

CHAPTER 1: INTRODUCTION TO MACROECONOMICS

LEARNING OBJECTIVES

- I. Goals of Part I: Introduction
 - A. Introduce students to the main concepts in macroeconomics (Ch. 1)
 - B. Introduce national income accounting and major economic magnitudes (Ch. 2)
- II. Goals of Chapter 1
 - A. Major economic issues—growth, business cycles, unemployment, inflation, the international economy, macroeconomic policy, aggregation (Sec. 1.1)
 - B. What macroeconomists do—forecasting, analysis, research, data development (Sec. 1.2)
 - C. Why macroeconomists disagree—Classicals vs. Keynesians, the text's approach (Sec. 1.3)
- III. Notes to Sixth Edition Users
 - A. All Figures have been updated to reflect the newly available data

TEACHING NOTES

- I. What Macroeconomics Is About (Sec. 1.1)
 - A. Long-run economic growth
 1. Growth of real output in Canada over time
 2. Sources of growth—rising population, increase in the average labour productivity

This may be a good place to introduce students to the calculation of a growth-rate, which is used throughout the textbook. You can write it first in general terms, as

$$\% \Delta X = [(X_{t+1} - X_t)/X_t] \times 100\% = [(X_{t+1}/X_t) - 1] \times 100\%.$$

Then you might use an example with something you're talking about, such as real GDP growth over the past year, or the inflation rate. We also recommend explaining how the growth rate of a ratio is approximately the growth rate of the numerator minus that of the denominator. Throughout the text, students may come across mathematical calculations that are unfamiliar to them. The Appendix at the end of the textbook contains some helpful basic guidance to mathematical topics, including discussions of functions and graphs, slopes of functions, elasticities, functions of several variables, shifts of a curve, exponents, and growth rate formulas.

- B. Business cycles
- C. Unemployment; Canadian experience

Analytical Problem 1 asks students to think about average labour productivity and unemployment and their relationship to output.

- D. Inflation
 1. Canadian experience

Analytical Problem 2 asks students to think about the welfare consequences of having a higher price level.

2. Deflation (falling prices)
3. Inflation rate

You may wish to note here that the inflation rate is just the growth rate of the price level, so that $\pi = [(P_{t+1}/P_t) - 1] \times 100\%$. Numerical Problem 1 gives students practice calculating growth rates, including the growth rate of average labour productivity, unemployment rate, and the inflation rate.

- E. The international economy
 1. Open vs. closed economies
 2. Trade imbalances; the trade deficit and the trade surplus
 3. The exchange rate
- F. Macroeconomic policy
 1. Fiscal policy
 - a. Effects of large federal deficits
 - b. Canadian experience
 - c. Relation to decline in productivity growth

Numerical Problem 2 serves two purposes: (1) to get students to look at some real data on the economy; and (2) to give them some idea how large are the trade deficit and government budget deficit or surplus.

2. Monetary policy; the Bank of Canada
- G. Aggregation; from microeconomics to macroeconomics
- II. What Macroeconomists Do (Sec. 1.2)
 - A. Macroeconomic forecasting
 1. Relatively few economists make forecasts

Data Application

There are many firms that provide forecasts for macroeconomic variables in Canada, such as the Conference Board of Canada, DRI Canada, and most private banks. In addition the Federal Department of Finance and the Bank of Canada make projections for the economy based on large scale macroeconometric models. Finally international agencies such as the Organization for Economic Cooperation and Development (OECD) provide annual surveys of the Canadian economy which make forecasts for the economy.

2. Forecasting is very difficult

Data Application

Francis X. Diebold presents a comprehensive survey of the development of structural and non-structural forecasting in his article, "The Past, Present, and Future of Macroeconomic Forecasting," *Journal of Economic Perspectives*, Spring 1998, vol. 12, pp. 175-92. Despite the difficulties in macroeconomic forecasting, he is optimistic about its future with the rapid advances in numerical and simulation techniques.

