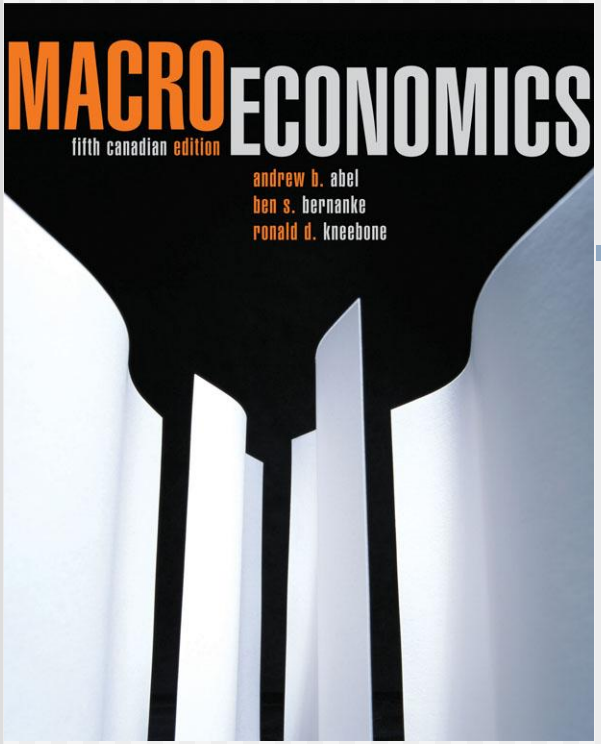


Chapter 1

Introduction to Macroeconomics

A word about the course

- Everybody wants to pass, so how do you do it? Turns out the answer is easy and not surprising:
  - Study
  - Do the assignments
  - Come to the lectures and avoid the post mid-term fall in attendance
  - Ask for help when you need it – we're here for that

Why study macroeconomics and why now?

- If not now, when?
- The world economy, and with it the Canadian economy, has just experienced a once-in-several-generations downturn. While a recovery is underway, there continue to be weak spots.
- But even without this, the subject remains very important – what happens to the aggregate economy affects everybody, most importantly by your chances of finding employment.

What Macroeconomics is About

- Macroeconomics is the study of the structure and performance of national economies and of the policies that governments use to try to affect economic performance.
- Perhaps more interestingly, it is about how markets interact – what happens in one market affects what happens in another, sometimes in a surprising way.
- Microeconomics more concerned with individual markets and how they function.

Issues Addressed by Macroeconomists

- The subject is empirical in nature. It seeks to answer:
- What determines a nation's long-run economic growth?
- What causes a nation's economic activity to fluctuate?
- What causes unemployment?

Issues Addressed by Macroeconomists (continued)

- What causes prices to rise and to fall and does this matter?
- How does being a part of a global economic system affect national economies?
- Why do some countries do well and others not?
- Can government policies be used to improve economic performance?

Relevance of the course

- The models studied in this course are, at heart, those used by professional economists to address the issues raised above.
- They are designed to try and answer the questions just raised as well as others.
- Of note here is that when we use models it means some math is required.

Long-Run Economic Growth

- Rich nations have experienced extended periods of rapid economic growth.
- Canada's experience is typical of many advanced economies.
- Some poor nations either have never experienced them or economic growth was offset by economic decline. Others have managed to enter new periods of strong growth – China and India stand out.

Reminder: What is a growth rate?

- $g = [(Y(t) - Y(t-1))/Y(t-1)]x100$

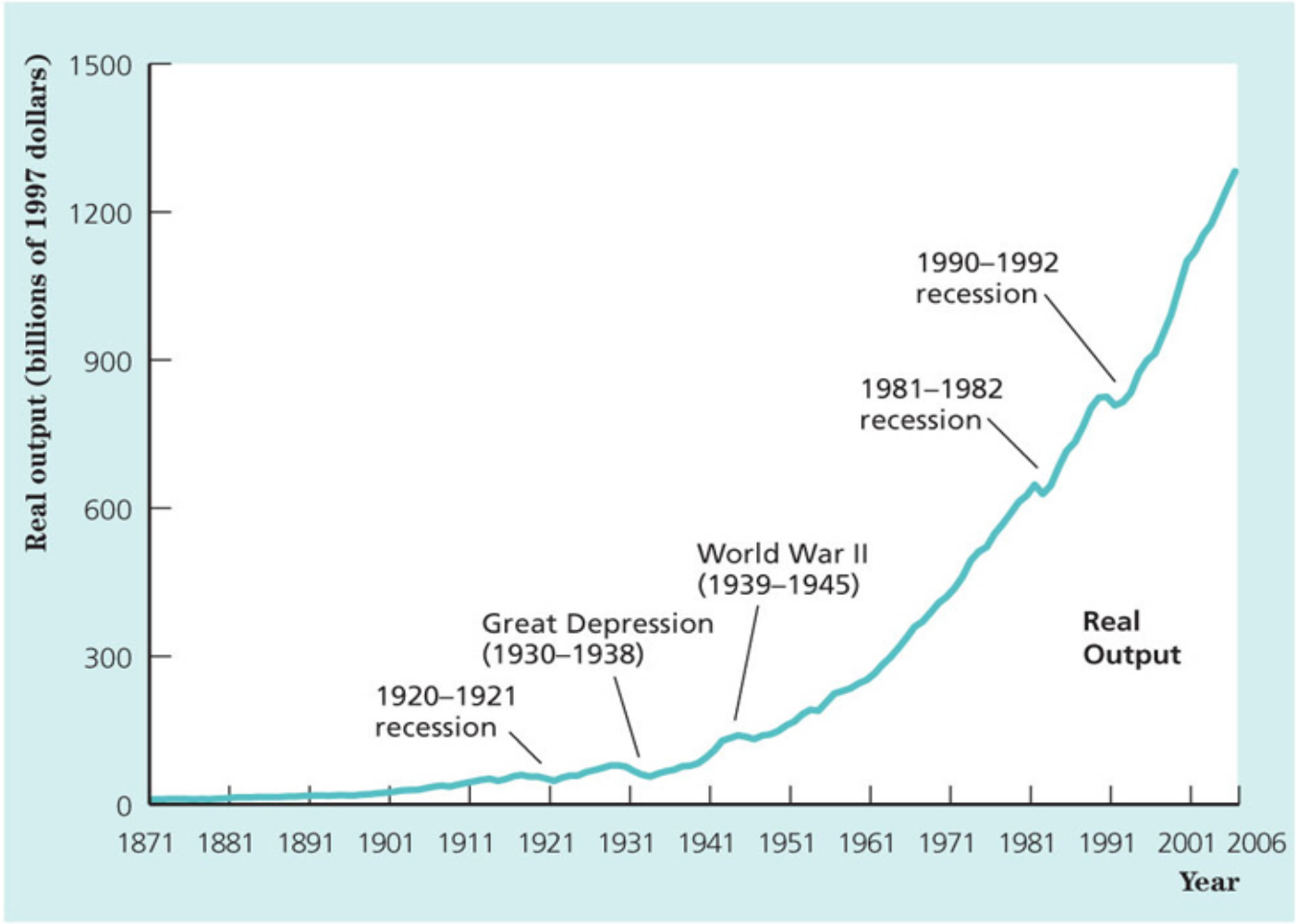
The Level of Output

FIGURE 1.1

OUTPUT OF THE CANADIAN ECONOMY, 1871–2006

In this graph, the output of the Canadian economy is measured by real gross domestic product (real GDP) with goods and services valued at their 2002 prices (see Chapter 2). Note the strong upward trend in output over time, as well as sharp fluctuations during the Great Depression (1930–1938), World War II (1939–1945), and the recessions of 1920–1921, 1981–1982, and 1990–1992.

Source: 1871–1960: *Historical Canadian Macroeconomic Dataset 1871–1994*, compiled by R. Marvin McInnis, Queen's University, 2001; 1960–2006: Statistics Canada, CANSIM II series v1997756 and v646937.



