

# **MACROECONOMICS PREPARATORY COURSE**

Ugo Zannini

Tor Vergata – EEBL – 2021/2022

# OVERVIEW

- **Day 1:**
  - Economics and economic reasoning;
  - Economic Growth, Business Cycles, and Unemployment;
  - Measuring and Describing the Aggregate Economy.
- **Day 2:**
  - The Keynesian Short-Run Policy Model: Demand-Side Policies;
  - The Classical Long-Run Policy Model: Growth and Supply-Side Policies;
  - Inflation, Deflation, and Macro Policy.
- **Day 3:**
  - The Supply of Money

# CHAPTER 1

# Economics and Economic Reasoning

# Chapter Goals

- Define economics and identify its components.
- Discuss various ways in which economists use economic reasoning.
- Explain real-world events in terms of economic forces, social forces, and political forces.
- Explain how economic insights are developed and used.
- Distinguish among positive economics, normative economics, and the art of economics.

# What Economics Is

**Economics** is the study of how human beings coordinate their wants and desires, **given** the decision-making mechanisms (?), social customs, and political realities of the society.

The three central coordination problems any economy must solve are:

1. What, and how much, to produce
2. How to produce it
3. For whom to produce it

# Scarcity

Coordination is required to efficiently allocate scarce resources to achieve social goals. (Q: which ones?)

Scarcity exists because individuals want more than can be produced.

**Scarcity** means the goods available are too few to satisfy individuals' desires.

The degree of scarcity is constantly changing.

The quantity of goods, services and usable resources depends on technology and human action.

# Microeconomics and Macroeconomics

Economic theory is divided into two parts:

- 1. Microeconomics** is the study of individual choice, and how that choice is influenced by economic forces.
- 2. Macroeconomics** is the study of the economy as a whole.

# Microeconomics and Macroeconomics

**Microeconomics** studies things such as:

- The pricing of firms
- Household decisions on what to buy
- How markets allocate resources among alternative ends

**Macroeconomics** studies such things as:

- Income
- Inflation
- Unemployment
- Economic growth



# A Guide to Economic Reasoning

Economic reasoning or “thinking like an economist” involves things such as:

- Analyzing issues and comparing costs and benefits of a decision
- Abstracting from the unimportant elements of a question and focusing on the important ones
- *Questions:* Are we talking about monetary costs and benefits? To what extent are costs and benefits also part of social norms?

# A Guide to Economic Reasoning

Steve Levitt's bestseller *Freakonomics* contains many examples of "thinking like an economist."

For example, Levitt uses economic reasoning to explain why people become drug dealers.

The potential financial ***benefit*** of selling drugs is much higher than the ***cost*** of giving up a minimum wage job.

# Marginal Costs and Marginal Benefits

Using economic reasoning, decisions are often made by comparing marginal costs and marginal benefits.

**Marginal cost** is the additional cost over and above costs already incurred.

**Marginal benefit** is the additional benefit above what has already derived.

**Economic reasoning** is based on the premise that everything has a cost.

# The Economic Decision Rule

If the marginal benefits of doing something exceed the marginal costs, do it.

**$MB > MC \rightarrow \text{Do it!}$**

If the marginal costs of doing something exceed the marginal benefits, don't do it.

**$MC > MB \rightarrow \text{Don't do it!}$**

# Opportunity Cost

**Opportunity cost** is the benefit that you might have gained from choosing the next-best alternative.

Opportunity cost should always be less than the benefit of what you have chosen.

Opportunity cost is the basis of cost/benefit economic reasoning.

# Examples of Opportunity Cost

## Individual Decisions

The opportunity cost of college includes:

- Items you could have purchased with the money spent for tuition and books.
- Loss of the income from a full-time job.

## Government Decisions

- The opportunity cost of money spent on the war on terrorism is less spending on health care or education.

# Opportunity Cost: Types of Costs

**Opportunity cost** focuses on two aspects of the costs of a choice that may be forgotten:

- **Implicit costs** are costs associated with a decision that often are not included in normal accounting costs.
- **Illusionary sunk costs** are costs that show up in financial accounts that are already spent.
- Implicit costs should be included in opportunity costs but illusionary sunk costs should not be included.
- Costs relevant to decisions are often different from the measured costs.

# Economic Knowledge in One Sentence

This one sentence embodies the concept of opportunity cost:

There ain't no such thing as a free lunch.

Abbreviated as TANSTAAFL.



# Economic and Market Forces

**Economic forces:** the necessary reactions to scarcity.

A **market force** is an economic force that is given relatively free rein by society to work through the market.

**The invisible hand** is the price mechanism that guides our actions in a market. The invisible hand is an example of a market force.

- If there is a *shortage*, prices rise.
- If there is a *surplus*, prices fall.

# The Invisible Hand Theorem

According to the invisible hand theorem, a market economy, through the price mechanism, will allocate resources efficiently.

- Price has a tendency to *fall* when quantity supplied is greater than quantity demanded.
- Price has a tendency to *rise* when the quantity demanded is greater than the quantity supplied.

**Efficiency:** achieving a goal as cheaply as possible.

# Social and Political Forces

What happens in society can be seen as a reaction to, and interaction of:

- Economic forces
- Social forces
- Political forces

Social and political forces influence market forces.

Social and political forces often work together against the invisible hand.

# Objective and Subjective Economic Policy

**Economic policies** are actions (or inaction) taken by the government to influence economic actions.

There are two types of policy analysis:

1. **Objective** policy analysis keeps value judgments separate from the analysis.
2. **Subjective** policy analysis reflects the analyst's views of how things should be.

# Economic Policy Options

To distinguish between objective and subjective analysis, economics is divided into three categories:

- 1. Positive economics** is the study of what is and how the economy works.
- 2. Normative economics** is the study of what the goals of the economy should be.
- 3. The art of economics** is using the knowledge of positive economics to achieve the goals determined in normative economics.

# Examples of Categories of Economics

Examples of each of the three categories of economics:

- 1. Positive economics** asks questions such as: How does the market for microchips work? It is based on facts.
- 2. Normative economics** asks questions such as: What should tax policy be designated to achieve? It is based on value judgments.
- 3. Art of economics** looks at questions such as: To achieve the goals that society wants to achieve, how would you go about it, given the way that the economy works?

# Chapter Summary (1 of 2)

Three coordination problems are what to produce, how to produce it, and for whom to produce it.

Economics is divided into microeconomics and macroeconomics. Microeconomics is the study of individual choice and how that choice is influenced by economic forces. Macroeconomics is the study of the economy as a whole.

Economic reasoning structures all questions in a cost/benefit framework.

“There ain’t no such thing as a free lunch” embodies the concept of opportunity cost.

## Chapter Summary (2 of 2)

Unlike market forces, economic forces and the forces of scarcity are always at work.

Economic reality is controlled by economic, political, and social forces.

Under certain conditions, the market, through its price mechanism, will allocate scarce resources efficiently.

Economics can be subdivided into positive economics, normative economics, and the art of economics.



# CHAPTER 2

## **Economic Growth, Business Cycles, and Unemployment**

# Chapter Goals

- Discuss the history of macroeconomics, distinguishing Classical and Keynesian macroeconomists.
- Define *growth* and discuss its recent history.
- Distinguish a business cycle from structural stagnation.
- Relate unemployment to business cycles and state how the unemployment rate is measured.

# Macroeconomic Outlook

## [Macroeconomic outlook report: Italy | Management Solutions](#) (Q420)

- During the fourth quarter of 2020, the Italian economy recorded a **GDP annual growth rate** of -6.58%, decelerating 1.42 p.p. compared with the previous quarter, after the reintroduction of containment measures motivated by the resurgence of the pandemic which particularly affected the service sector.
- Concerning the labor market, the **unemployment rate** decreased by 0.63 p.p. compared to the previous quarter, down to a rate of 9.20%. The y/y employment variation rate stood at -1.87%, despite recording an increase of 0.51 p.p. compared to the third quarter of 2020.
- The euro appreciated against the U.S. dollar compared to the previous quarter, with an average **exchange rate** of 1.19 \$/€ which was 0.02 dollars per euro higher than in 3Q20.
- The Italian Consumer **Price Index** increased by 0.26 p.p. compared to the previous quarter, up to a rate of -0.23%.

# What Is Macroeconomics?

**Macroeconomics** is the study of problems that affect the economy as a whole (lack of economic growth, recessions, unemployment, and inflation) and what to do about them.

Determination and fluctuation of 5 groups of phenomena:

- output/income and unemployment;
- interest rates, real and financial asset prices, nominal and real wages, and their interaction with investments, consumption, income distribution, and growth;
- price level, and its interaction with output, employment, wage, interest rate;
- real and nominal exchange rate, and its relation with aggregate demand, price level, BOP, demand for and supply of financial assets in international capital markets;
- Money, credit, public expenditure, taxation, public deficit and public debt.

# The Historical Development of Macro

Throughout the world, there are spirited debates about the appropriate macroeconomic policy.

To understand the nature of current policy debate, it's helpful to review the historical development of macroeconomics.

# The Historical Development of Macro (1 of 2)

- Pre-Keynesian:
  - Physiocrat, 18th-century (land and laissez-fair);
  - classical/mercantilist and Marxian (labor and growth);
  - marginalist or Walrasian, 1870-1890: equilibrium, no growth and distribution.
- Keynesian, 1930s: expectations, uncertainty, and money.
- Neo classical synthesis, 1940s: IS-LM/AS-AD.

# The Historical Development of Macro (2 of 2)

- New classical macro, Lucas, 70s: rational expectations, work vs leisure.
- Real Business Cycle: methodologic individualism.
- New Keynesian macro, 80s: market imperfections and asymmetric information.
- Neo-Keynesian Dynamic Stochastic General Equilibrium Model: RBC + NEK: IS with expectation + forward looking Phillips curve + monetary policy rule.

# The Historical Development of Macro: Classical versus Keynesian

In 1930's focus of macroeconomics moved to include short run as well as long run issues.

There were two types of economics:

1. Earlier economists who focused on long-run issues were called ***Classical economists***.
2. Economists who focused on the short run were called ***Keynesian economists***.



# The Historical Development of Macro

**Classical economists** believe that business cycles are temporary glitches, and generally favor laissez-faire, or nonactivist policies.

**Keynesian economists** believe that business cycles reflect underlying problems that can be addressed with activist government policies.

By the 1980s, Classical and Keynesian economics merged into a new conventional macroeconomics.

Following the crash of 2008, the U.S. economy experienced **structural stagnation** – a period of protracted slow growth.

# Two Frameworks: The Long Run and the Short Run

The long-run growth framework focuses on incentives for supply.

