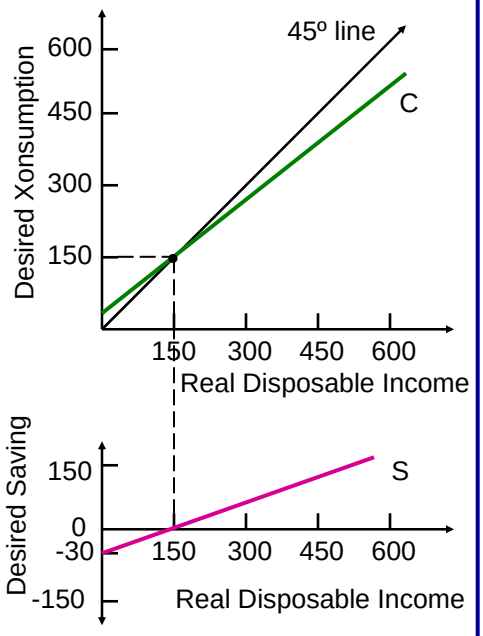
Disposable Income (Y_D)	Desired Consumption (C)	Desired Saving (S)	$APC = C/Y_D$	ΔY_D	ΔC	$MPC = \Delta C/\Delta Y_D$
0	30	−30	—			
				30	24	0.8
30	54	−24	1.80			
				90	72	0.8
120	126	−6	1.05			
				30	24	0.8
150	150	0	1.00			
				150	120	0.8
300	270	30	0.90			
				150	120	0.8
450	390	60	0.87			
				75	60	0.8
525	450	75	0.86			
				75	60	0.8
600	510	90	0.85			

Both consumption and saving rise as disposable income rises.



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The average propensity to save (APS) is equal to total desired saving divided by total disposable income:

$$APS = S/Y_D$$

The marginal propensity to save (MPS) relates the change in desired saving to the change in disposable income that brought it about:

$$MPS = \Delta S/\Delta Y_D$$

Since all of Y_D is either consumed or saved, we have:

- APC + APS = 1
- MPC + MPS = 1

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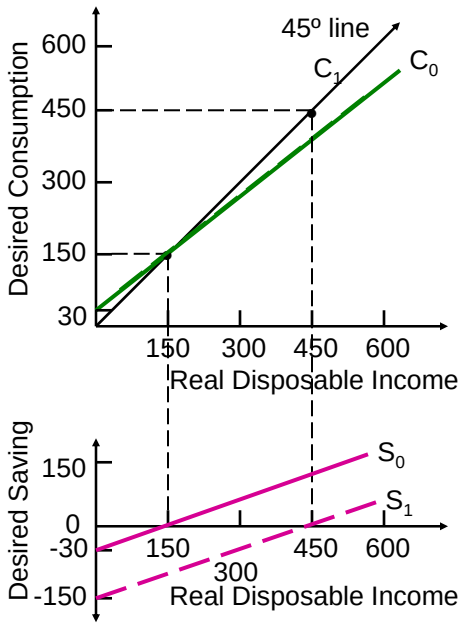
Shifts in Consumption Functions

Suppose there is an unexpected increase in wealth.

The consumption function will shift upward, and the saving function downward.

Other reasons the consumption function might shift include changes in interest rates or expectations.



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Desired Investment Expenditure

Investment expenditure is the most volatile component of GDP. Changes in investment expenditure are strongly associated with economic fluctuations.

Three important determinants of aggregate investment expenditure are:

- the real interest rate,
- changes in the level of sales, and
- business confidence.

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The Real Interest Rate

1. The real interest rate is the opportunity cost of using money (either borrowed or retained earnings) for investment in new plants and equipment.

2. It is also the opportunity cost of holding an inventory of a given size.

3. Also, higher real interest rates mean a higher cost associated with mortgage financing for residential construction.

Thus, all three components of desired investment expenditure are negatively related to the real interest rate.

Changes in Sales

The higher the level of production and sales, the larger the desired stock of inventories. This means that changes in the rates of production and sales cause temporary bouts of investment (or disinvestment) in inventories.

Business Confidence

When business confidence is high, firms will want to invest now so as to reap future profits (investment takes time to "come on line").

Business confidence and consumer confidence may feed off of one another.

The Aggregate Expenditure Function

The aggregate expenditure function relates the level of desired aggregate expenditure to the level of actual national income.

(Note the distinction between desired aggregate expenditure and actual national income.)

In the absence of government and international trade, desired aggregate expenditure is just equal to C + I.

$$AE = C + I$$

Consider the following example.

