



International Finance (Prof. G. Belletini)

Lecture 1: National and international accounts

Transactions within a closed economy National Income and Product Accounts

Total national resources devoted to expenditure
($C + I + G$)

Gross National Expenditure
GNE

Payments for final goods and services

Value added
(sales minus intermediates)

Gross Domestic Product
GDP

Payments for factor services

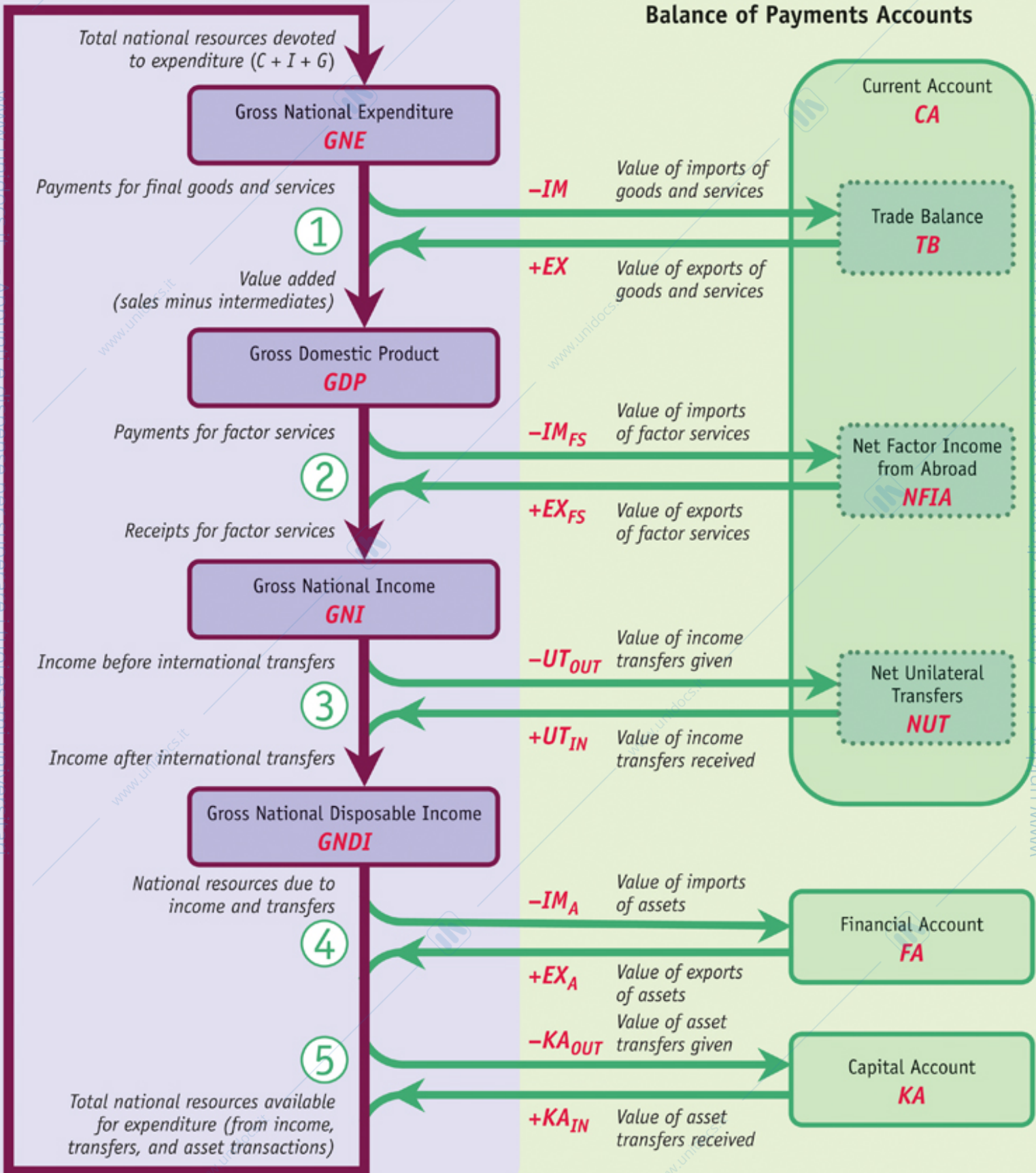
Receipts for factor services

Gross National Income
GNI

Total national resources available for expenditure
(from income)

Transactions within the home country National Income and Product Accounts

Home country transactions with the rest of the world Balance of Payments Accounts



2 Income, Product, and Expenditure

Three Approaches to Measuring Economic Activity

- The *expenditure approach* looks at the demand for goods: it examines how much is spent on demand for final goods and services. The key measure is GNE.
- The *product approach* looks at the supply of goods: it measures the value of all goods and services produced as output minus the value of goods used as inputs in production. The key measure is GDP.
- The *income approach* focuses on payments to owners of factors: it tracks the amount of income they receive. The key measures are gross national income (GNI) and gross national disposable income (GNDI) (which includes net transfers).

2 Income, Product, and Expenditure

From GNE to GDP: Accounting for Trade in Goods and Services

- *Personal consumption expenditures* (usually called “consumption”) equal total spending by private households on final goods and services, including nondurable goods such as food, durable goods, and services.
- *Gross private domestic investment* (usually called “investment”) equals total spending by firms or households on final goods and services to make additions to the stock of capital. Investment includes construction of a new house or a new factory, the purchase of new equipment, and net increases in inventories of goods held by firms (i.e., unsold output).

2 Income, Product, and Expenditure

From GNE to GDP: Accounting for Trade in Goods and Services

- *Government consumption expenditures and gross investment* (often called “government consumption”) equal spending by the public sector on final goods and services, including spending on public works, national defense, the police, and the civil service. It does *not* include any transfer payments or income redistributions, such as Social Security or unemployment insurance payments—these are *not* purchases of goods or services, just rearrangements of private spending power.

