

Chapter 17: The Future of Macroeconomics

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Questions

What might the future of macroeconomics bring? How might the macroeconomics taught two decades from now differ from the macroeconomics that is taught today?

What have been the principal changes in the way macroeconomics is taught over the past twenty years?

What additional changes took place in the twenty years before that—from roughly 1960 to roughly 1980?

What direction will macroeconomics take if the real business cycle research program is successful?

What direction will macroeconomics take if the new Keynesian research program proves successful?

How will economists understand the foundations behind the power of monetary policy?

The past sixteen chapters of this book have given a historically-informed long run growth-stressing new-Keynesian view of macroeconomics. But that is not all of macroeconomics—there are other currents of thought, and other live research programs. What is the past, and what might be the future of macroeconomics? This chapter takes a look back at the history of macroeconomics, and then looks forward and sketches a few outlines of what the future of macroeconomics might be.

If there is one thing that is certain it is that we will know different (and, we hope, know more) about macroeconomics in a decade than we do today. What will be taught in macroeconomics courses in twenty years will not be the same as what is taught today.

17.1 The Past of Macroeconomics

The Age of John Maynard Keynes

Macroeconomics as a discipline is to a remarkable extent the creation of John Maynard Keynes. His 1936 book *The General Theory of Employment, Interest, and Money* shifted economic research and macroeconomic thought into new and different directions that have led us where we are today. The *General Theory's* extraordinary impact was in large part a result of the then-ongoing Great Depression. Other and previous approaches to understanding business cycles had little useful to say about. Keynes had a lot to say.

Keynes's book emphasized (i) the role of expectations of future profits in determining investment, (ii) the volatility of expectations of future profits, (iii) the power of the government to affect the economy through fiscal and monetary policy, and (iv) the multiplier process which amplified the effects of both private-sector shocks and public-sector policies on aggregate demand. It swept the intellectual field, and shaped modern macroeconomics.

By a decade or so after World War II much of the analytical apparatus used in this textbook was already in place. The IS-LM model was developed by economists John Hicks and Alvin Hansen. Other economists developed the approaches used in this textbook to understanding consumption (Milton Friedman and Franco Modigliani), investment (Dale Jorgenson, James Tobin, and many others), and the relationship between interest rates and the money supply (James Tobin once again, along with many others). The difference between the behavior of the macroeconomy in the flexible-price long-run and the fixed-price short run was clarified by many economists (here Franco Modigliani was again the major contributor). The Solow growth model that is the workhorse of chapters 4 and 5 was developed by—no surprise—Robert Solow.

This is not to say that the bulk of this textbook stands as it would have been written back in 1960. Macroeconomics textbooks in 1960 had next to no discussion of the relationship between production and inflation. They had little discussion of expectations. The short run was seen as lasting for decades, and analysis of the long-run flexible-price model was rarely included in undergraduate courses. Textbooks in 1960 also downplayed monetary policy and emphasized fiscal policy: investment was seen as responding little to changes

in interest rates, and estimates of the multiplier were much higher than we now believe to be correct now or to have been correct then.

The Age of Milton Friedman and Robert Lucas

Between 1960 and 1980 a good deal of the rest of the meat of this textbook was put into place. Powerful critiques of the then-established conventional wisdom of macroeconomics were made first by Milton Friedman and then by Robert Lucas, both of whom made their intellectual home at the University of Chicago.

Milton Friedman's critique of the then-dominant tradition in macroeconomics had four major parts. The first was that the then-standard models greatly overestimated the government's ability to manage and control the economy. Great uncertainty, long lags, and variable effects of policy actions placed extremely tight limits on the ability of the government to smooth out recessions and avoid periods of high unemployment. The second was that the then-standard models greatly overestimated the power of fiscal policy and greatly underestimated the power of monetary policy. The third was that the measurement of the money supply told you most of what you needed to know about how economic policy was working.