The consumption function is:

$$C = 30 + (0.8)Y$$

The investment function is:

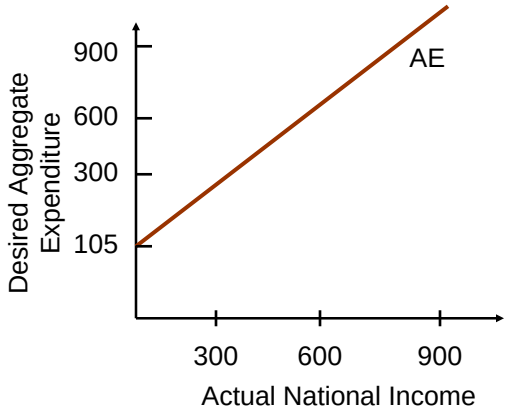
$$I = 75$$

The AE function is then given by:

$$AE = C + I = 30 + (0.8)Y + 75$$

and so $AE = 105 + (0.8)Y$

Y	C	I	AE
30	54	75	129
120	126	75	201
150	150	75	225
300	270	75	345
450	390	75	465
525	450	75	525
600	510	75	585
900	750	75	825



The slope of the AE function is the marginal propensity to spend. In the simplest model with no taxes and no international trade, this is just the MPC.

Summary

The AE function combines the spending plans of households and firms. It shows, for any level of *actual* national income, the level of *desired* aggregate spending.

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2 Equilibrium National Income

Desired Expenditure and Actual Output

If desired aggregate expenditure exceeds actual output, there will be pressure for output to rise.

If desired aggregate expenditure is less than actual output, there will be pressure for output to fall.

Why? Think about what happens to inventories when AE > Y, and why this leads to more production.

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National Income (Y)	Desired Aggregate Expenditure (AE = C + I)	Effect
30	129	Pressure on income to rise ↓ ↓
120	201	
150	225	
300	345	
450	465	
525	525	Equilibrium income
600	585	↑ Pressure on income to fall
900	825	

Equilibrium occurs where aggregate desired expenditure equals actual national income (output).

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Desired Saving and Desired Investment

We can view the equilibrium differently by considering desired saving and desired investment.

The difference between desired investment and desired saving is exactly equal to the difference between desired aggregate expenditure and actual national income.

To see this, suppose the difference between desired saving and desired investment is equal to some number, *W*. Thus,

$$S - I = W$$

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Now, recall that S = Y - C. We can therefore write:

$$Y - C - I = W$$

Since AE = C + I, we can rewrite the equation again as:

$$Y - (C + I) = W$$

$$\Rightarrow Y - AE = W$$

Thus defining the equilibrium as the level of output where AE = Y is exactly the same as defining the equilibrium as the level of output where S = I.

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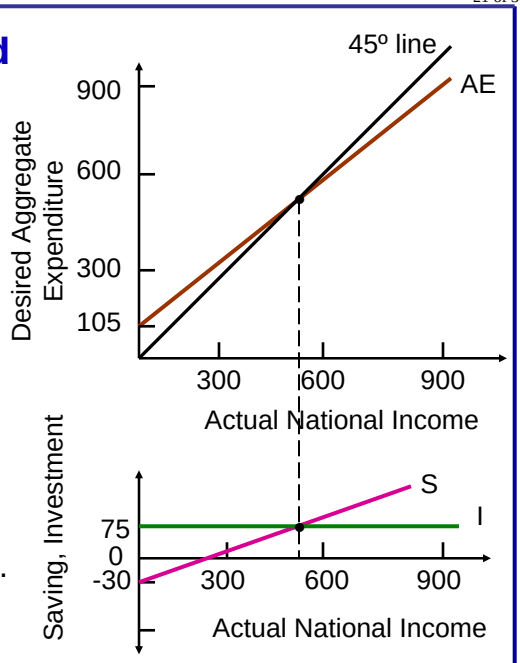
Equilibrium Illustrated

Equilibrium national income is that level of national income where desired aggregate expenditure equals actual national income.

Or, equivalently, it is the level of national income where desired saving equals desired investment.