Increased Output

- Total output is increasing because of increasing population, *i.e.* the number of available workers.
- Increasing average labour productivity: the amount of output produced per unit of labour input. This is key to determining living standards

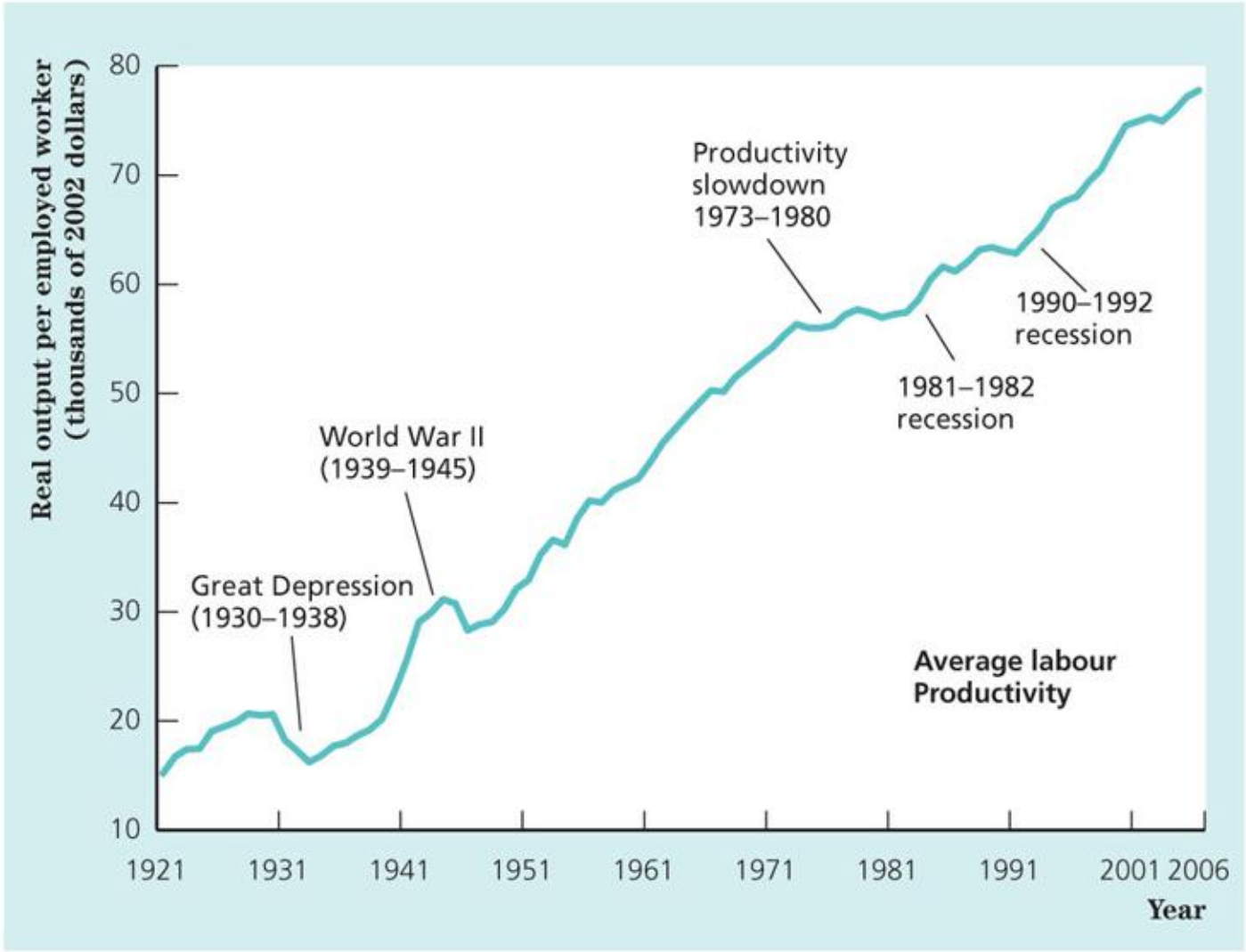
Labor Productivity

FIGURE 1.2

AVERAGE LABOUR PRODUCTIVITY IN CANADA, 1921–2006

Average labour productivity (output per employed worker) has risen over time, with a peak during World War II, reflecting increased wartime production, and troughs during recessions. Productivity growth was particularly strong during the 1950s and 1960s but has slowed since then.

Source: Employment: 1921–1975: *Historical Statistics of Canada*, Series D129 and D139; 1976–2006: Statistics Canada, CANSIM II series v2461119. Average labour productivity is real output (see Figure 1.1 for sources) divided by employment.



Rates of Growth of Output

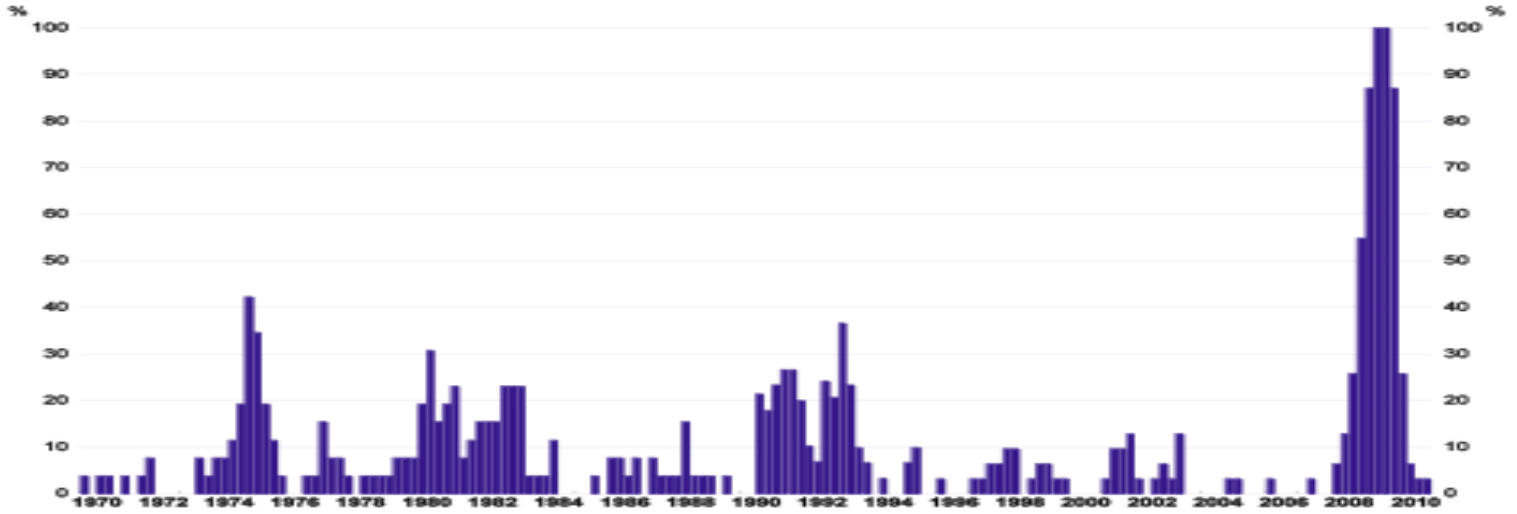
- Rates of growth of output (or output per worker) are determined by:
  - rates of saving and investment;
  - rates of technological change;
  - rates of change in other factors.

Business Cycles

- Business cycles are short-run (we hope) contractions and expansions of economic activity.
- The most volatile period in the history of Canadian output was between 1914 and 1945.
- In the post WWII period, the recessions of ’53-’54, ‘81-’82 and ‘90-92 stand out.
- Currently Canada, along with the world, is emerging from the most severe post-war recession on record. This one will go down in the history books.

The downturn is the most severe and synchronised in post-war history

Proportion of all OECD economies experiencing at least two consecutive quarters of downturn[1]