The fourth was the idea of that natural rate of unemployment, developed by Friedman and Edward Phelps in the second half of the 1960s. To the extent that macroeconomists in the early 1960s talked about aggregate supply and inflation at all, they tended to follow the lead of economists who took the location of the short-run Phillips curve to be fixed. A

given level of unemployment would produce a fixed, unchanging rate of inflation with no feedback of past inflation on expected inflation and no shifts in the natural rate of unemployment. Friedman and Phelps argued that high past inflation would raise expected inflation, and that if unemployment were kept below its natural rate then the Phillips curve would shift upward over time, generating higher and higher inflation.

The “stagflation” of the 1970s proved Friedman and Phelps to be completely correct on their fourth point. In less than a decade the economics profession shifted to the “accelerationist” Phillips curve that we use today. Friedman’s first and second points also became part of the received wisdom. Only the claim that the money supply was the sole important variable for understanding macroeconomic policy failed to win broad acceptance.

But Milton Friedman’s “monetarist” critique was only the first half of the successful revisionist challenge to the doctrines of the post-World War II Keynesians. The “rational expectations” macroeconomists—Robert Lucas, Thomas Sargent, Robert Barro, and others—argued that Keynesian economics had failed to think through the importance of expectations.

The rational expectations economists assumed that people were doing the best they could to figure out the structure of the economy in which they lived. Because standard Keynesian models did not pay enough attention to expectations, they failed to recognize that systematic changes in economic policy would change the parameters of the consumption and investment functions as well as the location of the Phillips curve. Thus

macroeconomic models that took estimated consumption functions, investment functions, and Phillips curves as building blocks would blow up in the face of policy makers.

Once again the critique was incorporated into the mainstream quite rapidly. As MIT economist Olivier Blanchard puts it, the “idea that rational expectations was the right working assumption gained wide acceptance... not... because all macroeconomists believe that people, firms, and participants... always form expectations rationally... [but because] rational expectations appears to be a natural benchmark, at least until economists have made progress... understanding... actual expectations.” By the mid-1980s the intellectual structure of the version of modern macroeconomics presented in this book was largely complete.

And since? The late 1980s and 1990s were a time of idea generation and exploration. They saw macroeconomists exploring and testing a large number of different ideas and models. It was an age in which the set of possible approaches expanded, but in which the mainstream policy-analytic position of macroeconomists did not shift much. If the past is any guide, such a period of exploration and experimentation will eventually be followed by another period of successful critique, during which the mainstream of macroeconomics will once again change substantially and rapidly as it did in the 1970s and early 1980s.

What might the future of macroeconomics bring?

Recap: The Ages of Keynes, Friedman, and Lucas

John Maynard Keynes's 1936 book *The General Theory of Employment, Interest, and Money* swept the intellectual field, shaped modern macroeconomics, and set the groundwork on which the analytical apparatus used in this textbook was built. Milton Friedman's critique in the 1960s established that the then-standard models greatly overestimated the government's ability to manage and control the economy. Friedman's critique was reinforced by a further critique led by Robert Lucas that established that Keynesian economists had failed to think through the importance of expectations. Since the Lucas critique there has been a lot of idea generation and exploration in macroeconomics, but the views held on economic policy issues today are as they were shaped by Keynes, Friedman, and Lucas.

17.2 The Future of Macroeconomics: “Real” Business Cycles

One Possible Road

One place where the future of macroeconomics might lie is in the theory of “real” business cycles, briefly sketched out in chapter 6. The fundamental premise of this line of thinking is that all the other macroeconomists took a wrong turn a long time ago. It is more than half a century since economists turned away from the line of analysis of Joseph Schumpeter and toward that of the monetarists and Keynesians. One possibility is that this was, in the long run, a mistake

John Maynard Keynes, Irving Fisher, Milton Friedman, Paul Samuelson, and all of the economists working in both Keynesian and monetarist traditions believe that there are two key elements to understanding business cycles. First you need to understand the determinants of nominal aggregate demand. Second, you need to understand the division of changes in nominal aggregate demand into changes in production (and employment) on the one hand and changes in prices (inflation or deflation) on the other. Thus Keynesians and monetarists think about the velocity of money, the determinants of investment spending, the multiplier, crowding out, the natural rate of unemployment, the rate of expected inflation, the Phillips curve, and other related topics

To real business cycle economists in the Schumpeterian tradition like Edward Prescott, most of this seems to be a waste of time. There are changes in nominal aggregate demand, but their impact falls mostly on prices and only a little in output and employment. To understand the roots of real fluctuations—fluctuations in the real economy—you need to follow a different road.

