



What We Know, What We Don't

If all 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, which helps its possessor to draw correct conclusions.

—John Maynard Keynes

The first chapter of this book states that the purpose of macroeconomics is to understand economic events and to improve economic policy. Now that we have developed and used many of the most important models in the macroeconomist's toolbox, we can assess whether macroeconomists have 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 on which we can rely when trying to analyze events or formulate policies. Yet there are also many questions about the economy that remain open to debate. In this last chapter, we briefly review the central lessons of macroeconomics, and we discuss the most pressing unresolved questions.

The Four Most Important Lessons of Macroeconomics

We begin with four lessons that have recurred throughout this book and that most economists today would 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 measures of economic performance introduced in Chapter 2 and used throughout this book, the one that best measures 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 more Internet connections. 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 turning these inputs into an output of goods and services.

This lesson has an obvious but important corollary: public policy can raise GDP in the long run only by improving the productive capability of the economy. There are many ways in which policymakers can attempt to do this. Policies that raise national saving—either through higher public saving or higher private saving—eventually lead to a larger capital stock. Policies that raise the efficiency of labor—such as those that improve education or promote 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—lead to both greater capital accumulation and a more efficient use of the economy's resources. All these policies increase the economy's output of goods and services and, thereby, improve the standard of living. It is less clear, however, which of these policies is the best way to raise an economy's productive capability.

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

Although the economy's ability to *supply* goods and services is the sole determinant of GDP in the long run, in the short run GDP depends also on the aggregate *demand* for goods and services. Aggregate demand is of key importance because prices are sticky in the short run. The *IS-LM* model developed in Chapters 11 and 12 shows what causes changes in aggregate demand and, therefore, short-run fluctuations in GDP.

Because aggregate demand influences output in the short run, all 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 making any change in 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 to 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 prints more and more of it. This lesson can explain the decade-to-decade variation in the inflation rate that we have observed in the United States, as well as the far more dramatic hyperinflations that various countries have experienced from time to time.

We have also seen many of the long-run effects of high money growth and 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 leads to a depreciation of the currency in the market for foreign exchange.

The long-run determinants of unemployment are very different. According to the classical dichotomy—the irrelevance of nominal variables in the determination of real variables—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 the rigidity of the real wage.

Thus, we concluded that persistent inflation and persistent unemployment are unrelated problems. To combat inflation in the long run, policymakers must reduce the growth in the money supply. To combat unemployment, they must alter 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 not related in the long run, in the short run there is a tradeoff between these two variables, which is illustrated by the short-run Phillips curve. As we discussed in Chapter 14, policymakers can use monetary and fiscal policies to expand aggregate demand, which lowers unemployment and raises inflation. Or they can use these policies to contract aggregate demand, which raises unemployment and lowers inflation.



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“And please let Ben Bernanke accept the things he cannot change, give him the courage to change the things he can and the wisdom to know the difference.”

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, change the short-run tradeoff; an adverse supply shock offers policymakers the difficult choice of higher inflation or higher unemployment. Second, when people change their expectations of inflation, the short-run tradeoff between inflation and unemployment changes. The adjustment of expectations ensures that the tradeoff exists only in the short run. That is, only in the short run does unemployment deviate from its natural rate, and only in the short run does monetary policy have real effects. In the long run, the classical model of Chapters 3 through 9 describes the world.

The Four Most Important Unresolved Questions of Macroeconomics

So far, we have been discussing some of the broad lessons about which most economists would agree. We now turn to four questions about which there is continuing debate. Some of the disagreements concern the validity of alternative economic theories; others concern how economic theory should be applied to economic policy.

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

The economy's natural level of output depends on the amount of capital, the amount of labor, and the level of technology. Any policy designed to raise output in the long run must aim to increase the amount of capital, improve the use of labor, or enhance the available technology. There is, however, no simple and costless 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 policymakers should not encourage current generations 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 additional 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 large differences in unemployment that we observe across countries, and the large changes in unemployment we observe over time within countries, suggest that the natural rate is not an immutable constant but depends on a nation's policies and institutions. Yet reducing unemployment is a task fraught with perils. The natural rate of unemployment could likely 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). Yet these policies would also hurt some of those members of society most in need and, therefore, do not command a consensus among economists. This issue has been particularly salient in recent years. In the aftermath of the financial crisis and deep recession of 2008–2009, the U.S. Congress extended eligibility for unemployment insurance to an unprecedented 99 weeks, leading to a debate among economists about whether this was an appropriate response to extraordinary circumstances or an overreaction.

