10

History of Macroeconomics

Macroeconomics as its own distinct branch of economic thought came into widespread existence during the Great Depression of the 1930s. The unemployment rate in the United States reached a record high of 25 percent during that decade, inflation was persistently negative during much of the 1930s (as figure 10.1 shows), and the growth rate of GDP plunged dramatically (as figure 10.2 shows). Neither fiscal policy nor monetary policy was able to do much to mitigate the sharp and widespread impact of the steep and long-lasting downturn. There was indeed not much "fiscal policy" to speak of, as figure 10.3 hints.

What follows is an admittedly brief and partial history of macroeconomics. Other scholars of economics or history might have different interpretations of the events described below. Despite the brevity of the ensuing historical recap, the main point is to provide a glimpse into the evolution of thought about economy-wide events over the past century and, importantly, how chains of thought over the decades have led to the current frameworks used today to provide policy advice and continuing economic research. The taxonomy of this short history is categorized into four phases.

Phase 0: Panics of the 1800s and early 1900s

The Great Depression was by no means the first downturn in US nationwide economic activity. There had been many waves of booms (economic expansions) and busts (economic contractions) prior to the Great Depression. A few examples before the Depression are the Panic of 1873, the Panic of 1893, and the Panic of 1907, which you might have studied in an American History course. As far as historical records indicate, there was very strong GDP growth in between these Panics, but this growth was largely washed away during the sharp, but brief, Panic-induced downturns.

What were the Panics, and how did they arise? To consider this, we have to remember that the US economy was heavily agriculturally based in the mid- to late 1800s. The percentage of workers in the agricultural sector around the turn of the twentieth century was about 50 percent; in contrast, in the 2010s it composes no more than 1 to 2 percent. Another

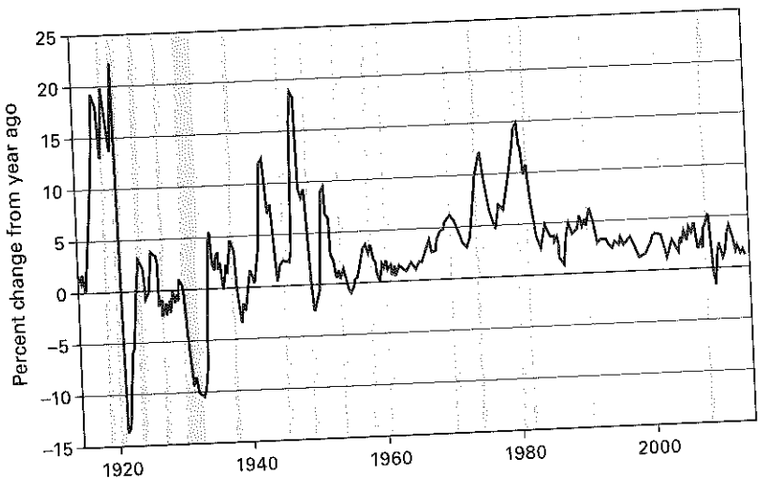

Figure 10.1
US annual inflation rate, 1929 to 2014, as measured by the Consumer Price Index. Source: FRED.

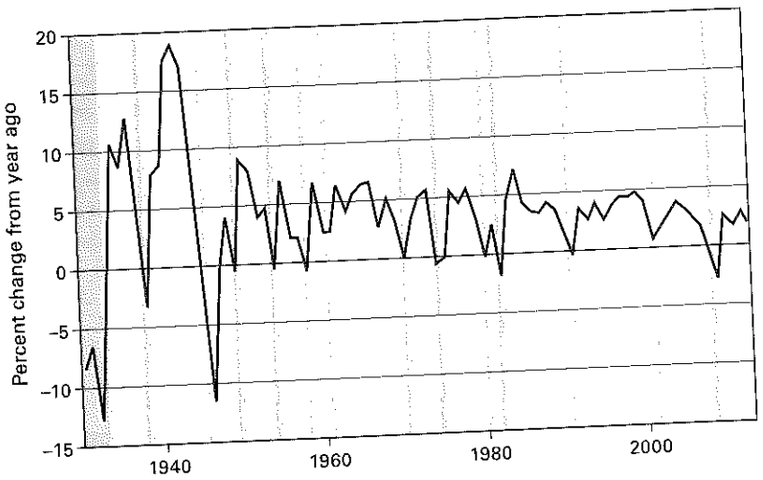

Figure 10.2
US annual GDP growth rate, 1929 to 2013. Source: FRED.

related development after the US Civil War was the rapid rise of the railroad industry. The railroad sector employed the second-largest percentage of US workers, trailing only the agricultural sector.

