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International Output Comparisons

Is the U.S. in long-term economic decline? Many would point to the narrowing of income level differences between the United States and other industrial countries during the post-World War II period as evidence that it is.

But comparisons of output levels across countries are problematic: They require converting the national output levels of individual countries to a common currency, such as the dollar; and without proper adjustment for the relative purchasing power of different currencies, international output comparisons can be subject to serious distortions.

This *Letter* discusses the methodology of making output comparisons across countries and reviews the facts concerning U.S. economic growth relative to other large industrial countries during the postwar period. It shows that, while the relative economic importance of the U.S. has changed in the last 40 years, the per capita output level of the U.S. still remains above that of other countries. Moreover, U.S. economic growth throughout the postwar period has been quite respectable by historical standards, especially in the 1980s. The narrowing gap between output levels in other industrial countries and the U.S. is attributable to a foreign growth surge that occurred primarily in the 1950s and 1960s.

The methodology of output comparisons

Almost all countries construct national income and product statistics to measure their national output and income levels. The accounting methods that underlie these statistics have generally been standardized throughout the world. National product statistics allow direct comparisons of output performance over time within a given country. For example, the national product figures of the United States allow the comparison of the U.S. output level in 1990 with that in previous years.

Converting national output levels of different countries to a common currency to make comparisons among countries is more problematic. Comparing U.S. and Japanese output levels in, say, 1980 requires converting Japanese national output levels to a common currency, such as the dollar. Typically this conversion is done using bilateral exchange rates.

However, using the exchange rate to compare national output levels implicitly assumes that the exchange rate reflects purchasing power parities among currencies and that prices in terms of a common currency are equal everywhere. Thus, for example, using the yen-dollar exchange rate to convert Japanese income measured in yen into dollars presumes that the number of yen required to buy a dollar on the foreign exchange market also buys the same amount of goods as a dollar.

In fact, this is not generally the case. Even after adjusting for transportation and other costs, many goods are priced differently in different countries. One obvious explanation is that goods are not identical across countries, so that comparing the prices of those goods can amount to comparing apples and oranges. In addition, many goods and services (whose prices are included in a measure of a country's price level) are not traded across borders. Housing, land, and services such as haircuts and golf lessons, for example, are not traded goods. The prices of these nontraded goods are therefore likely to differ across countries.

Even for many apparently identical goods, international prices differ. Big Mac hamburgers, for example, are made locally in more than 50 countries and look and taste virtually the same everywhere. Nevertheless, differences in Big Mac prices can arise because, even though meat may be internationally traded, the costs of labor and other inputs used to prepare and serve Big Macs are not traded. According to the *Economist* magazine (May 5, 1990) the average price in the U.S. of a Big Mac in 1990 was about $2.20; in Germany the price was DM 4.30. Given the prevailing $/DM exchange rate of $.60/DM, this implied a dollar equivalent price of $2.50 for a Big Mac in Germany, almost 20 percent above the price in the U.S. The corresponding price for a Big Mac in Tokyo was $2.33.

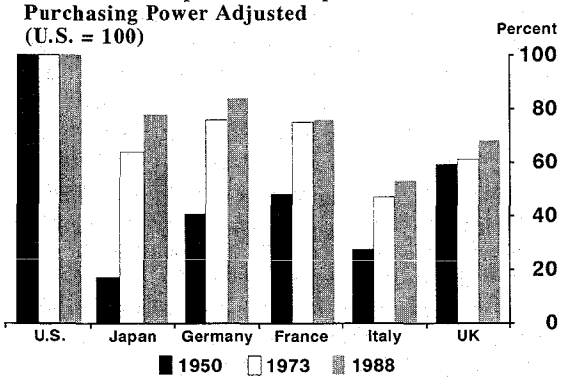
The exchange rate, then, tends to understate or overstate the purchasing power of one currency in terms of another. Therefore, using exchange rates to convert a country's gross product to dollars, for example, can overstate or understate that country's real product. Thus, if the number of yen required to match the purchasing power of the dollar over goods is overstated by the yen-dollar exchange rate, Japan's real income relative to that of the U.S. is correspondingly overstated as well.

Such distortions are particularly troublesome in periods when exchange rates are volatile. Year-to-year changes in exchange rates between major currencies of 20 percent or more have been observed since the early 1970s, particularly since 1985. Because most of these large changes have been unrelated to price movements of national outputs, exchange rate conversions necessarily have at times given erroneous measures of the relative output levels of countries.

Comparing the comparisons

To overcome these problems in making output comparisons, Kravis, Heston, and Summers have constructed relative purchasing power parity measures of currencies to convert the gross domestic products (GDP) of individual countries to dollars. (See Kravis, Heston, and Summers 1982; Summers and Heston 1991.) These price parity measures are derived from unique price data on identically specified goods and services in each country collected through the U.N. International Comparison Program. Chart 1 presents indexes of real per capita GDP levels in five large industrial countries relative to that of the U.S. in 1950, 1973, and 1988 using these data. (Later data are not available.)

