

On Business Cycles and Countercyclical Policies

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OVER THE LAST TEN YEARS, THE U.S. ECONOMY EXPERIENCED ONE OF THE LONGEST ECONOMIC EXPANSIONS IN ITS HISTORY. HOWEVER, SINCE THE THIRD QUARTER OF 2000, ITS REAL GROSS DOMESTIC PRODUCT (GDP) HAS EXPERIENCED SIGNIFICANTLY LOWER RATES OF GROWTH, ON AN ANNUALIZED BASIS, THAN THOSE OBSERVED BETWEEN 1996 AND MID-2000.

Economists are still trying to assess the severity of this slowdown, and this assessment has clearly become more difficult since the events of September 11. It is worth emphasizing that this article is silent about the economic implications of wars and similar cataclysms and focuses instead on the analysis of “typical” business cycles. The slowdown that began prior to September 11 had already served as a reminder that the business cycle is still alive—that the U.S. economy is likely to continue to experience both expansions and contractions. This situation raises the following questions: What do we know about the driving forces behind the business cycle? What should policymakers do in the face of economic fluctuations?

Not surprisingly, there are a number of competing explanations for business cycles, and there is no shortage of policy recommendations. This article focuses on only two of these explanations: the animal spirits theory and the real business cycle theory. The former is closely connected with the Keynesian economic tradition and identifies market participants’ mood swings as the key source of economic fluctuations. The second explanation is rooted in the classical economic tradition and views productivity shocks as the driving force behind economic fluc-

tuations. These explanations are examined because they are some of the better-known and most widely quoted business cycle theories among academic economists. Both theories meet modern academic standards—one of them from its inception and the other after a significant reformulation. Modern academic standards explicitly acknowledge the dynamic nature of economic decisions—that macroeconomic variables interact with each other in such a way that the relevant economic relations must be considered simultaneously—and the importance of microeconomic theory as a sound foundation for macroeconomic theory.

In addition to reviewing these two theories, the article looks at what they suggest about countercyclical policies—policies aimed at trying to eliminate business cycle fluctuations or insulate market participants from the effects of these fluctuations.

This article first presents the “everyday” adaptation of the original animal spirits explanation for business cycles and then sketches the foundations of the real business cycle and the reformulated animal spirits explanations. The article next reviews the real business cycle and Neo-Keynesian views and, finally, discusses the policy implications of these two theories.

The Keynesian (Nonfundamentals) Approach

One popular explanation for the source of the business cycle is that fluctuations in private spending are induced by so-called animal spirits.¹ That is, economic fluctuations result from waves of overpessimism or overoptimism, affecting households and firms, that are not directly connected to economic fundamentals but may nevertheless become self-fulfilling.

A report on a popular Internet site earlier this year reflects this belief. “The latest economic reports confirm what people on Wall Street and Main Street already knew: the U.S. economy slowed sharply at the end of last year. Consumers are largely to blame. They

reined in spending, which accounts for two-thirds of the U.S. economy; as their confidence fell to a four-year low, so did their spending” (www.cnn.com, January 2001).

This statement suggests that a fall in consumer confidence, induced perhaps by animal spirits, has driven down personal consumption expenditures, in turn dragging down output.

This logic is a faithful reproduction of the so-called spending hypothesis attributed to Keynes and found in many macroeconomics textbooks. In a review of the Great Depression, Mankiw (1992a) addresses the question that originally motivated Keynes: What caused the Great Depression? Mankiw describes what he calls the spending hypothesis of what caused the Depression. “The *spending hypothesis* . . . places primary blame for the Depression on an exogenous fall in spending on goods and services. Economists have attempted to explain this decline in spending in several ways. Some argue that a downward shift in the consumption function caused the contractionary shift. . . . The stock market crash of 1929 may have been partly responsible for this decline in consumption. By reducing wealth and *increasing uncertainty* about future prospects for the U.S. economy, the crash may have induced consumers to *save more of their income* [italics added]” (1992a, 284–85).

In fairness to Keynes, his conjecture was that a drop in consumption was part of the explanation behind business cycles. The second part of the explanation had to do with why the resources that

became available following a drop in aggregate consumption did not find their way into the investment sector of the economy, thus preventing market participants’ mood swings from becoming self-fulfilling. This question is a difficult one that many economists continue to struggle with, and therefore it is not always reported in textbooks. Because many commentators are exposed only to the first part of Keynes’s explanation, it is referred to in this discussion as the everyday Keynesian explanation.

Of course, for this logic to apply, one would first have to show that a fall in consumer confidence drags down private consumption spending. Assuming for the moment that this statement is true, the question remains, Why would changes in private consumption cause fluctuations in output or GDP? The explanation according to the everyday Keynesian theory can be illustrated as follows. Suppose a shoemaker’s customers suddenly, for whatever reason, become very pessimistic about their future income, inducing them to slash their consumption across the board. As a consequence, the shoemaker might see a significant drop in shoe sales, forcing him to reduce his production. Extrapolating from the shoemaker’s actions, commentators might conclude that there is likely to be a drop in GDP if most producers of consumer goods and services experience a simultaneous decrease in sales.² It is clear, then, from this line of reasoning, that lower private consumption spending causes lower output.

