Is the Business Cycle Disappearing?

By C. Alan Garner and Richard E. Wurtz

The United States is currently enjoying the longest economic expansion in its peacetime history. Moreover, most forecasters do not expect a recession in the near future. Given such a background, it is reasonable to ask whether the business cycle is disappearing, where "disappearing" is defined as a situation in which the frequency and severity of recessions are decreasing so much that uncertainty about cyclical fluctuations will no longer be a major factor in business and household decisions.

This article concludes that the business cycle is not disappearing. The first section presents historical evidence showing the cycle is moderating—that is, recessions are becoming less frequent and less severe. But to predict whether this moderation will ultimately lead to the business cycle disappearing, it is necessary to understand why the cycle is moderating. Thus, the second section identifies major factors behind the moderation of the business cycle. The third section finds that, while moderating factors will continue to influence the economy, the business cycle is unlikely to disappear because the economy will remain vulnerable to domestic and foreign shocks.

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I. Has the Business Cycle Moderated?

Economic activity has displayed wavelike fluctuations, known as business cycles, throughout U.S. history.[1] Peaks in economic activity have been followed by contraction phases in which real output and employment decline. The decline in economic activity ends with a business cycle trough, followed by renewed economic expansion in which output and employment rise. The most famous example of a cyclical contraction remains the Great Depression of the 1930s.

Virtually all economists agree the Great Depression—and, indeed, the entire period between and including the two world wars—was marked by unusually severe business fluctuations. Thus, the major disagreement among researchers has been whether business cycles after World War II, the postwar period, have been more moderate than cycles before World War I—typically called the prewar period.

Evidence of postwar moderation

The view that the business cycle has moderated in the postwar period is based on a wide range of historical evidence. The official statistics on real GNP, the broadest inflation-adjusted measure of output, indicate the severity of real output fluctuations has declined substantially in the postwar period. The historical record of real GNP growth can be divided into three major periods from 1890 to 1989: the prewar period from 1890 to 1914, the period from 1915 to 1945, and the postwar period from 1946 to the present (Chart 1). Fluctuations in real GNP growth were quite severe in the prewar period (Panel A). Such fluctuations were even more severe in the period containing the two world wars and the interwar years (Panel B). In the period after World War II, however, fluctuations in real GNP growth were much less severe than in the two previous periods (Panel C).[2]

Postwar moderation of the business cycle is also evident in the widely used business cycle chronology produced by the National Bureau of Economic Research (NBER). This dating of business cycle peaks and troughs shows the frequency of recessions has diminished in the postwar period. Business cycles have differed in total length, the percent of the cycle spent in the expansion and contraction phases, and the severity of movements in output. The NBER data for the postwar period exclude the current expansion because it is not yet part of a complete cycle. The average length of the business cycle has increased from 48 months in the prewar period to 56 months in the postwar period (Table 1). Also, the average length of the contraction phase has decreased over this period. As a result, contractions have become less frequent, making up only 20 percent of the average postwar cycle compared with 48 percent in the prewar period. On a similar basis, the postwar period also appears more moderate if only peacetime business cycles are considered.[3]