- Sometimes called supply-side economics.
- Issues of growth are considered in a long-run framework.

The short-run business cycle focuses on demand.

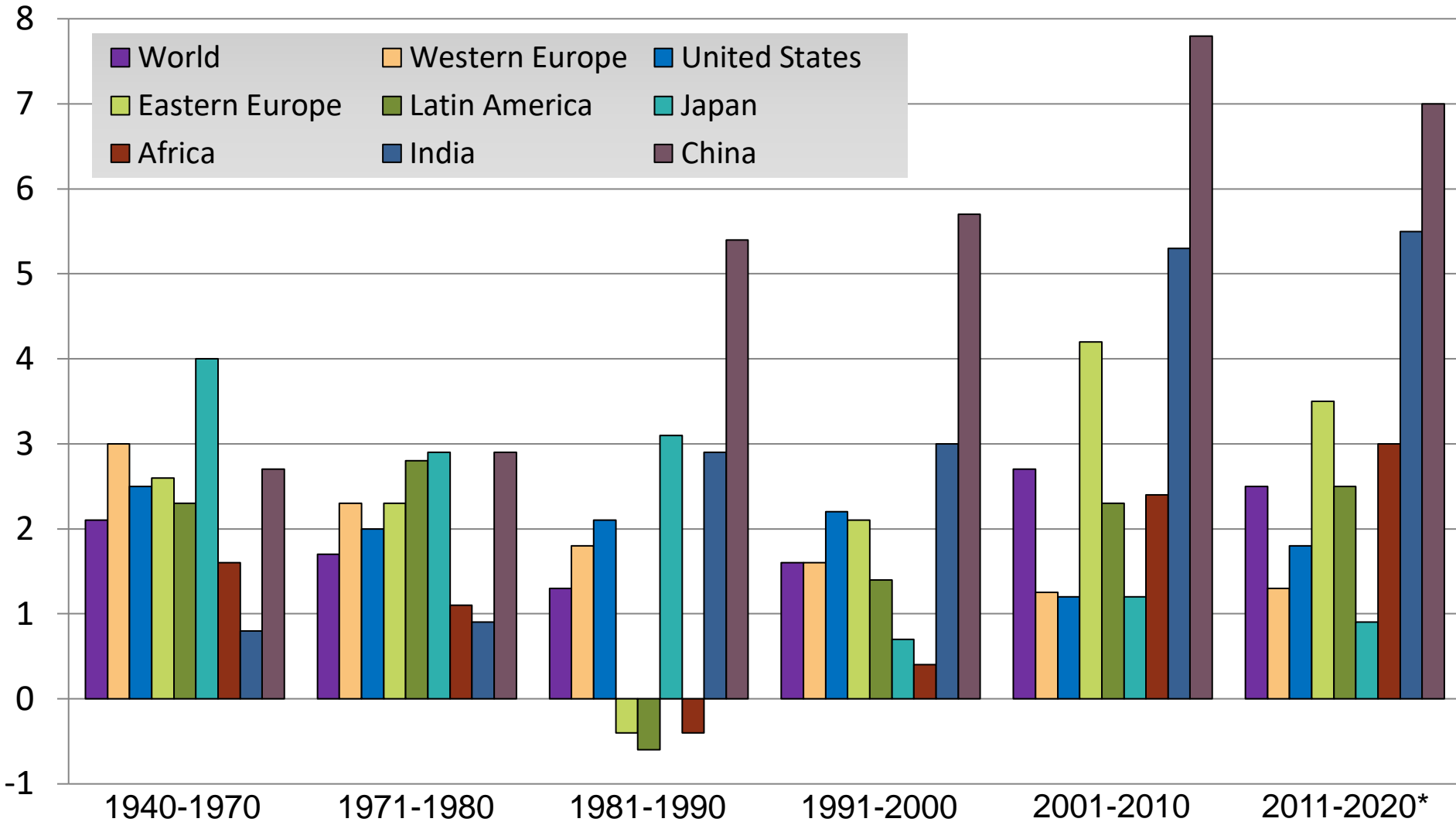
- Sometimes called demand-side economics.
- Business cycles are generally considered in a short-run framework.

Inflation and unemployment fall within both frameworks.

# Two Frameworks: The Long Run and the Short Run

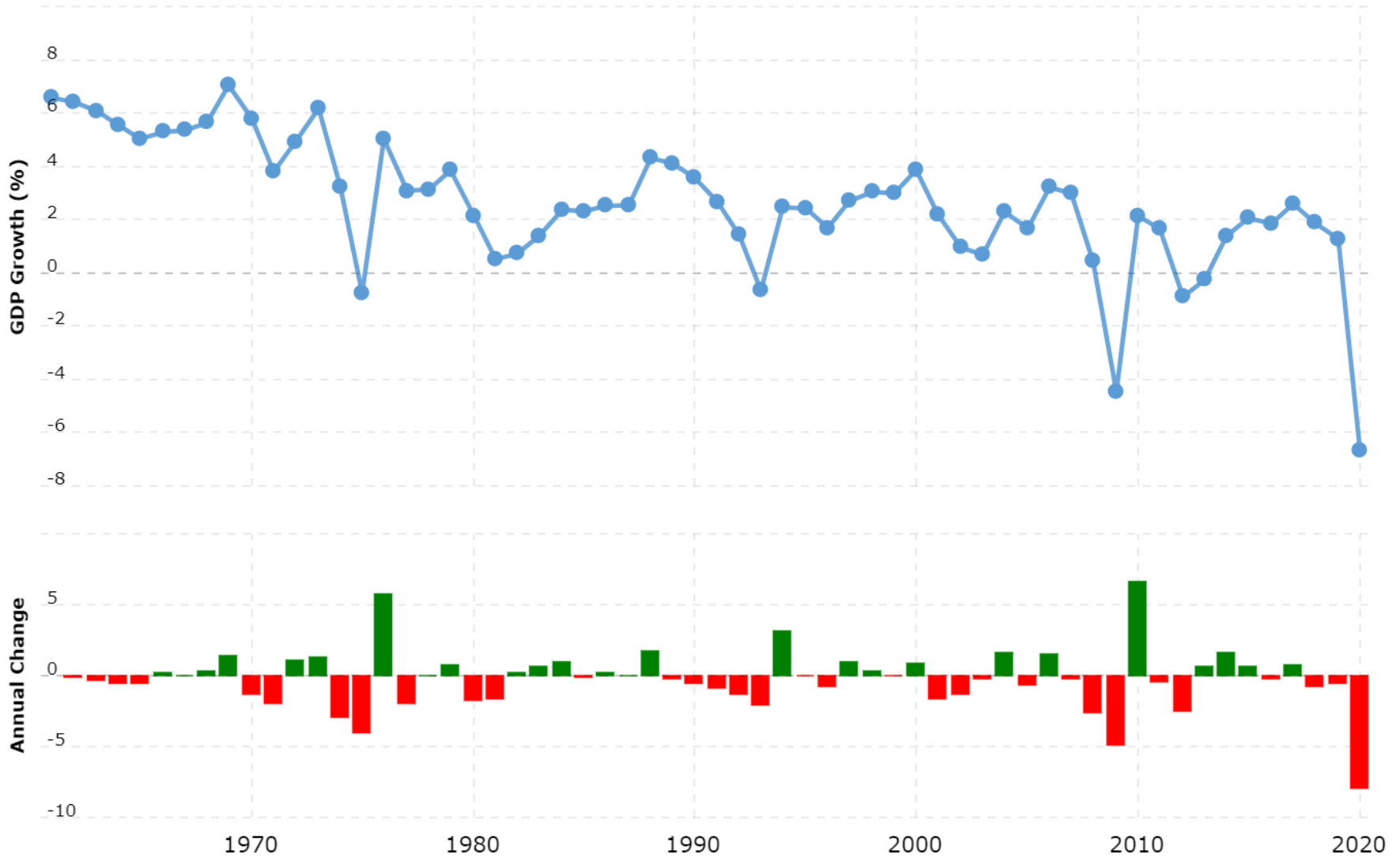
- The stark division between the short-run and the long-run frameworks is problematic.
- The economy is simultaneously in the long run and short run.
- Both frameworks have to be blended into a composite framework in which both supply and demand influence long-run and short-run forces.
- The long run is just a combination of short runs that cannot be separated.

# Growth Rates around the World



\*Estimates based on World Bank and government data and projections.  
© 2020 McGraw-Hill Education.

# Growth Rates in the Euro Area



# Growth

Economists measure growth with changes in total output over a long period of time.

**Potential output** is the highest amount of output an economy can sustainably produce and sell using existing production processes and resources.

U.S. economic output has grown at an annual 2.5 to 3.5 percent rate, *the secular growth trend*, which represents the rise in potential output.

# Growth

**Per capita output** is output divided by the total population.

Even if total output is increasing, the population may be growing even faster, so per capita output would be falling.

When the population is growing, per capita growth is lower than overall growth.

**Example:** If the population is growing at 1% and the economy is growing at 3%, per capita growth is 2%.

# Business Cycles and Structural Stagnation

A **business cycle** is the upward or downward movement of economic activity that occurs around the growth trend.

**Classical economists** argue that the government should just accept that business cycles occur and take a laissez-faire stance.

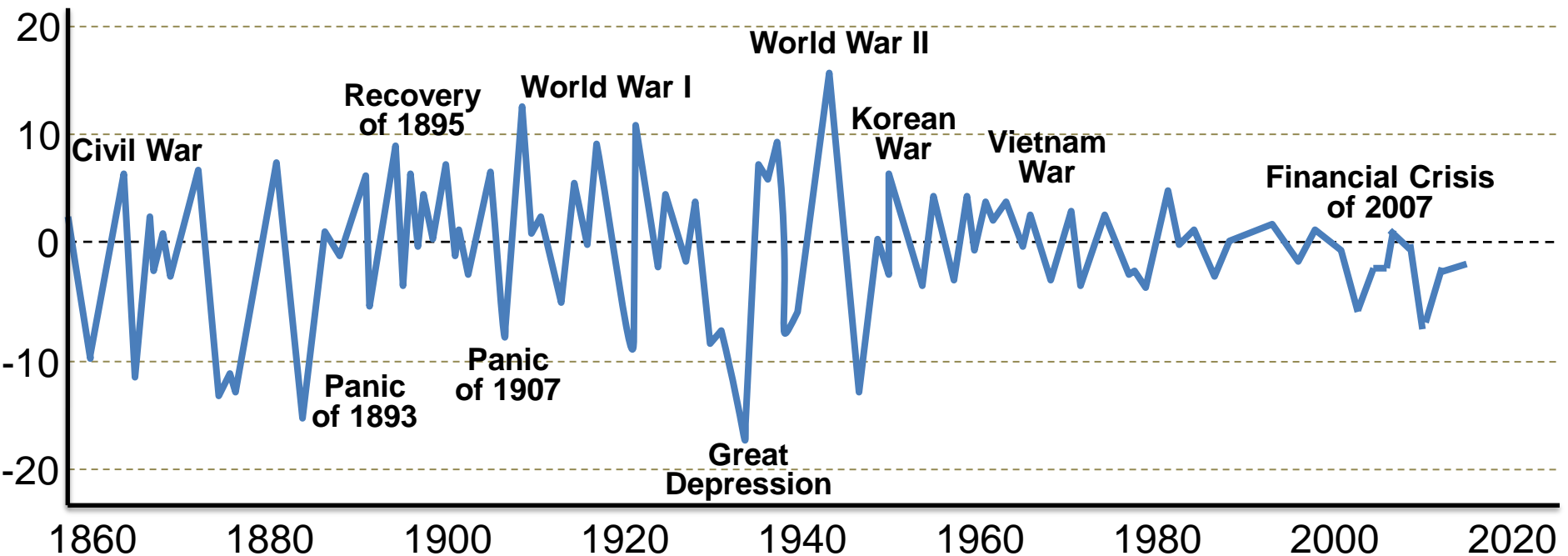
**Keynesians economists** argue that government can temper these fluctuations with policy actions.