The theory of real business cycles begins with the fundamental assumption that the same theory that determines what happens in the long run—the theory of economic growth—should also be applied to explain fluctuations in production and employment in the short run. It is not that real business cycle theorists assume that prices are never rigid, or that markets always clear, or that every price paid for every good balances supply and demand at that moment. Instead, real business cycle theorists assume that the price rigidities and patterns of sluggish adjustment that Keynesians and monetarists see are simply not very relevant. They assume that it is a reasonable first approximation to suppose that the money supply and the level of potential output determine the price level,

and that the level of potential output at any moment is more-or-less equal to actual real GDP. They believe strongly in the *classical dichotomy*: real fundamentals effectively determine the values of real quantities like GDP even in the short run, and nominal variables (like the money stock) determine the values of nominal quantities (like the price level).

The Unevenness of Economic Growth

Some years there are adverse cost shocks—the tripling of world oil prices in 1973, for example. In such years it makes no sense to produce at what had been the normal level of economic output. The normal level balances social benefits and social costs: when social costs increase the last one percent of output produced is certainly no longer worth the resources in people’s time, used-up capital, depleted natural resources, and so on, that it consumes. So when an adverse cost shock hits the economy, a recession ought to follow and people ought to spend less time working: that’s what an efficient economy would look like. Conversely, when a favorable cost shock hits the economy, it is advantageous to produce as much as possible: because goods and services can then be produced at low cost, workers should work extra shifts and heavy demands should be placed on other resources.

But these are not the only “real” shocks to the economy’s production possibilities that happen. Entrepreneurs have to guess at the future of technological development, and the value of new investment. There are moments when rapid technological innovation opens up new industries and new possibilities for investment. At such moments the stock

market will be high, the returns to investment large, and so investment spending will be high and an efficient economy will be in a boom even though the new technologies have not yet increased real output. Current productivity is not especially high. But putting lots of new capital in place is uniquely profitable.

At other moments entrepreneurs will realize that they and those who came before them have been overoptimistic. Branches of industry that have been built up turn out to be unpromising. The socially optimal thing to do is not to invest, but instead to retrench: to cut back on investment spending and scrap capital until it becomes clear where there will be opportunities for profitable large-scale investment. Most of the work on real business cycle theory has concentrated on the effect of cost—supply—productivity shocks on output. But shocks to future technologies are just as “real” in that they involve changes in the economy’s long-run production possibilities. And they are large: just look at the technology section of your newspaper, or visit Silicon Valley.

Is this theory of real business cycles a promising theory of economic fluctuations?

Economists disagree. Perhaps fewer economists think that real business cycle theory is a progressive research program this year than thought so a decade ago, but that could change. Whether you think that real business cycle theory is promising depends on answers to three questions:

- Should the fact that a reduction in work hours shows up as some people becoming wholly unemployed change one’s interpretation of what causes a decline in total hours worked?

- Should the fact that many wages and prices are not flexible lead one to assign a prominent role to monetary factors as causes of real fluctuations in output and employment?
- How large are “technology” shocks to the economy, anyway?

Problems of Real Business Cycle Theory

Unemployment

Real business cycle theory assumes that the total amount of hours worked at any moment is largely determined by how many hours it makes sense for people to work. The supply of hours worked is set at the point where the marginal displeasure of working an extra hour is just about equal to the marginal social product of an extra hour’s work, given the marginal value of extra goods for consumption or for investment purposes.

When the marginal social product of labor is high—when labor is more than usually productive, or when there are extremely valuable opportunities to invest that an increase in work hours and thus of total product can take advantage of—workers are willing to work more hours. When labor is relatively unproductive, or when highly valuable investment opportunities are scarce, it makes sense for total work hours to fall. Instead of spending extra time on the job producing output of relatively little marginal value, take a week or two off and go on an extra vacation, or spend some extra time with the kids.