Given the farming-based US economy, agriculturists often needed to borrow in order to fund themselves during out-of-season periods. This need arose because many crops could only be harvested during particular months or weeks of the year. Even then, the quantity and quality of the crop yield could heavily depend on the weather before harvest season—was it too rainy of a season? Too dry of a season? Were railroads allowed to ship crop?

Regardless, come harvesting time, the bounty of crops was picked and then delivered (think of wheelbarrows and wagons and vendors on the streets) to town or county markets. One reason the developing railroad industry became prominent was because it allowed for faster transportation of wheats and grains. Regardless of mode of transport, this was the *supply* side of that particular crop's market. There were also people and families that wanted to purchase these items, which was the *demand* side of that particular market.

The prices that emerged in these markets depended somehow on the quantity and quality of the items supplied. Nonetheless—and very important—the sale of these crops provided the farmers and their families' revenue—that is, income—which in turn would be available to be spent on households' needs.

However, in out-of-season times of the year, when there were no crops to harvest and sell, some or perhaps many farming families could run short or completely run out of the income they had raised during the previous harvest season. Silos to store food products were not common in the late nineteenth century. What this in turn implied was a natural need for **borrowing:** a family could borrow from willing lenders to meet their expenses during out-of-season times, and then repay their debts, inclusive of interest, when harvested crops were sold on markets. Such a setup is perfectly rational.

More and more willing lenders began sprouting up. Among these were **speculative lenders,** who offered very low interest rates. Although economic historians continue to debate their relative importance, lenders' rationale for offering low-interest rate loans goes along the following two highly related lines.

One is that some fields were left fallow so that the soil and earth would have time to re-fertilize after a crop season. To incentivize farmers to not leave fields fallow, these speculative lenders provided very cheap loans, with the expectation that the fields that should have remained fallow would yield bounty. If this occurred, then lenders would receive a higher total repayment due to the larger revenue raised by the farmers. The second, related, rationale is the decreasing costs to transport harvests to more distant markets, thanks to the quickly rising railroad networks.

From the point of view of agriculture, cultivating fields that should have remained vacant could be considered a risky endeavor. If these "extra harvests" did not eventually

materialize, then the farmers who overborrowed would not be able to repay their debts and hence face bankruptcy. If many farming families' extra harvests did not grow—due to, say, inclement weather, which does not affect only one farm but many farms in a particular geographic area—then there would be many bankruptcies. One example is the Dust Bowl of the 1930s in the US prairies caused by severe droughts.

As an aside, from the point of view of economics, however, the overborrowing due to low interest rates need not be viewed as irrational. Why? Because the farmers willingly chose to take on more debt—willingly overborrowed—because of the lower interest rates offered. They were not forced to borrow more but rather were incentivized due to low interest rates.

The various Panics were thus largely tied to big swings in conditions in financial markets, which were heavily dependent, to put it simply, on the quality and quantity of harvests and the rush to invest in easier modes of transportation.

Digging a bit deeper, they were tied to huge ups and downs emanating from newly created banking and lending markets, as well as newly developing (and ultimately short-lived) currencies. One prime example of a short-lived attempt to revive bimetallic currency (gold and silver) was the ill-fated Free Silver Movement of the late 1800s and early 1900s, during which 1896 presidential candidate William Jennings Bryan made his famous "Cross of Gold" speech, advocating the use of silver, in addition to gold and states' own currencies, as a medium of exchange. It was not until after 1913, the year the Federal Reserve System was created, that all the US states shared one unified currency.

Thus the seeds of the idea of sharp swings in economy-wide aggregate outcomes —that is, in *macroeconomic outcomes,* parlance that was little used then—was planted before the largest and longest lasting *PANIC* of all.

Phase 1: Measuring Macroeconomic Activity (1930s to Early 1950s)

It was the very long-lasting and very deep economic Panic of the Great Depression that led to the emergence of the branch of economics that we now know as "macroeconomics." The causes of the Great Depression are typically thought to be financial in nature (indeed Ben Bernanke, the chairman of the Federal Reserve from 2006 to 2014, is one of the leading economic scholars of the Great Depression). It should be noted, however, that virtually all scholars of the Great Depression seem to agree that the cause was not the spectacular stock market crash of 1929.

In the early stages of the Depression, the idea that the national government could and should regulate the periodic ups and downs of the economy rose to prominence. John Maynard Keynes was the most forceful and persuasive proponent of this idea (but by no means the only one), describing it in his tome published in 1936, *The General Theory of Employment, Interest, and Money*. The basic tenet of what soon was dubbed the

"Keynesian view" was that various "rigidities" plague market transactions and lead to potentially long-lasting *disequilibrium* outcomes.