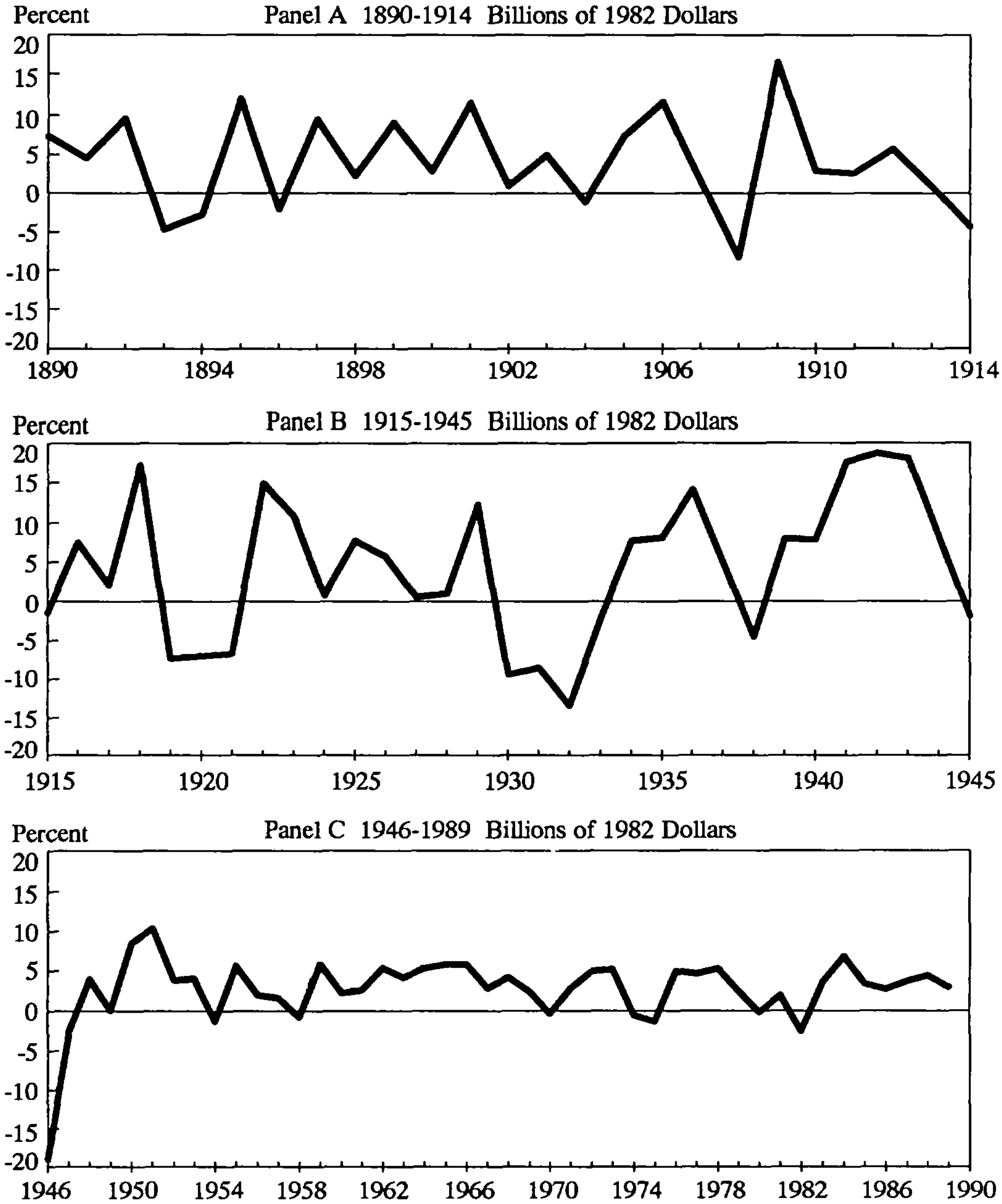
Besides becoming less frequent, the cyclical contractions designated by the NBER have become less severe in the postwar period. Zarnowitz (1989) found industrial output declined 15 percent in an average prewar business contraction but only 11 percent in an average postwar contraction. And employment fell 10 percent in an average prewar contraction but only 3 percent in an average postwar contraction. Other economic statistics, such as steel output and the money supply, also fluctuated more moderately in the postwar period.[4]

Recent debates about postwar moderation

Some economists have recently challenged the view that the business cycle has moderated in the postwar period. Their challenge is based on the belief that comparisons between the prewar and postwar periods are distorted by statistical errors in the prewar data. In particular, Romer (1989) believes the official estimates of real GNP for the prewar period are inaccurate because the estimates are based on commodity output, a volatile sector of the economy. The real GNP estimates, she asserts, do not give adequate weight to less volatile components of real output and, therefore, overstate the severity of prewar business cycles.[5]

Romer develops alternative estimates of prewar GNP showing greatly reduced cyclical fluctuations. Romer uses statistical relationships from the post-World War II period to correct for the supposed inaccuracies in the prewar data. Compared with the official postwar data, Romer's statistics on real GNP growth actually show a small reduction in the severity of real output fluctuations since World War II. However, Romer finds the difference in severity between the

Chart 1
Real GNP Growth from 1890 to 1989
Annual Percent Change



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

Table 1
Average Lengths of the Business Cycle and Contraction Phase

	Length of cycle (months)	Length of contraction (months)	Contractions (as percent of cycle)
Average, all cycles			
Prewar period, 1854-1914	48	23	48
World wars and interwar period, 1914-45	53	17	32
Postwar period, 1945-82	56	11	20
Average, peacetime cycles			
Prewar period, 1854-1914	46	22	48
World wars and interwar period, 1914-45	46	20	43
Postwar period, 1945-82	46	11	24

Note: Length of cycle is measured from trough to trough. Length of contraction is measured from peak to trough.
Source: U.S. Department of Commerce, *Business Conditions Digest*, July 1989.

prewar and postwar periods to be statistically insignificant. Thus, in Romer's view, postwar business cycles appear more moderate because of statistical errors, not because of any major change in the cyclical properties of the economy.[6]

Historical data developed by other researchers support the view that the business cycle has moderated. For example, Balke and Gordon (1989) have developed improved estimates of real GNP in the prewar period. These GNP statistics are preferable to Romer's because the estimates incorporate new information about prewar output in the transportation, communications, and construction sectors. In contrast, Romer's revised statistics do not incorporate new historical data and are based on statistical relationships that assume away major changes in the economy over the last century. The more plausible Balke-Gordon estimates of real GNP fluctuate as severely, on average, in the prewar period as the official estimates, thus confirming postwar moderation of the business cycle.[7]

Changing the time periods for comparison also supports the view that the business cycle has moderated in the postwar period. Although economic research has focused on comparing the prewar and postwar periods, the interwar period also provides valuable evidence on the frequency and severity of U.S. business cycles and should not be excluded. The two cycles containing world wars might legitimately be excluded because these cycles were affected by large external disruptions to the normal functioning of the economy. But the peacetime cycles during the interwar period were no more disrupted by external factors than many cycles in the prewar and postwar periods. And as Table 1 shows, peacetime recessions were more frequent during the interwar period than during the postwar period.

