What We Know, What We Don't

> If all the economists were laid end to end, they would not reach a conclusion.
>
> —George Bernard Shaw

> The theory of economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions.
>
> —John Maynard Keynes

The first chapter of this book stated that the purpose of macroeconomics is to understand economic events and improve economic policy. Having studied many of the most important models in the macroeconomist's toolbox, we can now assess whether the field has achieved these goals.

Any fair assessment of macroeconomics today must admit that the science is incomplete. There are some principles that almost all macroeconomists accept and rely on when analyzing events or crafting policies. Yet many questions about the economy remain open to debate. In this epilogue, we review the central lessons of macroeconomics and the most pressing unresolved questions.

The Four Most Important Lessons of Macroeconomics

Let's begin with four lessons that have recurred throughout this book and that most economists today endorse. Each lesson tells us how policy can influence a key economic variable—output, inflation, or unemployment—either in the long run or in the short run.

Lesson 1: In the long run, a country's capacity to produce goods and services determines the standard of living of its citizens.

Of all the statistics introduced in Chapter 2 and used throughout this book, the one that best captures economic well-being is GDP. Real GDP measures the economy's total output of goods and services and, therefore, a country's ability to satisfy the

needs and desires of its citizens. Nations with higher GDP per person have more of almost everything—bigger homes, more cars, higher literacy, better health care, longer life expectancy, and easier access to the Internet. Perhaps the most important question in macroeconomics is what determines the level and the growth of GDP.

The models in Chapters 3, 8, and 9 identify the long-run determinants of GDP. In the long run, GDP depends on the factors of production—capital and labor—and on the technology used to turn capital and labor into output. GDP grows when the factors of production increase or when the economy becomes better at transforming these inputs into goods and services.

This lesson has an important corollary: Public policy can raise GDP in the long run only by improving the economy's productive capability. Policymakers can attempt to do so in many ways. Policies that raise national saving—by increasing either public or private saving—lead to a larger capital stock. Policies that raise the efficiency of labor—by supporting education or technological progress—lead to a more productive use of capital and labor. Policies that improve a nation's institutions—such as crackdowns on official corruption—promote both capital accumulation and the efficient use of scarce resources. By increasing the economy's output of goods and services, these policies enhance the standard of living.

Lesson 2: In the short run, aggregate demand influences the amount of goods and services that a country produces.

The economy's ability to *supply* goods and services is the sole determinant of GDP in the long run, but in the short run GDP also depends on the aggregate *demand* for goods and services. Aggregate demand is important because prices are sticky in the short run. The *IS–LM* model developed in Chapters 12 and 13, along with the open-economy Mundell–Fleming model in Chapter 14, shows what causes changes in aggregate demand and, therefore, short-run fluctuations in GDP.

Because aggregate demand influences output in the short run, the variables that affect aggregate demand can influence economic fluctuations. Monetary policy, fiscal policy, and shocks to the money and goods markets are often responsible for year-to-year changes in output and employment. Because changes in aggregate demand are crucial to short-run fluctuations, policymakers monitor the economy closely. Before changing monetary or fiscal policy, they want to know whether the economy is booming or heading into a recession.

Lesson 3: In the long run, the rate of money growth determines the rate of inflation, but it does not affect the rate of unemployment.

In addition to GDP, inflation and unemployment are among the most closely watched measures of economic performance. Chapter 2 discussed how these two variables are measured, and subsequent chapters developed models that explain how they are determined.

The long-run analysis of Chapter 5 stresses that growth in the money supply is the ultimate determinant of inflation. That is, in the long run, a currency loses real value over time if and only if the central bank creates more and more of it. This lesson explains the decade-to-decade variation in inflation observed in the United States,

as well as the more dramatic hyperinflations that various countries have experienced from time to time.

We have also discussed many of the long-run effects of high inflation. In Chapter 5, we saw that, according to the Fisher effect, high inflation raises the nominal interest rate (so that the real interest rate remains unaffected). In Chapter 6, we saw that high inflation causes the currency to depreciate in foreign exchange markets.

The long-run determinants of unemployment are different. According to the classical dichotomy, nominal variables are irrelevant to the determination of real variables. As a result, growth in the money supply does not affect unemployment in the long run. As we saw in Chapter 7, the natural rate of unemployment is determined by the rates of job separation and job finding, which in turn are determined by the process of job search and by wage rigidity.

Warren Miller/Cartoon Stock

"And please let Jay Powell accept the things he cannot change, give him the courage to change the things he can, and the wisdom to know the difference."