2 Income, Product, and Expenditure

From GNE to GDP: Accounting for Trade in Goods and Services

$$\underbrace{GDP}_{\substack{\text{Gross} \\ \text{domestic} \\ \text{product}}} = \underbrace{C + I + G}_{\substack{\text{Gross} \\ \text{national} \\ \text{expenditure} \\ GNE}} + \left(\underbrace{EX}_{\substack{\text{All exports,} \\ \text{final \& intermediate}}} - \underbrace{IM}_{\substack{\text{All imports,} \\ \text{final \& intermediate}}} \right) \quad (5-1)$$

Trade balance
TB

This formula says gross domestic product is equal to gross national expenditure (GNE) plus the trade balance (TB).

The trade balance (TB), also referred to as *net exports*, may be positive or negative.

- If $TB > 0$, exports are greater than imports and we say a country has a *trade surplus*.
- If $TB < 0$, imports are greater than exports and we say a country has a *trade deficit*.

2 Income, Product, and Expenditure

From GDP to GNI: Accounting for Trade in Factor Services

- Gross national income equals gross domestic product (GDP) plus net factor income from abroad (NFIA).

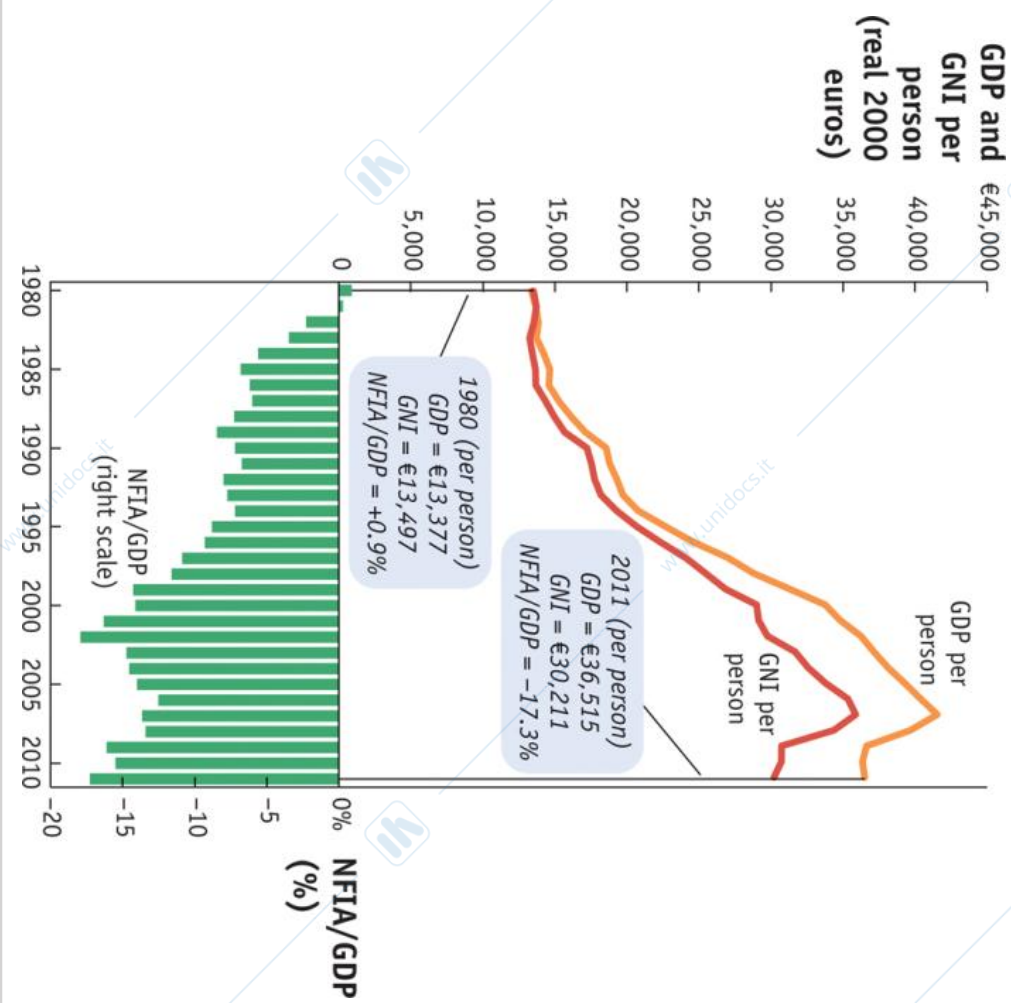
$$GNI = \underbrace{C + I + G}_{\substack{\text{Gross national expenditure} \\ GNE}} + \underbrace{(EX - IM)}_{\substack{\text{Trade balance} \\ TB}} + \underbrace{(EX_{FS} - IM_{FS})}_{\substack{\text{Net factor income from abroad} \\ NFIA}} \quad (5-2)$$

$\underbrace{\hspace{15em}}_{GDP}$

APPLICATION

Celtic Tiger or Tortoise?

FIGURE 5-3



A Paper Tiger? The chart shows trends in GDP, GNI, and NFIA in Ireland from 1980 to 2011. Irish GNI per capita grew more slowly than GDP per capita during the boom years of the 1980s and 1990s because an ever-larger share of GDP was sent abroad as net factor income to foreign investors. Close to zero in 1980, this share had risen to around 15% of GDP by the year 2000 and has remained there.

2 Income, Product, and Expenditure

From GNI to GNDI: Accounting for Transfers of Income

If a country receives transfers worth UT_{IN} and gives transfers worth UT_{OUT} , then its net unilateral transfers (NUT), are

$$NUT = UT_{IN} - UT_{OUT}.$$

Adding net unilateral transfers to gross national income, gives a full measure of national income in an open economy, known as gross national disposable income (GNDI), henceforth Y :