The clearest way to understand Keynesianism (which we will study in more depth later) was that *nominal wages and/or prices* may not adjust quickly enough to clear quantity supplied and quantity demanded. Hence Keynesian logic demands that the government should and is able (the latter because of slowly adjusting nominal prices) to aid the economy.

In order to do so, there needed to be some US-wide measures of the performance of markets; until the Great Depression, there were none. The system of GDP accounting that we more or less still continue to use began during the Great Depression. The concepts and measurements of **aggregate GDP** and **aggregate consumption** and **aggregate investment** that we now take for granted in the typical basic macroeconomics-class GDP accounting equation were essentially invented during the Depression. With only desk calculators, constructing and adding up the national income accounts itself was an agonizingly labor-intensive, time-consuming project. Thousands of economists were hired in Washington, DC, during 1930 to 1938 to work at the newly created New Deal government agencies charged with the task.

The first attempts at the Keynesian policy prescription for the government were to increase national government spending, the *G* term in the *GDP* accounting equation. It may be surprising to learn, but measured federal government spending pre–Great Depression was essentially zero. Figure 10.3 shows the share of US federal government spending in

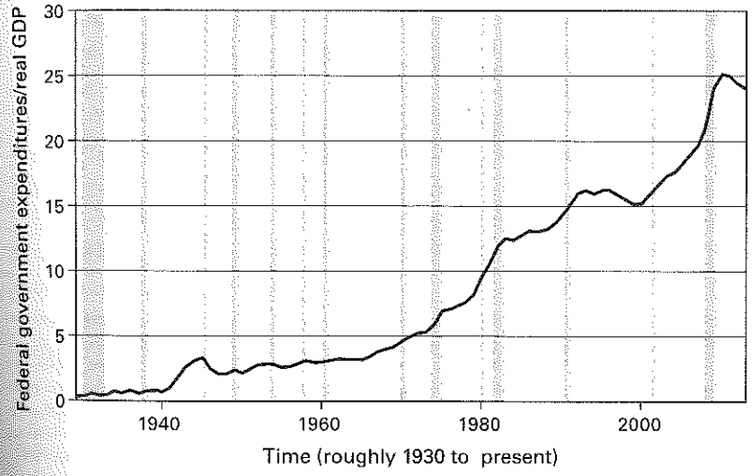

Figure 10.3
Share of government spending, excluding government investment expenditures, as a percentage of aggregate GDP, 1929 to 2013. Source: FRED.

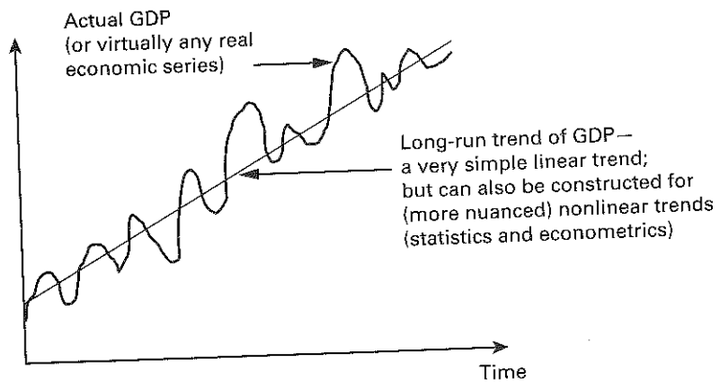

Figure 10.4
Fluctuations across time of real economic outcomes (real GDP)

total GDP—*G/GDP* rose from 0 to about 1 percent during the course of the 1930s, and then spiked higher to about 4 percent when the United States entered World War II.[1]

Perhaps coincidentally, by the mid-1940s, economists had collected and tabulated about 15 years of quarterly data (roughly 60 time periods) on what now are considered "standard macro measures" often used to judge that society's standards of living. Simple sketches, like the illustrative figure 10.4 (which is not based on actual data), convey two basic ideas. First, in the long-time horizon there is a steady upward march of GDP, and hence of individuals' standards of living.[2] But this upward march is not at all smooth—there are many ups and downs along this long-run path.

By no means did this happen immediately, especially because members of society, including economists, were nowhere near as hyperconnected to each other as now. But as the measurements of collected macroeconomic data (not simply the sketch like in figure 10.4, but further statistical measurements of correlations, standard deviations, etc.) seeped into the thinking of many economists and policy makers, a main question emerged. The

1. The percentage has continued to increase over the decades, piercing 20 percent over the last several years. Some of this can be attributed to increases in military spending, and some can be attributed to ever-increased benefits provided by the government to US citizens. Leading examples are the Social Security System, Medicare, and Medicaid—the first began in the New Deal era of President Franklin D. Roosevelt, and the second two began in the Great Society period of President Lyndon B. Johnson. Although, it should be importantly noted, it's not the benefit payments themselves that cause increases in government spending (such benefits are actually accounted for differently); rather, it's the expansion of the infrastructure to maintain and implement the benefits systems (e.g., employees that work for the Social Security Administration who ensure that the people who are eligible to receive Social Security payments do so in a timely fashion).