Thus, we concluded that persistent inflation and persistent unemployment are unrelated problems in the long run. To combat inflation, policymakers must limit the growth in the money supply. To combat unemployment, they must improve the structure of labor markets. In the long run, there is no tradeoff between inflation and unemployment.

Lesson 4: In the short run, policymakers who control monetary and fiscal policy face a tradeoff between inflation and unemployment.

Although inflation and unemployment are unrelated in the long run, there is a tradeoff between them in the short run, illustrated by the short-run Phillips curve. As we discussed in Chapter 15, policymakers can use monetary and fiscal policy to expand aggregate demand, lowering unemployment and raising inflation. Or they can use these policies to contract aggregate demand, raising unemployment and lowering inflation.

Policymakers face a fixed tradeoff between inflation and unemployment only in the short run. Over time, the short-run Phillips curve shifts for two reasons. First, supply shocks, such as changes in the price of oil, alter the short-run tradeoff; an adverse supply shock offers policymakers the difficult choice of higher inflation or higher unemployment. Second, when people adjust their expectations of inflation, the short-run tradeoff between inflation and unemployment shifts. The adjustment of expectations ensures that the tradeoff is temporary. That is, unemployment deviates from its natural rate and monetary policy has real effects only in the short run. In the long run, the world is best described by the classical model of Chapters 3 through 10.

The Four Most Important Unresolved Questions of Macroeconomics

So far, we have discussed the lessons about which most economists agree. Let's now turn to four questions that are subject to ongoing debate. Some disagreements

concern the validity of alternative theories. Others concern how theory should be applied to policy.

Question 1: How should policymakers try to promote growth in the economy's natural level of output?

Because the economy's natural level of output depends on capital, labor, and technology, any policy designed to raise output in the long run must aim to increase capital accumulation, improve the use of labor, or enhance the available technology. There is, however, no easy way to achieve these goals.

The Solow growth model of Chapters 8 and 9 shows that increasing the amount of capital requires raising the economy's rate of saving and investment. Therefore, many economists advocate policies to increase national saving. Yet the Solow model also shows that raising the capital stock requires a period of reduced consumption for current generations. Some argue that current generations should not be asked to make this sacrifice because technological progress will ensure that future generations are better off than current generations. (One waggish economist asked, "What has posterity ever done for me?") Even those who advocate increased saving and investment disagree about how to encourage saving and whether the investment should be in privately owned plants and equipment or in public infrastructure, such as roads and schools.

To improve the economy's use of its labor force, most policymakers would like to lower the natural rate of unemployment. As we discussed in Chapter 7, the differences in unemployment that we observe across countries, as well as the changes we observe over time, suggest that the natural rate is not immutable but depends on a nation's policies and institutions. Yet labor-market policies often present difficult tradeoffs. The natural rate of unemployment could be reduced by decreasing unemployment-insurance benefits (and thus increasing the search effort of the unemployed) or by decreasing the minimum wage (and thus bringing wages closer to equilibrium levels). But these measures would hurt some of the members of society who are most in need. During the Great Recession of 2008–2009, the U.S. Congress temporarily extended eligibility for unemployment insurance to an unprecedented 99 weeks, sparking debate about whether this policy was an appropriate response to extraordinary circumstances or an overreaction. Similarly, during the Covid-19 Recession of 2020, Congress substantially raised the replacement rate offered by unemployment insurance, again generating much debate.

In many countries, the natural level of output is depressed by a lack of institutions that people in developed nations take for granted. U.S. citizens today do not worry about revolutions, coups, or civil wars. They generally trust the police and the court system to respect the laws, maintain order, protect property rights, and enforce private contracts. In nations without such institutions, people face the wrong incentives: If creating something of value is a less reliable path to riches than is stealing from a neighbor, an economy will not prosper. All economists agree that establishing the right institutions is necessary to promote growth in the world's poorest nations, but those who try to transform a nation's institutions often face daunting political hurdles.

Promoting technological progress is, according to some economists, the most important goal for public policy. The Solow growth model shows that only technological progress can yield persistent growth in living standards. Despite much work on theories of endogenous growth, which highlight the societal decisions that influence technological change, economists cannot offer a reliable recipe to ensure rapid

advances in technology. Some suggest that the government should promote specific industries that are key to technological advance; others want the government to create a level playing field and let market forces determine which sectors will grow and which will shrink. As one economist put the question, is there an economic difference between computer chips and potato chips?

Question 2: What is the best way to stabilize the economy?