1. The last historical observation is for 2008q4.

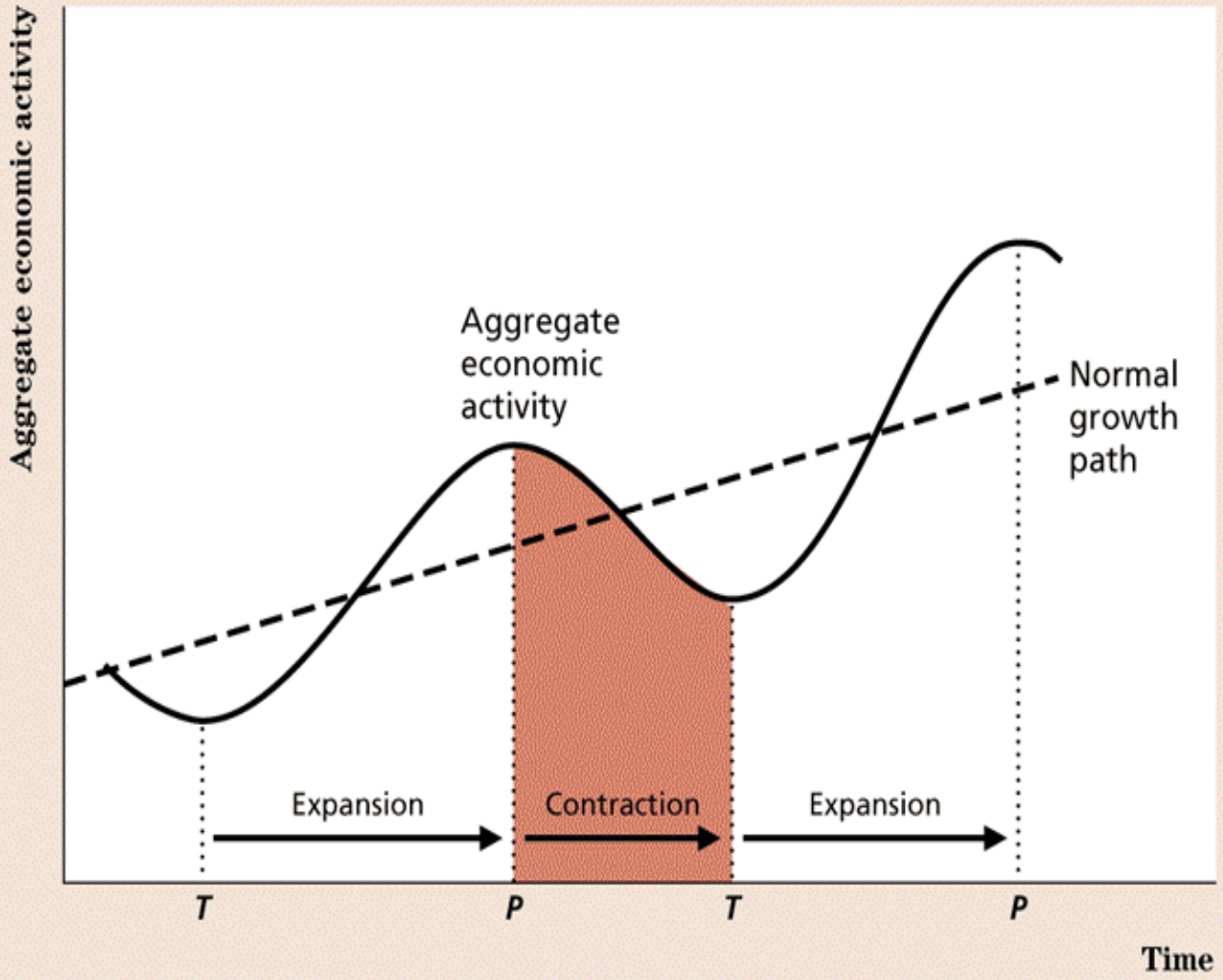
Source: OECD.

Business Cycles

FIGURE 8.1

A BUSINESS CYCLE

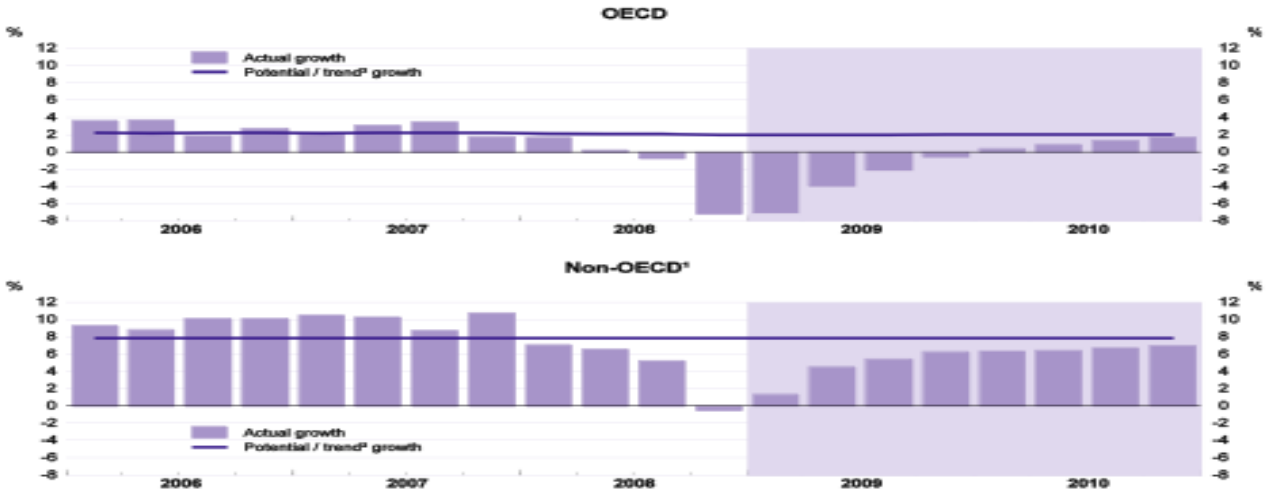
The solid curve graphs the behaviour of aggregate economic activity over a typical business cycle. The dashed line shows the economy's normal growth path. During a contraction, aggregate economic activity falls until it reaches a trough, *T*. The trough is followed by an expansion during which economic activity increases until it reaches a peak, *P*. A complete cycle is measured from peak to peak or trough to trough.



Recessions

- Recession is the downward phase of a business cycle when national output is falling or growing slowly.
  - Hard times for many people
  - A major political and policy concern

The cycle is global



1. The non-OECD region is taken here to be a weighted average, using 2000 GDP weights and PPPs, of Brazil, China, the Russian Federation and India which together accounted for about half of non-OECD output in 2000.
2. Trend growth for the non-OECD area is the average over the period 2000-07.

Source: OECD.

Unemployment

- Recessions are usually accompanied by high unemployment: the number of people who are available for work and are actively seeking it but cannot find jobs.

$$Unemployment\ Rate = \frac{Unemployed}{Labour\ Force} \times 100\%$$

The Unemployment Rate

- The unemployment rate can stay high even when the economy is starting to do well.
- After fifteen years of economic growth, in 2006, the unemployment rate in Canada was near 6%.
- Unemployment has risen in the wake of the current recession hitting a peak of over 8½%.
- Currently it has eased back to 7.6%.

