The phenomenal increase in the U.S. standard of living over the past 100 years, while often taken for granted, was made possible by remarkable growth in the productivity of the basic factors of production, especially in the productivity of labor. On average, U.S. workers today can produce 10 times more in one hour than their counterparts could produce in one hour a century ago.

However, some time around the first oil-price shock in 1973, commentators began to talk about a "productivity slowdown." Productivity growth slowed from an average annual rate of 2.8 percent before 1973 to 1 percent in the period since then. When productivity grows at 2.8 percent a year, it takes about 25 years for workers to double the amount they can produce in one hour. But when productivity grows at 1 percent a year, it takes workers almost three times longer—70 years—to double their hourly output. Because productivity growth is the key to gains in our standard of living, the post-1973 slowdown has caused a lot of concern and attracted much attention during the past 20 years.

Is the slowdown in productivity as serious a problem as some claim? Two factors suggest that it is not. First, the rapid rates of productivity growth achieved immediately after World War II were exceptional, not normal. Thus, a significant part of the slowdown has essentially been a reversion to historical trends. Second, countries such as Japan achieved extraordinary rates of productivity growth because they were catching up with the United States. These countries have succeeded in closing much of the gap in output and incomes that existed in 1950; yet, the average U.S. worker is still more productive and enjoys a higher standard of living than his or her counterpart abroad. This is not to say that we live in the best of all possible worlds. The United States can and should try to raise the rate of productivity growth, but it is unrealistic to expect a return to the heady days of the 1950s.

The Long-Run Growth Performance of the United States

The recession that began in July 1990 was the ninth since the end of World War II and the 45th in U.S. history. Recessions have always been with us and always will be; it is impossible to smooth out all fluctuations in economic activity. The very real pain associated with downturns in economic activity often leads to policy initiatives that
boost the economy in the short run
at the expense of longer-run growth
potential. Day-to-day discussions
about the state of the economy
generally focus on the inevitable
ups and downs in activity in the
short run and neglect the more
significant long-run trends.

Chart 1 shows how U.S. gross
domestic product has behaved over
the past 100 years. Two features
warrant comment. First, the GDP
movements associated with business
cycles are small relative to long-run
growth trends. Second, the GDP
has grown at a remarkably steady
pace, despite all the ups and downs
in economic activity. There were no
fewer than 24 recessions, including
the Great Depression, during the
period shown in Chart 1. Yet, out-
put grew at a remarkably steady
pace over the entire period. Over
this 100-year period, real GDP
increased 24-fold, while GDP per
capita increased more than six-fold.
These are big numbers, and they
naturally lead to the question of
what determines the underlying
rate of economic growth.

What does cause output to grow
over time? Aggregate output is
intimately related to the size of the
aggregate capital stock and the labor
force. The final output obtained
from given quantities of these inputs
is determined by their productivity.
Therefore, three sources of output
growth can be isolated: growth in the
labor force, growth of the capital
stock and growth of productivity.
Among these sources, growth in the
numbers of workers and machines
accounts for less than half of all
output growth in the United States.
This leaves growth in productivity
as the single most important deter-
ninant of long-run growth. Increases
in productivity are crucial to sus-
tained GDP increases and, thus, to
improvements in our standard of
living over time.

Productivity can be measured in a
number of ways. Labor productivity,
or output per hour worked, is the
most commonly used and, under cer-
tain conditions, is representative of
broader measures. A variety of factors
determines the productivity of labor.
The importance of education is
obvious: the pervasive concern about
the quality of U.S. schools reflects
this. The level of experience of the
average worker is also important.
The longer workers have been doing
their particular jobs, the better
they are at it. The computer revolution
of the past 20 years, and especially
the boom of personal computing over
the past decade, illustrates how more
and better machines can raise pro-
ductivity. And finally, institutional
factors, such as laws and regulations,
affect productivity, although in a
way that is often hard to quantify.

While influenced by many factors,
the growth of labor productivity in
the United States has been remark-
ably stable for a long time. As Chart
2 shows, productivity grew at an
average annual rate of about 2
percent a year before the Great
Depression. A dramatic decline in
productivity growth during the
Great Depression was offset by an
equally dramatic increase during
and immediately after World War
II. Productivity declined during the
Great Depression as a consequence of
the prevailing adverse climate for
business innovation and risk-taking.
The same explanation works in
reverse for the years after World
War II. The U.S. economy had been
immune from war damage, and the
rate of productivity growth soared
as American industrialists under-
took innovations postponed during
the Depression and war years.
Growth then slowed to something
approaching more normal levels.

Some commentators are con-
cerned about the further decline
below the historical norm of 2
percent that occurred in the 1970s.
Some of this loss ground was
recovered in the 1980s, but not
enough to allay fears of impending
crisis. But was the United States
alone in experiencing this slow-
down phenomenon, or was the
slowdown more widespread?

In comparing U.S. performance
relative to that of the other major
capitalist economies over the same
period, it is illuminating to distin-
guish among the four major phases
capitalist development over the past
100 years. Chart 3 shows the pro-
ductivity performance of the G-5
countries—the United States, the
United Kingdom, Japan, Germany
and France—since 1870.

