

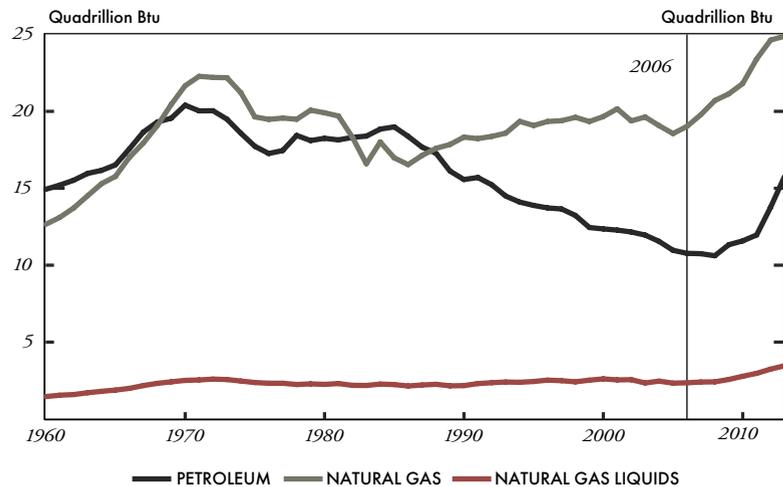
U.S. ENERGY TRENDS EFFECTS ON TRADE

INTERNATIONAL TRADE IS A GROWING SHARE OF ECONOMIC ACTIVITY IN THE UNITED STATES and an element of economic growth. And over the last three decades, imports and exports have more than doubled as a share of gross domestic product. Moreover, the contribution of net exports to economic growth has also increased. Energy net exports were a substantial part of the change, as its contributions to real annual GDP growth increased from -0.1 percentage point to 0.2 percentage point in the same periods.

Hydraulic fracturing and horizontal drilling technologies led to a significant structural change in energy production. Currently, the Energy Policy and Conservation Act of 1975 bans the export of most domestic crude oil in an effort to insulate the United States from worldwide price shocks. Policy changes, however, could bolster the recent domestic production growth's effects on trade.

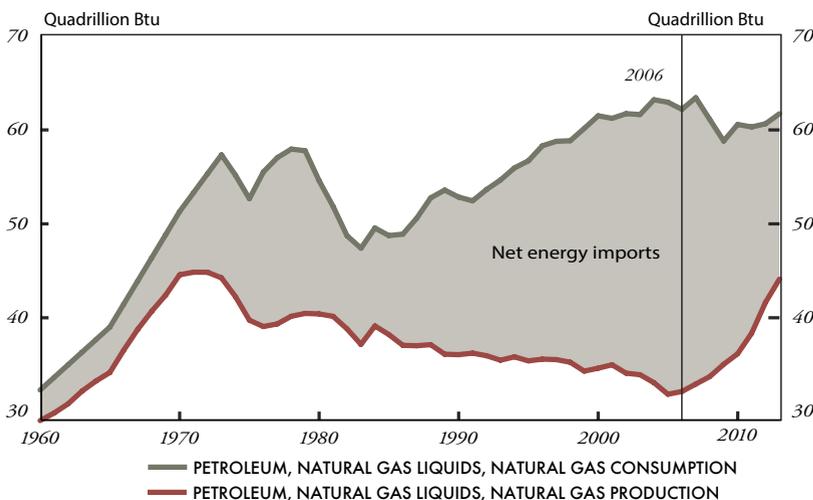
U.S. ENERGY PRODUCTION

After declining for several years, U.S. energy production increased in 2006. Production of natural gas and natural gas liquids reached historical highs in 2013. Petroleum production has experienced wide swings—increased to historical highs in 1970, largely decreased until 2006 and then increased through 2013.



Note: The British thermal unit (Btu) is the amount of heat needed to raise the temperature of one pound of water by one degree Fahrenheit.