Chart 1
Relative Per Capita Real Output Levels
Purchasing Power Adjusted
(U.S. = 100)



These data indicate that the economic positions of the U.S. relative to the rest of the world has indeed changed dramatically in the post-World War II period. In 1950, Germany's GDP per capita was one-half that of the U.S.; Japan's GDP per capita was one-sixth of the U.S. Since then, per capita growth in the rest of the world has considerably narrowed the U.S. lead. In 1988, Germany's real per capita GDP had risen to 84 percent of the U.S. figure; Japan's had risen to 78 percent.

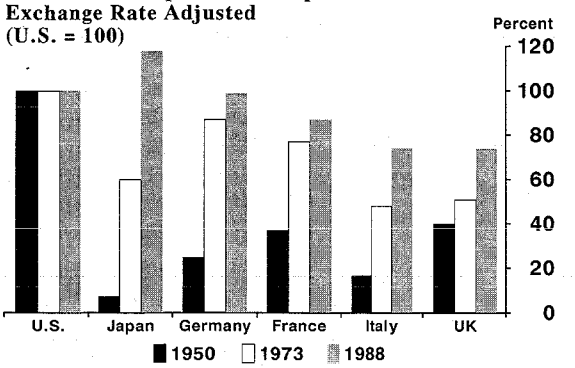
Chart 2 presents corresponding data on relative output levels computed using bilateral dollar exchange rates to make output comparisons. These figures concur in indicating significant foreign growth abroad relative to the U.S. since 1950. However, the exchange-rate-converted output figures generally overstate relative foreign output performance in the 1970s and 1980s. In 1988, for example, they indicate that per capita real output in Japan exceeded that in the U.S. by 20 percent, and that per capita output in Germany equaled that in the U.S. The reason is that because of the sharp appreciation in the yen, DM, and other major currencies against the dollar after 1985, the bilateral exchange rates used to make the comparisons overstated the purchasing power of these currencies relative to the dollar. Thus the exchange-rate-adjusted output measures exaggerate the growth of foreign output levels in the last decade. The Kravis-Heston-Summers figures reported in Chart 1 present the more accurate picture of relative output levels.

Why is the gap narrowing?

While U.S. per capita output levels still exceed levels abroad when properly measured, the gap clearly has narrowed over the last 40 years. Does this trend indicate that the U.S. is in long-run economic decline? In fact, much of this narrowing of output gaps reflects a growth surge by the rest of the world, rather than a major growth slump in the U.S.

During the periods 1950–1960 and 1960–73 U.S. real GDP growth averaged 3.3 percent and 4 percent a year, respectively. (Real per capita growth averaged 1.5 percent and 2.7 percent, respectively.) These figures compare favorably with U.S. historical experience. It is estimated that U.S. annual GDP growth was 3.5 and 2.7 percent for the periods 1900–1925 and 1925–1950, respectively. (Average annual per capita

Chart 2
Relative Per Capita Real Output Levels
Exchange Rate Adjusted
(U.S. = 100)



GDP growth was 1.7 percent and 1.6 percent over the same periods.)

During the 1950s and 1960s the growth of other industrial economies was exceptionally high. For example, between 1950 and 1973 Japan's real GDP grew roughly 9 percent a year. Germany's GDP grew by 8.4 percent annually between 1950 and 1960 and by 4.4 percent between 1960 and 1973.

There are several explanations for this foreign growth surge. In part it can be attributed to the opening of world trade and economic relations and catch-up growth by foreign industrial countries following the devastation of World War II. A number of researchers have emphasized the role of competitive forces that have generated a steady transference of technology from the U.S. to other countries.

In the period 1973–80, while most industrial countries experienced a growth slowdown as a result of oil shocks, growth abroad continued to exceed that in the U.S. Since 1980, however, U.S. growth has been comparable or superior to that abroad. Despite some rebounding from the effects of oil shocks, foreign growth remains far below rates experienced in the 1950s and 1960s. In terms of annual GDP growth, the U.S. rate of 3.3 percent exceeded that of all other large industrial countries except Japan's 3.6 percent rate. On a per capita basis, only Japan and the U.K. have displayed somewhat better performance than the U.S. during the 1980s.

Conclusions

A long-run view of U.S. economic performance indicates that U.S. economic growth in the postwar period has been quite respectable by historical standards. While growth in most other countries surged in the postwar period relative to the U.S., this surge occurred primarily in the 1950s and 1960s. There is no evidence that the associated convergence of worldwide growth rates has been damaging to the United States. In the 1960s, when foreign economic growth exceeded that in the U.S. by a wide margin, American output grew faster than at any time in U.S. history. Moreover, in the past decade U.S. growth performance has been comparable or superior to that abroad.

This does not imply that current or recent past rates of U.S. output growth are the highest that can be achieved. However, it does suggest that U.S. performance through the 1980s has not displayed any evidence of long-term output growth slowdown.

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Summers, Robert and Alan Heston. 1991. "The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950–1988." *Quarterly Journal of Economics* (May).

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