Including the long expansion of the 1980s in the cyclical record also supports the view that the business cycle has moderated. The current economic expansion began with the trough in November 1982 and had lasted for 88 months as of March 1990. Adding this expansion—the longest in peacetime U.S. history—to the data will increase the average length of postwar business expansions and reduce the postwar frequency of recessions.

Thus, the no-moderation viewpoint appears to be incorrect. Additional research is undoubtedly needed to develop better estimates of the frequency and severity of recessions in the prewar period. However, an examination of the best available statistics and the complete historical record suggests the U.S. business cycle has moderated in the postwar period.

II. What Factors Caused the Business Cycle to Moderate?

The historical evidence of business cycle moderation is reinforced by theoretical explanations of why the cycle has moderated in the postwar period. Identifying these theoretical factors is important not only to explain past cyclical moderation but also to understand how future changes in these factors may affect the frequency and severity of recessions. Commonly cited moderating factors include a larger economic role for government, changes in private spending behavior, and a more stable financial system.

A larger economic role for government

The government sector—including federal, state, and local government bodies—has played a much larger role in economic activity in the postwar period. Government purchases currently represent about 20 percent of total economic output. In contrast, the government sector represented less than 5 percent of total output before World War I.[8] Government has also played a larger economic role in the sense that government policies have been varied more often in the postwar period to deliberately influence the course of the business cycle.

The larger postwar share of government in economic activity is a moderating factor because government spending is relatively unaffected by fluctuations in real GNP and employment.[9] For example, government typically does not curtail new highway construction because of an unexpected business contraction. As a result, construction workers and their suppliers have jobs and continue to purchase other goods and services. Thus, the growth of the government sector as a share of economic activity moderates the business cycle because government purchases make total income and spending less sensitive to contractions in private business activity.[10]

Some components of government budgets, called automatic stabilizers, have a stronger moderating effect than other budget items. Automatic stabilizers change in ways that partially offset fluctuations in private business activity. For example, unemployment compensation supports consumer spending in a business contraction by providing income to laid-off workers. In addition, the state and federal tax burdens of households fall if their income falls during an economic contraction. Lower tax burdens moderate the fall in household income and therefore help maintain consumer spending. And because consumer spending accounts for nearly two-thirds of GNP, the cyclical decline in GNP is reduced. Automatic stabilizers generally were not an important factor prior to the Great Depression but have increased substantially in importance during the postwar period.[11]

The federal government in the postwar period has also used discretionary fiscal policy in an attempt to moderate the business cycle. By deliberately varying government spending or taxation to smooth fluctuations in business activity, the government can help maintain private spending in an economic downturn. The government has, at times, varied income tax rates to stimulate or restrain the economy. For example, federal taxes were cut in 1963 and 1981 to speed the pace of economic activity. The federal government also made discretionary changes in unemployment compensation programs during the 1975 recession. By increasing and extending unemployment benefits, the government provided further support for consumer income and spending during the recession.

In addition to fiscal policy, monetary policy has helped temper the ups and downs of the business cycle in the postwar period. The Federal Reserve influences the pace of economic activity because its policy actions affect the cost and availability of credit. If economic growth is too weak, the Federal Reserve can increase the quantity of bank reserves, leading to an expansion of the money supply and bank lending. This growth of money and credit causes interest rates to decline—assuming inflationary expectations are unchanged. In turn, lower interest rates stimulate interest-sensitive spending, increasing business output and employment. Conversely, the Federal Reserve can adopt policies to slow the economy if rapid growth in spending threatens to raise inflationary pressures.

