

宏观经济学 现代方法

Macroeconomics | A Modern Approach

(美) 罗伯特·J. 巴罗 (Robert J. Barro) 著



清华经济学系列英文版教材

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Macroeconomics

A Modern Approach

(美) 罗伯特·J. 巴罗 (Robert J. Barro) 著

清华大学出版社

北京

Robert J. Barro

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出版说明

为了适应经济全球化的发展趋势,满足国内广大读者了解、学习和借鉴国外先进的管理经验和掌握经济理论的前沿动态,清华大学出版社与国外著名出版公司合作影印出版一系列英文版经济管理方面的图书。我们所选择的图书,基本上是已再版多次、在国外深受欢迎、并被广泛采用的优秀教材,绝大部分是该领域中较具权威性的经典之作。在选书的过程中,我们得到了很多专家、学者的支持、帮助和鼓励,在此表示谢意!

由于原作者所处国家的政治、经济和文化背景等与我国不同,对书中所持观点,敬请广大读者在阅读过程中注意加以分析和鉴别。

我们期望这套影印书的出版对我国经济科学的发展能有所帮助,对我国经济管理专业的教学能有所促进。

欢迎广大读者给我们提出宝贵的意见和建议;同时也欢迎有关的专业人士向我们推荐您所接触到的国外优秀图书。

应外方出版社的要求,我们在本书影印过程中删掉了第17章“商品和信贷的全球市场”和第18章“汇率”,望读者予以谅解。

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世纪之交，中国与世界的发展呈现最显著的两大趋势——以网络为代表的信息技术的突飞猛进，以及经济全球化的激烈挑战。无论是无远弗界的因特网，还是日益密切的政治、经济、文化等方面的国际合作，都标示着 21 世纪的中国是一个更加开放的中国，也面临着一个更加开放的世界。

教育，特别是管理教育总是扮演着学习与合作的先行者的角色。改革开放以来，尤其是 20 世纪 90 年代之后，为了探寻中国国情与国际上一切优秀的管理教育思想、方法和手段的完美结合，为了更好地培养高层次的“面向国际市场竞争、具备国际经营头脑”的管理者，我国的教育机构与美国、欧洲、澳洲以及亚洲一些国家和地区的大量的著名管理学院和顶尖跨国企业建立了长期密切的合作关系。以清华大学经济管理学院为例，2000 年，学院顾问委员会成立，并于 10 月举行了第一次会议，2001 年 4 月又举行了第二次会议。这个顾问委员会包括了世界上最大的一些跨国公司和中国几家顶尖企业的最高领导人，其阵容之大、层次之高，超过了世界上任何一所商学院。在这样高层次、多样化、重实效的管理教育国际合作中，教师和学生与国外的交流机会大幅度增加，越来越深刻地融入到全球性的教育、文化和思想观念的时代变革中，我们的管理教育工作者和经济管理学习者，更加真切地体验到这个世界正发生着深刻的变化，也更主动地探寻和把握着世界经济发展和跨国企业运作的脉搏。

我国管理教育的发展，闭关锁国、闭门造车是绝对不行的，必须同国际接轨，按照国际一流的水准来要求自己。正如朱镕基同志在清华大学经济管理学院成立十周年时所发的贺信中指出的那样：“建设有中国特色的社会主义，需要一大批掌握市场经济的一般规律，熟悉其运行规则，而又了解中国企业实情的经济管理人才。清华大学经济管理学院就要敢于借鉴、引进世界上一切优秀的经济管理学院的教学内容、方法和手段，结合中国的国情，办成世界第一流的经管学院。”作为达到世界一流的一个重要基础，朱镕基同志多次建议清华的 MBA 教育要加强英语教学。我体会，这不仅因为英语是当今世界交往中重要的语言工具，是连接中国与世界上重要桥梁和媒介，而且更是中国经济管理人才参与国际竞争，加强国际合作，实现中国企业的国际战略的基石。推动和实行英文教学并不是目的，真正的目的在于培养学生——这些未来的企业家——能够具备同国际竞争对手、合作