Despite its intuitive appeal, this analysis has been the subject of criticism and qualifications by academic economists for a number of decades. More recently, these objections have stemmed from a theoretical reexamination of the way households and firms make their economic decisions at the microeconomic level and economists’ beliefs about how these decisions shape the evolution of the macroeconomy.

The next section presents a primer on the way modern academic economists describe the economic decisions of the two basic units that integrate the macroeconomy: households and firms. These ideas lay the foundations for the two business cycle theories this article examines.

The Economic Decisions of Households and Firms

Macroeconomists build theoretical models that are meant to provide a plausible representation of a number of features in the economy. Modern macroeconomists analyze models in which households make consumption, savings, and labor supply decisions over their lifetimes, which span a large number of years, and firms make their input choices so as to maximize their profits.

Households. For a given stream of projected income, a household’s key economic decision, which

According to the real business cycle theory, there is nothing the government can do to eliminate business cycle fluctuations.

According to Farmer and Guo, in contrast, governments may be able to design policies to moderate economic fluctuations.

takes place continuously and is based in part on a decision about how many hours to work, is how much to consume and how much to save. This decision is also based on the household's degree of frugality. For a given level of income, the more frugal a household is, the more it will save. Households also prefer to avoid sharp swings in their consumption patterns; for instance, most people would rather have a moderately priced meal most of the time than eat at La Tour d'Argent for a month and then starve for the rest of the year. Finally, household savings consist of increases in net acquisition of financial assets in financial institutions. These institutions lend most of their funds to the firms in the economy to help them acquire capital.

Firms. Every production process, from fast food restaurants to high-tech services, can be described as the result of combining two basic inputs: capital and labor. In most economic models, the goods that households consume are produced by firms that use labor and capital as inputs. The level of output depends on the amount of labor supplied by the households and on the amount of capital that has been accumulated over time.

The Interaction of Households and Firms in the Macroeconomy. The larger the number of hours worked and the higher the level of accumulated capital, the greater the output level in an economy. At the same time, capital enhances workers' productivity. In a competitive marketplace, higher productivity is normally associated with higher pay. Firms choose the right mix of labor hours and capital to maximize their profits.

The more frugal the households in an economy are—that is, the lower their contemporaneous consumption expenditures—the more the households will save and thus the more capital they will accumulate. The larger the amount of capital in an economy, the larger the amount of output produced, consumed, and invested. Hence, according to this sketch of how households and firms make economic decisions at the micro level, it is possible that lower consumption today will result in higher output

levels tomorrow. Similarly, if animal spirits led households to slash their consumption, for a *given* level of income this reduced consumption would result in *higher* savings, additional capital accumulation, and higher output in the near future. Unlike the everyday Keynesian explanation described earlier, in which a decrease in consumption leads to a fall in output, in modern macroeconomic models a drop in consumption produces an increase in savings that will provide the necessary capital to fuel economic growth.

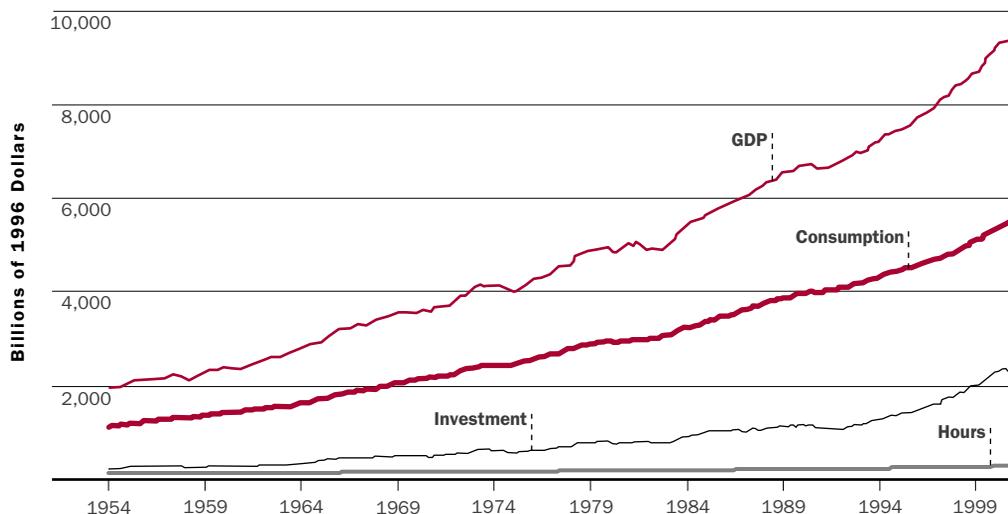
An example of this phenomenon is the boom Singapore experienced between 1960 and the mid-1980s. Singapore, one of the four “Asian tigers,” saw a decrease in consumption in the late 1970s. This drop was caused by a marked increase in household frugality and was matched by a sharp increase in the savings rate, which facilitated an investment expansion and an output boom.³ This example suggests that, as modern macroeconomic analysis predicts, lower consumption can cause higher GDP.