# U.S. Business Cycles

Percentage fluctuations  
in real GDP around trends

Business cycles have always been  
a part of the U.S. economic scene.

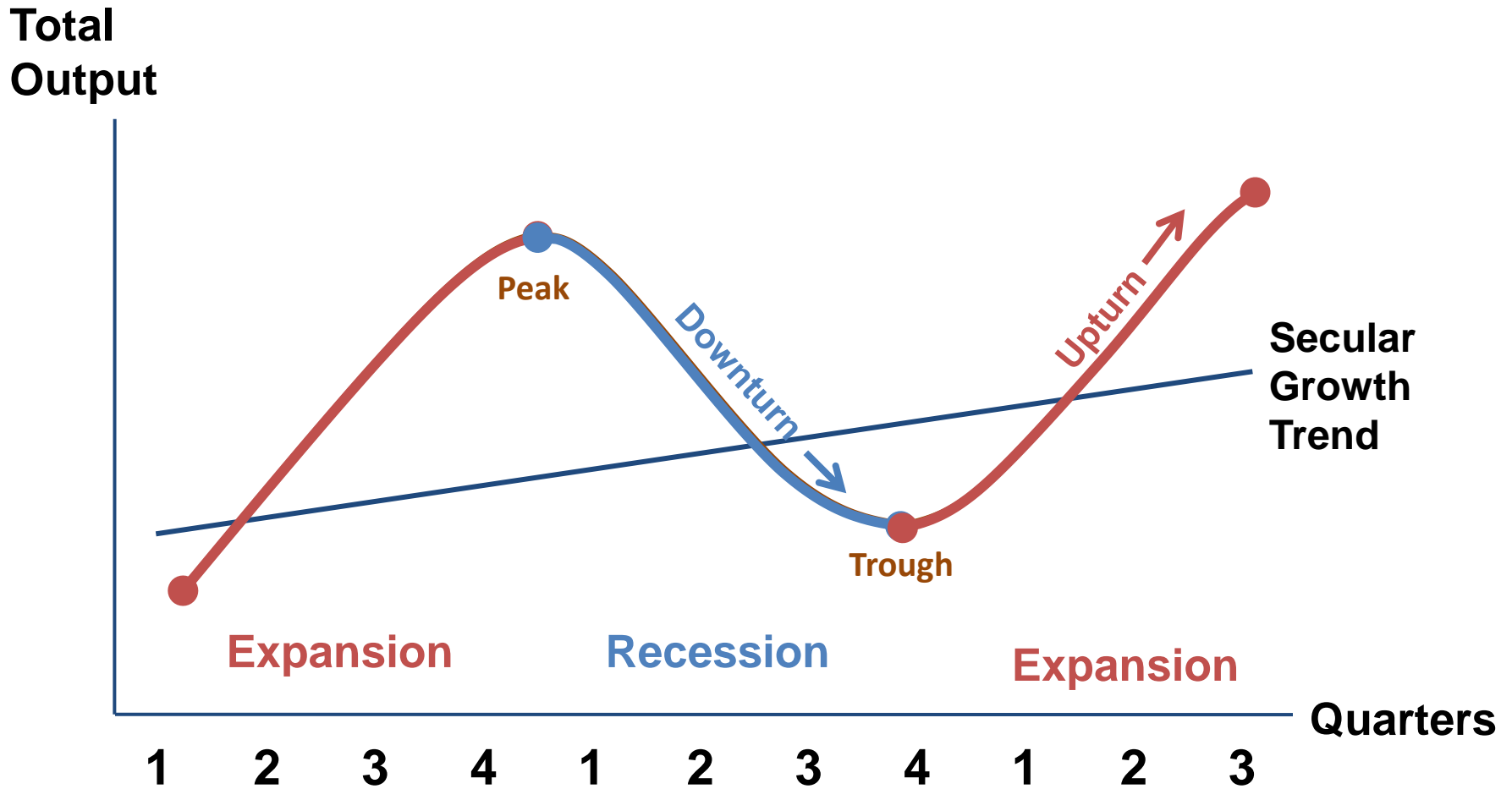


# Describing the Business Cycle

Four phases of the business cycle: peak, downturn, trough, and upturn.

1. The top of a business cycle is called the **peak**.
2. Eventually the economy enters a **downturn** and may enter a *recession*.
  - A **recession** is a decline in real output that persists for more than two consecutive quarters of a year.
3. The bottom of a recession or depression is called the **trough**
4. As total output begins to expand, the economy comes out of the trough; economists say it's in an **upturn**.

# Business Cycle Phases



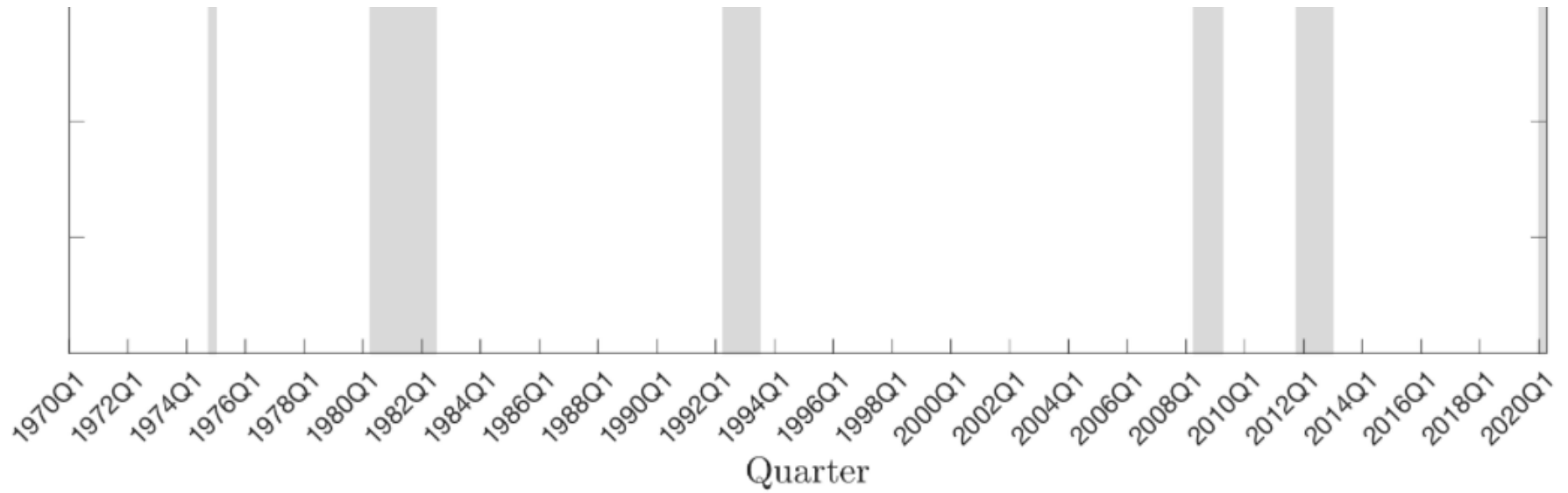
# Euro Area Business Cycles

The «Euro Area Business Cycle Network» has identified the peak and trough quarters since 1970.

Date	Peak / Trough	Announcement Date
2019 Q4	Peak	29 September 2020
2013 Q1	Trough	1 October 2015
2011 Q3	Peak	15 November 2012
2009 Q2	Trough	4 October 2010
2008 Q1	Peak	31 March 2009
1993 Q3	Trough	22 September 2003
1992 Q1	Peak	22 September 2003
1982 Q3	Trough	22 September 2003
1980 Q1	Peak	22 September 2003
1975 Q1	Trough	22 September 2003
1974 Q3	Peak	22 September 2003

[Chronology of Euro Area Business Cycles | EABCN](#)

# Euro Area Business Cycles



# Duration and Timing of U.S. Business Cycles Since 1854

Business Cycles	Duration (in months)	
	Pre-World War II (1854 – 1945)	Post-World War II (1945 – 2018)
Number	22	11
Average duration	50	66
Length of longest cycle	99 (1870-79)	128 (1991-2001)
Length of shortest cycle	28 (1919-21)	28 (1980-82)
Ave. length of expansions	29	59
Length of shortest expansion	10 (1919-20)	12 (1980-81)
Length of longest expansion	80 (1938-45)	120 (1991-2001)
Ave. length of recessions	21	11
Length of shortest recession	7 (1918-19)	6 (1980)
Length of longest recession	65 (1873-79)	18 (2007-2009)

# Structural Stagnation

**Structural stagnation** is a downturn that leads to slow economic growth that prevents the economy from returning to its past trend for a long time unless the structure of the economy changes significantly.

- Unemployment is not due to temporary layoffs, as it is in a business cycle; but to longer-term changes.
- A depression is a deep and prolonged recession.

The distinction between a business cycle and structural stagnation goes to the heart of the modern macro policy debates.

# Unemployment and Jobs

---

The **unemployment rate** is the percentage of people in the economy who are willing and able to work but who cannot find jobs.

---

**Cyclical unemployment** is that which results from fluctuations in economic activity.

---

**Structural unemployment** is that caused by the institutional structure of an economy or by economic restructuring making some skills obsolete.



# Calculating the Unemployment Rate

The unemployment rate is determined by dividing the number of people who are employed by the number of people in the *labor force*.

