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Federal Regulations Are Complicit

Identifying the Causes of Rising Gasoline Prices

Executive Summary

- The average price of gasoline has risen to $2.10 a gallon. But when adjusted for inflation, current gasoline prices are nowhere near historical high marks. In 1981, gasoline cost nearly $3.00 a gallon (in 2004 dollars). Going back further in time, gasoline prices were much higher than they are now.

- Nevertheless, rising gasoline prices and increasing price volatility are painful to consumers and producers and adversely affect the U.S. economy.

- Numerous components make up the price of gasoline, including the cost of crude oil (45 percent), federal and state taxes (23 percent), refining costs (22 percent) and marketing and distribution costs (10 percent). These components are affected by many factors.

- Among the factors affecting gasoline prices and price volatility, only federal regulations are within the direct control of the federal government.

- Federal regulations have contributed significantly to the high-price, high-volatility environment facing consumers today. These regulations have led to the proliferation of numerous fuel blends – known as "boutique fuels" – which in turn have increased refining and distribution costs.

- Boutique fuels typically have fewer fuel producers, are less fungible, and have fewer distribution supply options. Thus, when the market tightens, suppliers' ability to respond is limited, often resulting in higher fuel prices and increased volatility.

- To address boutique fuels directly, Congress should eliminate the Clean Air Act's oxygenate requirement for reformulated gasoline. Congress also should reduce the number of fuel specifications by offering a limited menu of choices for states and localities.

- In addition to addressing the boutique fuel problem, Congress and the Administration should reform other Clean Air Act regulations (such as the New Source Review requirements) that have resulted in the halt of construction of new refinery capacity.

Introduction

Gasoline prices are some of the most visible of all consumer prices. Gas stations prominently display the price of gasoline for all to see. As a result, consumers are highly sensitive to changes in price, and that sensitivity often translates into anxiety when it rises – especially when it is fueled by the media in an election year. It is important, however, to understand the causes of price fluctuations. A misdiagnosis would lead to the wrong cure, thereby worsening matters rather than making them better. Indeed, the worst effects of the 1973 "energy crisis" – widespread shortages and long gas lines – were self-inflicted through wrongheaded government policies such as price controls.

Many of the factors that affect price volatility, such as world supply and demand, are largely outside the control of the federal government. There are, however, federal regulations that put upward pressure on gasoline prices and increase price volatility. Clean-fuel and air quality programs, for instance, have led to the production and use of numerous and differing fuel blends throughout the country. These various fuels – often referred to as boutique fuels – have fewer fuel producers, are less fungible, and have fewer distribution options.

The multiplication of fuel types has stressed production and distribution systems and decreased supply flexibility. Thus, when fuel markets tighten, for whatever reason, the ability to respond is more limited, leading to higher fuel prices and increased volatility. Other air quality regulations, such as New Source Review requirements, have suppressed investment in additional refinery capacity and pipeline capacity. This paper will look at the effect of some federal regulations on gasoline prices and suggest some reforms to improve the situation.

Factors That Influence the Price of Gasoline

There are several components included in the price of gasoline but, before examining them, it is important that today's price of gasoline be viewed in context. Current gasoline prices, when adjusted for inflation, are nowhere near record highs. In 1981, for example, the price of a gallon of gasoline, in 2004 dollars, approached $3.00. And prices were near today's level of around $2.00 a gallon in 1991. Since then, prices have hovered around $1.50 a gallon. Although current gasoline prices are about 50 to 60 cents a gallon higher than the recent average, a longer-term view shows that, in the past, Americans have paid much more for a gallon of gasoline.[1] That's the good news.

The bad news is that even though prices have not reached historic highs, price volatility is still a cause for concern because it can cause havoc in the marketplace by reducing market stability and predictability. As this paper will demonstrate, volatility – when caused by regulatory interference – is something policymakers can and should address.

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[1]Energy Information Administration (EIA), *Short-Term Energy Outlook*, April 2004, http://www.eia.doe.gov/emeu/steo/pub/contents.html.