2. At least for the so-called advanced economies, such as the United States, much of Western Europe, Japan, Canada, and Australia.

question was how to logically, analytically think about economy-wide events, such as depicted in figure 10.4.

More precisely, should there be **one unified framework** to consider both long-run growth and business cycle fluctuations—that is, the ups and downs—of the economy?

Somehow the convention arose that the answer to this question is no. This convention did not have to arise amid all of the discussions and debates among many macroeconomists, but it did. This conventional view has more or less survived to today.

More precisely, the convention arose that economists could study the smoothly growing long-run component of the economy separately from the business cycle fluctuations. Research economists and policy-minded economists to this day essentially continue to consider these as two different branches of economics. Understanding, both empirically and theoretically, the long-run growth component is often referred to as the branch of **economic growth** or **economic development;** understanding the short-run fluctuations of the economy is almost universally referred to as the branch of **macroeconomics.**

The focus of our analysis will be almost entirely on this now more-restricted definition of macroeconomics—the hows and whys of macroeconomic fluctuations in the short-run around the smoother longer run growth trend.

Figure 10.5, which builds directly on figure 10.4, graphically displays the business cycle component of real GDP (which could be generalized to other real quantity measures). The methodology of how to "filter" actual economic time-series data is left to more advanced courses in statistics and econometrics. The takeaway message is that the bottom panel of figure 10.5 explicitly focuses on the business cycle fluctuations and effectively ignores mechanisms that ignite long-run growth.[3]

We've summarized phase 1 (which could be thought of as the "learning how to count" years of the macroeconomics profession) in just a few pages, but this was nearly two decades' worth of effort of many scholars, leaders, and policy-minded economists. Until phase 2, macroeconomics was largely qualitative (the **social** aspect of the growing profession), much more so than today. The mathematized portions (the **scientific** aspect of the growing profession) used fairly simple calculus routines, statistical procedures, and diagrammatic analysis. But the mix of "social" and "science" in the social science of macroeconomics was to soon change.

Phase 2: Keynesian Macroeconometric Approach (Early 1950s to late-1970s)

The end of WWII is often attributed to the powerful engineering and technology the US military rapidly developed. The idea of using advanced mathematics and advanced physics as a foundation for "practical" purposes (in this case, ending the war) captured the

3. But more on this later.

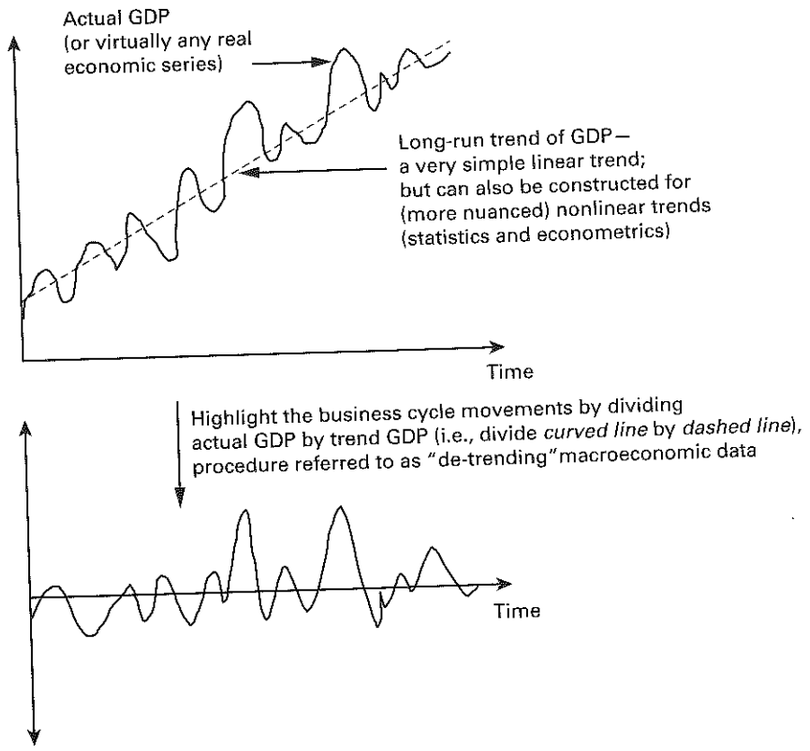

Figure 10.5
Business cycle ups and downs of real GDP (bottom panel) and "de-trended" version of the actual measured GDP (upper panel). The vertical axis of the bottom panel shows the percentage deviation from the long-run trend.

imagination of many (although surely not of everybody). This was also the period in which newly developed mainframe computers using punch cards to process computations were being increasingly put to research use.