In sum, the everyday Keynesian analysis predicts that lower private consumption will always lead to lower output. This prediction is inconsistent with the modern macroeconomic analyses described above and with the sequence of events that occurred in Singapore.

The factors that determine how much an economy produces, consumes, and invests are known as the economy's fundamentals. These fundamentals include the total number of hours worked and the amount of capital in the economy. Economists also recognize that there are additional fundamental factors that can help explain the ultimate level of GDP. These additional factors are included in so-called multifactor or total factor productivity (TFP).⁴ Factors affecting TFP include a country's legal framework, its infrastructure, and its level of technological sophistication. For a given number of hours worked and a given level of capital in an economy, higher TFP means higher production capacity. Thus, TFP reflects the fact that output can be increased not only by working harder but also by working

1. Originally, the term *animal spirits* was coined in the context of explaining wild investment swings. In Keynes's words, “Most, probably, of our decisions to do something positive . . . can only be taken as a result of animal spirits—of a spontaneous urge to action rather than inaction. . . . If the animal spirits are dimmed and the spontaneous optimism falters . . . enterprise will fade and die” (Keynes 1973, 161–62).
2. According to the same logic, a wave of overoptimism would lead to a sharp increase in the sales of consumer goods, and one would expect a production boom.
3. As reported by Barro (1992), the ratio of real gross investment to real GDP in Singapore was about 13 percent in the early 1960s, reached 21 percent between 1965 and 1969, and then climbed to an average of 37 percent from 1970 to 1985. Per capita real GDP growth rates from 1960 to 1985 were around 5.8 percent, whereas for the 1960–85 period per capita real consumption grew by only 2.9 percent annually. Therefore, for the 1960–85 period, the relatively low growth in consumption was matched by a sharp increase in the savings rate, which resulted in an investment and output boom.
4. Solow (1957) was the first economist to develop this idea.

CHART 1
U.S. Output, Consumption, Investment, and Labor Hours, 1954:Q1–2001:Q1



Source: Computed by the authors from data from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

smarter, that is, by combining the same amounts of inputs in a more efficient fashion.

In a market economy, individuals are rewarded according to the amount of goods and services they help produce. A higher level of capital per worker allows workers to generate more goods and services per unit of labor input and thus helps raise workers' compensation. However, efficiency changes (changes in TFP) can also help explain changes in workers' compensation. Other things being equal, above-average rates of TFP growth (possibly the result of technological innovation) generate higher rates of growth in real (inflation-adjusted) wages because workers are compensated for helping produce more goods and services. Higher wages, in turn, result in increases in household income, leading to higher consumption and saving. Similarly, below-average rates of TFP growth reduce the rate of growth in real wages. Lower wages result in decreases in household income, leading to lower consumption and saving. In sum, random shifts in TFP could cause fluctuations in the total output of an economy. The view that total factor productivity has an important role in economic fluctuations has slowly made its way into business economics and policy-making circles. For example, in recent testimony (February 2001), Federal Reserve Chairman Alan Greenspan stated that "crucial to the assessment of the outlook . . . is the role of technological change . . . in shaping cyclical forces."

The next section reviews the findings of a well-known explanation for economic fluctuations: the real business cycle (RBC) or fundamentals theory.

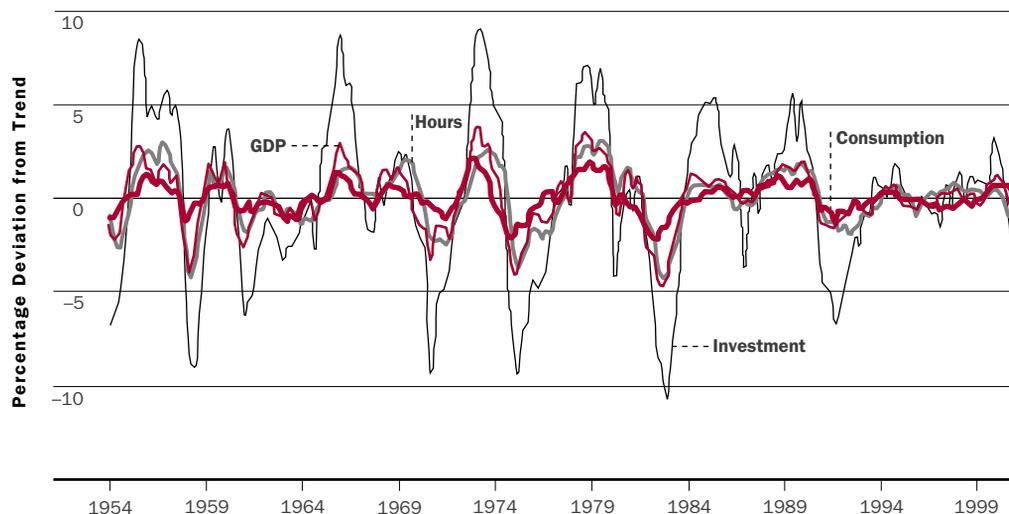
This theory relies on the foregoing analysis of the two basic units that make up the macroeconomy—households and firms.

