

Where is the US Motor Fuels Market Headed?

Michael E. Canes
LMI
703-917-7201 (O)
mcanes@lmi.org

Overview

Demand for motor fuels in the United States has steadily grown over the past decade and a half. Motor gasoline and diesel demand alone rose by over 3 million barrels/day (mb/d), from a combined 8.6 mb/d to 11.7 mb/d between 1990 and 2006. With continued economic growth this demand likely would continue to increase over the next decade, though price rises of the past few years likely would temper the rate. US motor fuels refining capacity, already strained by past increases in demand, likely would expand.

Policy makers, however, have expressed concern over refining profitability and rising US petroleum dependence, with Congress considering anti “price gouging” legislation and various new taxes on petroleum companies, and President Bush stating that the US is “addicted” to oil and proposing programs to reduce gasoline demand 20% over 10 years. In addition, rising concern over US carbon dioxide emissions has engendered proposals to limit these emissions, probably through use of a cap and trade program. Such a program effectively would put a price on carbon, raising the price of all fossil fuels. The impacts of these various proposals have important implications for US refinery investment.

This paper first examines economic factors that have influenced the motor fuels market in the past and likely will continue to influence it in the future. From these we project what growth would be in the absence of technological change and new policy choices. We then examine several factors that may affect demand for motor fuels over the next 10 years. These include aggressive pursuit of biofuels programs, increases in Corporate Average Fuel Economy (CAFÉ) standards, dieselization of US motor fuels, and a price placed on carbon emissions. Our findings suggest these may have substantial effects on the gasoline market, but fairly small effects on the diesel market.

Methods

The analysis utilizes price and income demand elasticities taken from the open literature to assess likely growth of US motor fuels demand over the next decade. Outcomes are analyzed under differing assumptions regarding price movements and income growth. We then analyze the effects that policy measures such as rising CAFÉ standards would have on demand. CAFÉ standards are assumed to increase by 4% per year over the period, but are modified by credits given car manufacturers for sale of flex-fuel vehicles. Ethanol production is assumed to increase to 15 billion gallons by 2017 while the price of emitting carbon is assumed set at \$30/ton. Dieselization is examined, but the assumption is made that there will not be a US dieselization policy within the relevant timeframe. The findings combine the effects of several of these policies to gauge their overall impact on the motor fuel market over the next 10 years.

Results

Diesel demand is mostly sensitive to economic growth so that this market likely will be strong if the economy continues to do well. Growth of 15-20% over the next decade would be slower than the recent past, but continued adjustment to past price increases and a somewhat lower economic growth rate plausibly will push future growth into that range. Biofuels and carbon policies would constrain diesel demand growth further, perhaps to the lower end of the range.

The gasoline market also will grow with the economy but is more sensitive to price and is still adjusting to past price increases. Base case growth of 15-20% over the next 10 years is plausible. However, biofuels and CAFÉ policies together could reduce gasoline demand by up to 1.2 million b/d. Alternatively, constraints on carbon emissions plus biofuels substitution could reduce overall motor fuels demand by as much as 1.3 million b/d. In that case the gasoline market would grow by only around 200,000 b/d over the 10-year period while diesel would grow 400,000 b/d.

Conclusions

Ordinarily, rising fuel demand would elicit additions to U.S. refining capacity. However, proposals to control refined product prices or to impose special taxes on refiners are likely to discourage such investment. Further, efforts to mandate biofuels as a substitute for petroleum based motor fuels creates a new level of uncertainty in the downstream petroleum market.

Government policy is inherently unpredictable, so that mandates, taxes and other policies that are politically popular today may no longer be so in the future. However, to add capacity, refiners must make long term commitments now. Increased political risk implies that some investments that would have occurred will be postponed. In short, market forces imply a need for more domestic refining capacity while legislative and policy initiatives discourage it.

References

Carol Dahl, "Energy Demand Elasticity Survey: A Primer and Progress Report," draft manuscript, April 2007.

Carol Dahl, "Oil and Oil Product Demand," for the the *Encyclopedia of Hydrocarbons*, published by the Istituto Della Encyclopedia Italiana Treccani.

David L. Greene, "The President's State of the Union Fuel Economy Plan: How I know it will work," Presentation at the 11th annual Washington Energy Policy Conference, April 20, 2007.

USEPA, "Light Duty Automotive Technology and Fuel Economy Trends: 1975 Through 2006," July 2006.