

MACROECONOMICS
Saving, Investment, and the Trade Balance

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These notes provide a simplified rendition of the saving-investment identity implied by the National Income and Product Accounts. The relationships derived below also provide a framework for thinking about long-run equilibrium in an open economy.

1. The **Expenditures Approach** to measuring GDP holds in nominal terms (i.e., with all the variables measured in current dollars). It also holds in real terms (i.e., with all the variables measured in constant dollars), setting aside some technical intricacies associated with chain-weighted indexes. All the definitions and relationships below also hold in nominal terms, but we will focus on the real variables and use the following notation:

Y = Real GDP (alternatively, NDP)
C = Real Personal Consumption Expenditures
I = Real Gross (alternatively, Net) Private Domestic Investment
G = Real Government Purchases of Goods and Services
X = Real Exports
M = Real Imports

The real version of the Expenditures Approach, then, says

$$(1) \quad Y = C + I + G + X - M$$

Note that we can think of both sides being defined net, or gross, of depreciation.

2. **The government's budget** shows the balance between tax revenues and government expenditures (purchases plus transfer payments like unemployment benefits). I'll use the symbol **NT** for **Net Tax Revenues**, defined as total (gross) tax revenues minus transfer payments (including interest on the national debt). The government's **budget surplus**, **NT-G**, is also called **government saving**:

$$(2) \quad S_g = NT - G$$

If the surplus is negative, we can think of the budget deficit, **G - NT**, as government dissaving.

(Note: The definition of government saving above follows your textbook. The Commerce Department currently defines government saving as net tax revenues minus government consumption.)

3. **Business (Corporate) Saving** is essentially equal to **Retained Earnings**.
4. **Personal Saving** is defined as Disposable Personal Income minus consumption.
5. **Private Saving**, S_p , refers to business plus personal saving.

6. Using the definition of Disposable Personal Income, we get

$$(3) \quad S_p = Y + NFP - NT - C$$

(Note: NFP stands for net factor payments from abroad; we are ignoring indirect business taxes and subsidies.)

7. **National Saving, S**, is government plus private saving. Using equations (2) and (3),

$$(4) \quad S = NT - G + Y + NFP - NT - C = Y + NFP - C - G$$

8. **The Trade Surplus** is defined as **Net Exports, NX = X - M**. The **Trade Deficit** is $-NX = M - X$. The textbook defines the **Current-account Surplus** as $CA = NX + NFP$. (Note: for now, we are ignoring unilateral transfers.) With this definition, $-CA = M - X - NFP$ is the **Current-account Deficit**.

The **Current-account Deficit** is often called **Foreign-sector Saving, S_f**. The basic idea is that a country (like the U.S.) with an external deficit effectively “borrows” the savings of other countries. By contrast, a country with an external surplus lends to other countries. [Note: some textbooks call the trade deficit foreign-sector saving; this is suitable for the GNP accounts.]

9. From equations (1) and (4), we get

$$(5) \quad S = I + X - M + NFP = I + CA \quad \Rightarrow \quad -CA = M - X - NFP = I - S$$

In words, national saving equals investment plus the current-account surplus; equivalently, the current-account deficit equals investment minus national saving. This is useful for highlighting the fact that a country with a current-account deficit is an international borrower. Also, a policy that reduces the current-account deficit (say, a tariff on imports) must either be accompanied by an increase in national saving or will lead to a decrease in investment.

10. Defining **Aggregate Saving** as the sum of national saving and foreign sector saving, equation (5) implies

$$(6) \quad \text{Aggregate Saving} = \text{Investment}$$

This equation is called the saving-investment identity. Interpreting this as a model of long-run equilibrium, we are looking at equilibrium from the perspective of the **market for loanable funds**. The equilibrium real interest rate in the long-run must be such that the supply of loanable funds (aggregate saving) equals the demand (investment).