Sources: Energy Information Administration and Haver Analytics



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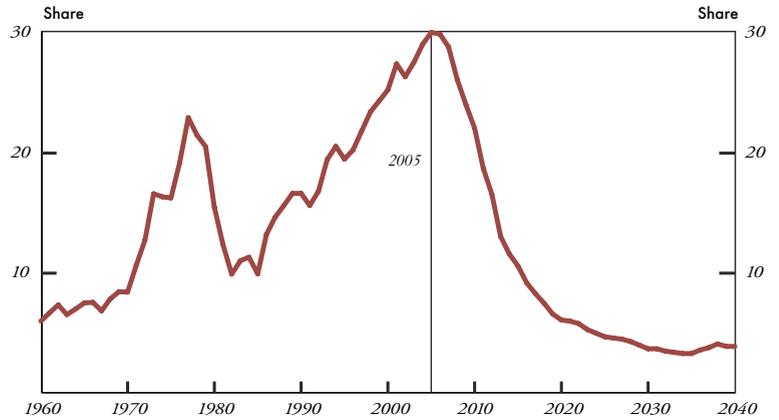
U.S. PRODUCTION, CONSUMPTION AND IMPORTS OF PETROLEUM AND NATURAL GAS

From 1980 to 2005, U.S. imports for crude oil, natural gas liquids and natural gas grew while domestic production declined. The increase in energy production after 2006 led to significant declines in net imports.

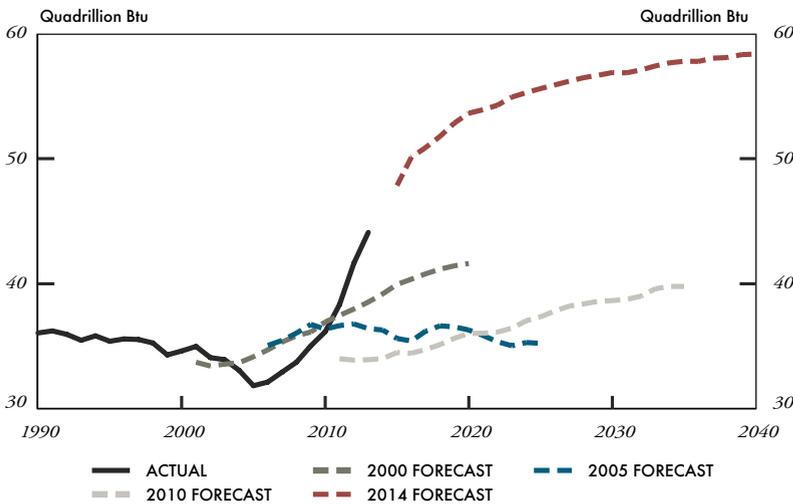
Further resources: "Implications of Recent U.S. Energy Trends for Trade Forecasts" by Craig S. Hakkio and Jun Nie: www.kansascityfed.org/publicat/econrev/pdf/14q4Hakkio-Nie.pdf

NET ENERGY IMPORTS AS A SHARE OF ENERGY CONSUMPTION

Energy Information Administration (EIA) forecasts illustrate the changes in energy trade by showing net imports of energy as a share of energy consumptions from 1960 to 2040. As shown, imports peaked in 2005 at 30 percent. By 2013, imports fell to 13 percent and are projected to fall to 6.1 percent by 2020 and 3.3 percent in 2035.



Sources: Energy Information Administration and Haver Analytics



Source: Energy Information Administration

PRODUCTION OF CRUDE OIL, NATURAL GAS LIQUIDS AND NATURAL GAS

EIA forecasts on energy production and imports have remained conservative and unable to keep up with the domestic energy sector's fast growth. As the charts show, actual energy production has outpaced energy forecasts, which also has altered forecasts on domestic net imports of petroleum and natural gas (not shown in chart).

To better capture recent changes in energy production and study its effects on future U.S. trade, Federal Reserve Bank of Kansas City's Craig Hakkio, a senior vice president and special advisor on economic policy, and Jun Nie, a senior economist, developed an analytical model that separates the energy and nonenergy components to forecast near-term imports and exports for both. The model's framework provides an independent forecast and can generate alternative forecasts under additional assumptions of future domestic energy production.

Combining the forecasts for imports and exports, net energy imports are expected to narrow by 40 percent in 2014 and 2015, which helps reduce the current trade deficit by about 14 percent.

The framework forecasts a 4.6-percent decline in 2015. Key factors shaping this forecast include relatively stable domestic energy consumption and a continued increase in production, which reduces reliance on energy imports.

4.6%
2015

19.4%

Energy exports are expected to increase 19.4 percent in 2015. The strong growth is supported by both a continued increase in domestic energy production and continued rising foreign demand.