- B. Macroeconomic analysis
 1. Private and public sector economists—analyze current conditions

Data Application

The Canadian financial sector hires a large number of economists, most of whom are engaged in data analysis on a daily basis. Their job is to tell traders what the current data means in terms of their effect on the financial markets in general, as well as on the prices of individual assets. Many of them also make their own detailed forecasts of the economy.

2. Does having lots of economists ensure good macroeconomic policies?
No, since politicians, not economists, make major decisions
- C. Macroeconomic research
 1. Goal: to make general statements about how the economy works
 2. Theoretical and empirical research are necessary for forecasting and economic analysis
 3. Economic theory: a set of ideas about the economy, organized in a logical framework
 4. Economic model: a simplified description of some aspect of the economy

This is a good point for you to talk about your own research interests. It has been found that students are very interested in learning about the kind of research their instructors do. You may want to talk about your research later, if and when you come to a section of the textbook that discusses the topic on which you do your research.

5. Usefulness of economic theory or models depend on reasonableness of assumptions, possibility of being applied to real problems, empirically testable implications, and theoretical results consistent with real-world data

Theoretical Application

The classic discussion of research issues by Milton Friedman is, "The Methodology of Positive Economics," *Essays in Positive Economics*, Chicago: University of Chicago Press, 1953.

Analytical Problem 3 is an exercise in how to formulate and test a theory.

- D. Data development—very important for making data more useful
- III. Why Macroeconomists Disagree (Sec. 1.3)
 - A. Positive vs. normative analysis

Analytical Problem 4 gives students practice in distinguishing positive from normative analysis.

- B. Classicals vs. Keynesians
 1. The classical approach
 - a. The economy works well on its own; the "invisible hand" leads people, acting in their own best interests, to maximize the general welfare
 - b. Wages and prices adjust rapidly to get to equilibrium
 - c. Result: Government should have only a limited role in the economy

Theoretical Application

At this point in the discussion, you may want to talk about philosophies of economics. Students are often fascinated by how philosophical differences arise and what they mean, especially for policy. This helps to reinforce the idea that the Keynesian and classical models are very different in their implications. You might suggest the idea that economists who are skeptical of government's role in the economy are more likely to believe in a classical model, while those who believe the government can do good are more likely to become Keynesians. You can point out, however, that things are changing; some New Keynesians seem skeptical of government intervention.

2. The Keynesian approach
 - a. The Great Depression: Classical theory didn't appear to work
 - b. Keynes: Persistent unemployment occurs because wages and prices adjust slowly, so markets remain out of equilibrium for long periods
 - c. Result: Government should intervene to restore full employment

Analytical Problem 5 asks students to distinguish between how a classical economist and a Keynesian economist would think about the same issue.

3. The evolution of the classical-Keynesian debate
 - a. Keynesians dominated from WWII to 1970
 - b. Stagflation led to a classical comeback in the 1970s
 - c. Last 30 years: excellent research with both approaches

Theoretical Application

You may wish to add a discussion of the recent progression of research. You could start by a brief discussion of how the failure of Keynesian models in the stagflation of the 1970s led to the growth of rational-expectations modeling, with its focus on the importance of microfoundations. Then you could discuss New Keynesian macroeconomics (discussed in greater detail in Chapter 13) and its attempts to provide some microfoundations for wage and price stickiness in Keynesian models.

Although the textbook presents just a few versions of classical models and Keynesian models, it is difficult to find a prototypical classical or Keynesian economist who believes fully in that particular model. The lack of convincing evidence on which model is correct has led macroeconomists to be eclectic, so that they often hedge their bets. As a result, a one-armed macroeconomist is hard to find; analysis tends to be of the "on the one hand, and on the other hand" variety. And of course that means that if you laid all the macroeconomists on the earth end to end, they still wouldn't reach a conclusion!