As to the components in the price of gasoline, here's the breakdown:
– the price of crude oil accounts for 45 percent of the total cost;
– federal and state gasoline taxes account for 23 percent;
– refining costs account for 22 percent; and
– marketing and distribution costs account for 10 percent of the total cost of gasoline.[2]

Several factors contribute to changes in the price of gasoline. The three main factors are:
– changes in crude oil prices;
– the transparency of energy markets;[3] and
– regulations that affect the price of gasoline.

The regulations that affect the price of gasoline include prohibitions on exploration, the resulting proliferation of fuel blends to comply with federal clean air regulations (boutique fuels), and regulations that impede the construction of additional refining and pipeline capacity.[4]

What the Federal Government Can and Cannot Do to Reduce Gas Price and Volatility

There is very little government can or should do about the first two factors. Crude oil prices are affected by world supply and demand. Supply is affected by both natural market forces and artificial forces, such as production quotas implemented by the Organization of Petroleum Exporting Countries (OPEC). And worldwide demand for oil continues to grow, most rapidly in Asia.[5] The second main factor is market transparency and, on the whole, it is a good thing. News travels the globe rapidly, and prices and commodities futures markets respond almost instantly to changes in market conditions. Transparency produces highly efficient markets, but it also increases volatility. Any attempt by the government to reduce the cost of transparency-induced volatility may well wipe out significant efficiency gains.

In addition to the fact that government has a limited ability to affect market-induced changes, it is probably unwise for government to create an expectation that it will come to the rescue by interfering with markets whenever gasoline prices rise.

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[2]EIA, *Gasoline and Diesel Fuel Update*, April 12, 2004, http://tonto.eia.doe.gov/oog/info/gdu/gasdiesel.asp.

[3]A transparent market exists when market information is readily available to market participants. In a transparent market, for instance, prices respond quickly to changes in the market, thereby efficiently conveying accurate information. This may also increase price volatility.

[4]Statement of James S. Carter before the Senate Permanent Subcommittee on Investigations, April 30, 2002.

[5]China is the largest contributor to global demand growth. According to the International Energy Agency, "The breakneck pace of Chinese economic expansion is rapidly changing the oil demand map. For oil products, as for coal, metals and other commodities, China has emerged as the single biggest factor behind world-wide demand growth." IEA estimates that China will account for 30 percent of global demand growth in 2004. IEA, *Monthly Oil Market Report*, November 13, 2003.

However, the government *is* able to ease the pressure on prices and reduce volatility by reducing its own interference in the market – mostly directly by way of taxes and regulation. Indeed, much of the upward pressure on gasoline prices originates with government policies. Unfortunately, the typical political response to rising gasoline prices is not to look inward at policies that may exacerbate the problem, but to look outward in search of scapegoats. This usually leads to calls for investigations into price fixing or other types of market manipulation by the private sector. These efforts inevitably prove fruitless and waste a lot of money. Over the last several decades, some 29 different federal and state government investigations into the rising price of gasoline have failed to turn up evidence of any wrongdoing or illegal activity by industry. Current gasoline prices are easily accounted for without resorting to conspiracy theories.

The Role of Government Regulation

The primary problem facing today's market for motor fuels is the proliferation of different fuel blends – boutique fuels – as a result of federally imposed clean-fuel and air quality regulations. The Environmental Protection Agency (EPA) was given authority to regulate motor fuels in the Clean Air Act Amendments of 1990. These amendments created the oxygenated-gasoline and reformulated-gasoline requirements, thereby creating three distinct fuel formulations (conventional, oxygenated, and reformulated). These three formulations are also available in three grades with distinctions between northern/southern and summer/winter blends. The transition from winter to summer blends creates additional complications, as the winter fuel supply must be completely emptied before the summer fuel grade can be added to the system.

To add to the complexity, states are allowed to adopt otherwise preempted unique clean-fuel requirements to comply with federal regulations. Upon developing their State Implementation Plans, many states discovered that they could comply with air quality regulations by using low-RVP (Reid Vapor Pressure, an indicator of a gasoline's volatility) conventional gasoline, instead of reformulated gasoline (RFG). In addition, California needed a cleaner fuel than Federal RFG (i.e., California RFG) to comply with federal air quality requirements, and the Midwest created its ethanol-blended RFG.[6] As a result, no fewer than 15 different gasoline blends are now used throughout the country.[7]

This year, further pressure is being put on the system as the Clean Air Act's so-called Tier 2 regulations go into effect. These require lowered sulfur content in gasoline. The ban on the use of MTBE (Methyl Tertiary Butyl Ether, an oxygenate widely used to comply with federal regulations) in California, New York and Connecticut is also causing prices to rise.