**Labor force** – those people in an economy who are willing and able to do work.

For example, if the total unemployed stands at 8 million and the labor force stands at 160 million, the unemployment rate is:

- $8 \text{ million} \div 160 \text{ million} = 0.05 \times 100 = 5\%$

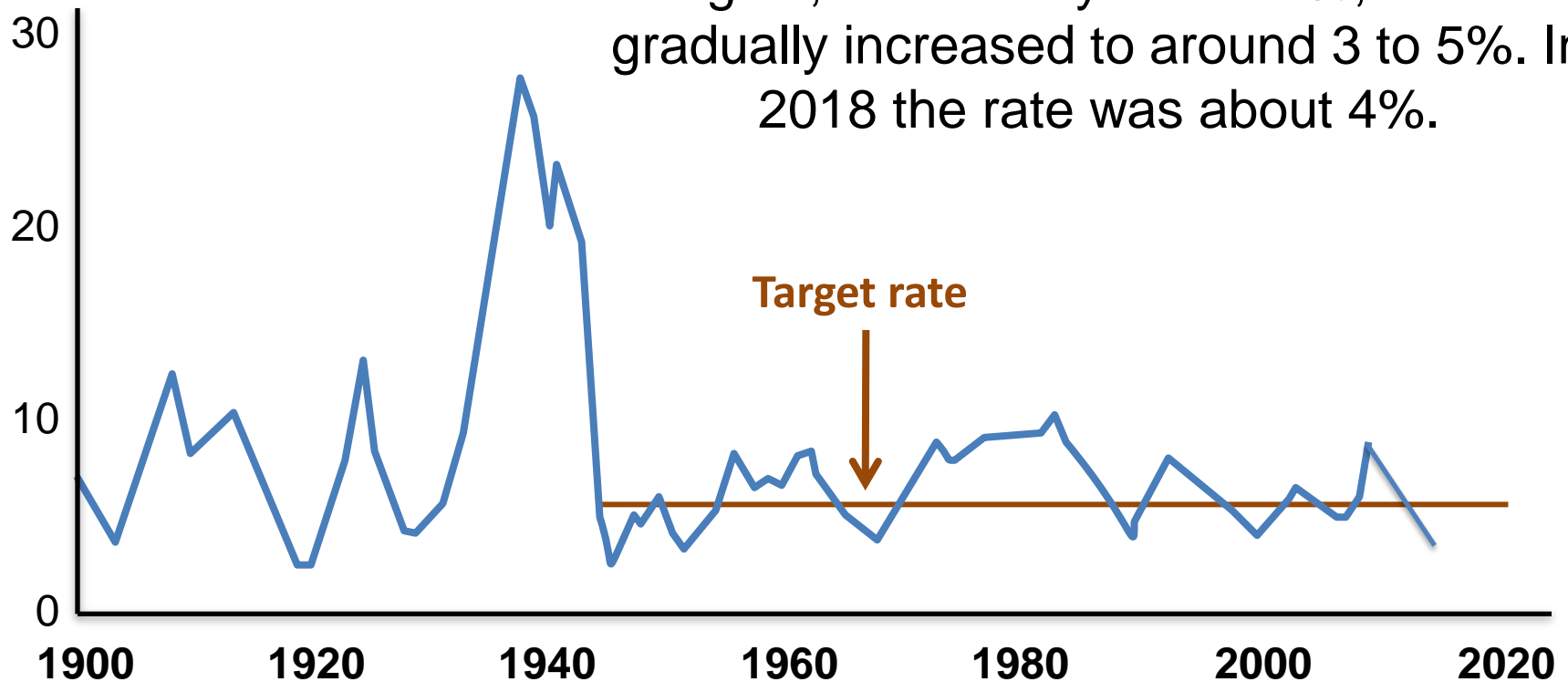
## Understanding the Unemployment rate

People who would like to work but cannot (due to a disability, for example), or have become discouraged after looking for work without success, are not considered unemployed under this measure; they are categorized as outside the labor force.

This measure (U-3) is also criticized for making no distinction between those in temporary, part-time, and full-time jobs, even when part-time or temporary workers would rather work full-time but cannot due to labor market conditions.

# U.S. Unemployment Rate since 1900

Percentage of labor force unemployed



In the mid-1940s, the U.S. government started focusing on the unemployment rate as a goal, and initially chose 2%, but it was gradually increased to around 3 to 5%. In 2018 the rate was about 4%.

# Unemployment as Government's Problem

Early capitalism had an unemployment solution: *the fear of hunger*.

As capitalism evolved, the fear of hunger was no longer an acceptable answer to unemployment.

In the Employment Act of 1946, the U.S. government took responsibility for unemployment.

**Full employment** is an economic climate where nearly everyone who wants a job has one.

**Frictional unemployment** is unemployment caused by people entering the job market and people quitting a job just long enough to look for and find another job.

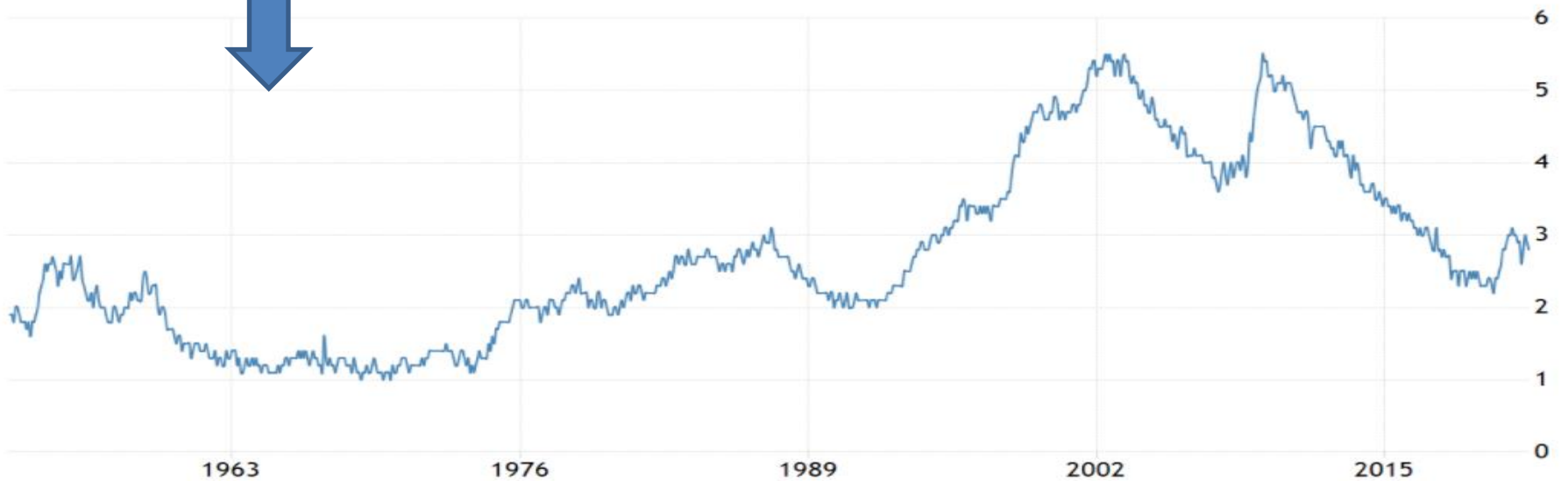
# Target Rate of Unemployment

The **target rate of unemployment** is the lowest sustainable rate of unemployment that policy makers believe is achievable given existing conditions.

The appropriate target rate of unemployment has been a matter of debate.

# Unemployment rate

Italy  
vs  
Japan



# Chapter Summary (1 of 3)

Classical economists use a laissez-faire approach and focus on long-run growth while Keynesian economists use an active government approach and focus on short-run fluctuations.

Modern conventional economics has been a blend of the Keynesian and Classical approaches.

Growth is measured by the change in total output over a long period of time and the change in per capita output. Per capita output is output divided by the population.

While the secular trend growth rate has been 2.5 to 3.5 percent, some expect it to fall.

# Chapter Summary (2 of 3)

Business cycles are fluctuations of real output around the secular trend growth rate. Phases of the business cycle include peak, trough, upturn, and downturn.

Structural stagnation is a cyclical downturn not expected to end soon without major changes to the structure of the economy.

Whether the economy is experiencing structural stagnation or a recession has significant implications for macroeconomic policy. Conventional macroeconomic policies can pull an economy out of a recession, but not out of a structural stagnation.



# Chapter Summary (3 of 3)

Cyclical unemployment fluctuates with the business cycle. Structural unemployment is caused by economic restructuring.

The unemployment rate is calculated as the number of unemployed divided by the labor force.

The official measure of unemployment is based on judgments about who to count as employed.

The target rate of unemployment is the lowest sustainable rate of unemployment possible under existing institutions.

# CHAPTER 3

# Measuring and Describing the Aggregate Economy

# Aggregate Accounting

**Aggregate accounting** (or national income accounting) is a set of rules and definitions for measuring economic activity in the economy as a whole.

Aggregate accounting is a way of measuring total, or aggregate production, expenditures, and income.

**Gross domestic product (GDP)** is the total market value of all final goods and services produced in an economy in a one-year period.

# Calculating GDP

- Calculating GDP requires adding together millions of different services and products.
- All of the quantities of goods and services produced are multiplied by their market price per unit to determine a value measure of the good or service.
- This is weighting the importance of each good by its price.
- The sum of all of these values is GDP.

# The Components of GDP

GDP is divided into four expenditure categories:

- 1. Consumption (C)** is spending by households on goods and services.
- 2. Investment (I)** is spending for the purpose of additional production.
- 3. Government spending (G)** is goods and services that government buys. Transfer payments are not included (Social Security, etc.)
- 4. Net exports** is spending on **exports (X)** minus spending on **imports (M)**.

# The Components of GDP

Since all production is categorized into one of these four divisions, by adding up these four categories, we get total production of U.S. goods and services

$$\begin{aligned} \text{GDP} = & \text{Consumption} \\ & + \text{Investment} \\ & + \text{Government spending} \\ & + \text{Net exports} \end{aligned}$$

$$\text{GDP} = C + I + G + (X - M)$$

# Inflation: Distinguishing Real from Nominal

**Inflation** is a continual rise in the overall price level.

**Price Index** is a measure of the composite price of a specified group of goods.

**Nominal GDP** is the amount of goods and services produced measured at current prices.

**Real GDP** is the total amount of goods and services produced, adjusted for price-level changes.

# Real versus Nominal GDP

**GDP deflator** is the price index that includes all goods and services in the economy expressed relative to a base year of 100.