These mathematically and computationally based ideas crept—or perhaps, better said, launched full force—into macroeconomic thinking. Not uncoincidentally, much of the high-powered technology that aided military efforts was developed at research universities at which top-notch economists were also housed, so these ideas were only a short skip away.

Starting in the early 1950s, a heavy dose of mathematics and statistical analytics using high-powered mainframes quickly became the fashion of macroeconomics, first in academic circles and then, by the early 1960s, in policy circles. A paramount goal for these emerging computable statistical descriptions of aggregate economic events—the

Keynesian macroeconometric approach—was to answer an important question hanging over macroeconomics: How can business cycles be "explained"?

In terms of mathematics, the equations that were econometrically tested had the form of several equations that were hypothesized or "believable" descriptions of various interactions among economic variables; and these equations contained several economic price and quantity variables. Depending on the goal of the research, "several" equations and variables could mean just a few to several dozen to several hundred prices and/or quantities. In economics lingo, these are, respectively, *small-scale economic models, medium-scale economic models,* and *large-scale economic models.*

Throughout the 1950s many Keynesian macroeconometric frameworks were developed around the world. One, if not the most, prominent large-scale Keynesian macroeconometric frameworks that quickly took center stage was the **MIT/Penn/Federal Reserve Board** model constructed by a consortium of researchers and policy advisers at these three institutions.

Championing this effort was a group of three prominent economists from academe, all of whom would be future Nobel laureates—Paul Samuelson (Nobel recipient in 1970), James Tobin (Nobel recipient in 1981), and Robert Solow (Nobel recipient in 1987). Samuelson, Tobin, and Solow were not cloistered academics in the Ivory Tower. Each spent significant time in his career serving in various government positions that advised President John F. Kennedy and President Lyndon B. Johnson, including serving on the White House Council of Economic Advisers.[4]

The Keynesian-inspired macroeconometrics models took the form

$$x_{1t} = \alpha_0 x_{2t} + \alpha_1 x_{3t} + \alpha_2 x_{4t} + \ldots$$
$$x_{2t} = \alpha_3 x_{1t} + \alpha_4 x_{3t} + \alpha_5 x_{4t} + \ldots$$
$$\vdots$$
$$x_{136t} = \alpha_{597} x_{1t} + \alpha_{598} x_{13t} + \alpha_{599} x_{69t} + \ldots$$

in which all of the terms denoted $x_{\#t}$ represent *measured economic prices or quantities* in a particular time period t—for example, the CPI-based inflation rate in the fourth quarter of 1952. Coherently measuring macroeconomic outcomes was the significant achievement of phase 1. In phase 2, those interrelationships were being scientifically tested.

4. Paul Samuelson's highly acclaimed 1947 graduate-level textbook *Foundations of Economic Analysis* and 1948 undergraduate principles-level textbook *Economics* brought Keynesian ideas into mathematics, physics, and engineering terms. Samuelson popularized Keynesian thought in the classroom, first at Harvard University and then, shortly after, at MIT. Future President Kennedy took a class of Samuelson's at Harvard, and later asked Samuelson to be his economic adviser during his presidential campaign and then a member of the Council of Economic Advisers once he took office.

Each of the equations above represents a hypothesized relationship between some or many of the macroeconomic data. In any given equation, each of the empirically estimated α terms (Greek lowercase letter "alpha") describes the correlation observed in the real world between an economic variable on the right-hand side and the economic variable on the left-hand side. For example, α_{598} was a description of how a one-unit increase in x_{13t} would affect x_{136t}, holding all else constant.[5] Any of the estimated α terms could turn out to be strictly positive, strictly negative, or statistically zero.[6]

This is the "science" component of Keynesian macroeconometrics. The social—or, in Keynes's own words, the "animal spirits"—component of the framework was essentially just the Keynesian idea that nominal wages and nominal prices may not adjust quickly enough over the course of business cycles to clear quantity supplied and quantity demanded. These concepts were embedded into the equations displayed above.

Given the wealth of economic data that was developed between the 1930s and 1950s, not just in the United States but also in other advanced nations, it was possible to estimate the α coefficients fairly tightly. The original intention of the Keynesian macroeconometric paradigm appeared to have been positive one. Not positive in the mathematical sense that the goal was to obtain α coefficients > 0. Rather, positive economics in the sense that the α's could help explain economic phenomena that have already occurred by focusing on the facts.