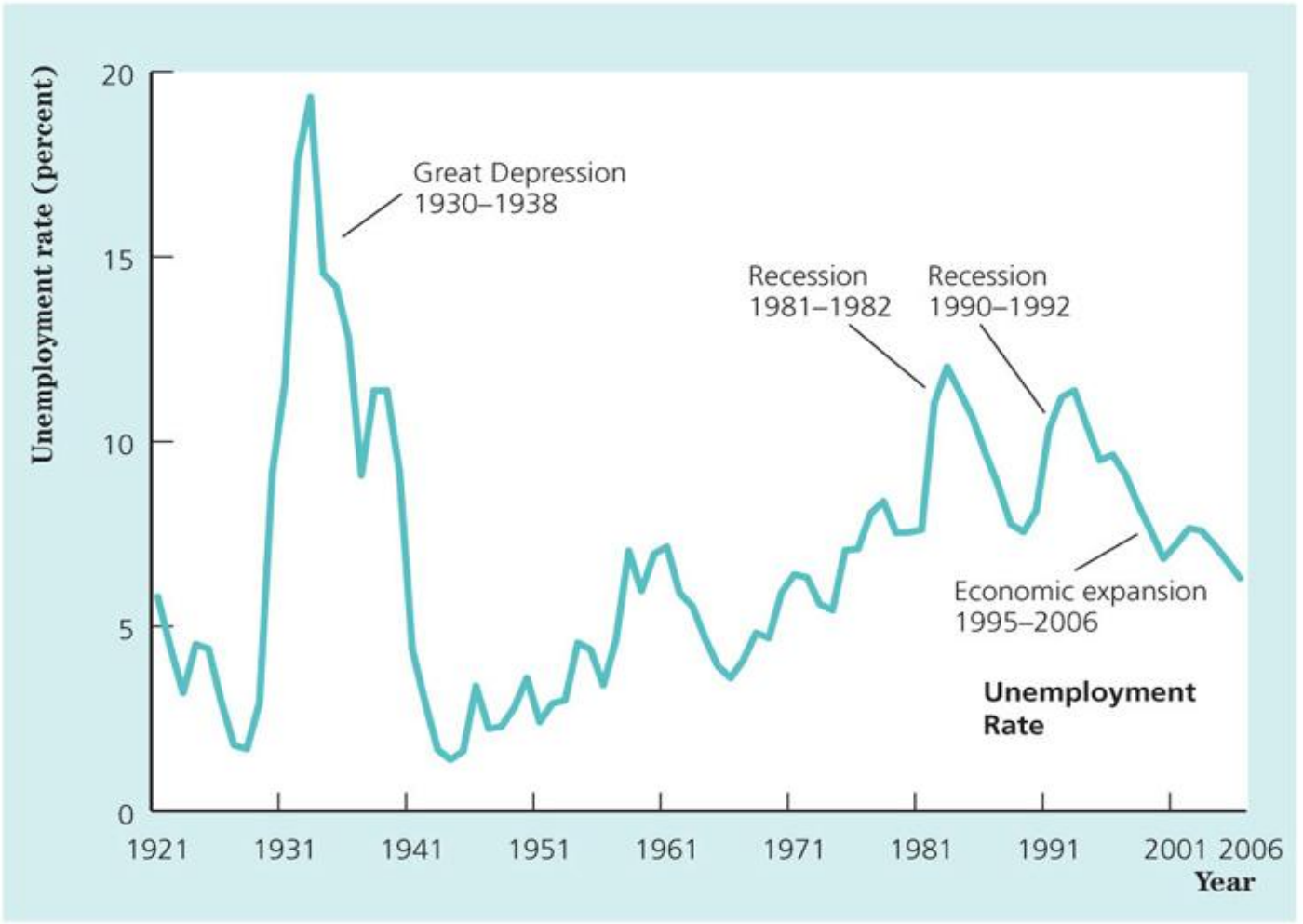
Unemployment Rate

FIGURE 1.3

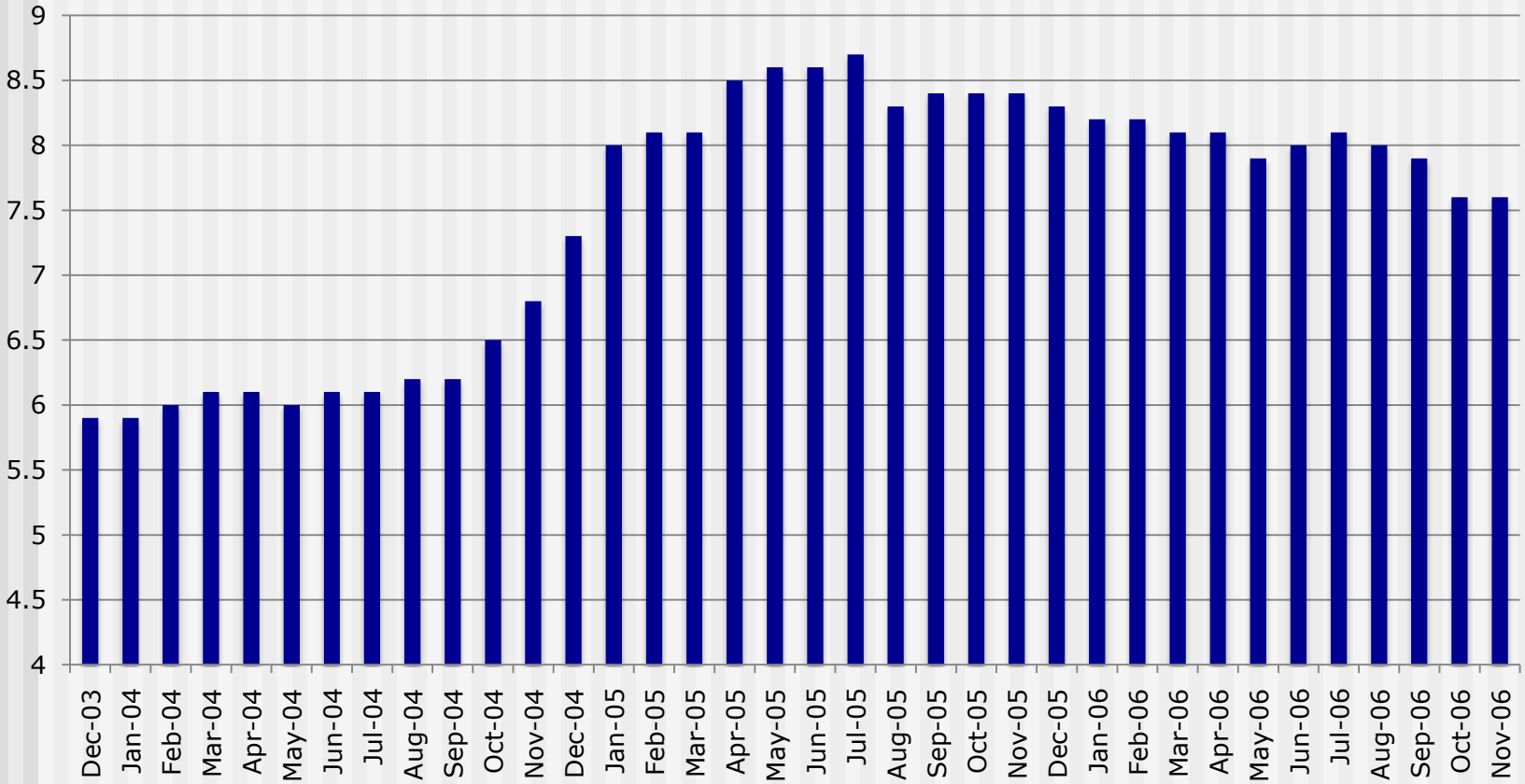
THE CANADIAN UNEMPLOYMENT RATE, 1921–2006

The figure shows the percentage of the labour force that was unemployed in each year since 1921. Unemployment peaked during the Great Depression of the 1930s and reached its low point during World War II. Since World War II the highest unemployment rates have occurred during the recessions of 1981–1982 and 1990–1992.

Sources: 1921–1975: *Historical Statistics of Canada,* Series D129, D132, D139, and D142; 1976–2006: Statistics Canada, CANSIM II series v2461119 and v2461182.



Unemployment Rtae



Inflation

- When prices of most goods and services are rising over time it is inflation. When they are falling it is deflation.
- The inflation rate is the percentage increase in the average level of prices.
- Inflation rates vary widely across countries from deflation in Japan to hyper inflation in Zimbabwe.
- Canada has seen both deflation (in the Great Depression) and high inflation (in the late 1970s). Recently (between June and September) Canada has seen a mild deflation. Currently the rate is positive.