Real Business Cycle Theory: The Fundamentals Approach

Kydland and Prescott (1982) and Long and Plosser (1983) were the first economists to recognize the possibility that business cycles could be caused by random shocks to TFP (technology shocks).⁵ They started with the observation that in the post-Korean War U.S. economy, output, consumption, investment, and labor hours are positively correlated but differ in terms of their volatility over the business cycle.

To illustrate this empirical fact, Chart 1 plots output, consumption, investment, and labor hours in the United States from the first quarter of 1954 to the first quarter of 2001.⁶ These time series can be thought of as consisting of two components: the trend or low-frequency component, which changes slowly over time, and the cyclical or high-frequency component—the deviation of the series from its trend—which moves up and down over the business cycle. The statistical mathematical procedure that decomposes a time series into these two components is called *detrending*. The cyclical component obtained after detrending is the object of business cycle analysis. Chart 2 shows the cyclical components (percentage deviations from trend) of some actual U.S. time series.⁷ They represent the yardstick against which to measure alternative business cycle theories' predictions.

CHART 2
Cyclical Components of U.S. Output, Consumption, Investment, and Labor Hours, 1954:Q1–2001:Q1



Source: Computed by the authors from data from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

Chart 2 shows that consumption, investment, and hours worked are all procyclical; that is, they all move in the same direction as output over the business cycle. Moreover, consumption displays a smoother pattern than output, labor is about as volatile as output, and investment is more volatile than output over the business cycle. Table 1 shows summary statistics on relative volatility and contemporaneous correlation with output for key U.S. aggregates during the sample period.⁸

Kydland and Prescott (1982) construct a model that builds on the assumptions about the behavior of households and firms that were sketched in the preceding section. They assume that the prices of different goods and services adjust readily in response to changes in the economy’s fundamentals. Furthermore, economywide production of goods and services is assumed to yield constant returns to scale—that is, a proportional increase in the quantity of capital and labor inputs is expected to increase output by the same proportion.

Chart 3 reproduces Chart 2 along with the cyclical responses of output, consumption, investment,

and labor hours to technology shocks in a single simulation experiment conducted within an RBC model. Although the model does a good job of matching the relative volatility of the macroeconomic aggregates, it does not capture the exact timing of the business cycle. However, given the relative simplicity of the model, it is remarkably successful in replicating the cyclical behavior of key U.S. macroeconomic aggregates revealed in Chart 2.⁹

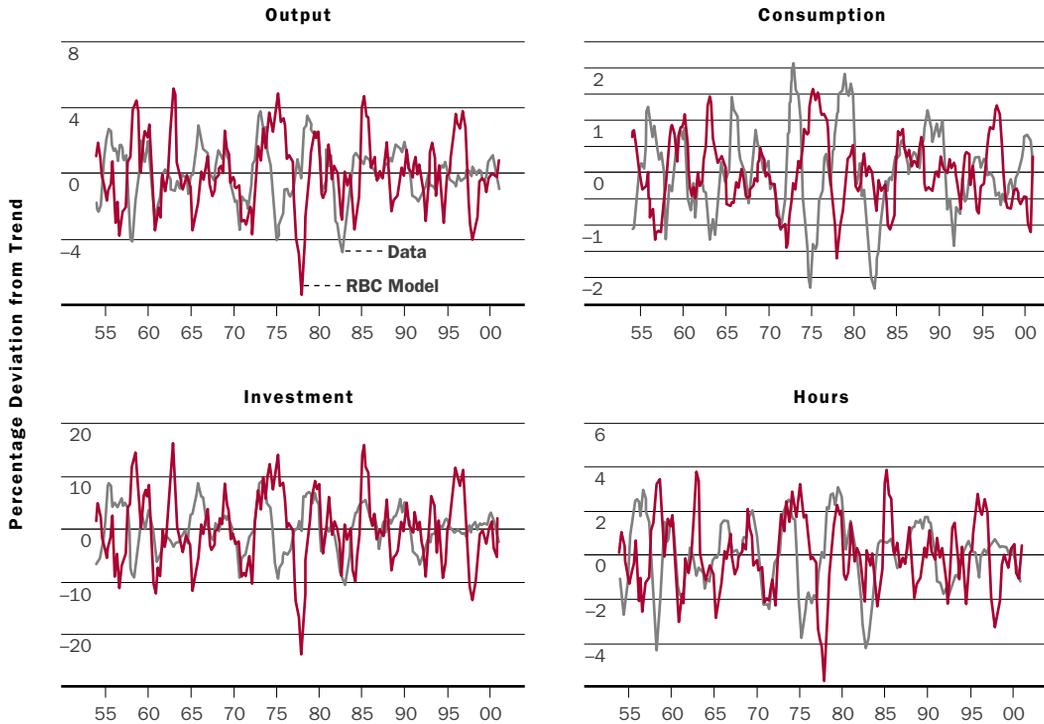
Another way of assessing the performance of the RBC model is to contrast Table 1 with Table 2, which presents sample means of relative volatility and contemporaneous correlation with output computed for