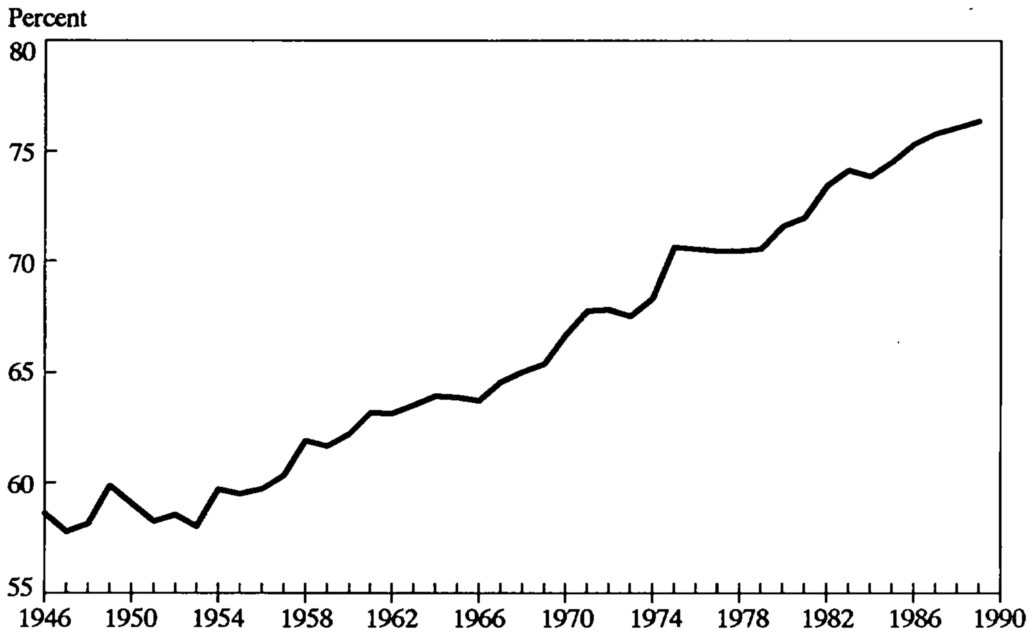
Monetary policy has played a greater moderating role in the U.S. economy since World War II for two reasons. First, and most important, the Federal Reserve has played a more active role in economic policy during the postwar period. After World War II, Congress committed the nation more explicitly to achieving such goals as full employment, economic growth, and price stability.[12] This more active approach to economic policy has been reflected in monetary policy actions, as well as government spending, taxation, and regulatory policies. Second, monetary policy has benefited from advances in economic knowledge and statistics. For example, improvements in the quality and coverage of the government's economic statistics have allowed policymakers to better assess the current state of the economy.

Changes in private spending behavior

Changes in the private sector of the economy have also moderated the business cycle in the postwar period. Growth of the service sector has been one moderating factor. Service-producing employment as a share of total nonfarm employment has risen from 59 percent in 1946 to over 76 percent in 1989 (Chart 2).[13] Service-producing jobs are more stable than goods-producing jobs because the need for many services does not change during an economic contraction. For example, although consumers can usually delay the purchase of a new automobile if economic conditions are unfavorable, medical services typically are not postponable. Employment in medical services is therefore more stable than employment in the automobile industry. Thus, rising service-sector employment moderates the business cycle because household income becomes more stable. In addition, service industries do not have large inventory holdings because services are not storable. As a result, the service sector does not experience sudden swings in inventory investment that could worsen the business cycle.

Another moderating factor has been the growth of international trade since World War II. Growth in imports and exports as a share of GNP indicates the rising importance of international trade to the U.S. economy (Chart 3). A higher share of imports implies foreign producers absorb more of the impact of a downturn in domestic spending. During an economic contraction, spending declines for imported goods as well as domestic goods. Thus, weaker purchases of imported goods will vent part of the effect of a spending decline to foreign producers. The growth of exports as a share of GNP could also moderate the business cycle in some cases. Because U.S. business contractions do not necessarily coincide with slowdowns in other nations, strong foreign demand for U.S. exports could supplement domestic spending and thereby

Chart 2
Service-Producing Employment as a Share of Total Nonfarm Employment



Source: U.S. Department of Labor, Bureau of Labor Statistics.

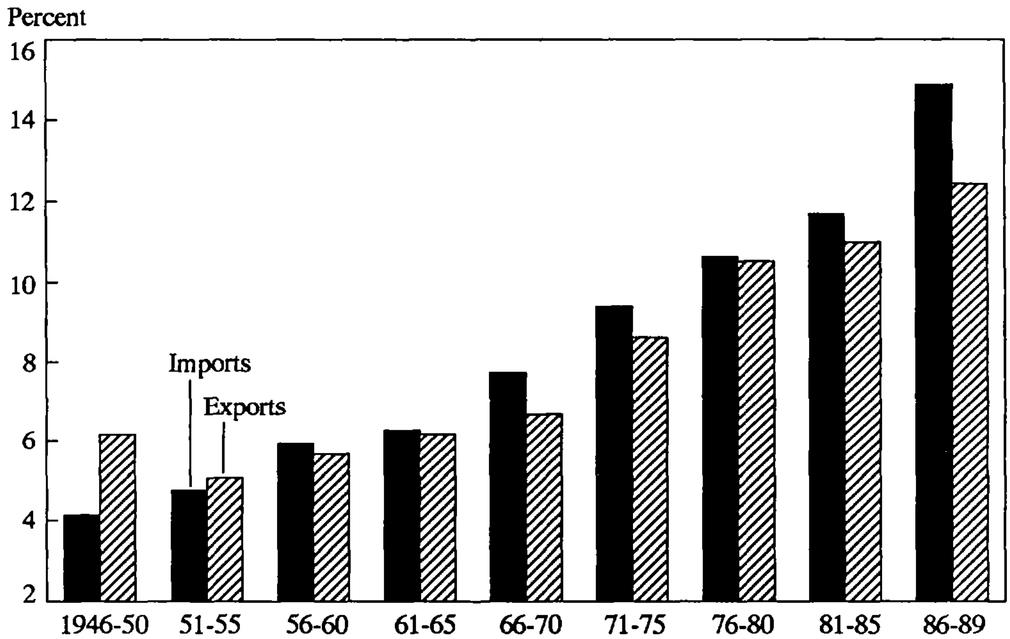
moderate some business contractions. Export growth is not necessarily a moderating factor, however, because foreign business contractions might coincide with U.S. contractions, causing exports to fall at the same time as domestic spending.