伙伴沟通和对抗的能力。按照这一要求,清华大学经济管理学院正在不断推动英语教学的步伐,使得英语不仅是一门需要学习的核心课程,而且渗透到各门专业课程的学习当中。

课堂讲授之外,课前课后的大量英文原版著作、案例的阅读对于提高学生的英文水平也是非常关键的。这不仅是积累相当的专业词汇的重要手段,而且是对学习者思维方式的有效训练。

我们知道,就阅读而言,学习和借鉴国外先进的管理经验和掌握经济理论动态,或是阅读翻译作品,或是阅读原著。前者属于间接阅读,后者属于直接阅读。直接阅读取决于读者的外文阅读能力,有较高外语水平的读者当然喜欢直接阅读原著,这样不仅可以避免因译者的疏忽或水平所限而造成的纰漏,同时也可以尽享原作者思想的真实表达。而对于那些有一定外语基础,但又不能完全独立阅读国外原著的读者来说,外文的阅读能力是需要加强培养和训练的,尤其是专业外语的阅读能力更是如此。如果一个人永远不接触专业外版图书,他在获得国外学术信息方面就永远会比别人差半年甚至一年的时间,他就会在无形中减弱自己的竞争能力。因此,我们认为,有一定外语基础的读者,都应该尝试一下阅读外文原版,只要努力并坚持,就一定能过了这道关,到那时就能体验到直接阅读的妙处了。

在掌握大量术语的同时,我们更看重读者在阅读英文原版著作时对于西方管理者或研究者的思维方式的学习和体会。我认为,原汁原味的世界级大师富有特色的表达方式背后,反映了思维习惯,反映了思想精髓,反映了文化特征,也反映了战略偏好。知己知彼,对于跨文化的管理思想、方法的学习,一定要熟悉这些思想、方法所孕育、成长的文化土壤,这样,有朝一日才能真正“具备国际战略头脑”。

以往,普通读者购买和阅读英文原版还有一个书价的障碍。一本外版书少则几十美元,多则上百美元,一般读者只能望书兴叹。随着全球经济合作步伐的加快,目前在出版行业有了一种新的合作出版的方式,即外文影印版,其价格几乎与国内同类图书持平。这样一来,读者可以不必再为书价发愁。清华大学出版社这些年在这方面一直以独特的优势领先于同行。早在1997年,清华大学出版社敢为人先,在国内最早推出一批优秀商学英文版教材,规模宏大,在企业界和管理教育界引起不小的轰动,更使国内莘莘学子受益良多。

为了配合清华大学经济管理学院推动英文授课的急需,也为了向全国更多的MBA试点院校和更多的经济管理学院的教师和学生提供学习上的支持,清华大学出版社再次隆重推出与世界著名出版集团合作的英文原版影印商学教科书,也使广大工商界人士、经济管理类学生享用到最新最好质优价廉的国际教材。

祝愿我国的管理教育事业在社会各界的大力支持和关心下不断发展、日进日新;祝愿我国的经济建设在不断涌现的大批高层次的面向国际市场竞争、具备国际经营头脑的管理者的勉力经营下早日中兴。

赵纯均 教授

清华大学经济管理学院

Preface

Sound Theory and a Unified Approach

Macroeconomics and microeconomics are the two pillars of economics. Yet, there is a wide gulf between the two pillars in the undergraduate curriculum. Micro courses teach material that is easier but basically consistent with the content taught to graduate students and used by economists in their research. In contrast, macro courses often bear little resemblance to graduate courses or academic research. Undergraduate macro textbooks and courses seem frequently to compromise good economics for presentations that are breezy, closely linked to arguments found in the popular press, and not very intellectually challenging. But sacrificing solid economics to capture student interest is not necessary—sound theory can be clearly written with vivid examples to reinforce it.

My dissatisfaction with the textbook environment motivated me to write my first intermediate macro textbook in 1984. That book appeared in five editions, and I like to think it had a positive impact—directly and also indirectly—in terms of influencing the subject matter and approaches of competitor works. Yet there have been tremendous advances in macroeconomic theory and evidence over the last 20 years, and much of this research was left out of my earlier books. I also think I have progressed over time in my ability to convey serious macroeconomics in an accessible, engaging way. Hence, I decided to put my energies into this new book, *Macroeconomics: A Modern Approach*.