Some of the x variables in these macroeconometrics frameworks were policy variables over which either fiscal authorities or monetary authorities presumably had good control. For example, suppose that x_{3t} and x_{13t} variables in the set of expressions above were the short-term nominal interest rate and the wage tax rate, respectively. What α_{598} then describes is the amount by which x_{136t}—suppose that it's the quantity of aggregate investment I—changes for a 1 percent increase in the tax rate. In the United States, it is the Congress that has fairly tight legislative control of, and enforcement of collections via the IRS, taxes.

As the macroeconometric approach became widespread, **positive economic** analysis could and did easily slip into **normative economic** analysis. To continue with the example, if politicians wanted to increase aggregate investment, economists could advise them how to achieve this. The advice is revealed in the estimated value of α_{598}. If the facts show that $\alpha_{598} = -0.5$, then to a obtain a 1 percent increase in x_{136t}, the labor tax rate should be decreased by 2 percent, ceteris paribus. Hence the estimated value of α_{598} intended for positive macroeconomic analysis based on past data seemingly could be used to provide normative policy advice to guide future macroeconomic outcomes.

5. *Ceteris paribus* (the Latin phrase for "all other things being held constant") analysis in economics, not just macroeconomics, is the usual way to empirically and theoretically understand connections between economic measures.

6. Again, the econometric methodology is left for another course.

And that is indeed what happened in the United States and other advanced countries. Keynesian macroeconometric frameworks were increasingly being used for policy advice, which in turn was intended to improve the standards of living in the country. Referring back to figure 10.2, in the United States the average GDP growth rate between 1950 and 1970 was 4.3 percent per year. In hindsight, economic growth was incredibly strong during the 1950s and 1960s, perhaps in part due to the "great policy tips" provided by the estimated models.

The developers of the Keynesian macroeconometric frameworks in some sense could self-congratulate themselves. Indeed these were the halcyon days, the Golden Age, of the US economy.[7] It came to the point where macroeconomic ups and downs started to be considered a solved problem, even though macroeconomics as a topic of collective thought had just emerged thirty years earlier. To portray the point in its extreme, perhaps there was no longer any need for "judgment" in the conduct of fiscal policy or monetary policy. All that was needed was to conduct policy on autopilot, based on the mechanically constructed α coefficients.

This seemed to be true throughout the 1950s and 1960s—but it then turned out to be no longer true in the stagflationary period of the 1970s and early 1980s. Looking again at figure 10.2, GDP growth between 1970 and 1975 was 2.3 percent per year, down sharply from the 1950s and 1960s. Growth was stronger in the second half of the 1970s, averaging 4.7 percent. But then GDP growth declined precipitously between 1979 and 1983, averaging a paltry 0.5 percent per year.

In terms of price movements, as figure 10.1 shows, inflation was quite tame during the 1950 to 1970 period, averaging about 2.2 percent per year. During the 1970s, however, inflation averaged 7.1 percent per year, meaning nominal prices of goods and services were rising about 3.5 faster per year in the 1970s than in the previous two decades. Inflation was even more extreme between 1979 and 1983, with an average annual rate of 10.4 percent.

Given the events of the 1970s and early 1980s, the term **stagflation** was coined to describe the high-inflation/slow-growth economy. But this characterization arose in hindsight. The stagflationary decade ran counter to the **Phillips curve** idea that was popular in policy circles and economic advisers in the 1960s. You are probably already familiar with the Phillips curve, which describes an inverse relationship between an economy's unemployment rate and inflation rate—the higher is the inflation rate, the smaller is the unemployment rate.[8] Nonetheless, during most of the stagflationary period, policy makers continuously attempted to use Keynesian-based econometric advice to boost GDP growth and lower inflation.

7. So much so that a TV show that began in the late 1980s, *The Wonder Years,* garnered rave reviews for its depiction of a family living in suburban United States in the late 1960s.

8. See chapter 12 for further, mostly qualitative, discussion of the "classical" Phillips curve.

But the fiscal policy levers of the airplane on autopilot turned out to no longer work.[9] All of a sudden, the glory decades of macroeconomics of the 1950s and 1960s seemed to have collapsed. If macroeconomics were to remain an organized field of thought, scores of economists figured that the future of macro had to somehow depart from Keynesian macroeconometrics because there was something seemingly inconsistent with economic analysis in these frameworks.

Many researchers struggled to describe the essence of this inconsistency. Finally, in 1976, it was the economist Robert Lucas (future Nobel recipient in 1995) who simply and elegantly described the root of the issue. His (later named) **Lucas critique is** described more fully in box 10.1.