Changes in household and business expectations regarding the economy may have further moderated postwar business cycles. As other economic factors reduced the frequency and severity of recessions, producers and consumers may have started to expect milder cycles in the future and, as a result, altered their behavior in stabilizing ways (Baily 1978). For example, after observing milder cycles in the late 1940s and the 1950s, individuals may have grown less concerned about suffering a long spell of unemployment. Therefore, individuals may have become less likely to reduce consumer spending at the start of a slowdown. Similarly, businesses facing a cyclical decline in sales may have become less inclined to reduce production and employment because such declines are believed to be shorter and milder. This greater stability of production and employment may have had additional moderating effects on consumer income and spending.

A more stable financial sector

Changes in the U.S. financial structure have also moderated the business cycle in the postwar period. In particular, deposit insurance and closer regulation of financial institutions have enhanced

Chart 3
Imports and Exports as a Percent of GNP



Source: U.S. Department of Commerce, Bureau of Economic Analysis.

public confidence in the banking system and diminished financial crises.

Many economic downturns in the prewar and interwar periods were associated with financial crises and periods of reduced access to credit and other banking services. Public fears that deposits were unsafe often caused runs on banks, creating bank failures and liquidity crises—times when requests for large withdrawals of deposits outstripped the ability of banks to provide funds. Because of reduced access to money and credit, firms and households often had to curtail their spending plans, worsening the contraction in economic activity.

Various financial reforms enacted in the 1930s have reduced the severity of financial crises. In particular, Congress created the Federal Deposit Insurance Corporation in 1933 to insure bank deposits. Deposit insurance has boosted public confidence in the soundness of the financial system. In turn, greater public confidence has eliminated banking panics and reduced liquidity pressures on solvent institutions. And confidence in the banking system is enhanced by the knowledge that the Federal Reserve stands ready to act as a lender of last resort—that is, the Federal Reserve can inject funds into the banking system to avert a liquidity crisis.

New financial instruments in the postwar period may have stabilized private spending by giving individuals and businesses greater access to credit (DeLong and Summers 1986). Credit cards and other kinds of consumer credit, for example, help individuals maintain their consumption during temporary declines in income. And because consumption is such a large part of real GNP, a more stable consumption pattern thus moderates the business cycle. Also, business investment may have become less sensitive to changes in the availability of bank credit. Increased issuance of commercial paper and securities, for example, allows businesses to bypass banks and borrow funds directly from the public.

In summary, the postwar moderation of the U.S. business cycle reflects many factors. Government policy has played a larger and more active role in achieving the nation's economic goals. In the private sector of the economy, employment has shifted toward the less-cyclical service industries, and growth of international trade has diminished the effect of changes in domestic spending on U.S. producers. Moreover, an improved financial system has reduced banking crises and their accompanying effects on business activity.

III. Will the Business Cycle Disappear?

Will the factors identified in the previous section continue to change in ways that further moderate the business cycle? Indeed, might such factors cause the business cycle to disappear—that is, to moderate so much that uncertainty about cyclical fluctuations is no longer a major factor in business and household decisions? Or will these factors move differently than in the past, causing recessions to become more frequent and more severe?

Prospects for further moderation

A number of reasons suggest the U.S. business cycle is likely to moderate somewhat further in the years ahead. However, a general tendency toward business cycle moderation does not preclude a severe recession or sharp expansion caused, for example, by some unexpected shock to the economy. Thus, any conclusions about future business cycle moderation apply only to average business cycle behavior.

Past sources of business cycle moderation are unlikely to be reversed, although many of these factors may cause no further reduction in the frequency and severity of recessions. For example, government spending is likely to remain a larger share of economic activity than in the prewar and interwar periods. Although recent international developments may allow some cuts in defense spending, government spending is unlikely to shrink substantially because of the strong demand for other government-provided goods and services, such as infrastructure investment and education. Also, discretionary policy should continue to play a more moderating role than in the prewar and interwar periods. Moreover, deposit insurance, the Federal Reserve's role as lender of last resort, and automatic stabilizers in the federal budget may not cause additional moderation of the business cycle, but the past moderating effects will persist.