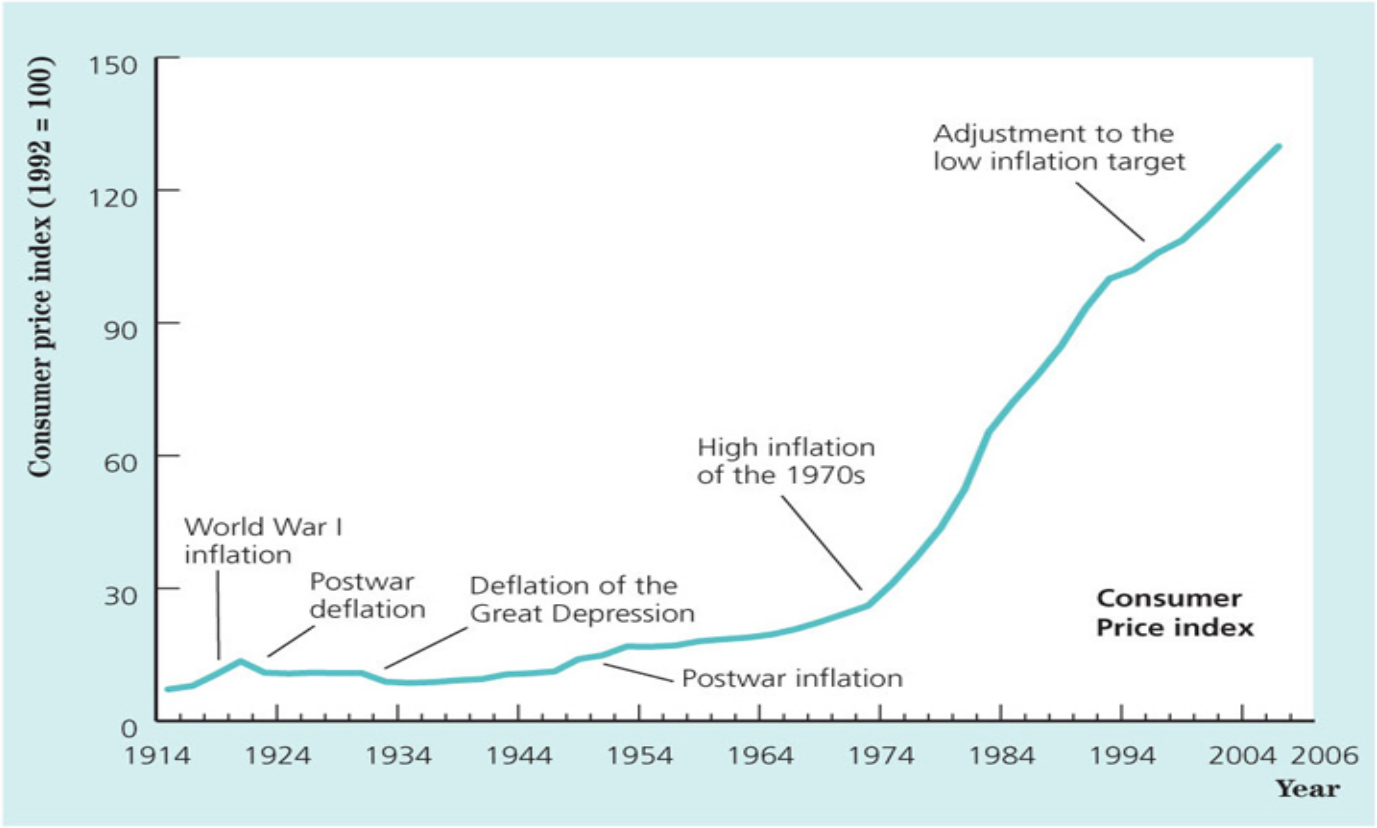
CPI and Inflation

FIGURE 1.4

CONSUMER PRICES IN CANADA, 1914–2006

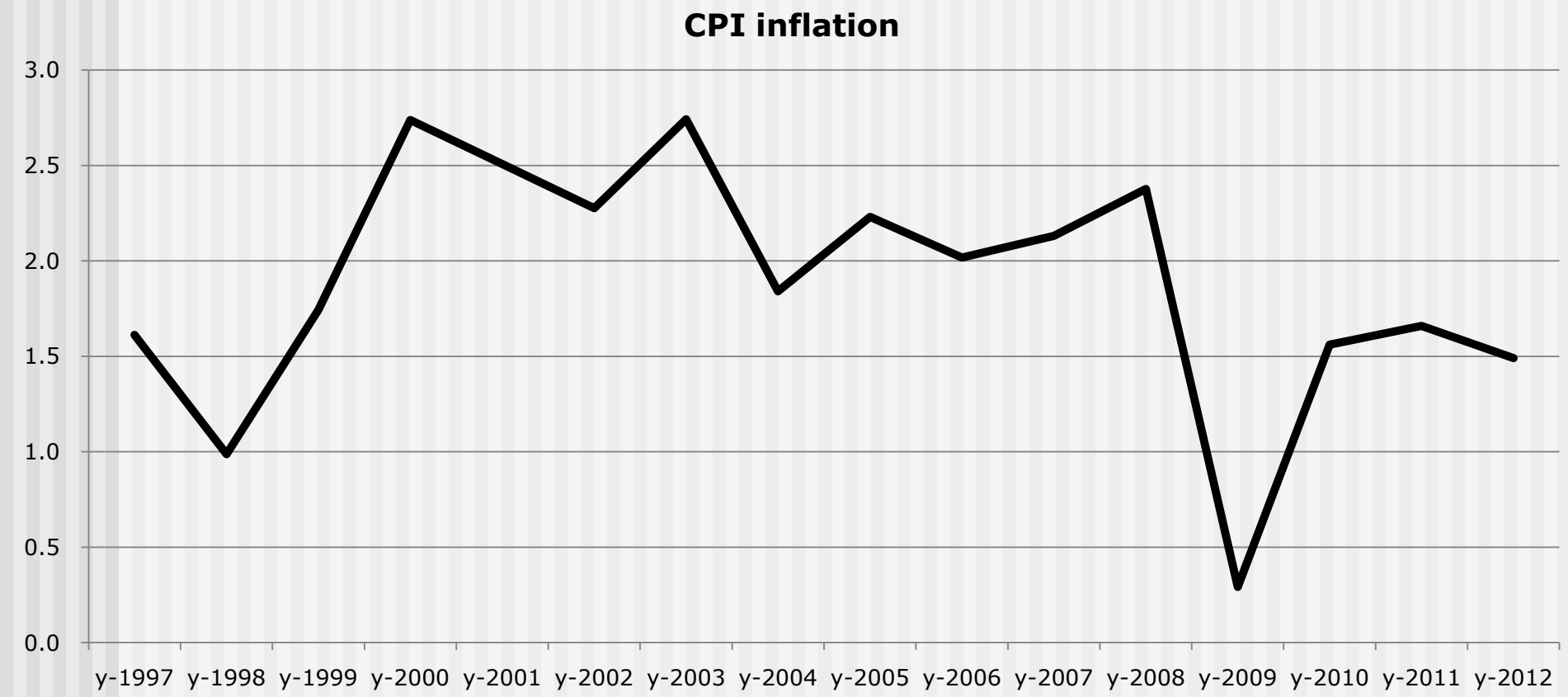
Prior to World War II, the average level of prices faced by consumers remained relatively constant, with periods of inflation (rising prices) offset by periods of deflation (falling prices). Since World War II, however, prices have risen more than tenfold. In the figure, the average level of prices is measured by the consumer price index, or CPI (see Chapter 2). The CPI measures the cost of a fixed set, or basket, of consumer goods relative to the cost of the same basket of goods in a base period, in this case 1992. Thus, a CPI of 130 in 2006 means that a basket of consumer goods that cost $100 in 1992 would cost $130 in 2006.

Source: Adapted from Statistics Canada CANSIM II series v735319.



[3] This measure is called the consumer price index, or CPI, which is discussed in Chapter 2. Conceptually, the CPI is intended to measure the cost of buying a certain fixed set, or "basket," of consumer goods. However, the construction of a consumer price index over a period as long as 90 years involves many compromises. One is that the basket of goods priced by the CPI is not literally the same over the entire period shown in Figure 1.4 but is periodically changed to reflect the different mix of consumer goods available at different times.

Recent inflation in Canada



Effects of Inflation

- Inflation can erode incomes, especially to those people on pensions or other fixed incomes.
- When the inflation rate reaches an extremely high level economies will function poorly.
- It can also damage investment by creating uncertainty.
- Determining the right level of inflation is a big policy issue.

The International Economy

- An economy which has extensive trading and financial relationships with other national economies is an open economy.
- An economy with no relationships is a closed economy.
- International trade and borrowing relationships can transmit business cycles from country to country.
  - In the current recession, this has been an important transmission mechanism.

Exports and Imports

- Canadian exports are goods and services produced in Canada and consumed abroad.
- Canadian imports are goods and services produced abroad and consumed in Canada.