The model of aggregate supply and aggregate demand developed in Chapters 11 through 16 shows how shocks to the economy cause economic fluctuations and how monetary and fiscal policy can influence these fluctuations. Many economists believe that policymakers should use this analysis to stabilize the economy. They believe that monetary and fiscal policy should actively try to offset shocks to keep output and employment near their natural levels.

Yet as we discussed in Chapter 17, others are skeptical about our ability to stabilize the economy, citing the long and variable lags inherent in policymaking, the poor record of forecasting, and our still-limited understanding of how the economy works. These economists conclude that policy should be more passive. In addition, some economists believe that policymakers are often politically opportunistic or tempted to follow time-inconsistent policies. They conclude that policymakers should not have discretion over monetary and fiscal policy but should instead commit to a policy rule. Or, at the very least, their discretion should be constrained, as is the case when central banks adopt inflation-targeting regimes.

There is also debate among economists about which macroeconomic tools are best suited for stabilization. Typically, monetary policy is the first line of defense against economic downturns. During the Great Recession of 2008–2009 and the Covid-19 Recession of 2020, however, the Fed cut interest rates to the lower bound of zero, and the focus turned to fiscal policy. Economists disagree about the extent to which fiscal policy should be used to stimulate the economy in downturns and the optimal division of fiscal stimulus between tax cuts and spending increases.

A related question is whether the benefits of stabilization, if achievable, are large or small. Many economists point to the hardship experienced during deep downturns and argue that stabilizing the economy should be a paramount concern of policymakers. Yet other economists note that, without a change in the natural rate of unemployment, stabilization policy can only reduce the magnitude of fluctuations around the natural rate. If successful stabilization policy eliminates booms as well as recessions, the average gain from stabilization may be small.

Finally, in the aftermath of the financial crisis and Great Recession of 2008–2009, economists questioned whether the economy could be stabilized by avoiding such shocks in the future. As we discussed in Chapter 19, problems in the financial system can lead to problems throughout the economy. Indeed, over the course of history, financial crises have caused some of the deepest downturns. Unfortunately, it is not clear how best to prevent such crises.

One point of debate centers on how monetary policy should respond to speculative bubbles in asset prices. Some economists argue that central banks should monitor financial markets and try to prevent speculative bubbles. The Fed could, for example, raise interest rates earlier than would otherwise be warranted to deflate bubbles as they begin. Other economists believe that central bankers are no better than market participants at determining when a rise in asset prices reflects an irrational speculative

bubble rather than a rational evaluation of changing fundamentals. Moreover, they argue, the tools of monetary policy are too crude to prick bubbles, and trying to use them that way could undermine the ability of central banks to achieve their main goals of stable prices and full employment.

Another point of debate concerns regulation. Some economists argue that more vigilant regulation of financial institutions can reduce reckless risk-taking and the likelihood of financial crises. Others believe that financial regulation is hard to execute, easy to evade, and liable to give the public false hope that the financial system is safer than it really is. In addition, they argue that excessive regulation could prevent the financial system from performing its job of efficiently allocating capital and risk, thereby impeding long-run growth.

Question 3: How costly is inflation, and how costly is reducing inflation?

Whenever prices are rising, policymakers face the question of whether to pursue policies to reduce inflation. To make this decision, they must compare the cost of allowing inflation to continue at its current rate to the cost of reducing it. Unfortunately, economists cannot offer accurate estimates of either cost.

The cost of inflation is a topic on which economists and laypeople often disagree. When inflation reached 10 percent per year in the late 1970s, polls showed that the public viewed inflation as a major problem. Yet as we saw in Chapter 5, when economists try to identify the social costs of inflation, they can point only to a few costs, including shoeleather costs, menu costs, and the costs of a nonindexed tax system. These costs are large when inflation is high, but they seem minor for moderate rates of inflation, such as the 2 to 4 percent per year experienced recently in most major economies. Some economists believe that the public confuses inflation with other problems that coincide with inflation. For example, as growth in productivity and real wages slowed in the 1970s, some laypeople might have viewed inflation as the cause of the slowdown in real wages. Still, economists may be mistaken: Perhaps inflation is very costly, and we have yet to figure out why.

It is also possible that some inflation is desirable. If workers resist cuts in nominal wages, inflation makes it easier for real wages to fall when necessary to equilibrate the supply and demand for labor. That is, inflation may "grease the wheels" of labor markets. In addition, higher inflation raises the nominal interest rate through the Fisher effect, and a higher nominal interest rate gives the central bank more room to cut interest rates when necessary to stimulate the economy. In other words, higher inflation makes it less likely that the central bank will hit the zero lower bound for nominal interest rates, reducing the risk of a liquidity trap. Some economists use these arguments to suggest that the Fed aim for 4 percent inflation instead of its current 2 percent target.