Box 10.1
Lucas critique

The α coefficients in Keynesian macroeconometric frameworks should be thought of as *depending on government policy directly*. The Lucas critique started ringing the death bell for Keynesian macroeconometrics. Why? Because this is not how Keynesian macroeconometric frameworks had been considered previous to the Lucas critique.

The α coefficients multiplied various and many economic measures, including policy instruments, either for positive purposes or normative purposes. But the α coefficients were essentially never seriously thought of as being dependent on policy. Stated mathematically and returning to the earlier example, it was not the case that the macroeconometric models contained terms such as

$$\alpha_{598}(x_{3t})\, x_{3t}$$

in which α_{598} could potentially depend on the wage tax rate x_{3t}. Thus, if the tax rate x_{3t} changed, α_{598} itself would change even though there is no data-based reason for this occur. In principle, this was an econometric and statistical issue, which could be gotten around using higher powered econometrics that would allow the α terms to depend on policy.

But a much larger, much deeper issue arose from the Lucas critique, which is that Keynesian macroeconometric models are not economic models, but rather only **statistical descriptions of economic outcomes.** This then raises the natural question: What is macroeconomics, or indeed, what is economics?

There are alternative ways of "defining" economics, but the theme that runs through them all is that **economics studies how individuals make informed choices given scarce resources.** After the Lucas critique, one could naturally ask: Do the α terms capture these ideas?

The answer was a resounding no. The macro profession was in disrepute by the late 1970s, on the verge of extinction.

9. Note the emphasis here on fiscal policy. In 1979 Paul Volcker was appointed chair of the Federal Reserve and adopted a never-before-seen strict monetary policy that is largely credited for the strong economic recovery starting in 1983. Volcker's policies were based on Milton Friedman's ideas that reigning in the growth of money supply will bring down the rate of inflation. More to come on this when we study monetary policy in part III.

Intermezzo Phase 2.5: The Rise of Monetarism

The rise of the monetarist school of thought bridged "phase 2" with "phase 3" of macroeconomic though. The outspoken champion of monetarism within the academic community and later in the political community was Milton Friedman.

Milton Friedman was a consultant for Barry Goldwater's (Republican) campaign for President in 1964. Although Goldwater lost to Lyndon Baines Johnson in a landslide, Friedman gained a lot of attention for his debunking of Keynes's views that it was a shortfall of aggregate demand that led to the protracted Great Depression.

Instead, Friedman examined every downturn of the US economy since the mid-1800s and found that they were all accompanied by either an outright decrease in the level of the supply of money or a decrease in the growth rate of the supply of money. As mentioned briefly above in the phase 0 section, the second half of the nineteenth century did not have an economy in which Federal Reserve notes freely circulated because the Federal Reserve was not yet established. Rather, "money" during that period was state-issued or locally issued scripts that were backed by gold and, for a short period, gold and silver (in varying relative prices of the two metals).

Friedman's analysis led to the conclusion that the Federal Reserve should not have clamped down on the nominal money supply in the early stages of the Depression. Friedman sometimes referred to this period as the "Great Contraction" (of the supply of nominal money).

Ronald Reagan was governor of California in the 1960s and a strong proponent of Goldwater's campaign for President. Despite Goldwater's defeat, Reagan found Friedman's descriptions clear. Friedman (who won the Nobel Prize in 1976) was to become, during the end of the 1970s when the United States (along with other developed countries) was in the throes of stagflation, an economic consultant for Reagan's campaign for President in 1980.[10]

Reagan won in a landslide against Jimmy Carter's re-election campaign, and Paul Volcker (the Federal Reserve chair at that time) essentially built directly on the monetarist idea, by clamping down tightly on the issuance of new nominal money. According to monetarist theory, tightening of the nominal money supply ought to bring down the inflation rate—and it did so in spades over the first few years of the 1980s.

Meanwhile, overseas in Britain, Margaret Thatcher had become Prime Minister in June 1979, and she herself held strong views about monetarism (along with balancing the government budget).

In terms of the proper reach of macroeconomic policy and how prescriptive policy should be (especially regarding monetary policy), monetarism (sometimes known by the

10. Friedman was also an informal economic adviser to President Richard Nixon.

name "quantity theory of money") ideologically bridged the decline of the Keynesian macroeconometrics phase in the 1970s with the emergence of the microeconomic-based approach of modern macroeconomics of the late 1970s and 1980s.