TABLE 1
The U.S. Economy, 1954:Q1–2001:Q1

Variable	Relative Volatility	Correlation with Output
Output	1.00	1.00
Consumption	0.50	0.83
Investment	2.57	0.91
Labor Hours	0.95	0.87

5. For a very informative tour of the genesis of the shock-based business cycle theory, see Chatterjee (2000).
 6. Output is defined as GDP, consumption is defined as private consumption of nondurables plus services, and investment is defined as nonresidential fixed investment plus consumer durables. All these variables are measured in billions of 1996 dollars. In addition, labor hours are defined as total manhours of the employed labor force in all industries from the household survey, measured in billions of hours.
 7. The detrending method used in Charts 2–4 is the Hodrick-Prescott filter, which fits a flexible trend through the time series. The flexible trend reflects the assumption that each of the relevant variables exhibits a slowly changing growth rate over time.
 8. Relative volatility is defined as the standard deviation of a variable divided by the standard deviation of output.
 9. Subsequent extensions of the real business cycle approach, as labeled by Long and Plosser (1983), have improved the U.S. data fit (see King and Rebelo 1999 for a survey and the references therein).

CHART 3 The Real Business Cycle Model



Source: Computed by the authors from data from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

fifty simulations of an RBC model. Each simulation consists of 189 periods, the same number as the U.S. data sample.

In the RBC artificial economy, the patterns of relative volatility are consistent with the U.S. data reported in Table 1; that is, investment is the most volatile, followed by output, labor hours, and then consumption over the business cycle. Based on this result, one can conclude that changes in total factor productivity are a possible cause of fluctuations in GDP, consumption, investment, and labor hours. Moreover, all model-generated time series are procyclical in an RBC economy. In particular, output and consumption are positively correlated over the business cycle. As discussed earlier, a positive technology shock (or above-average TFP growth) leads to higher labor hours and higher real wages; therefore, more output is produced, and households raise their consumption expenditure accordingly. However, from the RBC point of view, it would make no sense to blame consumers for an economic slowdown, as the everyday version of the animal spirits explanation for business cycles would suggest. According to the RBC explanation, changes in households' incomes brought about by an unanticipated change in total factor productivity will induce changes in both savings and consumption so that the causality

does not run from consumption to output but the other way around.

So far, this article has identified some inconsistencies between the predictions of the everyday adaptation of the original animal spirits theory and predictions of modern macroeconomic models. It has also presented an example that seems to support the predictions of modern macroeconomic theories. Finally, it has noted the success of the RBC theory in matching the fluctuations of U.S. data. Under these circumstances, one might wonder whether the non-fundamental or animal spirits explanation of the business cycle should be considered obsolete.

According to a new generation of Keynesian economists, the answer to this question is no. These economists study the cyclical implications of the presence of animal spirits in models that meet the modern academic standards sketched out in the last two sections. The next section presents a reformulation of the nonfundamentals explanation that has been put forward by some Neo-Keynesian economists.

The Neo-Keynesian (Nonfundamentals) Theory

According to Mankiw (1992b), a prominent Keynesian economist, at least some new or Neo-Keynesians agree with the RBC theorists that it is important for business cycle theory to

TABLE 2
The Real Business Cycle Model of the
U.S. Economy, 1954:Q1–2001:Q1

Variable	Relative Volatility	Correlation with Output
Output	1.00	1.00
Consumption	0.29	0.87
Investment	3.18	0.99
Labor Hours	0.76	0.98

be consistent with the micro foundations of the macroeconomy. Mankiw states that “Keynesian economics has been reincarnated into a body with firm micro-economic muscle. . . . Beyond the broad principles . . . old and new Keynesians differ substantially. . . . To some old Keynesians, new Keynesian economics may be hard to recognize as Keynesian at all. Indeed, new Keynesian economics may appear more similar to the classical economics of David Hume” (1992b, 560).

Mankiw makes it clear that he is not the spokesperson for all Neo-Keynesian economists. However, it is fair to say that he speaks for a large body of academic economists who see the business cycle as a type of economywide market failure, as Keynes did, but who seek explanations that are firmly anchored in the analysis of the behavior of households and firms.

Rather than surveying all Neo-Keynesian studies of the business cycle, this discussion focuses on a recent Neo-Keynesian analysis by Farmer and Guo (1994). This particular study was chosen because it is consistent with the RBC and Mankiw’s view that macro predictions should be the consequences of assumptions made at the micro level.¹⁰ However, Farmer and Guo’s analysis is also faithful to the Keynesian tradition. They pursue a market failure explanation for the business cycle, and they study the possibility that animal spirits or nonfundamental factors could be the driving force behind business cycle fluctuations. In addition, they were the first authors to conduct empirical tests of their theoretic-

cal arguments along the lines of the RBC approach, thereby permitting a straightforward comparison of their explanation and the RBC explanation.¹¹

Farmer and Guo’s analysis features an important departure from the RBC paradigm. Specifically, they postulate constant returns to scale at the firm level but economywide increasing returns to scale in production. The assumption of increasing returns to scale means that a proportional change in labor and capital inputs generates a more-than-proportional change in output.¹² To say that an economy experiences economywide increasing returns to scale means that, although individual firms see themselves as facing constant returns to scale, all of the firms taken together experience increasing returns to scale. Hence, Farmer and Guo assume that proportional additions of labor and capital by all individual firms result in a more-than-proportional increase in GDP. This possibility is also known as positive externalities in the aggregate production process.¹³

An example of positive externalities is the development and widespread use of the Internet. As individual firms continue to increase their use of the Internet, they induce improvements in the distribution, utilization, and management of information at the economywide level. Farmer and Guo believe that the assumption that there are externalities in the aggregate production process provides a better description of the production technology in the U.S. economy than the constant-return assumption favored by RBC theorists.