The cost of reducing inflation is a topic on which economists often disagree among themselves. As we discussed in Chapter 15, the standard view—as described by the short-run Phillips curve—is that reducing inflation requires a period of low output and high unemployment. According to this view, the cost of reducing inflation is measured by the sacrifice ratio (the number of percentage points of a year's GDP that must be forgone to reduce inflation by 1 percentage point). But some economists think that reducing inflation can be less costly than estimates of the sacrifice ratio indicate. According to the rational-expectations approach discussed in Chapter 15, if a disinflationary policy is announced in advance and is credible, people will adjust their expectations quickly, so the disinflation need not cause a recession.

Other economists believe that the cost of reducing inflation is larger than indicated by estimates of the sacrifice ratio. Theories of hysteresis discussed in Chapter 15 suggest that a recession caused by disinflationary policy could raise the natural rate of unemployment. If so, the cost of reducing inflation is not a temporary recession but a persistently higher level of unemployment.

Because the costs of inflation and disinflation remain open to debate, economists sometimes offer conflicting advice to policymakers. Perhaps with further research, we can reach consensus on the optimal rate of inflation and the best way to achieve it.

Question 4: Are government budget deficits a big problem?

Government debt is a perennial topic of debate, particularly in recent years. During the Covid-19 Recession of 2020, the U.S. budget deficit increased to $3.3 trillion, or about 16 percent of GDP, a level not seen since World War II. Even more troubling is the long-term fiscal picture. Although the budget deficit will shrink as the economy recovers from the recession, it is projected to rise again as more of the large baby-boom generation reaches retirement age and starts drawing on the benefits that the government provides to the elderly.

Most economists take the traditional view of government debt. According to this view, when the government runs a budget deficit and issues debt, it reduces national saving, leading to lower investment and a trade deficit. In the long run, this leads to a smaller steady-state capital stock and larger foreign debt. Those who hold the traditional view conclude that government debt places a burden on future generations.

Some economists, however, are skeptical of this assessment, as we discussed in Chapter 18. Advocates of the Ricardian view of government debt stress that a budget deficit represents a substitution of future taxes for current taxes. If consumers are forward-looking, as many theories of consumption presented in Chapter 20 assume, they will save today to meet their or their children's future tax liability. These economists believe that the level of government debt has a minor effect on the economy. They maintain that the government's spending decisions matter, but whether that spending is financed by taxation or by selling bonds is of secondary importance.

Still other economists assert that conventional measures of fiscal policy are too flawed to be of much use. Although the government's choices regarding taxes and spending greatly influence the welfare of different generations, not all of these choices are reflected in measures of the government debt. The level of Social Security benefits and taxes, for instance, has different implications for the welfare of elderly beneficiaries and that of working-age taxpayers, but these differences are not captured in the size of the budget deficit. Perhaps we should focus less on the budget deficit and more on the broader generational impacts of fiscal policy.

In recent years, several prominent economists have suggested that policymakers should be less concerned about government debt because interest rates are so low. In 2020, for example, the interest rate on ten-year Treasury bonds fell to less than 1 percent; with inflation running at about 2 percent, the real interest rate was negative. In this environment, crowding out of private investment may be less problematic. Perhaps the government should use this opportunity to borrow more to finance public investments, such as infrastructure and education.

Some economists are nonetheless concerned about the possibility of government default. In the eighteenth century, Alexander Hamilton argued successfully that the U.S. federal government should always honor its debts. In the early 2010s, however,

Greece and several other European nations struggled to do so. In August 2011, Standard & Poor's reduced its credit rating on U.S. bonds below the top AAA level, and it remained at that reduced level in 2020, suggesting that Hamilton's rule might someday be violated even in the United States. As the U.S. political system wrestles with budget deficits, both economists and the public are divided about what should be done to return fiscal policy to a sustainable path. Reasonable people disagree about how much of the fiscal adjustment should come from increased taxes and how much should come from reduced government spending.

Conclusion

Economists and policymakers must deal with ambiguity. Macroeconomics in its current state offers many insights but also leaves many questions open. The challenge for economists is to answer these questions and expand our knowledge. The challenge for policymakers is to use the knowledge we have to improve economic performance. Both challenges are formidable, but neither is beyond our grasp.