Some of the factors causing past moderation of the business cycle probably will moderate the cycle even more in the future. For example, a rising share of service employment will probably continue to stabilize household income and consumer spending. According to projections by the Bureau of Labor Statistics (Personick 1989), 79 percent of nonfarm jobs will be in service-producing industries by the year 2000, up from 76 percent in 1988.[14]

International trade also may have a larger moderating effect in the future. As discussed previously, domestic output becomes less sensitive to disturbances in domestic spending as the tendency to import rises. In the future, the tendency to import may increase further because international trade is still a smaller share of the U.S. economy than of many other industrial economies. Moreover, many foreign firms expanded their U.S. distribution facilities in the 1980s and advertised heavily to inform U.S. consumers about their products. Such investments may continue to win new customers for foreign firms. Exports also may increase somewhat as a share of economic activity in response to strong foreign economic growth and improved competitiveness of U.S. export industries. To be sure, changes in the import and export shares of GNP will also depend on such factors as the foreign exchange value of the dollar and possible protectionist legislation.

Three additional factors may moderate future business cycles after having relatively little effect on cycles earlier in the postwar period. Greater wage and price flexibility is one of these factors. Most economists believe greater wage and price flexibility would reduce the frequency and severity of recessions because wage and price adjustments help eliminate supply and demand imbalances in the labor and product markets. Wage and price flexibility was not a source of postwar moderation in the business cycle because the flexibility of wages and prices either decreased or was unchanged in most of the postwar period.[15] But wages and prices may have become more flexible in the 1980s because of several factors, including a decline in unionization of the labor force, growing international competition in the goods markets, and deregulation of such industries as the airlines, long-distance telecommunications, and trucking.[16]

Greater exchange rate flexibility is the second factor that may moderate future cycles after having only limited effects in much of the postwar period. When economic growth is rapid, higher U.S. real interest rates may cause foreigners to demand dollars for investment in the United States. The resulting upward pressure on the foreign exchange value of the dollar increases U.S. imports and weakens exports. Such a deterioration of the trade balance tends to moderate economic growth. Similarly, when economic growth weakens, downward pressure on the foreign exchange value of the dollar improves the trade balance and strengthens economic growth. Flexible exchange rates also give monetary policymakers greater independence from the effects of other nations' monetary policies. As a result, the U.S. economy is less affected by sudden changes in foreign monetary policy, which might be inappropriate for U.S. economic conditions and might even initiate a recession.[17]

Better inventory management by U.S. corporations is a third factor that may moderate future business cycles. During the postwar period as a whole, inventory investment has been no more stable than in the pre-World War II period. Firms have adjusted their production sluggishly to changes in sales. As a result, excess inventories have accumulated when sales declined, eventually requiring large production cutbacks. These cutbacks have sometimes worsened business contractions. In the 1980s, however, many U.S. firms have adopted better inventory management techniques, such as greater computerization and just-in-time delivery of parts. If such techniques reduce excessive inventory accumulation, fewer large cutbacks in production and manufacturing employment will be necessary.[18]

Thus, various factors may cause further moderation of the business cycle in the future. But will these factors be enough to make the business cycle disappear?

Reasons the cycle will not disappear

Some economists have argued the business cycle is disappearing because of the strength of the moderating factors described above. Although few go so far as to declare the business cycle dead, several economists claim recessions are becoming so rare and so mild that uncertainty about business fluctuations will no longer be an important factor in economic decisions. For example, Evans (1989) asserted the U.S. economy "may be able to avert another economic downturn indefinitely."

There is reason to doubt such claims. For one thing, the U.S. economy remains subject to unpredictable disturbances. In general, the moderating factors identified previously cannot eliminate these unexpected disturbances. Instead, the moderating factors merely reduce the effects of unpredictable disturbances on general business activity. Thus, any unexpected disturbance—or a combination of unexpected disturbances—that is strong enough could still cause an economic downturn.

Some unpredictable economic disturbances originate domestically. A drought in U.S. agricultural regions, for example, can depress farm output and real GNP growth. The severe drought in 1988 slowed real GNP growth but did not cause a business contraction. But if such a drought were to appear when the economic growth rate was already quite low, the disturbance might tip the economy into recession. Other examples of domestic disturbances are a sudden change in the tax laws or an unexpected shift in the willingness of U.S. firms to invest in new plant and equipment.

The U.S. economy is also subject to unpredictable disturbances originating abroad. For example, the economy can be affected by foreign supply shocks, such as an increase in the price of imported crude oil. Many economists believe large increases in imported crude oil prices in 1973-74 and 1979 helped cause recent U.S. recessions. Furthermore, the U.S. economy remains vulnerable to other foreign disturbances.[19] A sudden tightening of Japanese fiscal policy, for example, could reduce Japanese purchases of U.S. products, thereby lowering U.S. employment and income.

Thus, the economy will likely continue to be affected by a variety of foreign and domestic shocks. Discretionary monetary and fiscal policy can often prevent recessions or reduce their severity by offsetting shocks to the economy. But discretionary policy may not always succeed in fully offsetting these sudden foreign and domestic shocks.