Armed with modern analytical tools, some of which were outlined earlier, Farmer and Guo envision an alternative sequence of events leading to economic fluctuations that have nothing to do with changes in TFP. Suppose, for whatever reason—say, an unexpected increase in the ratio of total business inventory to sales—households become pessimistic about the future of the economy. Fearing that the investment financed by their savings is not going to pan out, households lower their savings today. For a given level of income, this move would result in higher consumption. But since households are happy

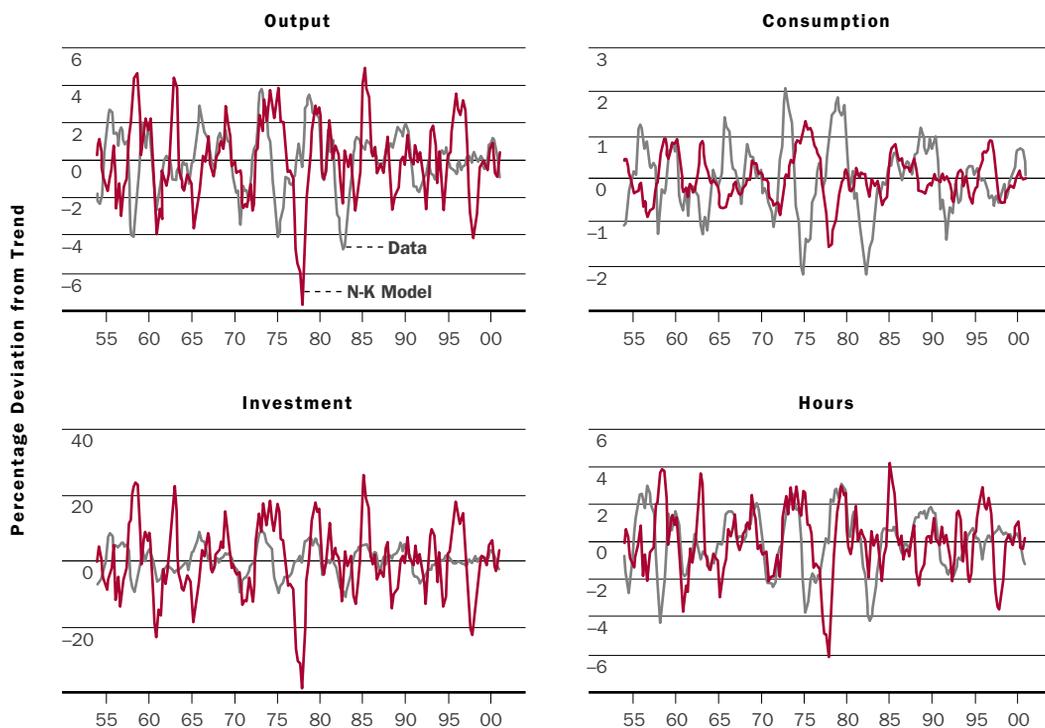
10. Of course, Farmer and Guo (1994) is not the only Neo-Keynesian work on business cycles. It is, however, one that incorporates most of the elements that academic economists have come to accept as standard in modern macroeconomic models. For example, Mankiw (1985) presents a static, partial equilibrium analysis with no quantitative analysis of the U.S. business cycle. On the other hand, Blanchard and Kiyotaki (1987) and Ball and Romer (1990) both examine general equilibrium models, but these models are static and contain no quantitative business cycle analysis.

11. An alternative Neo-Keynesian analysis that emphasizes animal spirits as the source of business cycles is that of Gali (1994). His analysis begins with a different source of economywide market failure: monopolistic competition. This characteristic would make Gali’s model also an ideal Neo-Keynesian study to contrast against the RBC theory. Farmer and Guo’s model was chosen instead because its theoretical setup and empirical methodology makes it a more transparent alternative to contrast against the RBC approach.

12. See, for example, Farmer and Guo (1994) for a careful justification of this assumption.

13. See, for example, Caballero and Lyons (1992) for empirical support of positive externalities in the U.S. economy.

CHART 4 The Neo-Keynesian Model



Source: Computed by the authors from data from the Bureau of Economic Analysis and the Bureau of Labor Statistics.

with their initial choices of consumption (assuming that households favor smooth consumption patterns), they will reduce their supply of labor just to the point where they can earn enough to consume what they were consuming prior to the outbreak of pessimism. Therefore, employment will be predicted to fall at this stage.