In addition to providing a more accurate presentation of the current state of macroeconomic thought, this text provides a unified approach that most macro textbooks lack. Rather than presenting a completely new model when shifting from a discussion of long-run theory to short-run theory, this book develops short-run and long-run models that build on one another in a natural, comprehensible, and elegant way. And all this is done *without* ignoring the important differences between the economy in the long run and the short run. Similarly, I bring in the Keynesian idea of sticky prices as a new idea but one that builds coherently on the structure of the basic equilibrium model.

Organizational Structure

Long-Term Growth

I now begin with long-run macroeconomics—that is, with the determinants of long-term economic growth. Great advances in theory and empirical analysis took place in this area since the late 1980s. Fortunately, it is possible to convey these important findings to undergraduates in a manageable and interesting way. In fact, students can understand the exciting results (in Chapters 3–5) without having to first master the details of the underlying microeconomic foundations (which come in Chapters 6 and 7). This early consideration of results with important policy implications helps to drive home the impact and relevance of macroeconomics.

The Equilibrium Business-Cycle Model

A complete microeconomic framework is more important for satisfactory analyses of economic fluctuations. Therefore, I apply the micro foundations from Chapters 6 and 7 to the

development of an equilibrium business-cycle model in Chapters 8 and 9. This model generalizes the real business-cycle model, which has become a centerpiece of macroeconomic research since the mid 1980s. The modeling is, I believe, more transparent and more empirically anchored than the treatments in my earlier books. Chapters 10–14 extend the equilibrium model to allow for money and inflation and for the government sector (expenditure, taxes, transfers, and public debt). These chapters on government were always viewed as strengths of my textbooks, and I believe that characterization still applies.

Incomplete Information and Sticky Prices

The next part focuses on interactions between money and the real economy. Chapter 15 extends the equilibrium business-cycle model to allow for incomplete information about prices in a setting of rational expectations. The exposition of this model is far superior to that in my previous books. Chapter 16 introduces the Keynesian idea of sticky prices and wages, with a focus on the new Keynesian model, another major development since the mid-1980s. This model recognizes that, rather than being perfect competitors, producers typically set prices, which represent markups on costs of production. Most importantly, these prices adjust only infrequently to changed circumstances. Chapters 15 and 16 together usefully supplement the equilibrium business-cycle model to allow for significant real effects from monetary policy.

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Throughout the writing and development of this book, many dedicated professors have generously contributed their time and comments to help improve its presentation. I am grateful for their consideration and assistance.

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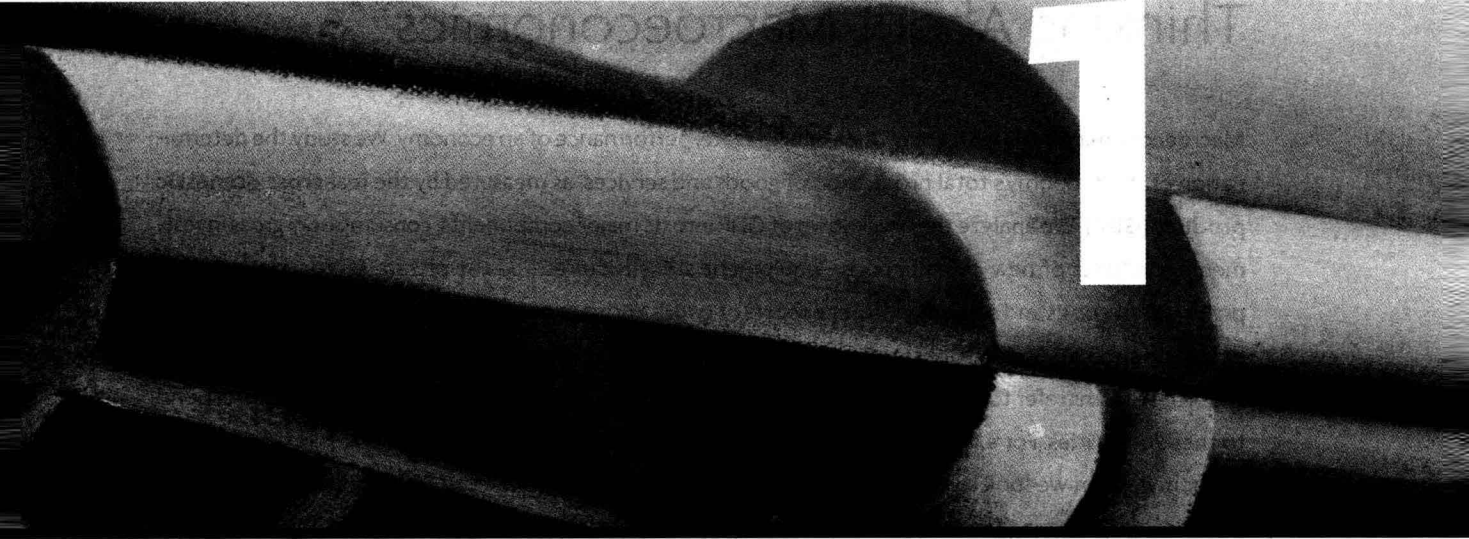
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Introduction