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[6]National Association of Convenience Stores (NACS), *Motor Fuels Supply Fungibility and Market Volatility Analysis*, September 2003.

[7]If one counts the various octane grades, the number jumps to 40+ different fuel blends being used throughout the U.S.

As a consequence of these provisions, the U.S. gasoline market has become fragmented by regional and seasonal differences in fuel requirements. This has put added pressure on refinery capacity, thereby causing a general rise in gasoline prices and increasing volatility.

A 2001 EPA report on the boutique fuels problem notes, "The current fuel production and distribution/storage systems are capable of supplying sufficient volumes of the various types of fuels required today under normal operating conditions." However it goes on to note:

> "With fuel production operating at near capacity, when the market tightens for whatever reason (e.g., refinery shutdown, pipeline failure, winter-to-summer transition, or unusually high demand), they have limited ability to respond to overcome the disruption. These tight market conditions manifest themselves in increased fuel prices and price volatility for consumers."[8]

Among the report's findings:

- The growth in the number of fuel blends has been significant, and is a result of federal clean-fuel regulations.
- The proliferation of boutique fuels has made it difficult to move gasoline supplies around the country to respond to supply disruptions.
- Although the entire fuel market is stressed by supply and demand forces, the effects of supply shortages and price volatility show up first in geographically isolated fuel programs – i.e., where boutique fuels are used. These fuels have fewer producers, are less fungible, and have fewer distribution system supply options.
- The continued growth in the number of fuel types make it difficult for fuel producers to stay in existing niche markets, resulting in fewer producers for any given fuel type.
- Fuel marketers were once able rely on alternative terminals in the case of a supply shortfall, but that is no longer the case. Often, the nearest terminal carrying the required fuel may be hundreds of miles away.
- If the number of fuels continues to grow, occasional and isolated supply problems may become frequent and widespread, which would require significant investment in fuel production and distribution systems.

In addition to these difficulties, U.S. fuel regulations are also affecting gasoline imports because foreign suppliers are unable to keep up with the increasing complexity of federal gasoline requirements. The United States increasingly relies on imports of refined gasoline to meet demand. Currently, this nation imports about 10 percent of its total gasoline consumption, in addition to its oil imports. According to the *Houston Chronicle*, the sulfur standards that went into effect this year are keeping 150,000 barrels of gasoline per day out of the U.S. market.[9]

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[8]U.S. EPA, *Staff White Paper: Study of Unique Gasoline Fuel Blends ("Boutique Fuels"), Effects on Fuel Supply and Distribution and Potential Improvements*, October 2001.

[9]*Houston Chronicle*, "Gasoline Demand and Prices Are Going Up, But New Refineries Aren't. With Permits, Regulations and Imported Fuel, Everyone Has Issues," March 28, 2004.

Lack of Refining and Pipeline Capacity

Finally, it is often noted that domestic refineries are operating at near-full capacity (about 95 percent), and more capacity is needed to ease the pressure on the production system. Indeed, since 1981 the total number of refineries in the United States has fallen from 324 to 149. Again, boutique fuels are a major reason why current refining capacity is so strained. This decline in capacity is due in large part to the fact that "many refiners have struggled to remain online due to the investment costs associated with complying with new federal and state regulations, including regulations designed to improve air quality."[10] Smaller refineries are especially vulnerable to the competitive disadvantages introduced by rising compliance costs. This has contributed to increasing the concentration of the refining industry over the last 10 to15 years. The top 10 refineries now control more than 78 percent of the market, compared to less than 56 percent 10 years ago.