A major reason discretionary policy may not always succeed is because the constantly changing structure of the economy creates uncertainty about the effects of policy actions. For example, financial deregulation may have made the effects of monetary policy actions less certain in the 1980s.[20] Financial deregulation has helped stabilize private spending by relaxing financing constraints in recessions. Yet many economists believe it also has made less certain the relationship between monetary growth and such economic variables as real GNP growth and inflation. Because financial deregulation has probably changed the interest sensitivity of the economy, policymakers may find it more difficult to judge the effects of their actions.[21]

Recent changes in the economic system also may have worsened the economy's response to unexpected disturbances. The most notable change is the higher level of corporate and personal debt. Judicious use of credit can help stabilize private spending, but many observers feel current debt levels have become excessive. Corporations increased the ratio of debt to the book value of their equity from 36 percent in 1984 to 52 percent in 1988. Faust (1990) concluded such a surge in debt will increase the risk of corporate bankruptcy in future recessions. Higher bankruptcy risks will make it more difficult for firms to raise funds and disrupt business relationships with customers and suppliers. As a result, firms will be more likely to curtail their business activities, thereby worsening the recession.[22]

One variant of the disappearing business cycle viewpoint emphasizes rolling recessions, or periods of declining activity in individual industries or regions within the national economy. Yardeni and Moss (1988) have asserted rolling recessions are gradually replacing economy-wide contractions. Rolling recessions, they argued, reduce the likelihood of general excess production—and therefore a general economic contraction—by eliminating excess production in particular business sectors on a rotating basis. Possible examples of sectors experiencing rolling recessions in the 1980s included the farm economy, the energy sector, the semiconductor industry, and Wall Street brokerage houses.

Empirical evidence, however, does not show any tendency toward more rolling recessions in the 1980s. McKelvey (1989) found that cross-industry variation in output growth actually reached a 40-year low in 1987, the latest year for which data are available. And cross-state variation in income growth has not increased significantly in the 1980s. This evidence implies rolling recessions were no more common in the 1980s than in the preceding postwar years.

Thus, the business cycle is unlikely to disappear for several reasons. The U.S. economy will probably remain more open to foreign disturbances because of the growth in world trade and capital flows. Moreover, the economy will continue to experience domestic disturbances, such as droughts and unexpected changes in private spending. Because discretionary monetary and fiscal policy may not always be able to fully offset such disturbances, the United States should continue to experience economic upturns and downturns.

IV. Conclusion

Economic contractions have become less frequent and less severe in the postwar period. Major reasons for this moderation include a larger and more active role for government, changes in private spending behavior, and a more stable financial sector. These factors—along with greater flexibility of wages, prices, and exchange rates—may moderate the business cycle even further in the future. However, the business cycle is unlikely to disappear in the future because the economy will remain subject to a variety of disturbances, both domestic and foreign. In other words, uncertainty about future cyclical fluctuations will continue to be an important factor in business and household decisions.

Endnotes

1 Cyclical movements in real output are wavelike in that real output has temporary upward or downward movements that later tend to be reversed. However, the business cycle is not wavelike in the sense that real output fluctuations follow a regular predictable pattern. Some recent empirical studies—for example, Campbell and Mankiw 1987, and Nelson and Plosser 1982—have challenged the common view that real output has such cyclical movements. However, other recent studies—for example, Clark 1987 and Cochrane 1988— have supported the existence of cyclical movements in real output.

2 The standard deviation of real GNP growth was 6.0 percent in the period from 1890 to 1914, and 8.9 percent in the period from 1915 to 1945. In the period from 1946 to 1989, however, the standard deviation of real GNP growth fell to 4.3 percent. The prewar real GNP statistics in this article are the Kendrick-Kuznets estimates published in U.S. Department of Commerce 1975.

3 Business cycles are measured from trough to trough in Table 1. The prewar period includes 15 complete cycles. The period containing the world wars and the interwar years includes seven complete cycles. And the postwar period includes eight complete cycles but does not include the long 1980s expansion. Wartime cycles were designated for the Civil War, World Wars I and II, the Korean War, and the Vietnam War.

4 Zarnowitz's prewar period is defined as 1885-1912, a shorter period than in Table 1. Schultze (1986) showed fluctuations of steel output and the money supply have been less severe in the postwar period.

5 Romer has not used her new estimates of prewar real output to develop a business cycle chronology comparable with the NBER chronology. As a result, recent academic debates have considered the severity of real GNP fluctuations but not the frequency of recessions.

6 Several other empirical studies have also challenged the view that the business cycle has moderated. Romer (1986a, 1986b) argued that standard measures of prewar unemployment and industrial output are excessively volatile. Shapiro (1988) claimed stock price data support the hypothesis that the business cycle has not moderated. And Sheffrin (1988) found the business cycle did not moderate substantially during the postwar period in five of the six European countries he examined.