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. For the most part, they 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, however, people face the wrong incentives: if creating something of economic value is a less reliable path to riches than is stealing from a neighbor, an economy is unlikely to prosper. All economists agree that setting up the right institutions is a prerequisite for increasing growth in the world's poor nations, but changing a nation's institutions requires overcoming some difficult political hurdles.

Increasing the rate of technological progress is, according to some economists, the most important objective for public policy. The Solow growth model shows that persistent growth in living standards requires continuing technological progress. Despite much work on the new theories of endogenous growth, which highlight the societal decisions that determine technological progress, economists cannot offer a reliable recipe to ensure rapid advances in technology. They continue to debate the extent to which the government should take an active role in promoting the development and spread of particular technologies.

Question 2: Should policymakers try to stabilize the economy? If so, how?

The model of aggregate supply and aggregate demand developed in Chapters 10 through 15 shows how various shocks to the economy cause economic fluctuations and how monetary and fiscal policy can influence these fluctuations. Some economists believe that policymakers should use this analysis in an attempt to stabilize the economy. They believe that monetary and fiscal policy should try to offset shocks in order to keep output and employment close to their natural levels.

Yet, as we discussed in Chapter 18, others are skeptical about our ability to stabilize the economy. These economists cite the long and variable lags inherent in economic policymaking, the poor record of economic forecasting, and our still-limited understanding of the economy. They conclude that the best policy is a passive one. In addition, many economists believe that policymakers are all too often opportunistic or follow time-inconsistent policies. They conclude that policymakers should not have discretion over monetary and fiscal policy but should be committed to following a fixed policy rule. Or, at the very least, their discretion should be somewhat constrained, as is the case when central banks adopt a policy of inflation targeting.

There is also debate among economists about which macroeconomic tools are best suited for purposes of economic stabilization. Typically, monetary policy is the

front line of defense against the business cycle. In the deep downturn of 2008–2009, however, the Federal Reserve cut interest rates to their lower bound of zero, and the focus of many macroeconomic discussions turned to fiscal policy. Among economists, there was widespread disagreement about the extent to which fiscal policy should be used to stimulate the economy in downturns and whether tax cuts or spending increases are the preferred policy tool.

A related question is whether the benefits of economic stabilization—assuming stabilization could be achieved—would be large or small. Without any change in the natural rate of unemployment, stabilization policy can only reduce the magnitude of fluctuations around the natural rate. Thus, successful stabilization policy would eliminate booms as well as recessions. Some economists have suggested that the average gain from stabilization would be small.

Finally, in the aftermath of the financial crisis and recession of 2008–2009, economists questioned whether the economy could be stabilized by avoiding such shocks in the future. As we discussed in Chapter 20, problems in the financial system can lead to problems throughout the economy. Indeed, throughout history, financial crises have led to some of the deepest economic downturns. Unfortunately, it is not clear how best to prevent such crises.

One point of debate centers on the response of monetary policy to speculative bubbles in asset prices. Some economists argue that central banks should monitor these markets and try to prevent speculative bubbles from arising in the first place. This might mean raising interest rates earlier than otherwise to deflate bubbles as they begin to form. Other economists believe that monetary policymakers are no better than market participants at telling 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 do so could distract central banks from their primary objectives of stable employment and low inflation.

Another point of debate concerns regulation. Some economists argue that more vigilant regulation of financial institutions can limit the scope of reckless risk taking and thereby prevent financial crises. Others believe that financial regulation is hard to do well, easy to circumvent, and liable to give the public a 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 efficiently performing its crucial job of allocating capital and risk, which in turn could impede long-run economic growth.