In addition to fuel regulations, New Source Review (NSR) regulations under the Clean Air Act have halted the construction of new refinery capacity. Under the NSR, all new refineries are subject to stringent air quality regulations. Older refineries (those built before 1977) are not subject to the those requirements unless operators expand or substantially upgrade their facilities. Routine repair and maintenance were allowed without triggering NSR requirements. As a result, no new refineries have been built since 1976.

The Clinton administration reinterpreted the NSR rules, so that what had previously been considered routine maintenance was now sufficient to trigger the NSR requirements. The reinterpretation was applied retroactively, and many refineries were penalized with big fines for work done years before. This has further chilled investment in additional capacity.

These restrictions on increasing refining capacity have led to big profits for the refining industry. Under normal circumstances, large profits lead to investment in higher capacity; instead, according to the *Houston Chronicle*,[11] "Between now and year-end 2006, refiners say they will be spending billions of dollars on things other than expansion." Citing industry officials, the article notes that "the cost of meeting clean-fuel rules diverts money that could be used for new construction. To make matters worse, the methods used to take out sulfur to meet the specifications also reduce the amount of gasoline that can be made from a barrel of crude."

The president of the National Petrochemical and Refiners Association predicts that the industry may have to spend as much as $20 billion to meet all types of regulations over the next decade, enough money to build a half dozen refineries.[12]

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[10]NACS, September 2003.

[11]*Houston Chronicle*, March 28, 2004.

[12]*Houston Chronicle*, March 28, 2004.

The Bush administration has tried to reform NSR in order to facilitate repairs and make improvements to existing facilities. The reforms would allow the industry to improve the efficiency, safety, and reliability of plants without triggering NSR's requirements as long as improvements do not increase emissions.[13] These efforts have been blocked by a coalition of Democrats in the Senate.[14]

The fragmentation of the gasoline market stresses the distribution system, which also has limited excess capacity. The Association of Oil Pipelines has warned that as more fuel grades come onto the market, "the pipelines may ultimately not be able to carry all the fuel grades produced."[15] The association notes that there always will be some intermixing of fuels in the pipeline, which downgrades the mixed fuel to the least valuable product; additionally, some fuels that have been mixed cannot be used at all.

With U.S. oil consumption projected to increase from the current 8.7 million barrels per day in 2001 to 13.8 million barrels per day in 2025, it is critical something be done to address the issue of refinery and pipeline capacity. Over the long term, this will probably require a combination of reducing the number of fuels in use and easing restrictions on more construction.

Some Suggestions to Reduce Price Volatility

There are several possible solutions available to Congress to reduce the stress on the gasoline supply and distribution system. In the short term, the EPA should temporarily suspend clean-fuel requirements in the event of local supply disruptions. For example, when a pipeline that carried gasoline to Phoenix burst last summer, gasoline could not be diverted from Tucson or Flagstaff because Phoenix uses a different fuel blend than the rest of Arizona. As a result, Phoenix ran low on gasoline, which allowed prices to soar to around $3.00 a gallon.[16] A temporary waiver would have allowed Phoenix to import fuel from elsewhere until the emergency had passed.

There are longer-term solutions that Congress should explore to help ease pressures on the gasoline market. First, it could make it easier to solve the boutique fuel problem by eliminating the oxygenate requirement in the 1990 Clean Air Act amendments. Many states learned that they could avoid the expensive oxygenate requirements and still comply with clean air standards by adopting conventional low-RVP fuels. This has contributed significantly to the proliferation of boutique fuels. In 1999, a blue-ribbon panel appointed by EPA Administrator Carol Browner recommended that the oxygenate requirement be eliminated on the basis that it is possible to

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[13]Jonathan Adler, "New Source Review Revue," *National Review Online*, October 1, 2003.

[14]David Brooks, "Clearing the Air," *New York Times*, April 20, 2004.

[15]NACS, September 2003.

[16]*Arizona Republic*, "Pipeline Task Force Offers 21 Pointers," April 16, 2004.

reformulate gasoline without oxygenates that can achieve similar air quality improvements.[17] The National Research Council also found that commonly used oxygenates do little to improve ozone air quality and may have some disadvantages.[18] Eliminating the oxygenate requirement would clear the way to reduce the number of fuels in use.