The first phase lasted 43 years,
from 1870 to 1913, and coincided
with the golden age of American
capitalism. Productivity grew in the
1-percent to 2-percent range for all
the major industrial economies,
with the United States leading the
pack. During this period, the United
States overtook the United Kingdom
to become the world’s leading...
industrial power. The United States retained its position of leadership throughout the second phase, during the turbulent period from 1913 to 1950 that included the two World Wars and the Great Depression.

The third phase lasted 23 years, from 1950 to 1973, and saw a remarkable acceleration in productivity growth in all the major industrial economies except the United States. This was the golden age of postwar growth. During this period, Japanese productivity grew at an average annual rate of about 8 percent, while productivity growth in the United States lumbered along at less than 2.5 percent a year. After decades of being the world leader in productivity growth, the United States became the laggard and was outperformed even by the United Kingdom.

The fourth phase, which runs only from 1973 to 1984 because of data availability, brought a slowdown in productivity growth worldwide. The global nature of the slowdown suggests that whatever lay behind it was common to all of the industrialized countries, and that looking for an explanation in factors specific to each country would be misleading.

The Convergence Hypothesis

What explains the acceleration and subsequent deceleration in productivity growth in the major industrial economies in the postwar period? A significant part of the difference between the growth rates of the United States and those of Japan and the former West Germany can be explained by the phenomenon of “catch-up” or “convergence.” Fundamental economic forces cause “follower” countries (in terms of economic development) to grow faster than the “leader.” As a follower, a country can offer a relative abundance of investment opportunities to both domestic and foreign investors and can copy the technical know-how of more advanced countries. This combination of factors produces unusually high levels of investment, which lead to rapid growth. Over time, growth declines to more sustainable rates as the most profitable investment opportunities are exploited, and only projects offering average rewards remain.

However, nothing guarantees that the followers will catch up with the leader. The process of catching up has been confined to a small number of relatively developed countries, and, among these countries, convergence was stronger after World War II than before. Two factors can explain this: the availability of a skilled work force in these countries after the war, and a new, liberal international trading regime that freed access to foreign markets and facilitated the transfer of technology between countries. (It is worth noting that something along these lines is going on in the recently united Germany. Rapid rates of investment in the eastern part of the country reflect both the abundance of investment opportunities there and the scope for transferring technical expertise developed in the West.)

Following World War II, per capita output levels in Germany and Japan were one-third and one-seventh of U.S. levels, respectively (Chart 4). To bring their output to U.S. levels while the United States continued to expand, these countries had to grow more rapidly than the United States. The United States could not eliminate the portion of the growth differential attributable to the process of catching up by these countries. The rapid growth rates these countries achieved narrowed the difference between their living (Continued on page 8)
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standards and those of the United States, but as shown in Chart 4, the United States has stayed ahead.

Summary and Conclusions

Aggregate output in the United States grew rapidly in the immediate postwar period primarily because of unusual rates of productivity growth. The other major industrial economies grew rapidly in the 1950s and 1960s as they caught up with the United States. While the gap between U.S. and foreign living standards has narrowed, the United States retains its position of leadership by most conventional measures.

The ability of the United States to influence its long-run rate of growth is somewhat asymmetric. There may be little to do to raise it, but there is a lot that can be done to lower it. Failure to address the problems in our schools and rebuild our infrastructure will have serious long-run consequences. So, too, will misdirected legislation that is designed to stimulate the economy in the short run without any concern for long-run implications. As one commentator said, “It would be ironic indeed if fear of decline leads us to enact protectionist legislation that rejects foreign investment and overly restricts immigration. That would mean turning our backs on the very characteristics that carried us to where we are today. Instead, Americans must maintain their confidence that our country’s capacity to reinvent itself will once again prove to be our hidden strength.”

The low standard of living endured by the average Japanese worker, despite the impressive performance of the Japanese economy, is due in no small part to just this kind of protectionist legislation.

— Mark A. Wynne

1 This slowdown in productivity growth inevitably was accompanied by a slowdown in the growth of gross domestic product (GDP). Average annual rates of GDP growth fell from 3.6 percent from 1950 to 1973 to 2.5 percent since 1973.

2 For a recent example see “Shadow of Pessimism Eclipses a Dream” and “Attention, America! Snap Out of It!” New York Times, Sunday, Feb. 9, 1992.

3 This point has been made by other economists as well. See, for example, Blinder, Alan S. (1992), “The Days of Ozzie and Harriet are Gone for Good,” Business Week, Feb. 10. For a more detailed analysis, see Baumol, William J., Sue Anne Batey Blackman and Edward N. Wolff (1989), Productivity and American Leadership: The Long View, (Cambridge, Mass.: MIT Press).

4 However, there is some evidence that the business cycle has been less severe in the post World War II period, in that recessions have tended to be shorter and expansions longer than before World War II. See Diebold, Francis X., and Glenn D. Rudebusch (1991), “Shorter Recessions and Longer Expansions,” Federal Reserve Bank of Philadelphia Business Review, November/December.