

because they do not affect real quantities. Despite the neutrality of money, inflation does impose real costs on the economy.

First, although inflation does not alter relative prices, it does reduce the value of money. In effect, inflation is a tax on people who hold money. As prices rise, the value of the currency people have in their wallets declines relative to the goods and services they want to purchase. As a result, people will reduce the amount of money they hold. This means they have to go to the bank or ATM more frequently, which imposes an inconvenience. Inflation also imposes a cost on firms because firms have to adjust the prices of their products more frequently, and this can be a costly process.

Second, inflation introduces distortions into pricing. Because firms will not all adjust their prices at the same time, relative prices will not always accurately reflect the relative costs of production. Recall that these prices play an important role in coordinating economic decisions in market economies. Because of these distortions, the information conveyed by market prices becomes less valuable.

Third, inflation introduces confusion about the true value of goods and services in the future. Remember that when someone with savings lends it, they are compensated by an interest payment for postponing their use of that money until a future date. But, if they cannot accurately forecast the rate of inflation, they cannot calculate how much purchasing power they will have in the future. Uncertainty about the rate of inflation adds to the risks that both borrowers and lenders face in credit markets, and this increased risk reduces both the supply of savings and the demand for investment. Because investment is crucial to economic growth, inflation reduces economic growth.

## SHORT-RUN ECONOMIC FLUCTUATIONS

We noted earlier that macroeconomics is concerned with two issues: the long-term growth of the aggregate economy and short-term fluctuations. In the preceding sections, we have developed a framework for understanding the forces that determine the long-run performance of national economies. This theory provides a useful description of how the economy evolves over long periods of time of several decades or more. But, it does not provide much guidance for

understanding the shorter-run deviations of economic growth from these long-run trends.

In Figure 30, we graphed the growth of real GDP in the United States between 1900 and 2019. If you look closely at that figure, you can see that superimposed on the upward trend in total output are some significant fluctuations. In particular, the drop in output during the Great Depression stands out, as does the rapid growth of production during World War II. The downturn during the 2008 financial crisis is also clearly evident. According to the National Bureau of Economic Research (NBER), a *recession* is a period between a peak and a trough in economic activity, and an *expansion* is a period between a trough and a peak in economic activity. During a recession, a significant decline in economic activity spreads across the economy and can last from a few months to more than a year. Similarly, during an expansion, economic activity rises substantially, spreads across the economy, and usually lasts for several years. In both recessions and expansions, brief reversals in economic activity may occur—a recession may include a short period of expansion followed by further decline; an expansion may include a short period of contraction followed by further growth. A *depression* is a particularly severe or protracted recession.

The recurrent alternation of expansions and recessions is commonly referred to as the *business cycle*. Business cycles have been a characteristic of industrial societies since at least the late eighteenth century. The table in Figure 50 shows the dates and duration of U.S. business cycles. A commonly used rule of thumb is that periods when real GDP declines for two consecutive quarters may indicate the beginning of a recession. The determination of the dates on which recessions and expansions begin and end is performed by the NBER, a non-profit organization of economists that has been a major source of research on short-term fluctuations in the economy. The NBER considers a broad array of different economic indicators in fixing the dates listed in Figure 50.

Looking at the data in Figure 50, the longest and deepest period of recession in the 1900s is the decline that began in August 1929, which has come to be known as the Great Depression. During this episode, the nation's real GDP fell by more than one-quarter. Since the Second World War, periods of recession have tended to be relatively short, with only three stretching longer than twelve