Since aggregate production in the Farmer-Guo framework is subject to increasing returns, a decrease in labor supply may reduce labor productivity. If so, this decline leads to a drop in the demand for labor at every level of wages, in turn leading to a downward shift of the labor demand curve. Hence, the above outcome of lower employment in the economy is reinforced. The fall in employment reduces households' projected income streams, thus decreasing their ability to consume and save. In the end, households' pessimism becomes a self-fulfilling prophecy that causes output, investment, employment, consumption, and labor productivity all to go down.

Notice that, as in the RBC theory, Farmer and Guo's theory predicts that the cause of cyclical declines in output is not lower consumption. Lower consumption results from a decrease in investment and output caused by something else—in this case, a sudden burst of pessimism about investment prospects.

The natural question at this point is, How well do the simulated data generated by this model match the actual data featured in Chart 2? Chart 4 shows that, like the RBC model, the Farmer-Guo model is able to reproduce the relative variances of U.S. output, consumption, investment, and labor hours over the business cycle. Similarly, Table 3 shows that, like the RBC model, the Farmer-Guo model provides a plausible quantitative description of the cyclical behavior of key post-Korean War U.S. macroeconomic aggregates in terms of relative volatility and contemporaneous correlation with output.¹⁴

To sum up, the last two sections have described the driving forces behind business cycles according to two well-known theories: the real business cycle theory and the Neo-Keynesian Farmer-Guo theory. Neither theory supports the notion that fluctuations in consumption cause the business cycle. Instead, the theories predict that either random shocks to total factor productivity or investors' mood swings can lead to fluctuations in GDP, consumption, investment, and labor hours.

Policy Implications

As this article has just reported, proponents of these two explanations for the business cycle have conducted empirical tests of their theo-

TABLE 3
The Neo-Keynesian Model of the
U.S. Economy, 1954:Q1–2001:Q1

Variable	Relative Volatility	Correlation with Output
Output	1.00	1.00
Consumption	0.24	0.78
Investment	5.14	0.99
Labor Hours	0.83	0.98

retical arguments. Both theories seem to achieve a reasonable fit to U.S. data. Since neither theory can be written off on empirical grounds, it is interesting to ask the following questions. What kind of economic policies according to these theories might moderate the business cycle, or insulate households and firms from aggregate fluctuations, and how desirable are such policies?

Policy Prescriptions from the RBC Camp.

Imagine, as proponents of the RBC theory claim, that there really are random and perhaps persistent changes in total factor productivity. As discussed earlier, these changes will induce fluctuations in output, consumption, investment, and so on. Total factor productivity movements will also induce changes in the relative scarcity of resources. Under the assumptions of the RBC theory, inflation-adjusted wages and interest rates will adjust quickly to reflect these scarcity changes. Households and firms will modify their behavior so that they continue to maximize their well-being and profits, respectively, through time.

According to the RBC theory, business cycle fluctuations are the optimal responses of households and firms to random shocks to TFP and hence are “efficient” outcomes. In this scenario, Adam Smith’s “invisible hand” will work in the sense that decisions and actions of the private sector will achieve the best possible economic outcomes. Accordingly, under RBC assumptions there is no reason for the government to implement any kind of “leaning against the wind” policy—that is, there is no reason for it to design policies that try to stimulate economic activity during a downturn or slow it down during a boom. The marketplace of households and firms will engineer adjustments in the opportunity cost of investment, leisure, and so forth that induce the optimal responses by its participants.

Consider the following simple example of cyclical economic behavior in the U.S. economy: the construction industry. Construction booms in the sum-

mer and slows down in the winter. Is there a case for taking policy actions such as raising interest rates during the summer and lowering them during the winter to stimulate borrowing and construction during winter (and vice versa) so as to even out the level of construction throughout the year? Probably not. No government policies can get rid of summers or winters. There is a reason for the building booms of the summer: building in the sun is a lot easier than building under layers of snow. Why then distort the market allocation of resources if it produces an efficient outcome?

Critics of the RBC approach argue that its predictions cannot be fully tested because relatively few observations of business cycles are available. They also argue that the TFP-shock story is contrived in that it does not admit any market failures and that its explanation for unemployment as a natural market response is hard to swallow. These critics also point out that the RBC theory makes a number of assumptions that are at odds with reality. Some prices, for example, do not adjust immediately to economic conditions. And what if the U.S. economy experiences aggregate production externalities of the type described in the Neo-Keynesian discussion? These concerns raise some questions: How seriously should one take the RBC theory’s claim about the uselessness of countercyclical policies? Is there room for stabilization policies according to the competing animal spirits explanation of business cycles? And how desirable are these policies?

Policy Prescriptions from the Animal Spirits Camp.

According to everyday Keynesian economics, policies that boost private consumption can help speed up a country’s recovery from an economic slowdown. As noted earlier, however, this prescription is based on analytical methods that do not enjoy widespread support among academic economists.