Such a willingness to work more hours when the incentive to work is relatively high and fewer hours when the incentive to work is relatively low is called an intertemporal

substitution of labor. As an example, consider a student who needs to (a) take classes and (b) earn money. It's hard to take classes and earn money at the same time, so the choice is between either working in the summer and taking classes in the winter, or working in the winter and taking classes in the summer. If the student works in the summer and gets paid at the end of the summer, then at the end of the winter the student will have $W_s(1 + r/2)$ dollars—the sum of his or her summer wage and the interest for half a year that he or she would earn by banking that money until it is needed at the end of the winter. If the student works in the winter, then at the end of the winter the student would have W_w dollars.

The real relative wage between the summer and the winter is thus equal to:

$$\frac{W_s(1 + r/2)}{W_w}$$

The higher this quantity, the more likely the student is to choose summer rather than winter work. Thus the incentive to work hard now—accept lots of overtime, say—depends on three things: (a) the wage now, (b) the wage expected in the future, and (c) the real interest rate. Increases in the first and the third tend to lead people to postpone recreation and other non-work uses of time to the future. Increases in the second tend to lead people to cut back on work effort now. If people are highly willing to shift their hours of work from season to season or from year to year, then one would expect fluctuations in current productivity and technological opportunities to lead to substantial fluctuations in employment.

But critics of real business cycle theory think that it makes little sense to analyze the total amount of hours worked in the economy as if it were like the decisions of a representative

worker. They point out that people change their weekly work hours by relatively little. People in the labor force want to work. When total work hours fall it isn't because people have chosen to work shorter shifts and avoid overtime, it is because people have lost their jobs. The unemployment rate fluctuates substantially over the business cycle. And high unemployment in a recession is not a market-clearing phenomenon: people don't call themselves "taking an extra vacation" or "out of the labor force because wages will be higher this year"; people call themselves "unemployed."

Advocates of real business cycle theory say that this critique misses the point. People stay unemployed because they would rather spend more time searching for a better job that matches their skills and pays more than the job they could get today. And the job they could get today pays relatively little either because labor productivity is not high, or because there are no extremely valuable uses in investment or consumption for the good produced by an extra amount of work.

Technology and Real Business Cycles

According to real business cycle theories, production fluctuates because of the changing value of output and the changing productivity of the economy. When production technology improves, more is produced. When unique opportunities for investment open, more is produced. Perhaps recessions are times in which increases in costs—the tripling of oil prices in 1973, say—make it socially inefficient to run factories at near capacity. Perhaps recessions are times in which everyone now recognizes that too much has been

invested, and that it is better to cut back on investment than to continue to build up capital that adds little to the economy's productive capacity.

Critics of real business cycle theory concentrate their fire on the claim that the economy experiences large negative shocks to productivity. They claim that increases in costs like the 1973 oil shock are the exception rather than the rule. Critics tend to be silent on whether downturns in investment are to be understood as rational reactions to news about future growth and productivity, and have little to offer as alternative explanations of why investment fluctuates so much.

Money and Real Business Cycles

Real business cycle theorists tend to argue that monetary policy has little impact on production and employment, and that fluctuations in the money stock and interest rates are much more reactions to changes already taking place in output and employment. But the Federal Reserve certainly believes that it affects the level of interest rates, that it makes decisions about the level of the money supply, and that its decisions cause changes in the level of production and output. Either everyone in the Federal Reserve's conference room is hopelessly deluded (and what they think are their decisions are instead the result of fluctuations in real activity that they do not consciously know about at the time they make their votes) or monetary policy has a powerful impact on production and employment.

Assessment

If I thought this line of research truly will be the future of macroeconomics, I would have written a different book. Nevertheless there are important points made especially by what I see as the Schumpeterian wing of the real business cycle tradition. Economic growth *is* not smooth. It *does* proceed sector-by-sector. Shifts in investment—big backwards-and-forwards moves in the position of the IS curve—do arise out of changing beliefs about the current productivity of the economy and the future value of new investment.

