



## BTUs in GDP

This spring, the U.S. Congress returned to a topic that has become a staple of political discussion in Washington: the role of energy in the economy and, in particular, the dependence of the U.S. economy on energy imports.

Since 1973, when President Richard Nixon announced the goal of making the United States energy-independent by the end of that decade, the nation has steadily increased its energy imports. This trend is usually expressed in terms of petroleum imports. According to statistics from the U.S. Department of Energy, the United States imported about one-quarter of all the petroleum it used in the early 1970s. By 2000, that fraction had risen to nearly 57 percent. When all sources of energy are considered, not just those from petroleum products, import shares have not been as large. As measured by total British thermal units (BTUs) generated from all sources, the U.S. reliance on imported energy rose from about 10 percent of total energy used in the early 1970s to nearly 25 percent in 2000.

Over the same period, however, the United States has become much more efficient in its use of energy resources, mitigating the overall dependence of the economy on foreign energy supplies. Economic theory suggests that when a factor of production such as energy is subject to supply uncertainties and price spikes—like we have seen since the 1970s—the users of that factor have incentives to economize by substituting other factors and switching toward production techniques that do not depend so heavily on that factor. As illustrated in the accompanying chart, the U.S. economy has, indeed, become much more efficient in its use of energy over past decades, particularly since the early 1970s. In terms of energy consumption per unit of real economic output, efficiency has nearly doubled. Between 1970 and 2000, the energy needed

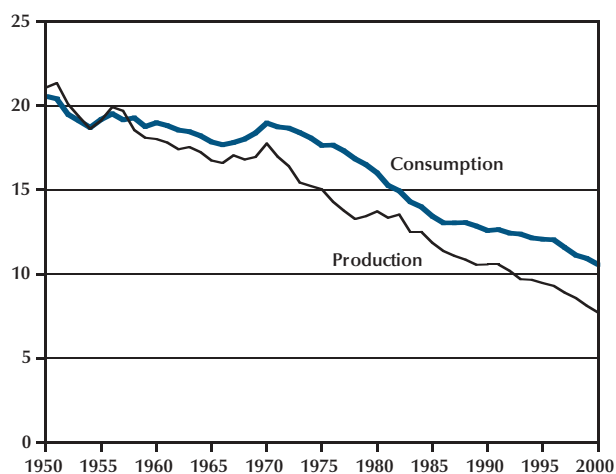
to produce one dollar of real gross domestic product (GDP) declined from nearly 19 thousand BTUs to 10.6 thousand BTUs. Were it not for this improvement in energy efficiency, the U.S. might very well be even more dependent on imported energy than it is today.

The chart also shows that, as the U.S. economy has grown and diversified, domestic energy production has also declined relative to total output. With energy production and consumption both falling relative to GDP, the gap between the two—net energy imports relative to GDP—has changed little since the 1970s: In 1973, energy imports amounted to 3.0 thousand BTUs per dollar of real GDP produced. In 2000, that measure of energy dependence stood at 2.9 thousand BTUs. When measured relative to total economic activity, therefore, these statistics show that the economic significance of energy imports has not changed substantially over the past quarter-century.

—Michael R. Pakko

### Energy Production and Consumption (Per Dollar of Real GDP)

Thousands of BTUs/Real 1996 Dollars



SOURCE: U.S. Department of Energy.