**Example:** GDP rises 10%, from \$16 trillion to \$17.6 trillion. How much of that 10% is real?

If prices have risen 5%, that means the GDP deflator has increased from 100 to 105 (100 + 5).

Real GDP =  $\$17.6 \div 105 \times 100 = \$16.76$  trillion  
(+4.75%)



# Other Real-World Price Indexes

**Consumer Price Index (CPI)** includes prices of goods and services sold in the retail market, i.e. the final prices which the end consumers have to pay, weighted according to each component's share of an average consumer's expenditures. It is hence also called the cost of living index. It is also used for indexing dearness allowance to employees for increase in prices.

**Producer Price Index (PPI)** is an index including producer or output prices which are the prices of the first commercial transactions of goods and services or the transactions at the point of first sale.

# Other Real and Nominal Distinctions

**Nominal interest rate** is the rate you pay or receive to borrow or lend money.

**Real interest rate** is the nominal interest rate adjusted for inflation.

**Real wealth** is the value of the productive capacity of the assets of an economy measured by the goods and services it can produce now and in the future.

**Nominal wealth** is the value of those assets measured at their current market prices.

**Asset price inflation** is a rise in the price of assets unrelated to increases in their productive capacity.

# Some Limitations of Aggregate Accounting

Per capita GDP can be misused in comparing various countries' living standards.

Because of differences in nonmarket activities and difference in product prices, per capita GDP may be a misleading measure of living standards.

**Purchasing power parity** is a method of comparing income that takes into account the different relative prices among countries.

# Some Limitations of Aggregate Accounting

GDP measures neither happiness nor economic welfare.

Measuring inflation can involve significant measurement errors.

A reason is a possible misinterpretation of the components. For example, the line between consumption and investment may be unclear.

# Some Limitations of Aggregate Accounting

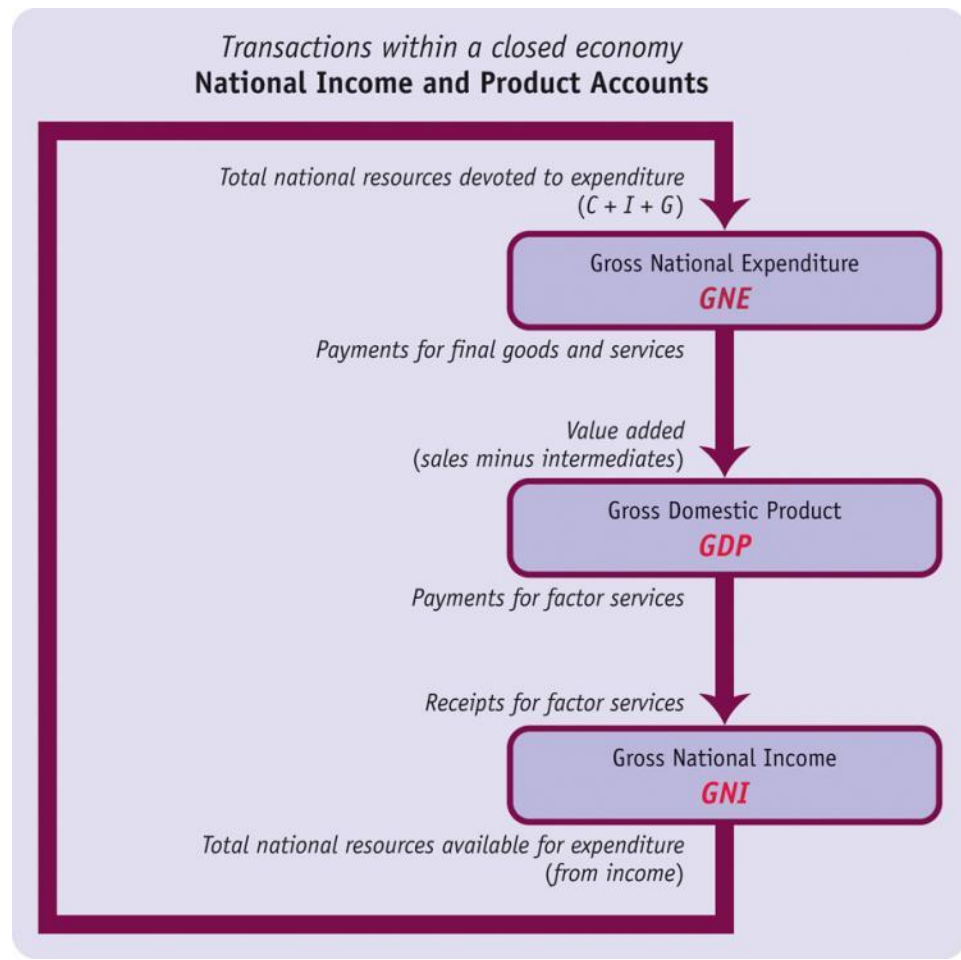
Measurement is necessary, and the GDP measurements and categories have made it possible to think and talk about the aggregate economy.

The **genuine progress indicator (GPI)** makes a variety of adjustments to GDP to better measure the progress of society rather than just economic activity.

The GPI includes social goals such as pollution reduction, education, and health.

# 1 Measuring Macroeconomic Activity: An Overview

FIGURE 5-1



**The Closed Economy**  
Measurements of national expenditure, product, and income are recorded in the national income and product accounts, with the major categories shown. The purple line shows the circular flow of all transactions in a closed economy.

## 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. This includes nondurable goods (e.g., food), durable goods (e.g., autos), 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. This includes construction of a new house or 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

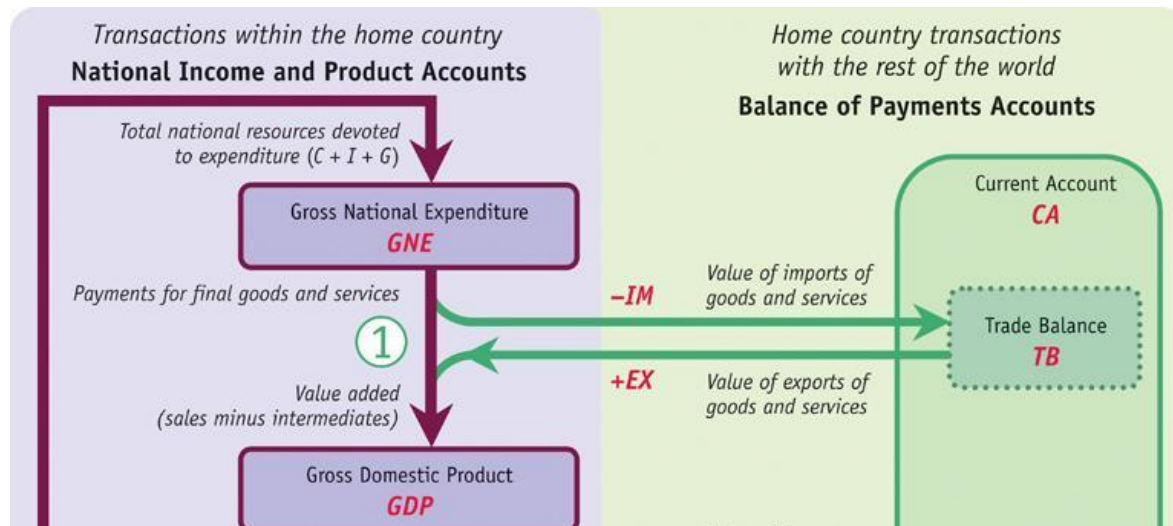
- *Government consumption expenditures and gross investment* (often called “government consumption”) equal spending by the public sector on final goods and services. This includes spending on public works, national defense, the police, and the civil service. It does *not* include any transfer payments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



# 1 Measuring Macroeconomic Activity: An Overview

## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- The difference between payments made for imports and payments received for exports is called the **trade balance (TB)**, which equals net payments to domestic firms due to trade.
- GNE plus TB equals GDP, the total value of production in the home economy.



## 2 Income, Product, and Expenditure

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

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

Trade Balance  
TB

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

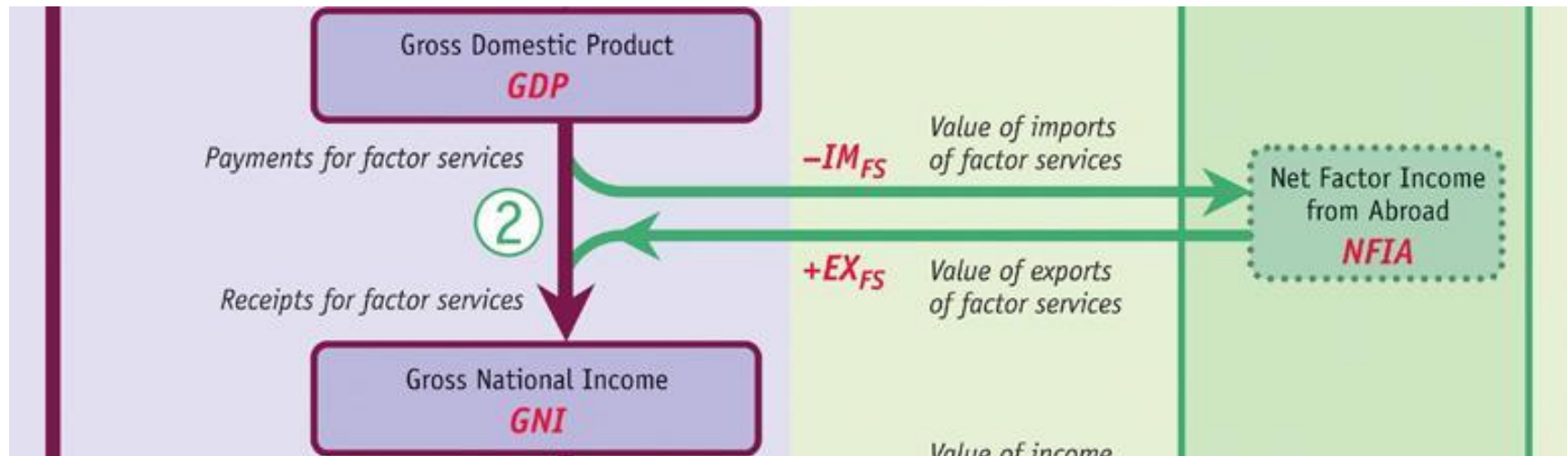
The trade balance (TB), also referred to as *net exports*, may be positive or negative.

- 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*.

# 1 Measuring Macroeconomic Activity: An Overview

## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- The value of factor service exports minus factor service imports is known as **net factor income from abroad (NFIA)**, and thus GDP plus NFIA equal GNI, the total income earned by domestic entities from all sources, domestic and foreign.