The existence of real business cycle theory is a call for all economists to spend more time thinking about the determinants of investment fluctuations: either tying them to changes in productivity and the value of investment, or developing useful social-psychological theories of the shifts in animal spirits that cause such large movements in investment over time. My guess is that a lot of what is now called real business cycle analysis will be incorporated into mainstream macroeconomics over the next two decades as the theory of growth is integrated with the theory of business cycles, and as economists make progress in understanding why investment is so volatile.

Recap: Real Business Cycle Theory

Real business cycle theorists see booms as generated when rapid technological innovation opens up new industries and new possibilities for investment. At such moments the stock market will be high, the returns to investment large, and so investment spending will be high. Real business cycle theorists see recessions as generated when entrepreneurs conclude that those who came before them have been overoptimistic. The socially optimal thing to do is not to invest, but instead to retrench: to cut back on

investment spending and scrap capital until it becomes clear where there will be opportunities for profitable large-scale investment.

17.3 The Future: New Keynesian Economics

The second possible future for macroeconomics sees the continued development of the mainstream research program, as its weaknesses and incoherencies are slowly repaired.

Certainly the area of modern macroeconomics that is in least satisfactory shape is the area of aggregate supply. Why do changes in nominal aggregate demand show up as changes in the level of production and employment, and not just as changes in the level of prices? Since at least the 1930s, the mainstream of macroeconomics has attributed the sluggishness of aggregate supply—the fact that the Phillips curve has a slope, and is not vertical—to stickiness in wages and prices. Thus fluctuations in the nominal level of aggregate demand cause fluctuations in output and employment. But where does this stickiness and slow adjustment of wages and prices come from? Given that business cycles appear to be so unpleasant and costly to society as a whole that by now a way should have been found to greatly reduce the harmful macroeconomic consequences of price stickiness.

Thus a direction that might be the future of macroeconomics is that of deep investigation into the sources of sluggish wage and price adjustment, and of aggregate supply. This research program has gained the name of *New Keynesian Economics*.

Menu Costs

Prices do not adjust immediately and completely in the short run because it is costly to change them. A restaurant must print up a new menu; a mail-order firm must send out a new catalog. Economists call these costs of changing prices *menu costs*. They are what lead firms to adjust prices once in a while—not, with a few exceptions, every second. In most cases such menu costs are small: it doesn't cost a firm very much to change its prices. But “small” does not mean “unimportant.” As macroeconomists George Akerlof, Janet Yellen, and Greg Mankiw have stressed, it is entirely possible, in theory at least, for small menu costs at the level of an individual firm to have large effects on the economy as a whole.

A price adjustment or a failure to adjust prices on the part of one firm affects other firms. Whenever one particular business lowers its price, it frees up a little bit of nominal purchasing power. The extra nominal purchasing power that would have been spent buying that particular firm's product (but that wasn't spent because the price was lowered) is free instead to be spent on products made by other firms. As long as total nominal spending remains constant, a decline in one firm's price (slightly) increases demand for other firms' products. New Keynesian economists call this phenomenon an *aggregate demand externality*.

Because of such aggregate demand externalities, as long as total nominal demand is fixed the economy as a whole benefits more by one firm's reduction in price than that one firm does. But the firm decides whether or not to cut its price depending on whether or not the

benefit *to the firm* from cutting its price exceeds the menu costs the firm must pay. Thus the economy can get stuck in a situation in which no firm reduces its price—because no firm can see a private benefit in excess of its menu cost—even though the economy as a whole would benefit by vastly more than the sum of menu costs if all businesses were to reduce their prices.

Staggered Prices and Coordination Failures

Even if menu costs are not important, the fact that one firm's best choice for its price depends on the prices that other firms are charging may lead to sluggish adjustment in wages and prices even though individual prices are theoretically free to move without hindrance.

Macroeconomist John Taylor was the first to consider an economy in which large groups of workers sign three-year labor contracts. Those who negotiate their wages in years divisible by three will look forward at what demand and supply on the labor market is likely to be, but they will also look sideways, at firms that negotiated their labor contracts one or two years ago. Thus the wage negotiated this year will depend not just on what will happen but on what people one or two years ago—when the last set of contracts were signed—thought was likely to happen. The aggregate wage and price levels will thus exhibit *inertia* even without barriers to price flexibility when renegotiations occur just because of the institutional structure of the economy.