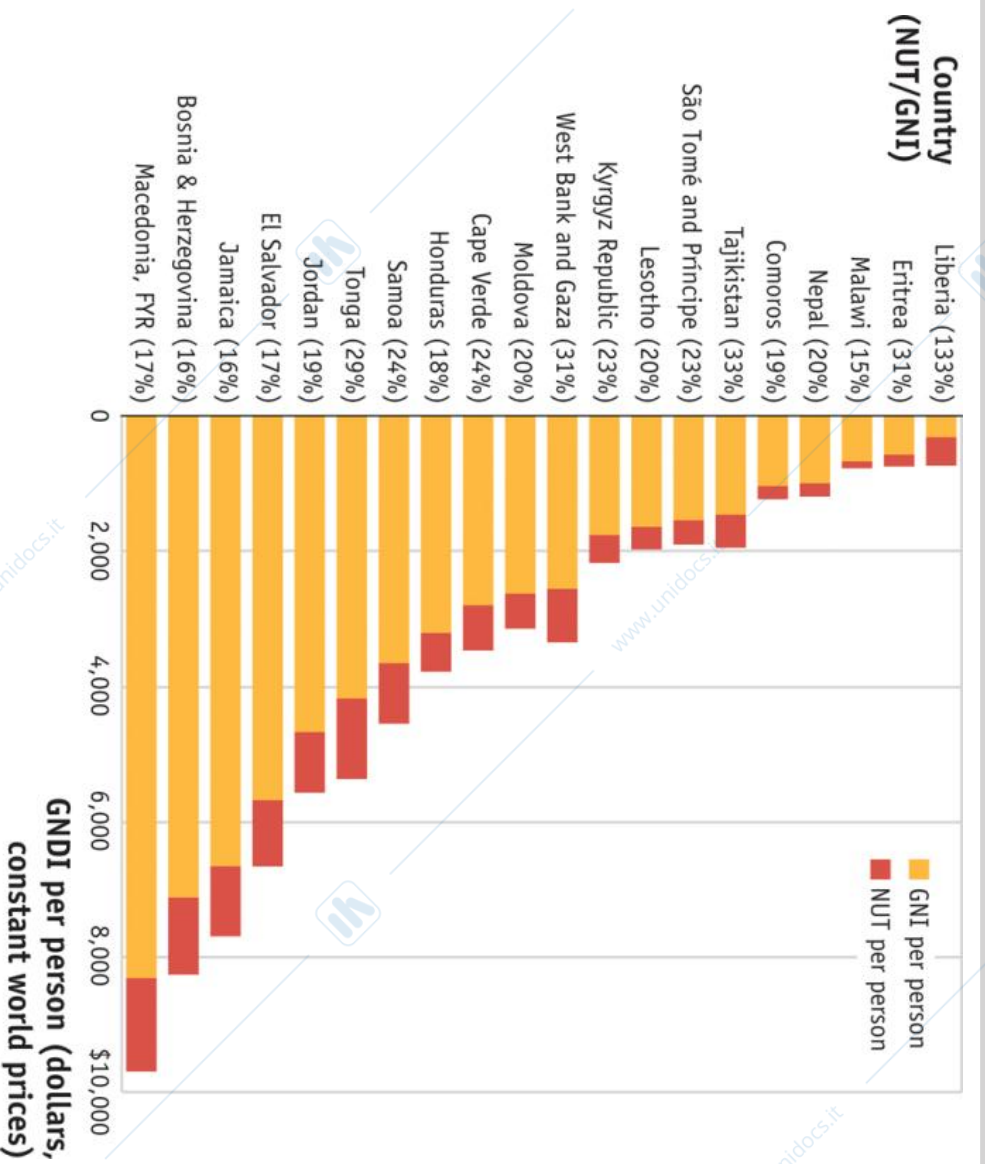
$$\underbrace{Y}_{GNDI} = \underbrace{(C + I + G)}_{GNE} + \underbrace{(EX - IM)}_{\substack{\text{Trade} \\ \text{balance} \\ (TB)}} + \underbrace{(EX_{FS} - IM_{FS})}_{\substack{\text{Net factor income} \\ \text{from abroad} \\ (NFIA)}} + \underbrace{(UT_{+} - UT_{-})}_{\substack{\text{Net unilateral} \\ \text{transfers} \\ (NUT)}} \quad (5-3)$$

GNI

2 Income, Product, and Expenditure

From GNI to GNDI: Accounting for Transfers of Income

FIGURE 5-4



Major Transfer Recipients The chart shows average figures for 2000 to 2010 for all countries in which net unilateral transfers exceeded 15% of GNI. Many of the countries shown were heavily reliant on foreign aid, including some of the poorest countries in the world, such as Liberia, Eritrea, Malawi, and Nepal. Some countries with higher incomes also have large transfers because of substantial migrant remittances from a large number of emigrant workers overseas (e.g., Tonga, El Salvador, Honduras, and Cape Verde).