Part

1



Chapter 1 Thinking About Macroeconomics

Chapter 2 National-Income Accounting:
Gross Domestic Product and the Price Level

Chapter 1

Thinking About Macroeconomics

Macroeconomics deals with the overall, or aggregate, performance of an economy. We study the determination of the economy's total production of goods and services, as measured by the real **gross domestic product (GDP)**. We analyze the breakdown of GDP into its major components: consumption, gross investment (purchases of new capital goods—equipment and structures—by the private sector), government purchases of goods and services, and net exports of goods and services. We also examine the aggregates of **employment** (persons with jobs) and **unemployment** (persons without jobs who are seeking work).

These terms refer to quantities of goods or labor. We are also interested in the prices that correspond to these quantities. For example, we consider the dollar prices of the goods and services produced in an economy. When we look at the price of the typical or average item, we refer to the **general price level**. We also study the **wage rate**, which is the dollar price of labor; the **rental price**, which is the dollar price paid to use capital goods; and the **interest rate**, which determines the cost of borrowing and the return to lending. When we consider more than one economy, we can study the **exchange rate**, which is the rate at which one form of money (e.g., the euro) exchanges for another form of money (e.g., the U.S. dollar).

We will set up an economic model, which will allow us to study how the various quantities and prices are determined. We can use the model to see how the quantities and prices respond to technological advances, government policies, and other variables. For example, we will consider monetary policy, which involves the determination of the quantity of money and the setting of interest rates. We will also study fiscal policy, which describes the government's expenditures, taxes, and fiscal deficits.

The performance of the overall economy matters for everyone because it influences incomes, job prospects, and prices. Thus, it is important for us—and even more important for government policymakers—to understand how the macroeconomy operates. Unfortunately, as is obvious from reading the newspapers, macroeconomics is not a settled scientific field. Although there is consensus on many issues—such as some of the determinants of long-run economic growth—there is also controversy about many topics, such as the sources of economic fluctuations and the short-run effects of monetary policy. The main objective of this book is to convey the macroeconomic knowledge that has been attained, as well as to point out areas in which a full understanding has yet to be achieved.