- C. A unified approach to macroeconomics
 1. Textbook uses a single model to present both classical and Keynesian ideas
 2. Three markets: goods and services, assets, labour
 3. Model starts with microfoundations: individual behaviour
 4. Long run: wages and prices are perfectly flexible
 5. Short run: Classical case—flexible wages and prices; Keynesian case—wages and prices are slow to adjust

ADDITIONAL ISSUES FOR CLASSROOM DISCUSSION

1. How Has Increasing Productivity Changed Life in Canada?

Increases in labour productivity allow people to consume more goods and services. How have rising consumption levels affected daily life—and people's expectations—over the last few generations?

Even over relatively short periods of time, such as 30 years, living standards for Canadians have changed dramatically. In the 1981-2011 period, average labour productivity has risen tremendously, (although it slowed in the 1980s and recently), as did the quantity of consumer goods people owned. In 1981 the population of Canada was 24.9 million people. It had risen to almost 34.3 million by 2010. Thus the population increased by almost 38 percent in that time. But the value of consumer durables owned by households increased by 291 percent (from 109 billion to 426.8 billion).

Do additional goods make people happier? Are Canadian's lives better today because they now own more cars and appliances than they did in the early 1960s?

Note: Data from CANSIM II Series v33467 (*Table 3780049, v1 (Table 051-0005)*).

2. Are Canadians Better Off Today?

Canadians have more material goods today than they had in the 1950s. Does this mean that life in the 2000s is better than it was in the 1950s and 1960s?

Do more goods and services compensate adequately for the environmental problems and rapid changes of life today?

Although the average house has more square feet and more appliances than it had 40 years ago, does that outweigh the fear that causes us to keep our doors locked? Does being able to buy many fruits and vegetables year-round improve lives enough to make up for the additional pollution, which causes increased respiratory problems? Is it more important to be able to drive two hours to work that is interesting and challenging than to breathe clean air? Does having several cars in the garage compensate for urban congestion? Does the exhilaration of new products and services outweigh the disruption in our lives caused by rapid and extensive change?

Robert, Frank. *Luxury Fever*. New York: Free Press, 1999.

3. Is Economics a Science?

What is a science? Does the term *science* apply to economics? If economists cannot predict accurately what will happen in the future, can we claim that economics is a science?

If one defines as a body of knowledge gained by investigation that will allow one to predict future outcomes, can economics be considered a science? Although economists argue that they follow scientific methods to learn about economic interactions, can they claim true scientific rigour? In economics it is difficult to carry out controlled experiments such as those undertaken by physicists, biologists, and chemists; and in most cases we can't even repeat experiments for verification. The economy is influenced by a myriad of factors; sorting out what is cause and what is effect is quite difficult. With so many factors changing at once, together with shocks such as weather, earthquakes, riots, and changes in people's preferences, it's tough to figure out the effects of changes in policy. However, economic theory does allow us to predict the direction of change if not its exact magnitude.

4. Is Macroeconomics Linked to the Modern Industrial Society?

Many topics in macroeconomics are closely linked to our urban money-based economy. Inflation, unemployment, business cycles, growth, and the balance of trade have all been the concerns of leaders for long periods of time, yet they tended to have limited impact on the common person until the end of the nineteenth century. You may ask your students to think about why this is true.

In the middle of the nineteenth century, a large percentage of the Canadian population lived in farms. Much of their commerce was based on barter—trading the products of their fields and forests for flour, cloth, powder, and shot. In a society in which many produced their own food and clothing, questions of inflation, unemployment, and balance of trade had little effect on the common person. Such questions applied mostly to those who lived in the cities or those involved in international trade.

Inflation and unemployment became concerns as people moved from mostly subsistence farming to either cash crops or urban wage employment. Because today's workers specialize in the production of a particular good in exchange for money income, they are more subject to the vagaries of inflation and unemployment.

5. Do Economic Conditions Change the Outcome of Elections?

Many commentators believe that the condition of the economy with respect to unemployment and growth influence the outcome of general elections.