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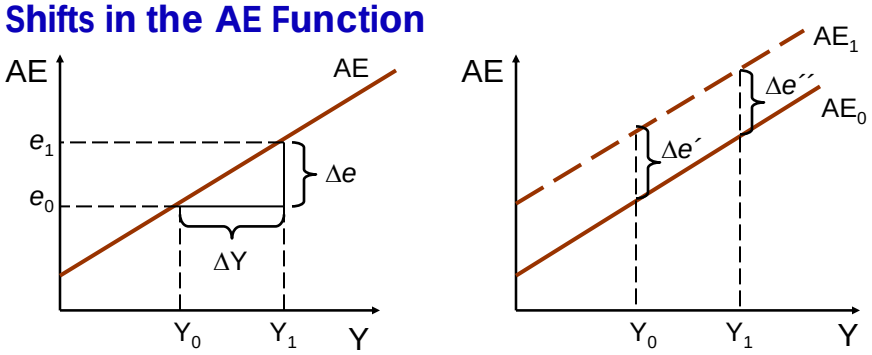
3 Changes in Equilibrium National Income

Shifts in the AE Function



A movement along the AE function occurs in response to a change in Y; a shift of the AE function indicates a change in desired expenditure for any given level of Y.

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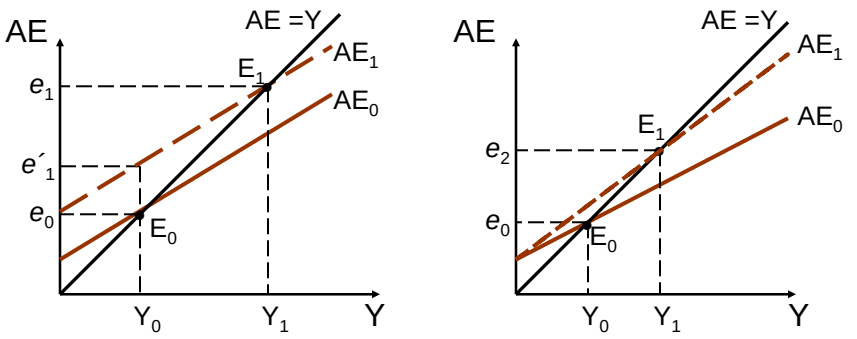

Two types of shifts can occur with the AE function:

- First, the AE function can shift parallel to itself.
- Second, the slope of the AE function can change.

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The Multiplier

What is the Multiplier?

The multiplier is a measure of the size of the change in equilibrium national income that results from a change in autonomous expenditure.

In the simplest of macro models, the multiplier is greater than one.

For example, a $1 billion increase in desired investment expenditure will increase the equilibrium level of national income by more than $1 billion.

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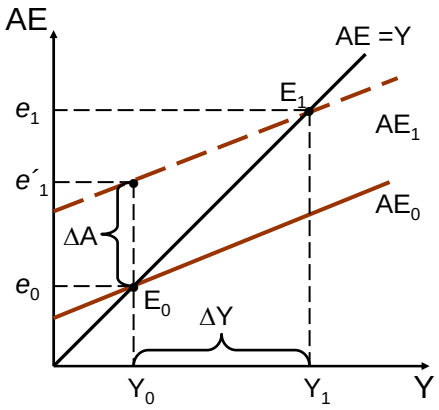
Suppose there is an increase in autonomous desired expenditure equal to ΔA.

We can derive the precise value of the simple multiplier:

Simple multiplier $= \dfrac{\Delta Y}{\Delta A} = \dfrac{1}{1-z}$



where z is the marginal propensity to spend out of national income.

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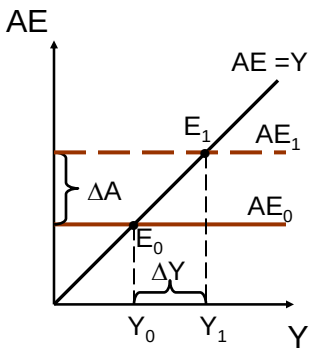

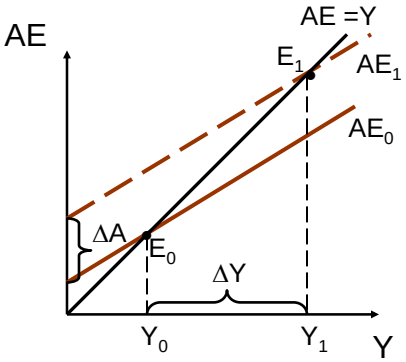

The larger the marginal propensity to spend out of national income (z), the steeper the AE curve and the larger the multiplier.

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Economic Fluctuations as Self-Fulfilling Prophecies

Households and firms base their desired investment and consumption partly on their expectations for the future.

As a result, changes in expectations about the future can lead to real changes in the current state of the economy.

To see this, imagine that many firms feel optimistic about future economic prospects. This increased optimism will increase their desired investment, shifting up the AE curve.

As we have seen, this shift will increase national income, justifying the firms' initial optimism.

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Now imagine the opposite scenario. It should be clear that if firms and households are pessimistic about the future in large numbers, the ensuing change in their behaviour will lead to a self-fulfilling prophecy of reduced national income.

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