Output, Unemployment, and Prices in U.S. History

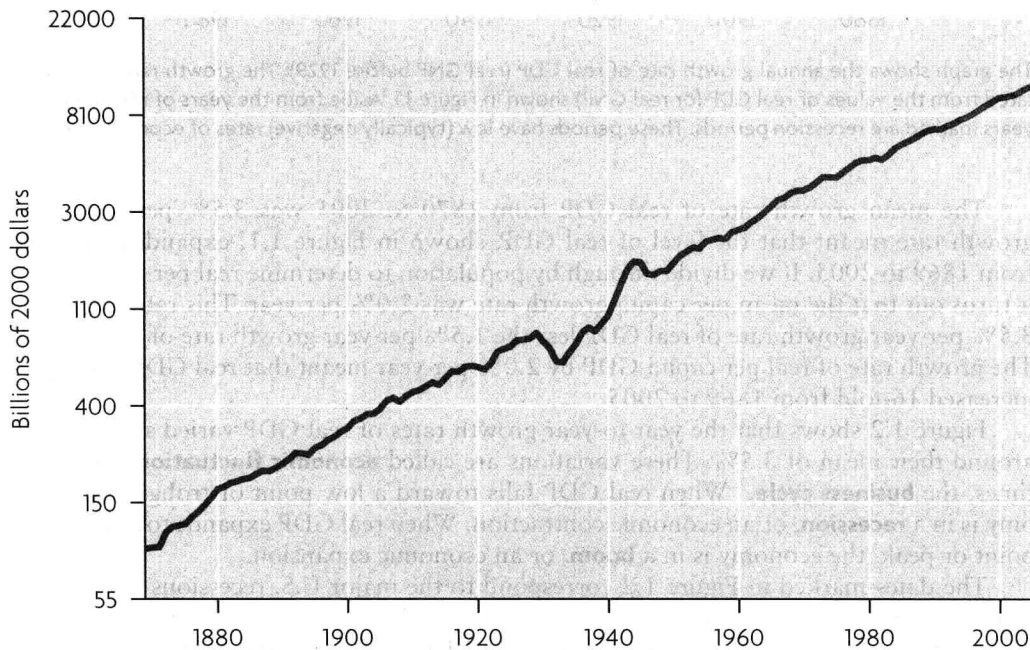
To get an overview of the subject, we can look at the historical record of some of the major macroeconomic variables in the United States. Figure 1.1 shows the total output or production of goods and services from 1869 to 2005. (The starting date is determined by the available data.) Our measure of aggregate output is the **real gross domestic product (GDP)**.¹ This concept expresses quantities in terms of a base year—in our case, 2000. Chapter 2 considers **national-income accounting** and thereby provides the conceptual details for measuring **real GDP**.

The general upward trend of real GDP in Figure 1.1 reflects the long-term growth of the U.S. economy. Figure 1.2 on the next page plots the growth rate of real GDP for each year, from 1870 to 2005. A simple way to compute the growth rate for year t is to take the difference between the levels of real GDP in years t and $t - 1$, $Y_t - Y_{t-1}$, divide by year $t - 1$'s level of real GDP, Y_{t-1} , and then subtract one:

$$\text{growth rate of real GDP for year } t = (Y_t - Y_{t-1}) / Y_{t-1} - 1$$

If we then multiply by 100, we get the growth rate of real GDP in percent per year.

Figure 1.1 | U.S. Real GDP, 1869–2005



The graph shows the real gross domestic product (GDP) on a proportionate (logarithmic) scale. Data before 1929 are for real gross national product (GNP). The numbers are in billions of 2000 U.S. dollars.

Sources: Data since 1929 are from Bureau of Economic Analysis (<http://www.bea.gov>). Values from 1869 to 1928 are based on data from Christina Romer (1988, 1989).

¹ The graph uses a proportionate scale, so that each unit on the vertical axis corresponds to the same percentage change in real GDP. Because of data availability, the numbers before 1929 refer to real gross national product (GNP). We discuss the relation between GDP and GNP in Chapter 2.