For instance, if the economy is sluggish or undergoing a recession during an election, the incumbent party may be defeated. The poor state of the Canadian economy in the early 1990s was clearly an important factor in the Conservative government's dramatic defeat in November 1993. Although economic conditions are not the only factor that influences voters, they may play a major role. Is this good or bad? Economic policies often take effect only after long delays. Quick-fix changes may lead to more problems later on. While no one argues that bad economic policy should be encouraged, are there problems with politicians being concerned with short-run results that improve their electoral chances, rather than long-run solutions?

ANSWERS TO TEXTBOOK PROBLEMS

Review Questions

1. Both total output and output per worker have risen strongly over time in Canada. Output itself has grown by a factor of 80 in the last 125 years. Output per worker is now five times as great as it was in 1921. These changes have led to a much higher standard of living today.
2. The business cycle refers to the short-run movements (expansions and recessions) of economic activity. The unemployment rate rises in recessions and declines in expansions. The unemployment rate never reaches zero, even at the peak of an expansion.
3. A period of inflation is one in which prices (on average) are rising over time. Deflation occurs when average prices are falling over time. Before World War II, prices tended to rise during war periods and fall after the wars ended. Over the long run the price level remained fairly constant. Since World War II however, prices have risen fairly steadily. In the mid 1990s, the inflation rate fell below 2% and stayed around there since then.
4. The government budget deficit is the annual excess of government spending over tax collections. The Canadian federal government has been most likely to run deficits during wars. From the early 1980s until the late 1990s deficits were very large, even without a war.
5. Aggregation refers to the process of adding together individual economic variables to obtain economy-wide totals. Aggregation distinguishes microeconomics from macroeconomics. It allows us to study the economy as a whole, rather than looking at its individual parts.
6. Macroeconomists engage in macroeconomic forecasting, macroeconomic analysis, basic research, and data development. Macroeconomic research can be useful in investigating forecasting models to improve forecasts, in providing more information on how the economy works to help macroeconomic analysts, and in telling data developers what types of data should be collected. Research provides the basis (results and ideas) for forecasting, analysis, and data development.
7. The steps in developing and testing an economic model or theory are: (1) State the research question; (2) make provisional assumptions that describe the economic setting and the behaviour of the economic actors; (3) work out the implications of the theory; (4) conduct an empirical analysis to compare the implications of the theory with the data; (5) if the theory fits the data well, use the theory to predict what would happen if the economic setting or economic policies change; (6) if the theory fits the data poorly, start from scratch with a new model; (7) if the theory fits the data moderately well, either make do with a partly successful theory or complicate the model with additional assumptions. The criteria for a useful theory or model are that (1) it has reasonable and realistic assumptions; (2) it is understandable and manageable enough for studying real problems; (3) its implications can be tested empirically using real-world data; and (4) its implications are consistent with the data.

8. Yes, it is possible for economists to agree about the effects of a policy (that is, to agree on the positive analysis of the policy), but to disagree about the policy's desirability (normative analysis). For example, suppose economists agreed that reducing inflation to zero within the next year would cause a recession (positive analysis). Some economists might argue that inflation should be reduced, because they prefer low inflation even at the cost of higher unemployment. Others would argue that inflation isn't as harmful to people as unemployment is, and would oppose such a policy. This is normative analysis, as it involves a value judgment about what policy should be.
9. Classicals see wage and price adjustment occurring rapidly, while Keynesians think that wages and prices adjust only slowly to shocks. The classical theory implies that unemployment will not persist, since wages and prices adjust to bring the economy rapidly back to its full-employment equilibrium in response to a shock. But if Keynesian theory is correct, then the slow response of wages and prices means that unemployment may persist for long periods of time unless the government intervenes.