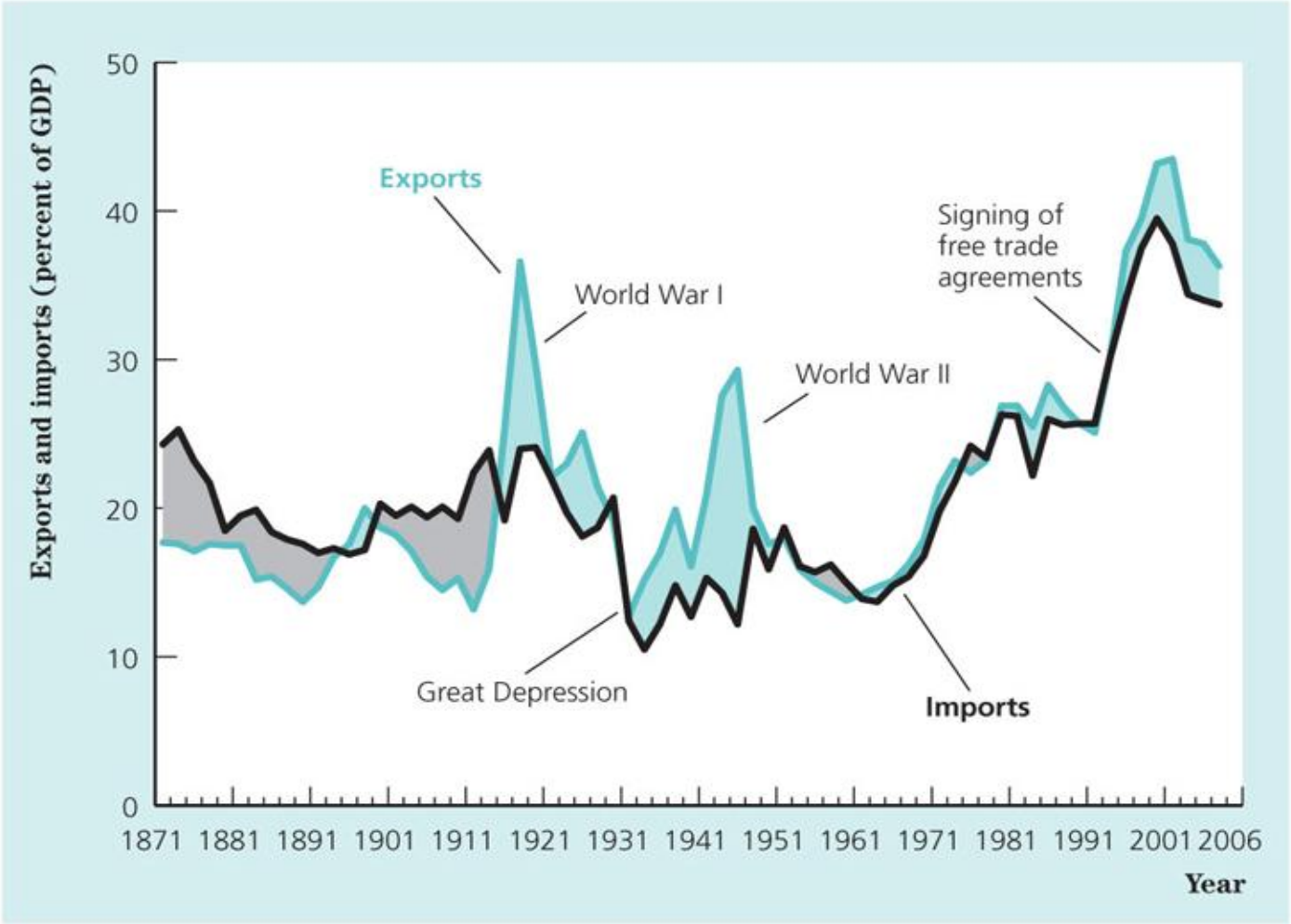
Imports and Exports

FIGURE 1.5

CANADIAN EXPORTS AND IMPORTS, 1871–2006

The figure shows Canadian exports (teal curve) and imports (black curve), each expressed as a percentage of total output. Exports and imports need not be equal in each year: During the late 1950s and early 1990s, Canadian exports were smaller than Canadian imports (shaded grey area). Since 1994, exports have exceeded imports (shaded teal area).

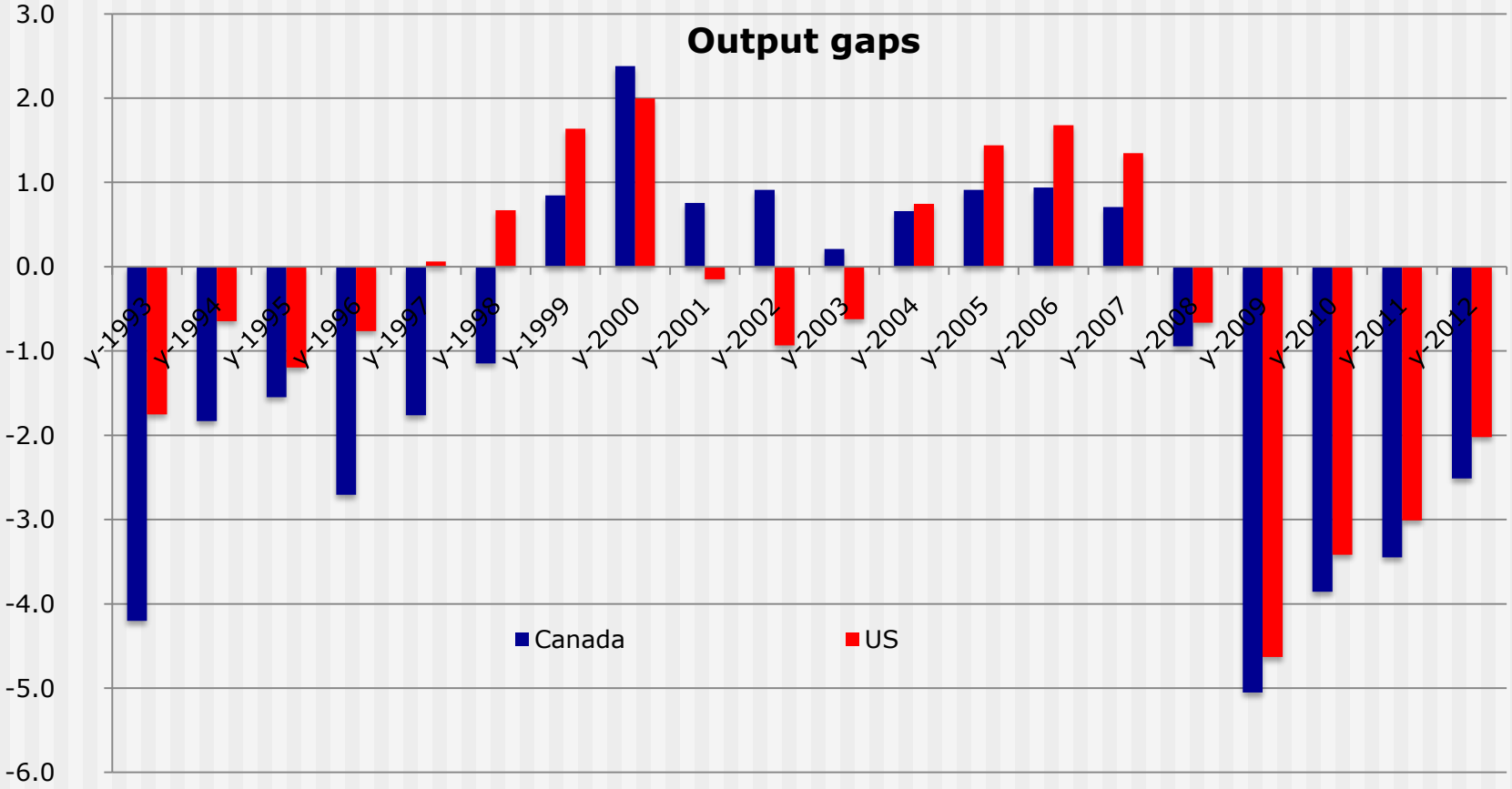
Sources: Exports and imports of goods and services: 1871–1970: *Historical Canadian Macroeconomic Dataset 1871–1994*, compiled by R. Marvin McInnis, Queen's University, 2001. 1970–2006: Statistics Canada, CANSIM II series v498728 and v498745. GDP: 1871–1960: *Historical Canadian Macroeconomic Dataset 1871–1994*. 1960-2006: Statistics Canada, CANSIM II series v1997756.



Trade Imbalances

- Trade imbalances (trade surplus and deficit) affect output and employment.
  - Trade surplus: exports exceed imports.
  - Trade deficit: imports exceed exports.

Why is trade important?



The Exchange Rate

- The trade balance is affected by the exchange rate.
- The exchange rate is the amount of Canadian dollars it takes to buy a unit of foreign currency.
  - Relative to the US$, the rate has fluctuated widely over the past number of decades from a low of $1CAN = $0.62US in Jan 2002 to a high of $1CAN = $1.10US in Nov 2007. It is now around par with the US dollar.