## 2 Income, Product, and Expenditure

### From GDP to GNI: Accounting for Trade in Factor Services

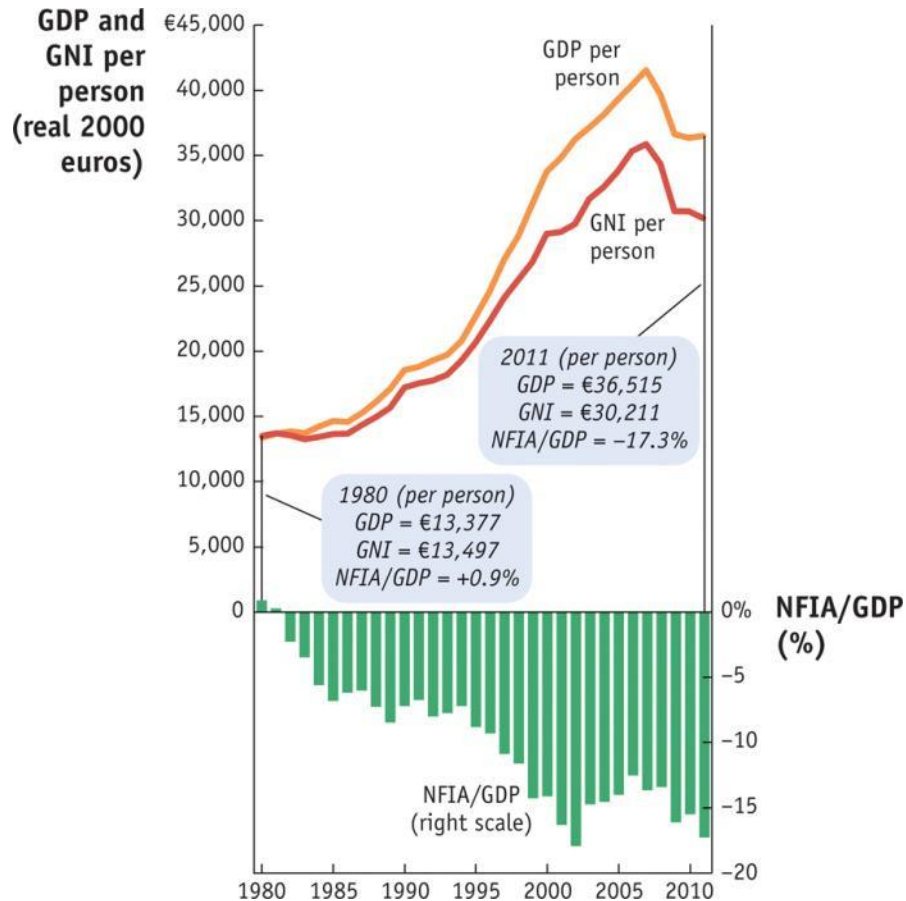
- Gross national income equals gross domestic product (GDP) plus net factor income from abroad (NFIA).

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

# 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.

# 1 Measuring Macroeconomic Activity: An Overview

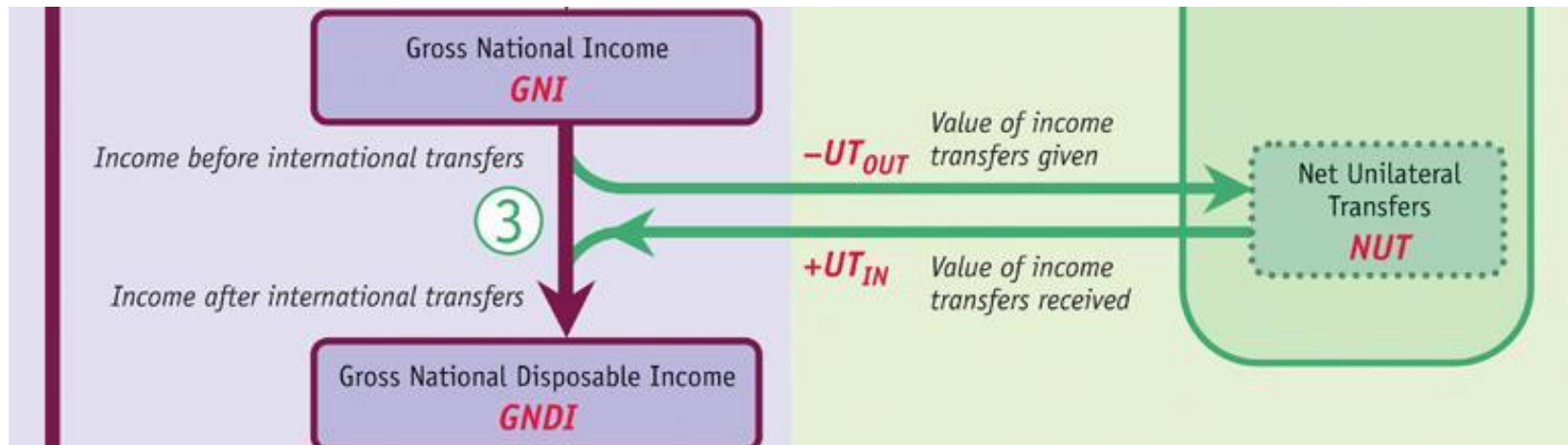
## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- Gifts may take the form of income transfers or “in kind” transfers of goods and services.
- They are considered nonmarket transactions, and are referred to as *unilateral transfers*.
- **Net unilateral transfers (NUT)** equals the value of unilateral transfers the country receives from the rest of the world minus those it gives to the rest of the world.

# 1 Measuring Macroeconomic Activity: An Overview

## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- These net transfers have to be added to GNI in order to calculate **gross national disposable income (GNDI)**.
- Thus, GNI plus NUT equals GNDI, which represents the total income resources available to the home country.



## 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  $Y$ :

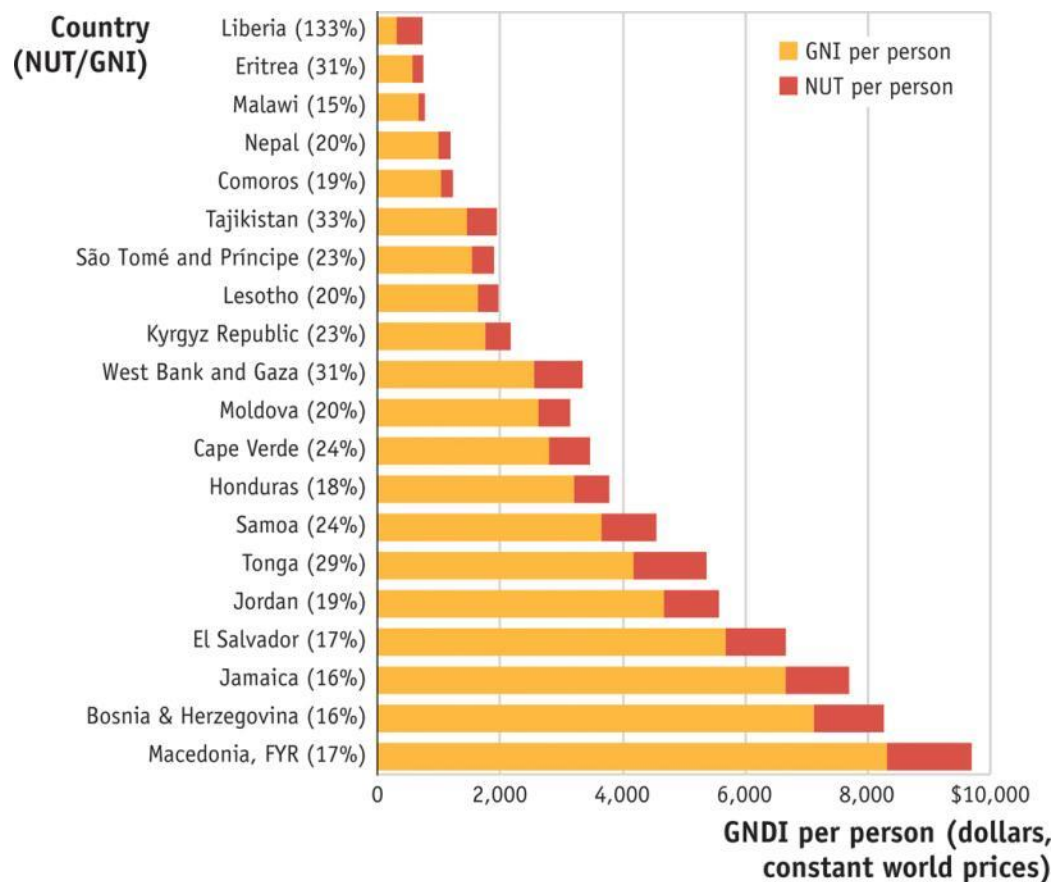
$$\underbrace{Y}_{GNDI} = \underbrace{C + I + G}_{GNE} + \underbrace{(EX - IM)}_{\text{Trade balance (TB)}} + \underbrace{(EX_{FS} - IM_{FS})}_{\text{Net factor income from abroad (NFIA)}} + \underbrace{(UT_{IN} - UT_{OUT})}_{\text{Net unilateral transfers (NUT)}} \quad (5-3)$$