Numerical Problems

1. a. Average labour productivity is output divided by employment:
 2011: 12 000 tonnes of potatoes per 1000 workers = 12 tonnes of potatoes per worker
 2012: 14 300 tonnes of potatoes per 1100 workers = 13 tonnes of potatoes per worker
- b. The growth rate of average labour productivity is $[(13/12) - 1] \times 100\% = 8.33\%$.
- c. The unemployment rate is:
 2011: $100/1100 = 9.1\%$
 2012: $50/1150 = 4.3\%$
- d. The inflation rate is $[(2.5/2) - 1] \times 100\% = 25\%$.
2. The answers to this problem will vary depending on the current date. Numbers are at annual rates in billions of current dollars.

	2009	2010
GDP	1,529.0	1,624.6
Exports	439.5	478.1
Imports	465.3	508.7
Federal Revenues	223.3	228.6
Federal Expenditures	254.3	268.3

a.

Exports/GDP	28.7%	29.4%
Imports/GDP	30.4%	31.3%
Trade imbalance/GDP	-1.7%	-1.9%

b.

Federal Revenues/GDP	14.6%	14.1%
Federal Expenditures/GDP	16.6%	16.5%
Deficit/GDP	2.03%	2.44%

Analytical Problems

1. Yes, average labour productivity can fall even when total output is rising. Average labour productivity is total output divided by employment (of workers sixteen years old and over). So average labour productivity can fall if output and employment are both rising but employment is rising faster.

Yes, the unemployment rate can also rise even though total output is rising. This can occur through a number of channels. For example, average labour productivity might be rising with employment constant, so that output is rising; but the labour force may be increasing as well, so that unemployment is rising. Or average labour productivity might be constant, and both employment and unemployment could rise at the same time due to an increase in the labour force.

2. Just because prices were lower in 1914 than they were in 2009 does not mean that people were better off back then. People's incomes have risen much faster than prices have risen over the last 95 years, so they are better off today in terms of real income.
3. There are many possible theories. One possibility is that people whose last names begin with the letters *A* through *M* vote Liberal while those whose names begin with the letters *N* through *Z* vote Conservatives. You could test this theory by taking exit polls or checking the lists of registered voters by party. However, this theory fails the criterion of being reasonable, since there is no good reason to expect the first letter of people's last names to matter for their political preferences.

A better theory might be one based on income. For example, you might make the assumption that the Conservatives party promotes business interests, while the Liberal party is more interested in redistributing income. Then you might expect people with higher incomes to vote Conservatives and people with lower incomes to vote Liberal. This could be tested by taking a survey of people as they left the polls. In this case the assumptions of the theory seem reasonable and realistic, and the model is simple enough to understand and to apply. So it is potentially a useful model.

4.
 - a. Positive. This statement tells what *will* happen, not what *should* happen.
 - b. Positive. Even though it is about income-distribution issues, it is a statement of fact, not opinion. If the statement said "The payroll tax should be reduced because it . . . ," then it would be a normative statement.
 - c. Normative. Saying they are too high suggests that they *should* be lower.
 - d. Positive. Says what *will happen* as a consequence of an action, not what *should be done*.
 - e. Normative. This is a statement of preference about policies.
5. A classical economist might argue that the economy would work more efficiently with NAFTA because it reduces trade barriers, making the invisible hand work even better. Workers could specialize even more than before, so that more total output would be produced by all three countries. Though the industrial mix might change in each country, wages and prices across industries would adjust quickly, and people in industries that closed down in a particular country would quickly find new jobs.

A Keynesian economist might be more sympathetic to concerns about NAFTA because of the belief that adjustment to the changes will not occur quickly. As a result, people in particular industries in a country may become unemployed.

Wages won't adjust quickly to restore full employment, so some government action (like retraining programs to give displaced workers new skills) may be desirable.

6. Keynes was responding to the suggestion of classical economists that there was no need for a response to the Great Depression from government policymakers because in the long run the economy always adjusts back to full employment equilibrium. Keynes argued that this adjustment might take a long time and that it might be better for policymakers to take action to speed up the process of adjustment and so relieve the suffering of those suffering unemployment.