The Farmer-Guo model from the preceding section meets modern academic standards, but, unlike the RBC theory, it assumes positive externalities in the aggregate production process. From this perspective, if firms recognized that their individual actions affected all the firms in the economy and if they could coordinate their actions, then all could reap the productivity benefits of increasing returns to scale. However, by design, economic decisions in a market economy take place in a decentralized way and thus make this kind of coordination difficult. As a result, it is possible for the decentralized decisions of households and firms to be “inefficient” in the sense that a central coordinating arrangement

14. As in Table 2, the statistics reported in Table 3 are sample means computed for fifty simulations, each of which consists of 189 periods.

would produce a better economic outcome than Adam Smith's invisible hand.

The potential inefficiency of the free-market outcome creates an opportunity for stabilization policies designed to suppress fluctuations driven by animal spirits to increase public welfare. For example, Guo and Lansing (1998) show that in a Neo-Keynesian model with aggregate increasing returns, a progressive income tax can prevent households from reacting to bursts of optimism or pessimism. When households experience a burst of optimism and decide to work harder and invest more, they are subject to a higher tax rate, preventing their optimism from becoming self-fulfilling. Conversely, when households experience a burst of pessimism and decide to work and invest less, they are subject to a lower tax rate, preventing their pessimism from becoming self-fulfilling.

But is it necessarily a good idea to eliminate economic fluctuations that are caused by animal spirits? Suppose Farmer and Guo are right and the aggregate production process in the United States does display positive externalities. In this case, if all the firms in the economy cooperated, they could obtain more-than-proportional increases in output by increasing their inputs simultaneously. However, since there is no central coordinating mechanism in a decentralized market economy, firms cannot take advantage of this situation under normal circumstances. One can think of waves of overoptimism as an unintentional coordinating mechanism. For example, if most firms believe that the "bad" times are over and decide to produce more, more-than-proportional increases in output may be observed. This possibility suggests that animal spirits-induced fluctuations may be a good thing for the economy. Thus, it is possible that even if the government can eliminate bursts of overoptimism, it may not want to.

What is the potential advantage of moderating economic fluctuations? First, if overoptimism alternates with overpessimism, then the average level of output might fall more than proportionally to the decreases in the amount of inputs, leading to undesirably low levels of consumption and investment. Second, even if fluctuations caused by animal spirits do not reduce the average level of output, they definitely increase the variability of consumption. Since the economic theory outlined earlier predicts that households prefer their consumption to be smooth rather than variable, swings in consumption tend to reduce public welfare.

As Christiano and Harrison (1999) point out, the case for stabilizing the economy against fluctuations driven by nonfundamental forces depends on the relative magnitude of two opposing factors. On the one

hand, households prefer smooth consumption, so fluctuations in consumption reduce their well-being. On the other hand, increasing returns in production may allow nonfundamental fluctuations to increase the average level of consumption. As a result, it cannot be determined a priori whether stabilization policies will improve the well-being of the economy.

According to the RBC theory, there is nothing the government can do to eliminate business cycle fluctuations. According to Farmer and Guo, in contrast, governments may be able to design policies to moderate economic fluctuations. However, Farmer and Guo cannot recommend countercyclical intervention unambiguously because it is possible for cyclical fluctuations to be a net benefit for the economy.

Conclusion

This article has outlined two alternative explanations for business cycles: the real business cycle theory and Keynesian theory. Although neither theory is without detractors, each is worthy of review because it exerts significant influence on opinions about the business cycle inside the academic economic community.

This article has pointed out that the everyday version of Keynesian theory predicted that fluctuations in output might be caused by fluctuations in consumer spending. As a result, one of the reasons economic commentators follow consumer confidence and spending so closely is that these behaviors are viewed as leading indicators of economic fluctuations. Commentators think that identifying leading indicators is important in alerting government about the stage of the business cycle the economy is in so that the appropriate countercyclical policy can be implemented.

This article also reviewed the RBC theory's assumption that changes in total factor productivity are the cause of economic fluctuations. One modern version of Keynesian theory, on the other hand, suggests that animal spirits are the cause of economic fluctuations. However, this article makes two points. First, the existence of a causal relationship that runs from consumption spending to output is far from well established. In two prominent business cycle theories, the real business cycle theory and the Neo-Keynesian Farmer-Guo theory, causality runs from output to consumption. Second, although these theories differ diametrically in some key assumptions regarding the functioning of the economy, both theories meet modern academic standards and do a reasonably good job of matching key features of U.S. post-Korean War data. However, neither theory makes an unambiguous case for countercyclical policies.

Should readers conclude from this discussion that countercyclical policies are clearly a bad idea? Not necessarily. This review has covered only a small subset of the Keynesian literature, and it is possible that other modern Keynesian analyses of the business cycle may justify countercyclical policies more forcefully. Moreover, recent work using the RBC approach, such as Cho and Cooley (2000), suggests that it may permit more room for countercyclical policy than RBC theorists have previously believed.

This article makes clear, however, that two well-known and widely cited business cycle theories indicate that there may be no need for countercyclical government policies. This conclusion, no doubt, will come as a surprise to a number of government and business economists who have an ingrained belief in the benefits of such policies. It is important to remember, however, that attempts to understand business cycles and the effects and desirability of government policies that may (or may not) moderate them are still at a very early stage.

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