7 Zarnowitz (1989, pp. 2-3) provided a more extensive critique of Romer's revised GNP data. DeLong and Summers (1986) and Weir (1986) also examined the historical data and concluded the business cycle has moderated in the postwar period.

8 The prewar estimate uses Gross Government Product as a share of Gross Domestic Product and is an average covering the years from 1869 to 1916. The data are from Department of Commerce 1975. The postwar share of government is measured by government purchases of goods and services as a percent of GNP.

9 However, the higher postwar share of government in economic activity may not be positive in all respects. In theory, a large government sector can reduce the real output of the economy. One reason is that additional taxes required to fund a large government sector may distort private economic decisions, causing inefficiency and a loss of output. For example, business investment decisions may be made to avoid taxes rather than expand productive activities. And individuals may reduce the number of hours worked if their incomes are taxed too highly. A second reason is that government may use resources less efficiently than the private sector because government has no profit motive to encourage cost minimization. Although many economists accept these arguments at a theoretical level, there is disagreement about whether the government sector is currently too large in the United States.

10 To a lesser degree, government spending has moderated business contractions by speeding the economy's adjustment to labor market imbalances. Government spending on transportation—particularly highways, bridges, and airports—facilitates the movement of labor from depressed industries or regions to prosperous industries or regions. For example, such spending made it easier for labor to migrate from economically weak regions of the country to the prosperous southwestern states during the recessions in the early 1980s. Moreover, government expenditures on education in the postwar period may have produced a labor force better able to change jobs.

11 For example, unemployment insurance was created in the 1930s, and income taxes have become more important sources of government revenue in the postwar period. Other examples of automatic stabilizers include corporate income taxes and payroll taxes.

12 Two important laws affecting the Federal Reserve's postwar role are the Employment Act of 1946 and the Full Employment and Balanced Growth Act of 1978.

13 The definition of service-producing employment used here actually includes government employees. Government employment is relatively insensitive to the business cycle and therefore moderates household income and consumer spending. However, the share of employment in *private* service-producing industries also shows a strong upward trend in the postwar period.

14 Differences in productivity growth—growth in output per hour—will likely cause employment in the service sector to grow faster than employment in the goods-producing sector. Service employment will probably have to grow substantially to increase service output because productivity growth is weak in the service sector. In contrast, smaller employment gains will be needed to increase goods output because productivity growth is stronger in the goods-producing sector.

15 Cagan (1975) and Sachs (1980) found that wages and prices have become less flexible in the postwar period. However, Gordon (1980) and Schultze (1981) concluded that wage and price flexibility were relatively unchanged in the postwar period.

16 The union proportion of nonagricultural employees fell from 36 percent in 1956 to 18 percent in 1986. According to Freeman (1988), this decline represents the "most significant change" in labor market institutions since the Great Depression.

17 Under a system of fixed exchange rates, the monetary policies of other nations would affect the U.S. money supply unless the Federal Reserve undertook offsetting policy actions. However, under a system of perfectly flexible exchange rates, currency values would fluctuate with no change in U.S. bank reserves or the money supply. In recent years, exchange rates have not been perfectly flexible because countries have intervened in exchange markets to influence the values of their currencies. But exchange rates have remained much more flexible than under the fixed exchange rate system existing before 1973. Further discussion of flexible exchange rates and the national economy can be found in Kohn 1975.

18 Strongin (1990) asserted better inventory management techniques will help smooth future business cycles. How-

ever, McKelvey (1989) argued that better inventory management has not contributed to business cycle moderation. And Zarnowitz (1989) summarized evidence that inventory investment did not become more stable in the postwar period as a whole. Such evidence does not refute Strongin's view, however, because the major changes in inventory management have only occurred in recent years.

19 Although perfectly flexible exchange rates would insulate the U.S. economy from sudden changes in foreign monetary policy, changes in foreign fiscal policy would still affect U.S. production and employment. Moreover, the U.S. economy is not completely insulated from changes in foreign monetary policy because exchange rates are not perfectly flexible.

20 Some economists claim discretionary policy has become less important because private credit markets stabilize the economy more effectively than in the past. For example, Yardeni and Moss (1988) asserted, "In the global credit markets, bondholders push yields up rapidly when they perceive an inflation threat. Such preemptive strikes reduce the likelihood that inflation will become a serious problem again." However, there has been little economic research to either substantiate or refute this view.

21 Roth (1987) described the breakdown of the relationship between the M1 monetary aggregate and economic activity as a result of financial deregulation. Kahn (1989) found a reduction of the economy's overall interest sensitivity in the 1980s. In addition, Kahn found the time between a change in the federal funds rate and its effect on real output was longer, and the uncertainty about the real effects of monetary policy actions was greater.

22. Similar concerns have been expressed about the growth of debt in the household sector. For example, Volcker (1986, p. 7) stated, "It appears that households, like businesses, have become more willing to take on debt, at the expense of more vulnerable financial positions."

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