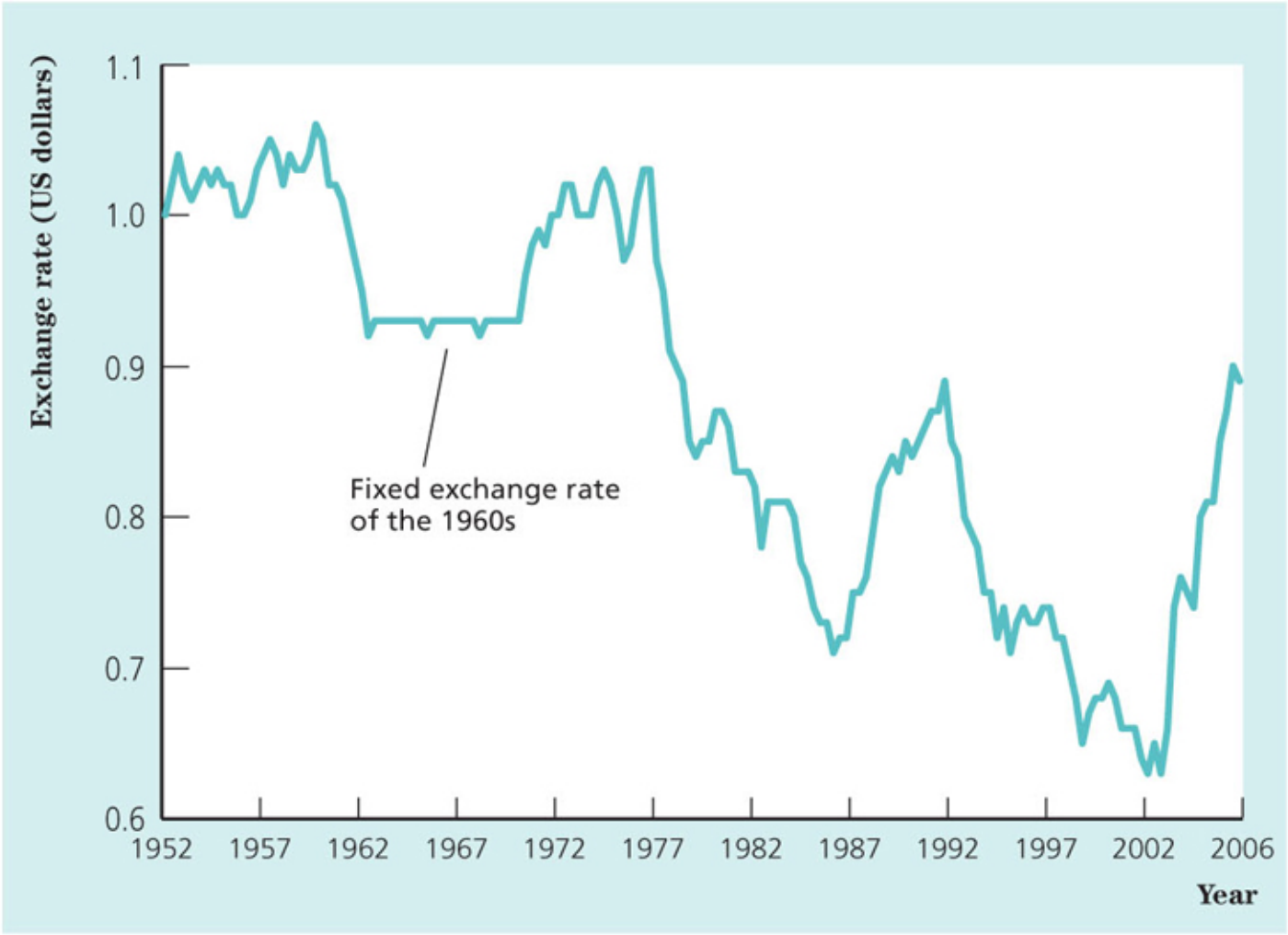
Exchange Rates

FIGURE 1.6

CANADA–US EXCHANGE RATE, 1950–2006

The figure shows the exchange rate between Canada and the United States, monthly since 1950. The exchange rate is the value of the Canadian dollar expressed in US dollars. During the 1960s, the exchange rate was fixed within a narrow band, but since then, it has floated and has been subject to large fluctuations.

Source: Adapted from Statistics Canada CANSIM II series v37426.



Exchange rates (recent data)

Macroeconomic Policy

- A nation's economic performance depends on:
  - natural and human resources;
  - capital stock;
  - technology;
  - economic choices made by citizens; and
  - macroeconomic policies of the government.

Macroeconomic Policy (continued)

- Macroeconomic policies:
  - Fiscal policy: government spending and taxation.
  - Monetary policy: the central bank's control of short-term interest rates and the money supply.
  - The two can can interact as developments by one can cause difficulties for the other.

Budget Deficits

- The economy is affected when there are large budget deficits: the excess of government spending over tax collection.
- The large budget deficits of the 1980s and early 1990s were unusual.
  - Borrowing from the public might divert funds from more productive uses.
  - Federal budget deficits might be linked to the decline in productivity growth.
  - After 10 plus years of surpluses the budget is once again in deficit.