Are such “coordination failures” caused by the fact that agents in the economy do not all make long-run decisions at the same time or are unable to commit to deciding in similar ways important causes of business cycles? Two decades ago economists thought that the answer was almost surely “yes.” Many studies were written comparing the U.S. system of wage negotiation with other, more centralized systems found in Germany and Japan that seemed less likely to lead to coordination failures.

Today because of the relatively good macroeconomic performance of the U.S. economy theories that point out structural flaws in U.S. macroeconomic institutions receive little attention. The theoretical point, however, remains unsettled.

Assessment

At the moment these ideas about the microfoundations of price stickiness are at the stage of just-so stories: plausible and possible mechanisms, but only that. There are no convincing quantitative analyses of just how much sluggishness in wage and price adjustment is contributed by each possible cause. There are no tests of one theory against another, and no predictions of the magnitude of price adjustment inertia that should emerge from any of the possible theoretical causes. In this sense, the theory of aggregate supply today is in a position roughly analogous to the position of the theory of aggregate demand just before John Maynard Keynes.

I have no doubt that the mechanisms of business cycles should be a large part of the future of economics. We should be able to learn a lot about which models of business

cycles are potentially useful by turning theories loose on perhaps the greatest macroeconomic laboratory available: the extant record of macroeconomic historical statistics. A robust and useful theory of business cycles should be able to account for the patterns seen in the long-run data for many countries.

My reading of the historical evidence is that business cycle models that do not put monetary economics at the center of analysis are inconsistent with the evidence on the behavior of real exchange rates. Events like the comparative pattern of national recoveries from the Great Depression cannot be understood without placing prices that are sticky at the center of the analysis as well. Thus I think that the New Keynesian research program is likely to play a stronger role the future of macroeconomics than the real business cycle research program.

But I have been wrong before.

Recap: New Keynesian Theories

Why do changes in nominal aggregate demand show up as changes in the level of production and employment, and not just as changes in the level of prices?

The mainstream of macroeconomics has attributed this to stickiness in wages and prices. But where does this stickiness come from? One possibility is that small costs of changing prices on the part of individual firms have large effects because a price adjustment or a failure to adjust prices on the part of one firm affects other firms through *aggregate demand externalities*. Another possibility is that prices and wages are sticky because agents in the economy do not all make long-run decisions at the same time.

17.4 Debts and Deficits, Consumption and Saving

Debts and Deficits: Ricardian Equivalence

Chapter 15 above detailed economists' standard view of debts and deficits. Fiscal deficits stimulate the economy in the short run as long as the central bank does not take action to neutralize the fiscal stimulus. In the long run, however, debts and deficits crowd out investment and shift the economy to a less favorable long-run steady-state growth path.

But this standard view has been subject to a powerful challenge, a challenge which may become an important part of the future of economics and whether it is successful or not is likely to change the way we think about how the government's budget affects the economy. This alternative view of the long run (and of the short run too) effects of debts and deficits is called "Ricardian" after David Ricardo (who does not seem to have held it) and that should be called "Barrovian" after its most effective and powerful advocate, Harvard macroeconomist Robert Barro.

Robert Barro's View

Think of it this way: The government is, in a sense, our agent. It buys things for us (government purchases) and it collects money from us to pay for the things it buys on our behalf. The monies it collects from us are called "taxes." Sometimes the government

collects as much from us as it buys on our behalf: then the government budget is balanced. Sometimes the government collects less from us than it spends on our behalf: then the government budget is in deficit, and the government makes up the deficit by borrowing money now and implicitly committing to raise taxes to repay the debt (interest and principal) at some time in the future).

Suppose that the government spends an extra \$1,000 on your behalf and at the same time raises your taxes by \$1,000. Because your after-tax income has gone down by \$1,000, you cut back on consumption spending. Now suppose that the government spends an extra \$1,000 on your behalf, but doesn't raise taxes—instead it borrows the \$1,000 for one year, and announces that it is going to raise taxes next year to repay the debt.