2 Income, Product, and Expenditure

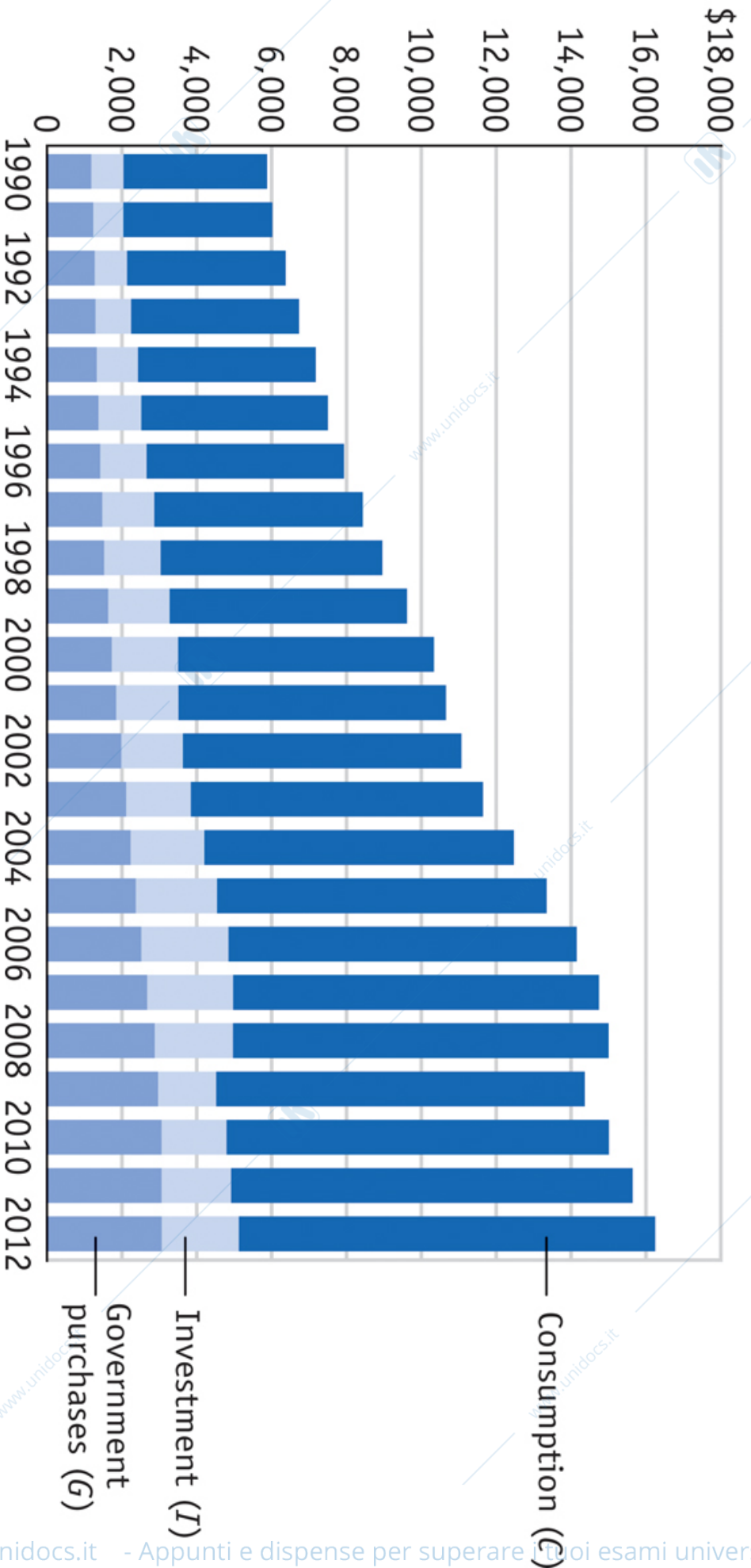
What the National Economic Aggregates Tell Us

$$\underbrace{Y}_{\text{GNDI}} = \underbrace{C + I + G}_{\text{GNE}} + \underbrace{\{(EX - IM)\}}_{\substack{\text{Trade} \\ \text{balance} \\ (TB)}} + \underbrace{\{(EX_{FS} - IM_{FS})\}}_{\substack{\text{Net factor income} \\ \text{from abroad} \\ (NFIA)}} + \underbrace{\{(UT_+ - UT_-)\}}_{\substack{\text{Net unilateral} \\ \text{transfers} \\ (NUT)}} \quad (5-4)$$

Current account
(CA)

- On the left is our full income measure, GNDI.
- The first term on the right is GNE, which measures payments by home entities.
- The remaining terms measure net payments to the home country from all international transactions in goods, services, and income. We group the three cross-border terms into an umbrella term that is called the current account (CA).

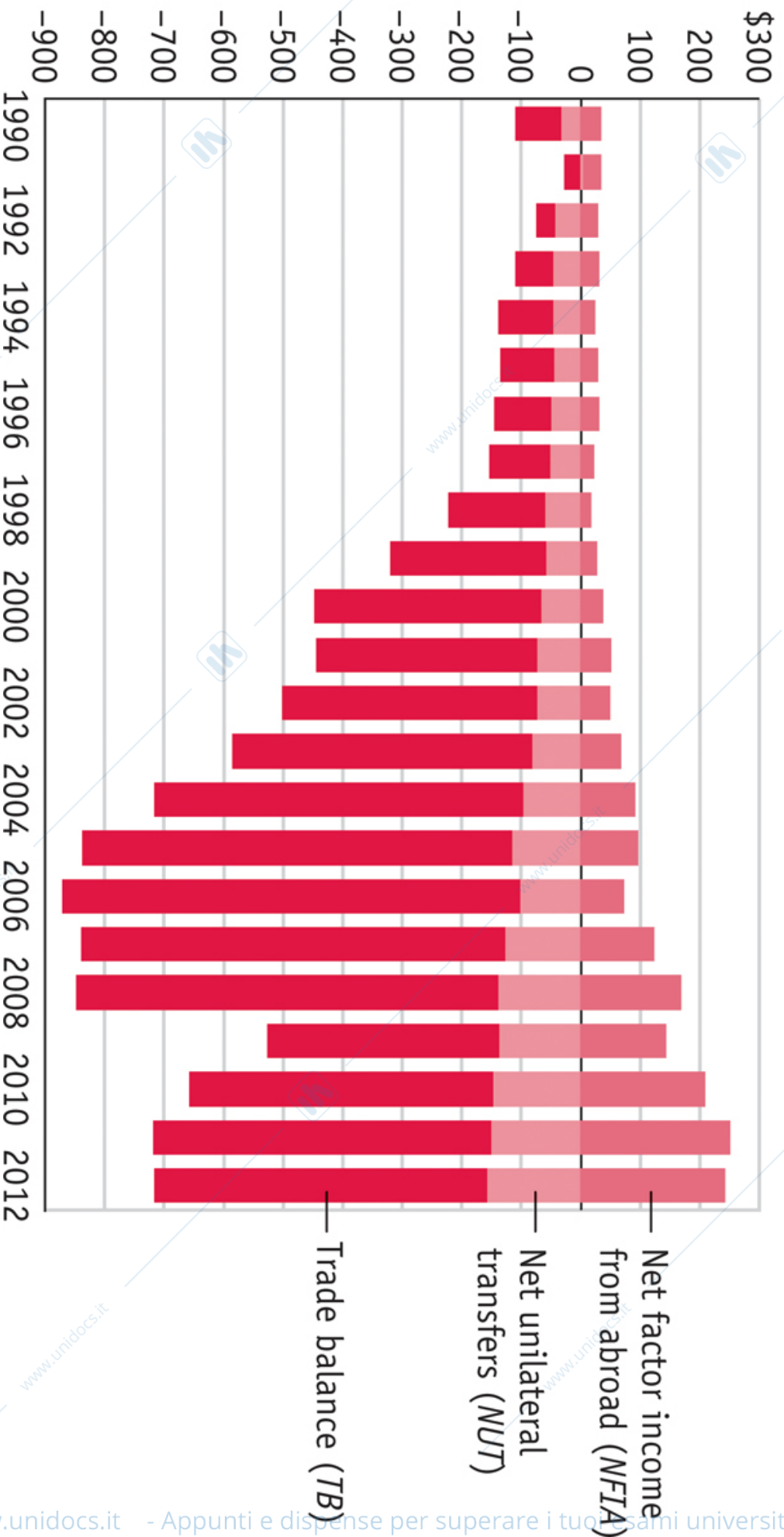
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U.S. \$ (billions)