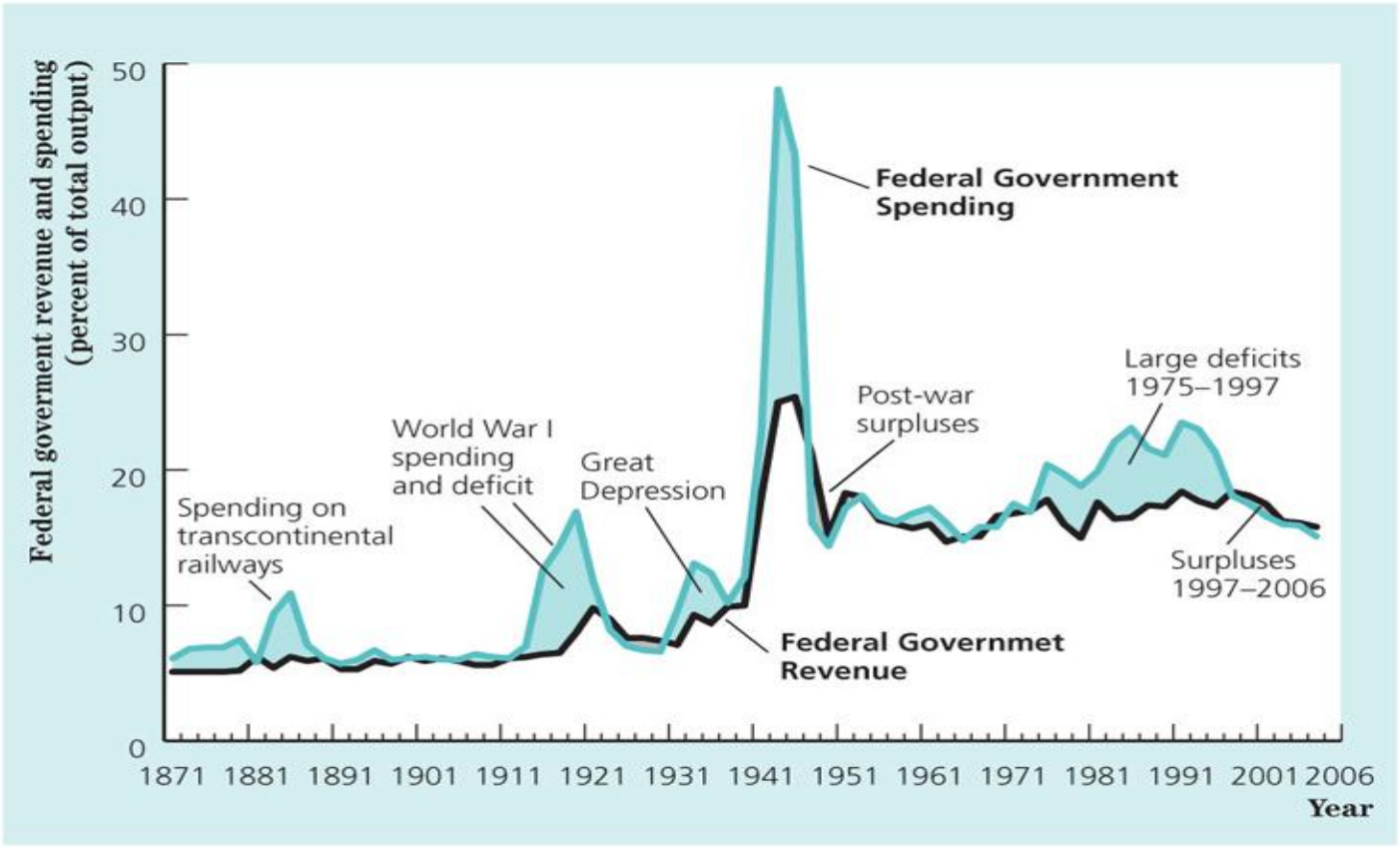
Fiscal Policies

FIGURE 1.7

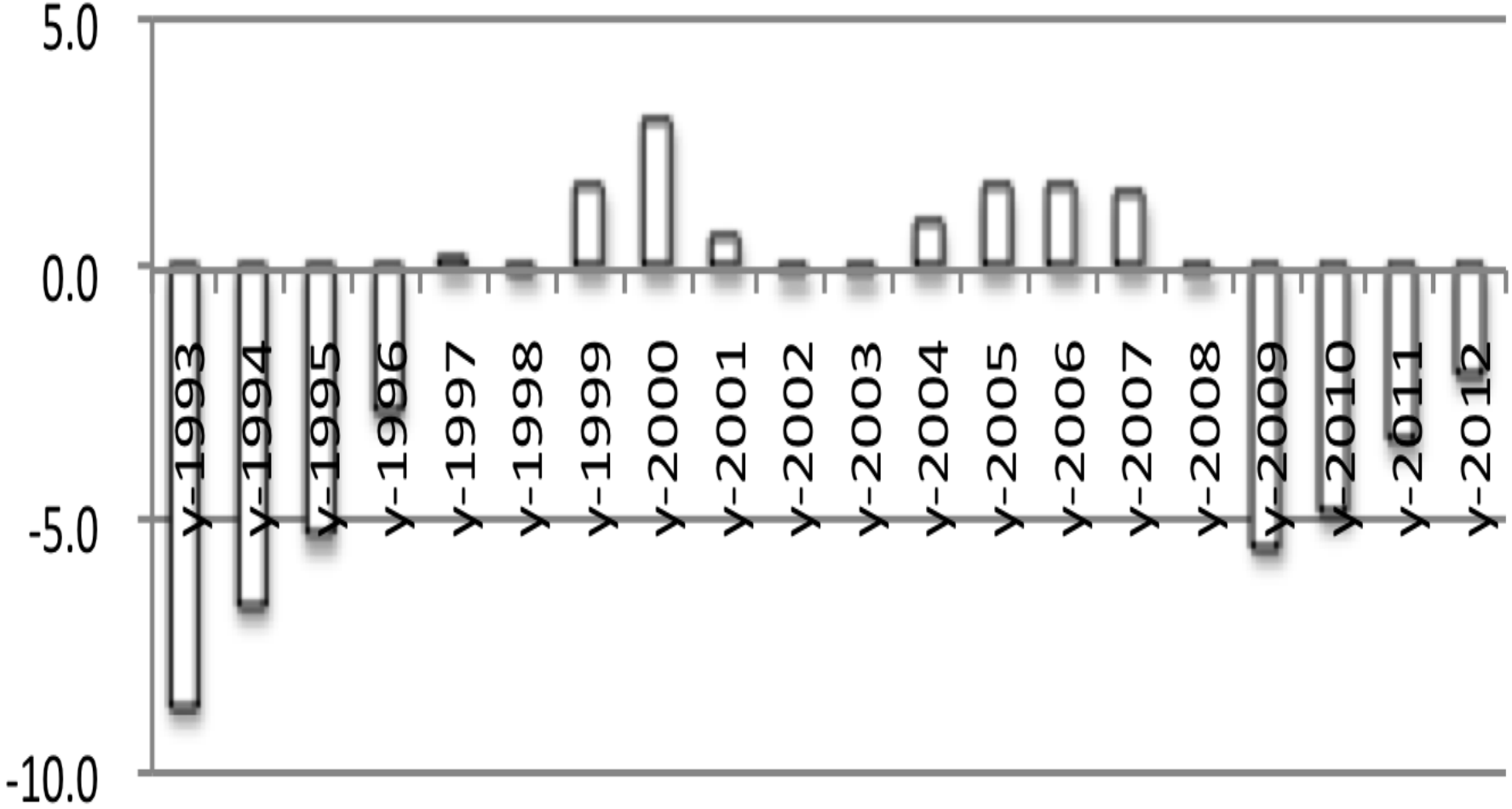
CANADIAN FEDERAL GOVERNMENT SPENDING AND REVENUE, 1871–2006

Canadian federal government spending (teal curve) and revenue (black curve) are shown as percentages of total output. Deficits, or excesses of spending over tax collections, are shaded in teal, and surpluses (excesses of revenue over spending) are shaded in grey. The federal government's share of the economy has grown since the Great Depression. Large deficits occurred in the 1880s, during World Wars I and II, during the Great Depression, and between 1975 and 1996. Since 1997 the federal government has realized budget surpluses.

Sources: Federal government revenue and expenditure: 1871–1960: *Historical Statistics of Canada*, series H18 and H34. 1960–2006: Statistics Canada, CANSIM II series v498358 and v498371. GDP: 1871–1960: *Historical Canadian Macroeconomic Dataset 1871–1994*. 1960–2006: Statistics Canada, CANSIM II series v1997756.



Budget balance (per cent of GDP)



Aggregation

- Macroeconomists ignore distinctions between individual product markets and focus on national totals.
- The process of summing individual economic variables to obtain economy wide totals is called aggregation.
  - We will be discussing this in the next lecture.

What Macroeconomists Do

- Macroeconomic forecasting
- Macroeconomic analysis
- Macroeconomic research
- Data development

Macroeconomic Forecasting

- Macroeconomic forecasting – prediction of future economic trends - has some success in the short run. In the long run too many factors are highly uncertain.
- If we're not good at it, why do it?
  - Perhaps because we make errors and there is information in those errors about key aspects of the economy like productivity.
  - This is where economic analysis comes in.

Macroeconomic Analysis

- Macroeconomic analysis - analyzing and interpreting events as they happen – helps both private sector and public policymaking.
- Here as well there are difficulties, partly because of politics but they can be overcome.
  - Examples here include trade, tax policy, environment, regional concerns.

Macroeconomic Research

- Macroeconomic research - trying to understand the structure of the economy in general – forms the basis for macroeconomic analysis and forecasting.
- There are a very wide variety of topics.
- Historical experience is important.

Economic Theory

- How is research carried out?
- Economic theory: a set of ideas about the economy to be organized in a logical framework.
- Economic model: a simplified description of some aspects of the economy.

Developing and Testing a Theory

- State the research question.
  - Is this an interesting and useful line of enquiry?
- Make provisional assumptions.
  - Are the assumptions reasonable and realistic?
- Conduct an empirical analysis.
- Work out the implications of the theory.
  - Does the theory have implications that can be tested by looking at the real world?
- Evaluate the results – here forecasting can be helpful.

Data Development

- Macroeconomists use data to assess the state of the economy, make forecasts, analyze policy alternatives, and test theories.
- Most data is provided by the public sector but increasingly by the private sector as well.
- Providers of data must:
  - Decide what types of data should be collected based on who is expected to use the data and how.
  - Ensure the measures of economic activity correspond to economic concepts.
  - Guarantee the confidentiality of data.

Why Macroeconomists Disagree

- A positive analysis examines the economic consequences of an economic policy or other development, but it does not address its desirability.
- Normative analysis tries to determine whether a certain economic policy should be used.
- Economists disagree:
  - on normative issues due to differences in values.
  - on positive issues due to different schools of thought.

The Classical Approach

- The invisible hand of economics: General welfare will be maximized (not the distribution of wealth) if:
  - there are free markets, with no impediments/frictions to adjustments;
  - individuals act in their own best interest; and
  - importantly it took the distribution of income as a given.

The Classical Approach (continued)

- To maintain markets' equilibrium – the quantities demanded and supplied are equal:
  - Markets must function without impediments – there are no frictions.
  - Wages and prices should be flexible.

The Classical Approach (continued)

- Thus, according to the classical approach, the government should have a limited role in the economy – largely because there is no need for them to do anything.
- This was key as it implied the "least government was the best government".
- It depends on markets not failing.

The Keynesian Approach

- In the Great Depression, the classical view did not seem to fit the facts – markets were failing to do their job or were taking too long to do it. Once again we can say that today the data don't seem the facts
- Keynes (1936) assumed that wages and prices adjust slowly.
- Thus, markets could be out of equilibrium for long periods of time and unemployment can persist.
- Therefore, according to the Keynesian approach, it may be useful for governments to take actions to alleviate unemployment.

The Keynesian Approach (continued)

- The government can purchase goods and services, thus increasing the demand for output and reducing unemployment.
- Newly generated incomes would be spent and would raise employment even further.
- His influence held sway for some time, declined in final 30 years of the 20th century and is now re-ascending.

Evolution of the Classical-Keynesian Debate

- After stagflation – high unemployment and high inflation – of the 1970s, a modernized classical approach reappeared.
- Substantial communication and cross-pollination is taking place between the classical and the Keynesian approaches.

Unified Approach to Macroeconomics

- Individuals, firms and the government interact in goods, asset and labour markets.
- Macroeconomic analysis is based on the analysis of individual behaviour.

The Unified Approach (continued)

- Keynesian and classical economists agree that in the long run prices and wages adjust to equilibrium levels.
- The basic model will be used either with classical or Keynesian assumptions about flexibility of wages and prices in the short run.
- This is sometimes referred to a New Keynesian economics.