What is the difference between these two situations? In one case, the government has collected an extra \$1,000 in taxes from you this year. In the other case, the government has announced that it will collect an extra \$1,000 in taxes from you next year. In either case you are poorer. In the first case you cut back on your consumption. Shouldn't you cut back on your consumption in the second case too—set aside a reserve to pay the extra taxes next year, and invest it, perhaps in the bonds that the government has issued? After all, the effect of the government policy on your personal private wealth is identical in the two cases.

Robert Barro would say yes. He would say that what matters for the determination of consumption spending is not what taxes are levied on you this year, but what all of the changes in government policy tell you about the value of the total stream of taxes this year, next year, and on into the future. Government policy thus ought to affect

consumption only to the extent that it tells you about how much the government is going to spend—and thus what will be the total lifetime tax bill levied on your wealth.

Counterarguments

Many economists point out that the theoretical elegance of Barro's view is broken by a number of different considerations.

Myopia. Perhaps people are not far-sighted enough to fully work out what an increased deficit in the present implies for their future taxes.

Liquidity constraints. Barro's argument implicitly assumes that it is easy for people to borrow and lend. If a good many people can't borrow and lend—would wish to spend more if only they could borrow it on reasonable terms—then you would expect consumers to react to tax cuts by increasing consumption spending even if they knew full well that the government was going to recapture those tax cuts with tax increases later.

People are different. I am the beneficiary from increased spending this year, but the extra taxes that the government will exact two decades hence may well not be paid by me but by someone who isn't even in the labor force today.

But are any of these—or all of them together—really enough to make us confident that changes in the timing of taxes (holding government spending patterns constant) will have a big effect on overall consumption? Even if Barro's challenge to the conventional

wisdom is unsuccessful, it will only become clear that it is unsuccessful when we have a much better understanding of how and why people divide their income between consumption and saving.

Consumption and Saving

In the early part of the twentieth century it was relatively easy to justify a relatively high marginal propensity to consume. Most households had little if any savings. Most households found themselves unable to borrow. Hence they were *liquidity constrained*: they wished to spend more today, but could not find anyone to lend them the liquid wealth to enable them to do so. Thus one would expect a boost to income today to generate a large rise in consumption spending. Add to this the fact that buying consumer durables is in a sense as valid a way of saving for the future as putting money in the bank, and a high marginal propensity to consume and a strong multiplier process seemed easy to understand.

The past fifty years, however, have seen steady and large increases in the flexibility of the financial system. Few Americans today are without the ability to borrow to increase current consumption should they so wish. Those Americans who are credibly liquidity constrained today receive a very small portion of total income, and a small portion of increases in total income. Thus economists' theories would predict that the marginal propensity to consume would have dropped far by today, and that the multiplier process would be more or less irrelevant to aggregate demand. Nevertheless, consumption still declines significantly when the economy goes into recession.

This consumption puzzle is another substantial hole in today's current macroeconomic knowledge. Many economists are trying to close it. Some, like Johns Hopkins macroeconomist Chris Carroll, argue that the typical consumer is both *impatient* and strongly *risk averse*. Risk aversion makes him or her unwilling to borrow. Impatience makes him or her eager to spend increases in income. Thus the fact that improvements in financial flexibility means that consumers could borrow doesn't mean that they will. Other economists focus on the persistence of income changes, and say that current income is a good proxy for permanent income and hence should be a strong determinant of consumption. Still others—led by Chicago economist Richard Thaler—argue that it is time for economists to throw the simple-minded psychological theory of utility maximization overboard, and to take seriously what psychologists have to say about how humans reason.

It is unclear how this hole in macroeconomists' understanding will be resolved. It is clear, however, that whatever answer is reached to the puzzles regarding consumption and saving will also have a powerful impact on the debate over debts and deficits as well.

17.5 Does Monetary Policy Have a Long-Run Future?

When the Federal Reserve uses open market operations to affect interest rates, it does so because its purchases or sales of Treasury Bills raise or lower the supply of bank reserves in the economy, and so make it easier or harder for businesses to borrow money. But total

commercial bank reserves in the U.S. amount to less than half a percent of GDP. A typical open market operation is a few billion dollars.