2 Income, Product, and Expenditure

What the Current Account Tells Us

$$Y = C + I + G + CA \quad (5-5)$$

- This equation is the open-economy **national income identity**. It tells us that the current account represents the difference between national income Y (or GNDI) and gross national expenditure GNE (or $C + I + G$). Hence:

- *GNDI is greater than GNE if and only if CA is positive, or in surplus.*
- *GNDI is less than GNE if and only if CA is negative, or in deficit.*

2 Income, Product, and Expenditure

What the Current Account Tells Us

- The current account is also the difference between **national saving** ($S = Y - C - G$) and investment:

$$S_{Y-C-G} = I + CA \quad (5-6)$$

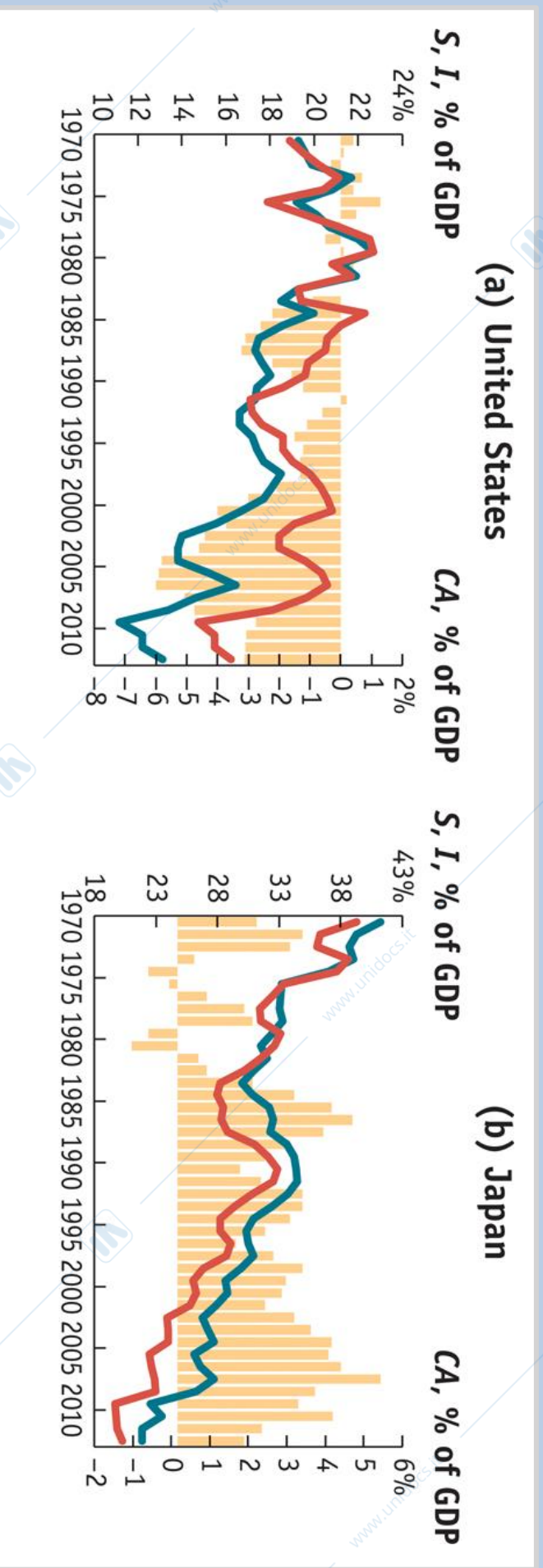
- This equation is called the **current account identity** even though it is just a rearrangement of the national income identity. Thus,
 - S is greater than I if and only if CA is positive, or in surplus.*
 - S is less than I if and only if CA is negative, or in deficit.*

APPLICATION

Global Imbalances

FIGURE 5-7 (1 of 2)

Saving, Investment, and Current Account Trends: Industrial Countries



The charts show saving, investment, and the current account as a percent of each subregion's GDP for four groups of advanced countries. The United States has seen both saving and investment fall since 1980, but saving has fallen further than investment, opening up a large current account deficit approaching 6% of GDP in recent years.

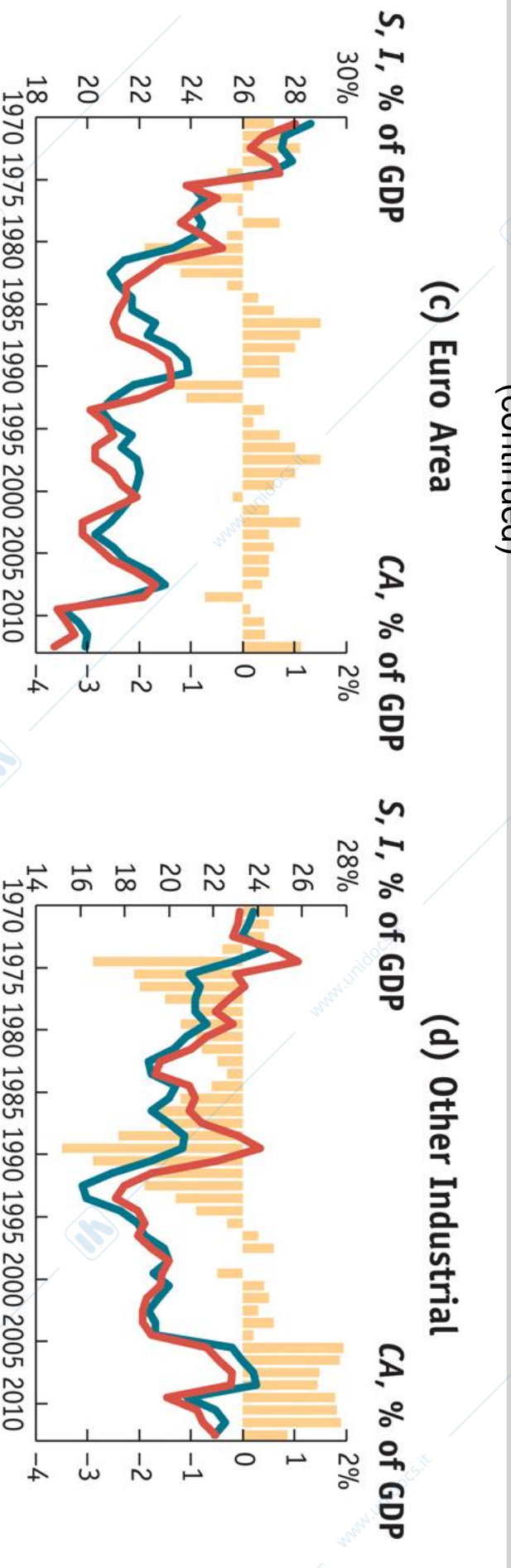
Japan's experience is the opposite: investment fell further than saving, opening up a large current account surplus of about 3% to 5% of GDP.