## 2 Income, Product, and Expenditure

### From GNI to GNDI: Accounting for Transfers of Income

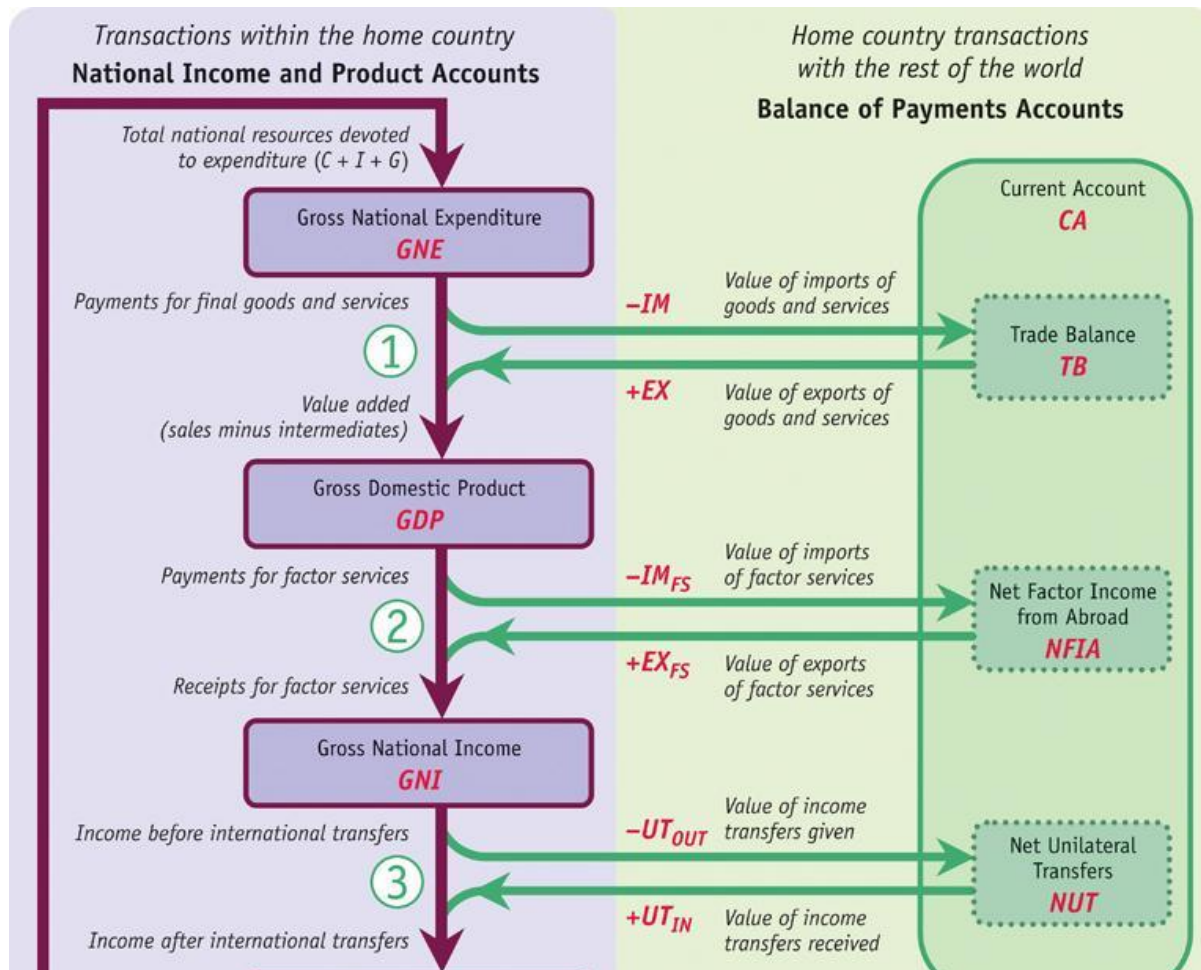
FIGURE 5-4



**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).

# 1 Measuring Macroeconomic Activity: An Overview

## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts



The **current account (CA)** is a tally of all international transactions in goods, services, and income (occurring through market transactions or transfers).

## 2 Income, Product, and Expenditure

### What the National Economic Aggregates Tell Us

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

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).

## 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** ( $S = Y - C - G$ , by definition) and investment:

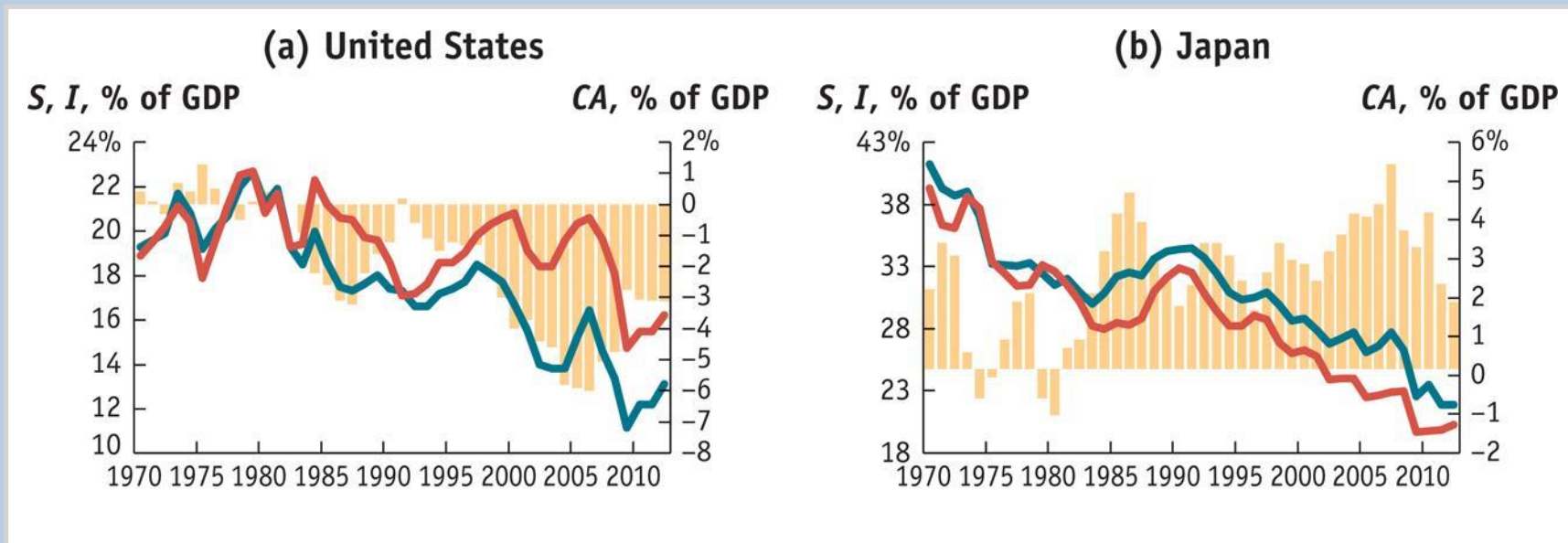
$$\underbrace{S}_{Y-C-G} = I + CA \quad (5-6)$$

- This equation, often written as  $CA = S - I$ , 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



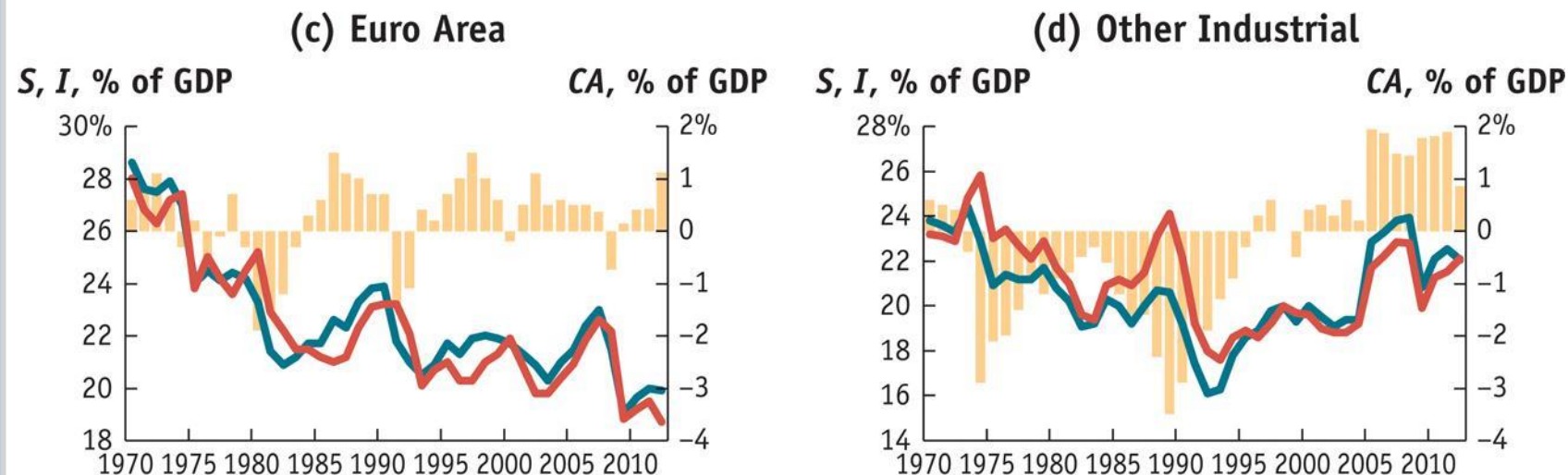
The charts show saving, investment, and the current account as a percent of each sub-region's GDP for four groups of advanced countries. The United States has seen both saving and investment fall since 1980, but saving has fallen further than investment, opening up a large current account deficit approaching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

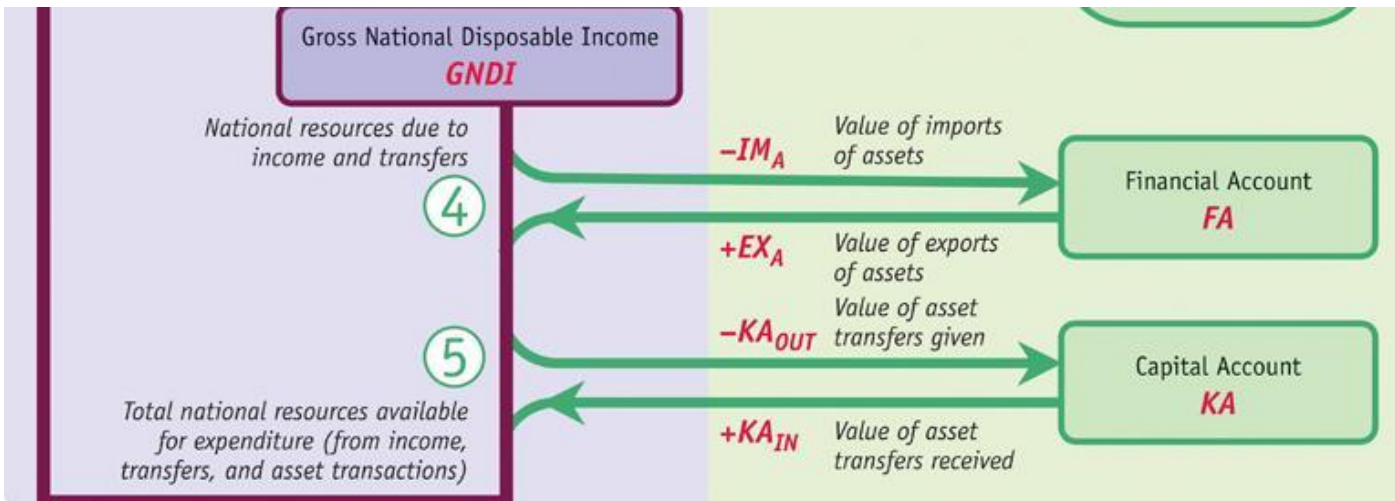
Other advanced countries (e.g., non-Euro area EU countries, Canada, Australia, etc.) have tended to run large current account deficits.