Phase 3: Modern Macroeconomic Frameworks (late 1970s to Present)

Macroeconomics was resuscitated. There were once again many researchers who postulated many new ideas to consider economy-wide events. The one that stuck, though, and has been the predominant strain of thought for now three decades is what we are calling **modern macroeconomics.**

Modern macroeconomics begins by explicitly studying the **microeconomic** principles of utility maximization, profit maximization, and market clearing. Once all of that is done (we have already spent a lot of effort going through this mathematically and will continue to do so as we further enrich the frameworks), then one can consider the consequences of various fiscal policies or monetary policies on consumers' and firms' informed choices, which then leads to different market-clearing outcomes.

This modern macroeconomic approach quickly captured the attention of the profession through the 1980s for two reasons. First, it actually begins with microeconomic principles, which was a rather attractive idea. Rather than building a framework of economy-wide events from the top down (which macroeconometric models increasingly came to be viewed as), one could build this framework using microeconomic discipline from the bottom up. Figure 10.6 conveys this idea.

Second, it was in the early 1980s that desktop computing started to become widespread. The new breed of modern macroeconomic frameworks could thus be computed directly in one's office, rather than needing to reserve time for use of costly mainframe machines. (Note the parallel between the start of phase 2 and the start of phase 3: in the former, brand-new mainframe computational power was available; in the latter, brand-new desktop computation power was available.[11])

The three distinct types of markets that modern macro was (and continues to be) based on are goods markets, labor markets, and capital markets, as figure 10.6 portrays. Figure 10.6 is all about general equilibrium analysis in which all three macro markets simultaneously clear.

Chapters 11, 12, 13, and 14 discuss in qualitative terms, respectively, the idea of supply-side analysis that emerged first in academe through Lucas's critique, which was then championed in the 1980s under the Reagan presidency; the classic Phillips curve that much of

11. Should we chalk that up to innovations in technology? The consensus answer is yes, and we get a short glimpse of this idea later when we get to the growth analysis discussions in part VI.

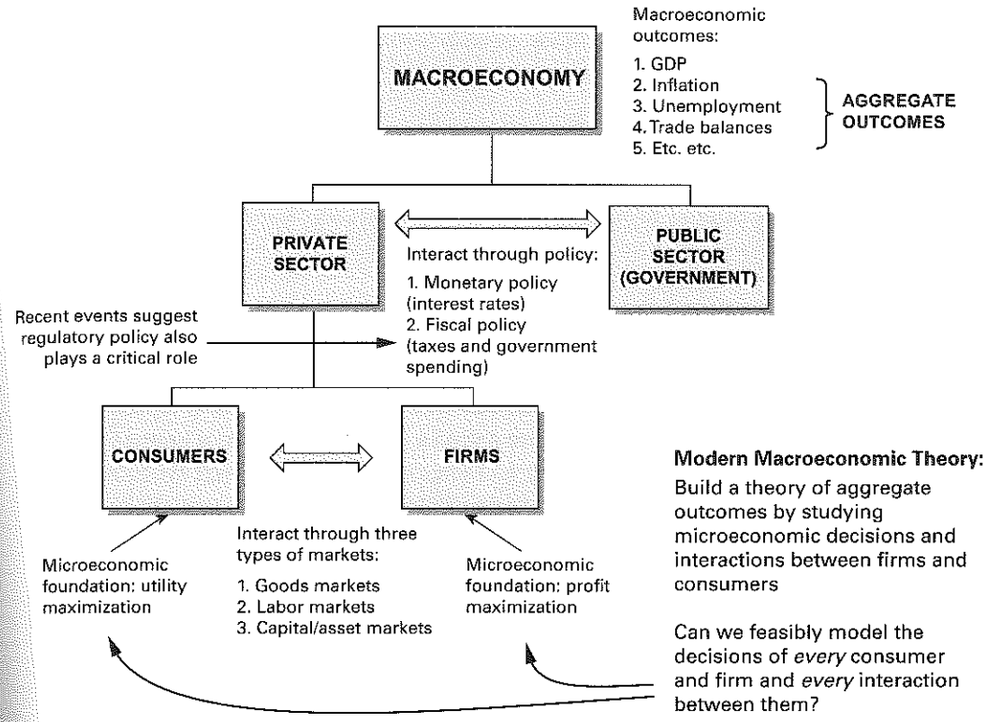

Figure 10.6
Schematic of the overall economy

policy analysis revolved around in the 1960s until its breakdown in the 1970s; the basics of New Keynesian theory, which resuscitates Keynes's ideas of "stickiness" in nominal prices, but in modern general-equilibrium macro form; and a mostly diagrammatical description that walks us through the basics of the "real business cycle framework," which is a phrase often used to characterize the underpinnings of modern macroeconomic frameworks.