APPLICATION

Global Imbalances

FIGURE 5-7 (2 of 2)

Saving, Investment, and Current Account Trends: Industrial Countries
(continued)



The Euro area has also seen saving and investment fall but has been closer to balance overall.

Other advanced countries (e.g., non-Euro area EU countries, Canada, Australia, etc.) have tended to run large current account deficits.

Global Imbalances

- We define **private saving** (S_p) as that part of *after-tax* private sector disposable income Y that is *not* devoted to private consumption C .

$$S_p = Y - T - C \quad (5-7)$$

- We define **government saving** (S_g) as the difference between tax revenue T received by the government and government purchases G .

$$S_g = T - G \quad (5-8)$$

- Private saving plus government saving equals total national saving, S

$$S = Y - C - G = \underbrace{(Y - T - C)}_{\text{Private saving}} + \underbrace{(T - G)}_{\text{Government saving}} = S_p + S_g \quad (5-9)$$

Global Imbalances

Do government deficits cause current account deficits?

- Sometimes they go together, but these “twin deficits” are not inextricably linked, as is sometimes believed.
- We can use the equation just given and the current account identity to write

$$CA = S_p + S_g - I \quad (5-10)$$

- The theory of *Ricardian equivalence* asserts that a fall in public saving is fully offset by a contemporaneous rise in private saving.
- However, empirical studies do not support this theory: private saving does not fully offset government saving in practice.

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3 The Balance of Payments

Accounting for Asset Transactions: The Financial Account

- The financial account (FA) records transactions between residents and nonresidents that involve financial assets. This definition covers all types of assets:
 - real assets such as land or structures,
 - and financial assets such as debt (bonds, loans) or equity, issued by any entity.
- Subtracting asset imports from asset exports yields the home country's net overall balance on asset transactions, which is known as the financial account, where $FA = EX_A - IM_A$.
- The financial account therefore measures how the country accumulates or decumulates assets through international transactions.

3 The Balance of Payments

Accounting for Asset Transactions: The Capital Account

- The capital account (KA) covers two remaining areas of asset movement of minor quantitative significance.
 1. the acquisition and disposal of nonfinancial, nonproduced assets (e.g., patents, copyrights, trademarks, etc.)
 2. capital transfers (i.e., gifts of assets), an example of which is the forgiveness of debts
- We denote capital transfers received by the home country as KA_{IN} and capital transfers given by the home country as KA_{OUT} . The capital account, $KA = KA_{IN} - KA_{OUT}$, denotes net capital transfers received.

3 The Balance of Payments

Accounting for Home and Foreign Assets

- From the home perspective, a foreign asset is a claim on a foreign country.
- When a home entity holds such an asset, it is called an **external asset** of the home country.
- When a foreign entity holds such an asset, it is called an **external liability** of the home country because it represents an obligation owed by the home country to the rest of the world.

3 The Balance of Payments

Accounting for Home and Foreign Assets

- If we use superscripts “H” and “F” to denote home and foreign assets, we can break down the financial account as the sum of the net exports of each type of asset:

$$FA = \underbrace{(EX_A^H - IM_A^H)}_{\text{Net export of home assets}} + \underbrace{(EX_A^F - IM_A^F)}_{\text{Net export of foreign assets}} = \underbrace{(EX_A^H - IM_A^H)}_{\substack{\text{Net export of home assets} \\ = \\ \text{Net additions to} \\ \text{external liabilities}}} - \underbrace{(IM_A^F - EX_A^F)}_{\substack{\text{Net import of foreign assets} \\ = \\ \text{Net additions to} \\ \text{external assets}}}$$

(5-11)

- FA equals:
 - *the additions to external liabilities* (the home-owned assets moving into foreign ownership, net)
 - *minus the additions to external assets* (the foreign-owned assets moving into home ownership, net).

3 The Balance of Payments

How the Balance of Payments Accounts Work:

A Macroeconomic View

- Recall that gross national disposable income is

$$Y = GNDI = GNE + TB + NFIA + NUT = \underbrace{GNE + CA}_{\substack{\text{Resources available} \\ \text{to home country from income}}}$$

- In addition, the home economy can free up resources by engaging in net sales (or purchases) of assets. We calculate these extra resources using our previous definitions:

$$\underbrace{[EX_A - KA_{OUT}]}_{\substack{\text{Value of} \\ \text{all assets} \\ \text{exported}}} - \underbrace{[IM_A - KA_{IN}]}_{\substack{\text{Value of} \\ \text{all assets} \\ \text{imported}}} = EX_A - IM_A + KA_{IN} - KA_{OUT} = \underbrace{FA + KA}_{\substack{\text{Extra resources available} \\ \text{to the home country} \\ \text{due to asset trades}}$$