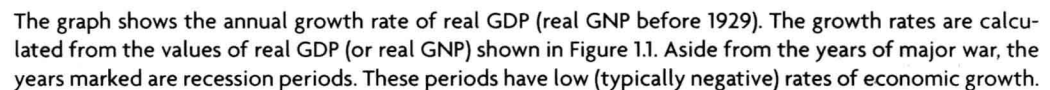
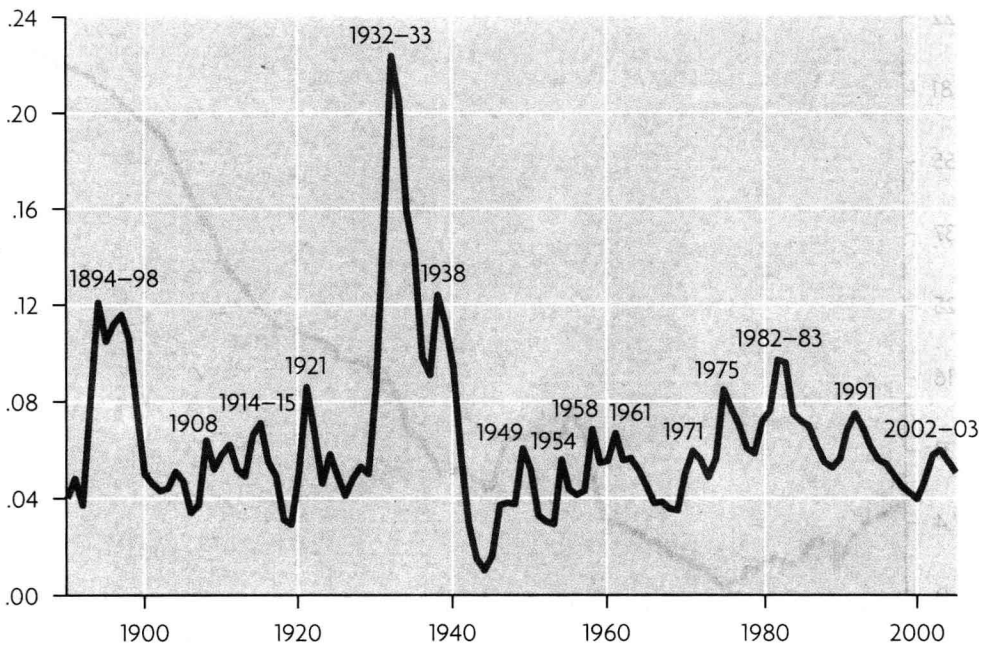


Figure 1.2 shows that the year-to-year growth rates of real GDP varied substantially around their mean of 3.5%. These variations are called **economic fluctuations** or, sometimes, the **business cycle**.² When real GDP falls toward a low point or trough, the economy is in a **recession**, or an economic contraction. When real GDP expands toward a high point or peak, the economy is in a **boom**, or an economic expansion.

Note in Figure 1.2 the **Great Depression** from 1930 to 1933, during which real GDP declined at 8% per year for four years. Other major recessions before World War II

² The term "business cycle" can be misleading because it suggests a more regular pattern of ups and downs in economic activity than actually appears in the data.

Figure 1.3 U.S. Unemployment Rate, 1890–2005

The graph shows the U.S. unemployment rate.

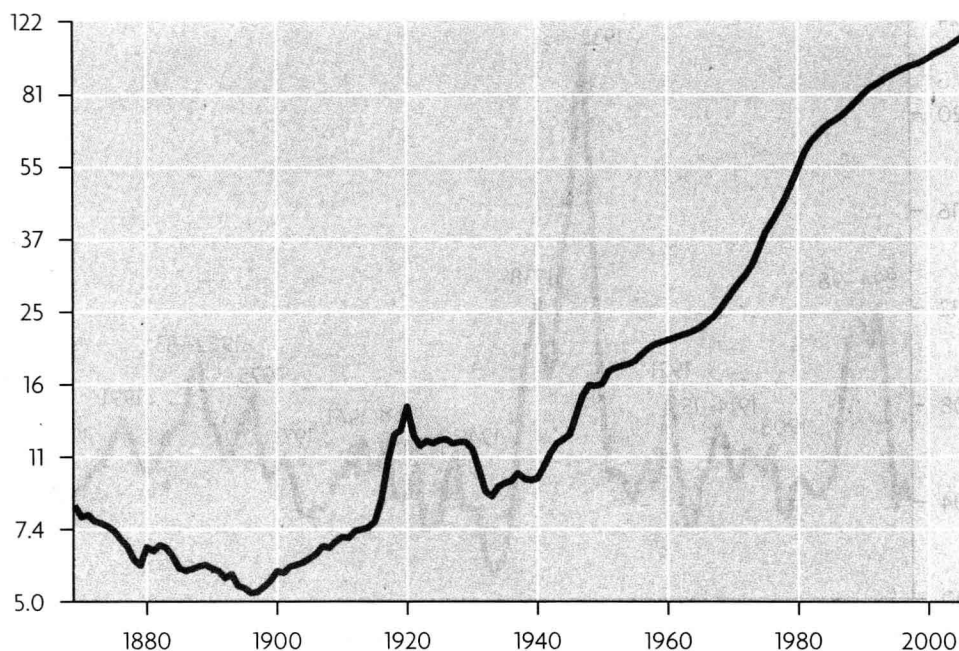
Sources: Data since 1929 are from Bureau of Labor Statistics (<http://www.bls.gov>). Values from 1890 to 1928 are based on data from Christina Romer (1986, Table 9). Values for 1933 to 1943 were adjusted to classify federal emergency workers as employed, as discussed in Michael Darby (1976).