In the context of an economy in which annual GDP is more than \$11 trillion and in which total wealth is something like \$40 trillion, how is it that a swap of one government promise to pay (a Treasury Bill) for another (a dollar bill) can cause big changes in the cost of borrowing money, and ultimately in the level and composition of economic activity?

This question has not been asked often enough in the past hundred years. Economists have tended to assume that monetary policy is powerful and that the reasons for its power are relatively uninteresting. They have by and large ignored the fact that to shift from an extremely tight monetary policy in which long-run nominal GDP growth is zero and a loose one in which long-run nominal GDP growth is ten percent per year requires that the Federal Reserve increase purchases of Treasury Bills by an average of only some \$20 million a day.

Monetary policy is certainly powerful. But in at least one of the potential futures of macroeconomics the reasons for its power become very interesting indeed. For it is at least possible that the future evolution of the financial system might undermine the sources of influence that monetary policy today possesses.

The reasons that monetary policy has power today that economists usually bring forward rest on what Harvard macroeconomist Benjamin Friedman calls—politely—“a series of

... familiar fictions: [like that] households and firms need currency to purchase goods... nonbank financial institutions [cannot] create credit... [and] so on.”

The standard explanation is that open market purchases of Treasury Bills increase the reserve balances held by the bank where the seller of the Treasury Bills receives payment. Thus the total volume of reserves in the banking system as a whole rises, and the banking system responds to this increase in reserves by increasing total credit in the economy by more than ten times the reserve increase. Because commercial banks must hold reserves, and because only the Federal Reserve can change the total amount of reserves, it has a uniquely strong ability to affect interest rates. In the standard story the central bank's power is further boosted because everyone in financial markets takes its actions today as a powerful signal of what its actions will be in the entire future.

This Federal Reserve power, however, would be of little use if nobody much cared about keeping deposits at commercial banks, and nobody used reserve-backed commercial bank deposits as transactions balances. When we look to the future, we see a future in which more and more transactions are carried out not through cash or check but through credit cards, debit cards, smart cash cards that we see in Europe, or other forms of electronic funds transfer at points of sale.

Will the future hold a gradual weakening of central bank power? Macroeconomists know that central banks today are powerful and are likely to remain so for at least a generation. But forecasting beyond that point requires a deeper knowledge and better models of the sources of central bank power than macroeconomists currently possess. This is thus

another area in which the macroeconomics taught in the future is likely to be substantially different from the macroeconomics taught in the past

17.6 Chapter Summary

Main Points

Modern macroeconomics has its origin in the “Keynesian” theories of the Great Depression and the immediate post-WWII era.

Modern macroeconomics was reformed by the monetarists under Milton Friedman in the 1960s and 1970s, and by the rational-expectations economists led by Robert Lucas in the 1970s and 1980s.

Perhaps the focus on aggregate demand will turn out in the long run to have been a false road. Perhaps a better theory of the macroeconomy can be built up out of the theory of real business cycles in the Schumpeterian tradition.

Perhaps the future of macroeconomics lies in a more detailed investigation of aggregate supply. Perhaps uncovering the reasons that prices are sticky will lead to the next wave of progress in macroeconomics.

The entire conventional analysis of debts and deficits is under challenge by Robert Barro, who argues that individuals are far-sighted and closely linked, and that they take action to neutralize the effects of many government policies.

The conventional analysis of consumption—the permanent income hypothesis—is also under challenge by more psychological approaches to understanding consumption.

The other possible interesting direction in which macroeconomics might evolve involves the future of monetary policy. How will the coming of the “new economy” and the changing institutional framework of transactions and settlements affect the power of monetary policy?

Important Concepts

Keynesianism

Monetarism

Sticky prices

Real business cycles

Menu costs

Staggered prices

Coordination failures

Ricardian equivalence

Myopia

Liquidity constraints

Impatience

Risk aversion

Analytical Exercises

1. What are the principal pieces of real business cycle theory?
2. Why is it possible that real business cycle theory will play a much larger role in macroeconomics courses in the future than in the present?
3. In what areas do new Keynesian economists concentrate their research?
4. What is Ricardian equivalence? Why might it not be a good approximation to the way individuals actually behave?
5. Why do some economists fear that monetary policy is going to lose its effectiveness?