Value of all assets exported via sales

Value of all assets imported via purchases

3 The Balance of Payments

How the Balance of Payments Accounts Work: A Macroeconomic View

- Adding the last two expressions, we have the value of the total resources available to the home country for expenditures. This total value is equal the total value of home expenditure on final goods and services, GNE:

$$\underbrace{GNE + CA}_{\substack{\text{Resources available} \\ \text{to home country due to income}}} + \underbrace{FA + KA}_{\substack{\text{Extra resources available} \\ \text{to the home country} \\ \text{due to asset trades}}} = GNE$$

- Cancelling GNE from both sides we obtain the result known as **the balance of payments identity or BOP identity:**

$$\underbrace{CA}_{\substack{\text{Current account}}} + \underbrace{KA}_{\substack{\text{Capital account}}} + \underbrace{FA}_{\substack{\text{Financial account}}} = 0 \quad (5-12)$$

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3 The Balance of Payments

How the Balance of Payments Accounts Work: A Microeconomic View

- The components of the BOP identity allow us to see the details behind why the accounts must balance.

$$CA = (EX - IM) + (EX_{FS} - IM_{FS}) + (UT_+ - UT_-)$$

$$KA = (KA_+ - KA_-)$$

$$FA = (EX_A^H - IM_A^H) + (EX_A^F - IM_A^F) \quad (5-13)$$

- If an item has a plus sign, it is called a balance of payments credit or **BOP credit**.
- If an item has a minus sign, it is called a balance of payments debit or **BOP debit**.

3 The Balance of Payments

How the Balance of Payments Accounts Work:

A Microeconomic View

- We have to understand one simple principle: every market transaction (whether for goods, services, factor services, or assets) has two parts.
- If party A engages in a transaction with a counterparty B, then A receives from B an item of a given value, and in return B receives from A an item of equal value.

3 The Balance of Payments

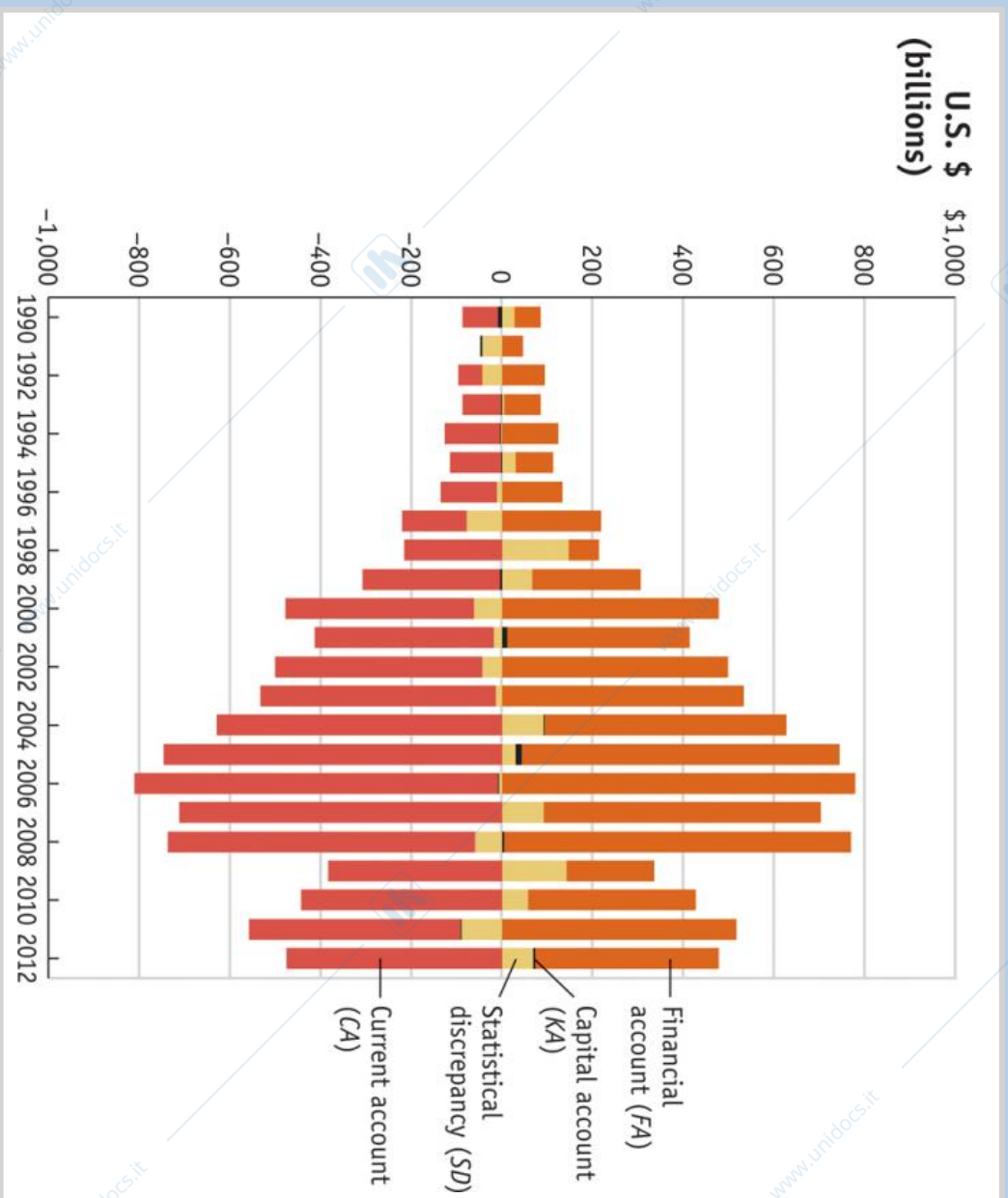
Understanding the Data for the Balance of Payments Account

- A country that has a current account surplus is called a **(net) lender**. By the BOP identity, it must have a deficit in its asset accounts.
- Any lender, on net, buys assets (acquiring IOUs from borrowers). For example, China is a large net lender.
- A country that has a current account deficit is called a **(net) borrower**. By the BOP identity, it must have a surplus in its asset accounts.
- Any borrower, on net, sells assets (issuing IOUs to lenders).
As we can see, the United States is a large net borrower.