# 1 Measuring Macroeconomic Activity: An Overview

## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- The value of asset exports minus asset imports is called the **financial account (FA)**.
- These net asset exports are added to home GNDI when calculating the total resources available for expenditure in the home country.

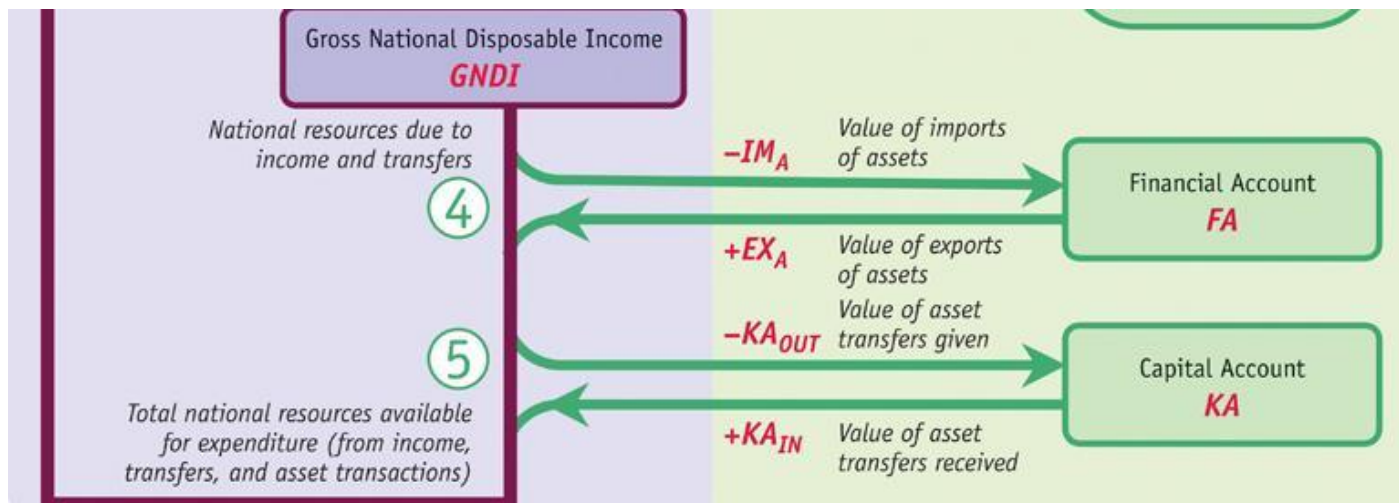




# 1 Measuring Macroeconomic Activity: An Overview

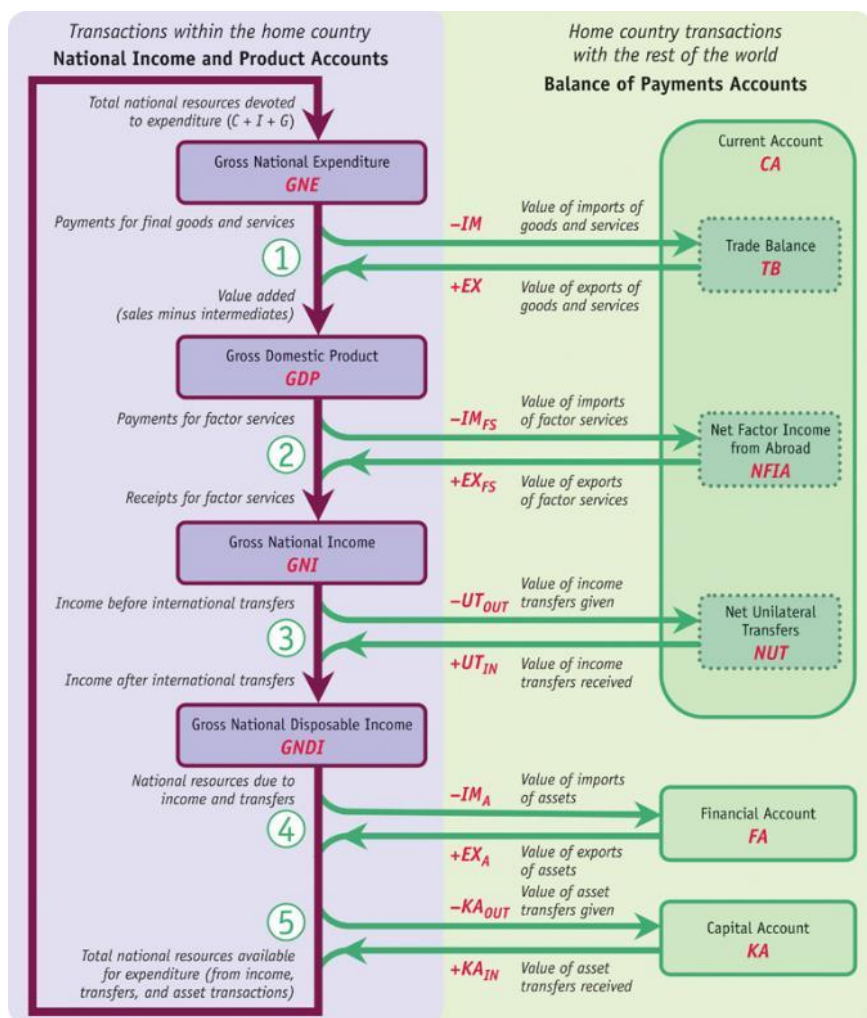
## The Flow of Payments in an Open Economy: Incorporating the Balance of Payments Accounts

- A country may not only buy and sell assets but also transfer assets as gifts.
- Such asset transfers are measured by the **capital account (KA)**, which is the value of capital transfers from the rest of the world minus those to the rest of the world.



# 1 Measuring Macroeconomic Activity: An Overview

FIGURE 5-2



The Open Economy Measurements of national expenditure, product, and income are recorded in the national income and product accounts, with the major categories shown on the left.

Measurements of international transactions are recorded in the balance of payments accounts, with the major categories shown on the right.

The purple line shows the flow of transactions within the home economy.

The green lines show all cross-border transactions.

# 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
  - 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, both of minor quantitative significance:
  1. Capital transfers (i.e., gifts of assets), an example of which is the forgiveness of debts
  2. The acquisition and disposal of nonfinancial, nonproduced assets (e.g., patents, copyrights, trademarks)
- 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, and is typically small in magnitude.

### 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 to the total value of home expenditure on final goods and services, GNE:

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

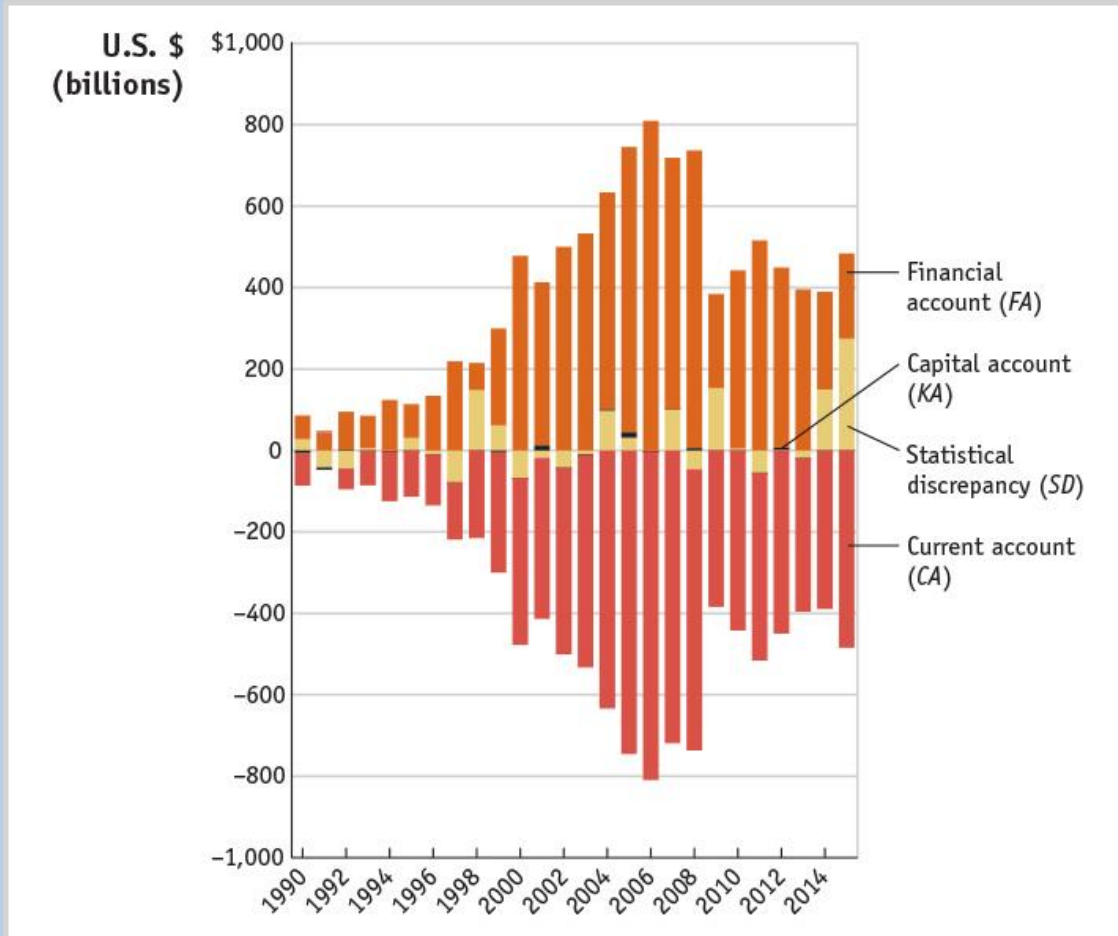
- Cancelling GNE from both sides, we obtain a result known as the **balance of payments identity** or **BOP identity**:

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

# 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, 1990–2015**  
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.

# An Example: US CA deficit

$$\text{GNE} = C + I + G = 100$$

$$\text{TB} = -25 \Rightarrow \text{GDP} = \text{GNE} + \text{TB} = 75$$

$$\text{NFIA} = 5 \Rightarrow \text{GNI} = \text{GDP} + \text{NFIA} = 80$$

$$\text{NUT} = 0 \Rightarrow \text{GNDI} = \text{GNI} = \text{GNE} + \text{CA} = 80$$

$$\text{CA} = \text{GNDI} - \text{GNE} = -20$$

$$\text{BOP} = \text{CA} + \text{FA} \text{ (Hp: KA=0)} = 0 \Rightarrow \text{FA} = +20$$

Expenditure > Disposable Income

To finance expenditures above income, domestic agents (C,I,G) have exported (sold) financial assets, like bonds or equity, in exchange for money to spend.