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

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

The cost of inflation is a topic on which economists and laymen often disagree. When inflation reached 10 percent per year in the late 1970s, opinion polls showed that the public viewed inflation as a major economic problem. Yet, as we discussed in Chapter 5, when economists try to identify the social costs

of inflation, they can point only to shoeleather costs, menu costs, the costs of a nonindexed tax system, and so on. These costs become large when countries experience hyperinflation, but they seem relatively minor at the moderate rates of inflation experienced in most major economies. Some economists believe that the public confuses inflation with other economic problems that coincide with inflation. For example, growth in productivity and real wages slowed in the 1970s; some laymen might have viewed inflation as the cause of the slowdown in real wages. Yet it is also possible that economists are mistaken: perhaps inflation is in fact very costly, and we have yet to figure out why.

It is also possible that some amount of inflation is desirable. If workers are highly resistant to cuts in nominal wages, then a positive amount of 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 would raise the nominal interest rate through the Fisher effect. 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 would make it less likely that the central bank would hit the zero lower bound on nominal interest rates, reducing the risk of the economy falling in a liquidity trap. Some economists have used these arguments to suggest that the Federal Reserve aim for 4 percent inflation, rather than the 2 percent rate that appears to be the Fed’s current inflation target.

The cost of reducing inflation is a topic on which economists often disagree among themselves. As we discussed in Chapter 14, 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, which is 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 the cost of reducing inflation can be much smaller than standard estimates of the sacrifice ratio indicate. According to the rational-expectations approach discussed in Chapter 14, 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 much larger than standard estimates of the sacrifice ratio indicate. The theories of hysteresis discussed in Chapter 14 suggest that a recession caused by disinflationary policy could raise the natural rate of unemployment. If so, the cost of reducing inflation is not merely 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 a consensus on the benefits of low inflation and the best way to achieve it.

Question 4: How big a problem are government budget deficits?

Government debt is a perennial topic of debate among policymakers, and it has been particularly heightened in recent years. During the deep recession of 2008–2009, the U.S. budget deficit increased to \$1.4 trillion, or about 10 percent of GDP, a level not seen since World War II. Even more troubling is the long-term fiscal picture. Many

economists believe that the budget deficit will be hard to control as the large baby-boom generation reaches retirement age and starts drawing on the Social Security and Medicare benefits that the government provides to the elderly.

Most models in this book, and 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, which in turn leads to lower investment and a trade deficit. In the long run, it leads to a smaller steady-state capital stock and a larger foreign debt. Those who hold the traditional view conclude that government debt places a burden on future generations.

Yet, as we discussed in Chapter 19, some economists are skeptical of this assessment. Advocates of the Ricardian view of government debt stress that a budget deficit merely represents a substitution of future taxes for current taxes. As long as consumers are forward-looking, as the theories of consumption presented in Chapter 16 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 only a minor effect on the economy. They believe that the government's spending decisions matter, but whether that spending is financed by taxation or by selling government bonds is of secondary importance.

Still other economists believe that standard measures of fiscal policy are too flawed to be of much use. Although the government's choices regarding taxes and spending have great influence on the welfare of different generations, many of these choices are not reflected in the size of the government debt. The level of Social Security benefits and taxes, for instance, determines the welfare of the elder beneficiaries versus that of the working-age taxpayers, but measures of the budget deficit do not reflect this policy choice. According to some economists, we should stop focusing on the government's current budget deficit and concentrate instead on the longer-term generational impacts of fiscal policy.

Recent events have focused renewed attention on the possibility of government default. In the eighteenth century, Alexander Hamilton argued successfully that the U.S. federal government should always honor its debts. But in 2011 many European nations were struggling to do just that, and it looked likely that Greece and perhaps other countries would default. In August of that year, Standard & Poor's reduced its credit rating on U.S. bonds below the top AAA level, suggesting that Hamilton's rule might someday be violated even in the United States. As the U.S. political system struggled with large budget deficits, economists as well as the general public were divided about what should be done to put the government back on a sustainable path. In particular, they were divided over how much of the fiscal adjustment should come from higher tax revenue and how much should come from reduced government spending.

Conclusion

Economists and policymakers must deal with ambiguity. The current state of macroeconomics offers many insights, but it also leaves many questions open. The challenge for economists is to find answers to these questions and to expand our knowledge. The challenge for policymakers is to use the knowledge we now have to improve economic performance. Both challenges are formidable, but neither is insuperable.