Another solution would be to reduce the number of fuel specifications across the country by offering a limited menu of fuel choices that states and localities could choose from. The EPA's report on boutique fuels notes that several of the fuels in use today constitute a very small percentage of the total gasoline supply. These could be consolidated with other fuels, which would reduce the number to five. These fuels would cover the same range of environmental performance as the current suite of fuels, including volatile organic compounds and toxics emission performance.[19] Related to this, states and localities could be allowed to choose more than one fuel option from this menu, giving them the ability to switch to an alternative fuel during a supply emergency, without having to wait for a waiver from the EPA.

Finally, NSR reforms would remove impediments to invest refinery capacity expansion and to improve safety, efficiency, and reliability. This could be done without harming environmental quality.

A Note on OPEC

As noted above, the cost of crude oil is the single largest component in the cost of gasoline. OPEC wields significant influence on world markets and, as long as there is a large price differential between the cost of drilling oil in the Middle East and everywhere else, the Middle East and Saudi Arabia in particular will continue to have significant influence over world oil markets. Unfortunately, the actions of OPEC also contribute to price volatility. Although it is difficult for the United States to influence OPEC's actions directly, there is something it can do to lessen to some extent OPEC's market power and to reduce volatility.

The biggest, and only real constraint on OPEC's market power is the threat of competition. As OPEC cuts production, it pushes oil prices to levels where more higher-cost producers can come online. If production is cut too much, this ultimately hurts OPEC, so there is a limit on its ability to influence crude oil prices. If oil production and distribution costs in other parts of the world are lowered, it would reduce OPEC's market power.

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[17]EPA, Blue Ribbon Panel on Oxygenates in Gasoline, *Achieving Clean Air and Clean Water*, September 1999, http://www.epa.gov/otaq/consumer/fuels/oxypanel/r99021.pdf.

[18]National Research Council, *Ozone-Forming Potential of Reformulated Gasoline*, National Academy Press, Washington, D.C.: 1999.

[19]U.S. EPA, October 2001.

One way to do this is to treat North America as a single energy market. The leading supplier of oil to the U.S. market is Canada. The third leading supplier is Mexico.[20] By lowering any remaining cross-border barriers to energy imports and by increasing the capacity of cross-border distribution systems, Congress can lower the cost to both Canada and Mexico of shipping oil to the United States, thereby inducing them to bring more supply on line. This would lower the extent to which OPEC could cut production and push up prices.

Terry Barnich, president of New Paradigm Resources Group, Inc., describes as a "thoughtful approach" efforts to implement a plan "to integrate a single North American energy market with the U.S. as a consumption center nestled between the two ample supply centers of Mexico and Canada:"

> There are enough oil and gas resources under the ground of those two reliable neighbors to supply the U.S. at current consumption levels for the next 100 years. The Bush administration has undertaken the first steps in this process by initiating the Canada-United States Smart Border Initiative, which is designed to jointly develop integrated energy infrastructures that should form a key building block in a more fully integrated energy market.[21]

The United States could also reduce barriers to exploration in both Alaska and the Outer Continental Shelf. Again, reducing the costs of exploration in the United States would help limit to some extent OPEC's market power.

Conclusion

The federal government should strive to maintain a well-functioning gasoline market for the good of the economy. It ought not to interfere in the marketplace, but it can and should make changes to regulations that impact the market. The proliferation of so-called boutique fuels in the U.S. gasoline market – resulting from federal regulations – has led to rigidities that increase gasoline prices and price volatility. The federal government should modify its regulatory regime so the market can respond by reducing the number of fuels in the market. It also should introduce additional flexibilities – including waivers during emergencies – to reduce volatility and introduce greater certainty into economic planning. Impediments to refinery and pipeline construction and greater domestic oil exploration should be reduced. Each of these actions would spur economic growth and greatly contribute to the well-being of American taxpayers.

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[20]U.S. Energy Information Administration, *Monthly Energy Review*, March 2004.

[21]Terry Barnich, "Kerry's Enervating Energy Plan: Ignoring the power of thriving free markets that would exploit the economic and technological sources of energy is foolhardy," *Chicago Tribune*, April 4, 2004.