occurred in 1893–94, 1907–8, 1914, 1920–21, and 1937–38. In the post-World War II period, the main recessions occurred in 1958, 1974–75, and 1980–82.

For economic booms, note first in Figure 1.2 the high rates of economic growth during World Wars I and II and the Korean War. Peacetime periods of sustained high economic growth before World War II were 1875–80, 1896–1906, much of the 1920s, and the recovery from the Great Depression from 1933 to 1940 (except for the 1937–38 recession). After World War II, periods of sustained high economic growth occurred in 1961–1973 (except for the brief recession in 1970), 1983–89, and 1992–2000.

Another way to gauge recessions and booms is to consider the **unemployment rate**—the fraction of persons seeking work who have no job. Figure 1.3 shows the unemployment rate for each year from 1890 to 2005. The mean unemployment rate was 6.3%, and the median was lower—5.5%. During recessions, the unemployment rate typically rises above its median. The extreme example is the Great Depression, during which the unemployment rate reached 22% in 1932. Also noteworthy in the pre-World War II period are the average unemployment rates of 18% for 1931–35, 12% for 1938–39, 11% for 1894–98, and 8% for 1921–22. In the post-World War II period, the highest unemployment rate was 10% in 1982–83. Other periods of high unemployment rates included 1975–76 (8%) and 1958, 1961, and 1991–93 (7%).

Figures 1.2 and 1.3 show the turbulence of the U.S. economy during the two world wars and the 1930s. But suppose that we abstract from these extreme episodes and compare the post-World War II period with the period before World War I. Then the major

Figure 1.4 U.S. Price Level, 1869–2005

The graph shows the price deflator for the GDP (GNP before 1929). The numbers are on a proportionate (logarithmic) scale, with the value for the year 2000 set at 100. The sources are those indicated for GDP in Figure 1.1.

message from the data is the similarity between the post-World War II and pre-World War I periods.

The mean growth rate of real GDP was 3.4% per year from 1948 to 2005, compared with 3.8% from 1870 to 1914 and 3.4% from 1890 to 1914. The mean unemployment rates were 5.6% from 1948 to 2005 and 6.4% from 1890 to 1914. The extent of economic fluctuations—in the sense of the variability of growth rates of real GDP or of unemployment rates—was only moderately larger in the pre-World War I period than in the post-World War II period.³ The economy has, of course, changed greatly over the 136 years from 1869 to 2005—including a larger role for government, a diminished share of agriculture in the GDP, and dramatic changes in the monetary system. Nevertheless, the U.S. data do not reveal major changes in the intensity of economic fluctuations or in the average rate of economic growth.

Figure 1.4 shows the evolution of the U.S. price level from 1869 to 2005. This graph measures the price level as the deflator for the GDP (we discuss the details of this price index in Chapter 2). For present purposes, the important point is that the GDP deflator is a broad index, corresponding to the prices of all the items that enter into the gross domestic product.

One striking observation is the persistent rise in the price level since World War II, contrasted with the up and down movements before World War II. There are long periods in the earlier history—1869 to 1892 and 1920 to 1933—during which the price level fell persistently.

³ For a detailed comparison of real GDP and unemployment rates for the two periods, see Christina Romer (1986, 1988, 1989).