3 The Balance of Payments

Some Recent Trends in the U.S. Balance of Payments

FIGURE 5-10



U.S. Balance of Payments and Its Components, 1990-2012 The figure shows the current account balance (*CA*), the capital account balance (*KA*, barely visible), the financial account balance (*FA*), and the statistical discrepancy (*SD*), in billions of dollars.

3 The Balance of Payments

What the Balance of Payments Account Tells Us

- Data and graphs from the IMF:

<http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52&sid=1484148942565>

<http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52&sid=1484252556980>

<http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52&sid=1542635306163>

4 External Wealth

- Just as a household is better off with higher wealth, all else equal, so is a country.
- “Net worth” or **external wealth** with respect to the rest of the world (ROW) can be calculated by adding up all of the home assets owned by ROW and then subtracting all of the ROW assets owned by the home country.
- In 2012, the United States had an external wealth of about $-\$4,474$ billion. This made the United States the world’s biggest debtor in history at the time of this writing.

4 External Wealth

The Level of External Wealth

- The level of a country's external wealth (W) equals

$$\underbrace{\text{External wealth}}_W = \underbrace{\left[\begin{array}{l} \text{ROW assets} \\ \text{owned by home} \end{array} \right]}_A - \underbrace{\left[\begin{array}{l} \text{Home assets} \\ \text{owned by ROW} \end{array} \right]}_L \quad (5-14)$$

- A country's level of external wealth is also called its *net international investment position* or *net foreign assets*. It is a stock measure, not a flow measure.

*If $W > 0$, home is a **net creditor country**: external assets exceed external liabilities.*

*If $W < 0$, home is a **net debtor country**: external liabilities exceed external assets.*

4 External Wealth

Changes in External Wealth

- There are two reasons a country's level of external wealth changes over time.
 1. *Financial flows*: As a result of asset trades, the country can increase or decrease its external assets and liabilities. Net exports of home assets cause an equal increase in the level of external liabilities and hence a corresponding decrease in external wealth.
 2. *Valuation effects*: The value of existing external assets and liabilities may change over time because of capital gains or losses. In the case of external wealth, this change in value could be due to price effects or exchange rate effects.

4 External Wealth

Changes in External Wealth

- Adding up these two contributions to the change in external wealth (ΔW), we find

$$\underbrace{\left[\begin{array}{l} \text{Change in} \\ \text{external wealth} \end{array} \right]}_{\Delta W} = - \underbrace{\left[\begin{array}{l} \text{Financial} \\ \text{account} \end{array} \right]}_{\substack{\text{Net export of assets} \\ = \\ F_A}} + \underbrace{\left[\begin{array}{l} \text{Capital gains on} \\ \text{external wealth} \end{array} \right]}_{\substack{\text{Valuation effects} \\ = \\ \text{Capital gains minus capital losses}}} \quad (5-15)$$

- Since $-FA = CA + KA$, substituting this identity into Equation (5-15), we obtain

$$\underbrace{\left[\begin{array}{l} \text{Change in} \\ \text{external wealth} \end{array} \right]}_{\Delta W} = \underbrace{\left[\begin{array}{l} \text{Current} \\ \text{account} \end{array} \right]}_{\substack{CA \\ = \\ \text{Unspent} \\ \text{income}}} + \underbrace{\left[\begin{array}{l} \text{Capital} \\ \text{account} \end{array} \right]}_{\substack{KA \\ = \\ \text{Net capital} \\ \text{transfers received}}} + \underbrace{\left[\begin{array}{l} \text{Capital gains on} \\ \text{external wealth} \end{array} \right]}_{\substack{\text{Valuation effects} \\ = \\ \text{Capital gains} \\ \text{minus capital losses}}} \quad (5-16)$$

Changes in Position during 2012 (\$ billions)

Of Which Valuation Effects

Category	Position, end 2011 (\$ billions)	Financial Flows (a)	Price Changes (b)	Exchange Rate Changes (c)	Other Changes (d)	Total (a + b + c + d)	Position, end 2012 (\$ billions)
1. External Assets	16,920	97	991	6	4	1,098	18,018
= <i>U.S.-owned assets abroad, of which:</i>							
U.S. official reserve assets	537	4	33	-2	0	35	572
U.S. government assets, other	179	-85	—	0	0	-85	94
U.S. private assets	16,204	178	958	8	4	1,148	17,352
2. External Liabilities	20,736	544	501	1	157	1,203	21,940
= <i>Foreign-owned assets in the United States, of which:</i>							
Foreign official assets in the United States	5,256	394	42	0	0	436	5,692
Other foreign assets	15,480	150	459	1	157	767	16,247

3. External Wealth

= Line 1 minus Line 2	-3,817	-446	490	5	-153	-105	-3,922
= <i>Net international investment position of the United States</i>							

Symbol	W	-FA	Capital gains				ΔW	W
	(end 2011)							(end 2012)

4 External Wealth

Some Recent Trends

- For the past 30 years the United States has almost always had a financial account surplus, reflecting a net export of assets to the rest of the world to pay for chronic current account deficits.
- If there were no valuation effects, then Eq. (5-15) implies that the change in the level of external wealth should equal the cumulative net import of assets over the intervening period.
- But valuation effects or capital gains can generate a significant difference in external wealth.
- From 1988 to 2012 these effects reduced U.S. net external indebtedness in 2012 by more than half compared with the level that financial flows alone would have predicted.

4 External Wealth

What External Wealth Tells Us

- External wealth data tell us the net credit or debit position of a country with respect to the rest of the world.
- They include data on external assets (foreign assets owned by the home country) and external liabilities (home assets owned by foreigners).
- A creditor country has positive external wealth, a debtor country has negative external wealth.
- Countries with a current account surplus (deficit) must be net buyers (sellers) of assets.

4 External Wealth

What External Wealth Tells Us

- An increase in a country's external wealth results from every net import of assets; conversely, a decrease in external wealth results from every net export of assets.
- In addition, countries can experience capital gains or losses on their external assets and liabilities that cause changes in external wealth.
- All of these changes are summarized in the statement of a country's net international investment position.