

Economic Amnesia: The Case against Oil Price Controls and Windfall Profit Taxes

By Jerry Taylor and Peter Van Doren

Introduction

From mid-September 2004 to mid-September 2005, gasoline prices increased a staggering 92 cents per gallon, to a national average of \$2.79 per gallon, before dropping down to \$2.48 on October 31.¹ The recent price increases have led some to call for federal price controls for gasoline and/or related oil products as well as some form of windfall profits tax on the oil industry.

Proponents of intervention contend that gasoline markets are not competitive (with some accusing producers of price collusion), that fat profit margins induce little more supply than might otherwise be induced by healthy but “reasonable” profit margins, and that the gasoline profits are largely unanticipated and unearned. As a result, oil companies are reaping very large profits at the expense of consumers. Price controls and/or windfall profit taxes, they maintain, would simply redistribute wealth from producers to consumers without any significant effect on supply.

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¹ Energy Information Administration, “Weekly Petroleum Status Report,” data for week ending September 16, 2005, DOE/EIA-0208(2005-37), p. vi; http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/current/pdf/wpsrall.pdf; “Weekly Petroleum Status Report,” data for week ending October 28, 2005, DOE/EIA-0208(2005-43), p.vi; http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/current/pdf/wpsrall.pdf.

We examine those arguments with particular attention to retail gasoline markets. We find those arguments to be generally unpersuasive. Both economic theory and past experience suggest that aggressive price controls and windfall profits taxes will harm consumers by creating fuel shortages and reducing investment in new supply.

The Economic Anatomy of Gasoline Prices

Economists believe that market prices should, as a general rule, be left alone by government. Prices in market economies are established by the interplay of supply and demand.² Goods and services are allocated to those who value them most, but competition ensures that consumers face the lowest possible prices. Information regarding relative scarcity or plenty is communicated quickly and unambiguously to both buyers and sellers. High prices encourage conservation and new supply.³

Government intervention, however, might improve overall economic efficiency if prices do not reflect total costs or if the market in question is not competitive. “Might” is the key word because no matter how imperfect markets may be, government intervention poses its own set of problems. Frequently interventions to correct “imperfect” markets (however rightly or wrongly defined) do more economic harm than good.⁴ Accordingly,

² For a primer on how prices are established in oil and gasoline markets in particular, see U.S. General Accounting Office, “Analysis of the Pricing of Crude Oil and Petroleum Products,” GAO/RCED-93-17, March 1993, and Federal Trade Commission, “Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition,” 2005.

³ Empirical studies conclude that in the short run, a 10 percent increase in gasoline prices will lead to a 0.6-1.0 percent decrease in demand. In the long term, however, a 10 percent increase in gasoline prices will lead to a 10 percent decrease in demand. See M.A. Adelman, *The Genie out of the Bottle* (Cambridge, MA: MIT Press, 1995), p. 190. Alan Krueger, Professor of Economics and Public Affairs at Princeton, in a recent *New York Times* column repeated Adelman’s characterization of the elasticity estimates in the literature but went on to observe that from September 2004 to September 2005 gasoline prices rose 55 percent but consumption dropped only 3.5 percent for an elasticity of .06 rather than .1. Alan Krueger, “Why the Tepid Response to Higher Gasoline Prices? *New York Times* October 13, 2005, p. C2.

⁴ Charles Wolf, *Markets or Government: Choosing Between Imperfect Alternatives* (Cambridge, MA: MIT Press, 1991).

evidence that market imperfections exist is a necessary but not sufficient condition for government intervention. Evidence must still be presented that the proposed intervention will on balance improve economic efficiency.

In gasoline markets no evidence supports any market failure claims in a manner that would support reduction of gasoline prices. For example, there is an extensive economics literature on the social costs associated with gasoline consumption that are not fully reflected in the price of gasoline at the pump, but the implication is that market prices for gasoline are too low, not too high.⁵ The remainder of this first section of the paper analyses the competitiveness and profitability of petroleum and gasoline markets.

How Competitive are Gasoline Markets?

Although the oil industry has consolidated over the past two decades⁶, no evidence exists of collusion or price fixing among investor-owned oil companies or gasoline retailers in domestic markets.⁷ A thorough examination of the literature through

⁵ Economists at Resources for the Future argue that consuming a gallon of gasoline imposes \$1.01 worth of costs on society that are not reflected in the price of gasoline. Current taxes average about 40 cents per gallon, but because those taxes are quasi-user charges for road services, the gas tax would have to total \$1.41 to equal road and external costs. Ian Perry and Kenneth Small, "Does Britain or the United States Have the Right Gasoline Tax?" Working Paper, Resources for the Future, January 25, 2002 (http://www.rff.org/~parry/Papers/01/gas_tax.pdf). For an economic argument against raising the gasoline tax, however, see Robert Hahn, "Energy Conservation: An Economic Perspective," AEI-Brookings Joint Center for Regulatory Studies, Policy Matters 05-25, September 2005; <http://www.aei-brookings.org/policy/page.php?id=228>.

⁶ The top five investor-owned oil companies in the world today control 14.2 percent of global oil production, 50.3 percent of domestic refining capacity, and 61.8 percent of the retail gasoline market. Ten years ago, the top five investor-owned oil companies in the world controlled 7.7 percent of global oil production, 33.4 percent of domestic refining capacity, and 27 percent of the retail gasoline market. "Mergers, Manipulation, and Mirages: How Oil Companies Keep Gasoline Prices High, and Why the Energy Bill Doesn't Help," Public Citizen, March 2004. On the other hand, vertical integration within the gasoline sector has decreased since 1990. Federal Trade Commission, "Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition," 2005, pp. 124-125.

⁷ We are unaware of any governmental investigation since the formation of the OPEC cartel that has found evidence of price fixing or collusion in U.S. gasoline markets. The Federal Trade Commission concludes that "the vast majority of the FTC's investigations have revealed market factors to be the primary drivers of both price increases and price spikes." Federal Trade Commission, "Gasoline Price Changes: The

July 2003 finds little evidence that increases in horizontal or vertical market concentration in the oil sector since 1990 have increased retail gasoline prices.⁸

Since the summer of 2003, however, two studies suggesting otherwise have emerged, but those studies are methodologically suspect. The U.S. General Accounting Office examined retail gasoline prices following the eight largest oil mergers since 1990 and found that, in six of the eight cases, retail prices increased an average of 1-2 cents per gallon as a result of those mergers.⁹ The FTC, however, believes that the GAO study failed to consider compelling alternative explanations for those price increases.¹⁰ The FTC raised several major methodological objections¹¹:

- The GAO study assessed the impact of mergers on wholesale gasoline prices, not retail pump prices. The two do not always move together.¹²
- The models employed by the GAO did not adequately control for several factors that affect gasoline prices, such as seasonal changes in demand, changing Reid

Dynamic of Supply, Demand, and Competition,” 2005, p. ii. Those investigations, it should be noted, were undertaken by both Republican and Democratic administrations.

⁸ For a summary of the literature, see John Geweke, “Empirical Evidence on the Competitive Effects of Mergers in the Gasoline Industry,” Public Comment, FTC Conference on Factors that Affect Prices of Refined Petroleum Products II, July 16, 2003; <http://www.ftc.gov/bc/gasconf/comments2/gewecke1.pdf>.

⁹ The GAO study provides a total of 10 estimates of the effects of mergers on prices. Those estimates cover three types of fuel (conventional, reformulated, and specially blended gasoline for the California market) and different geographic areas. Seven of the ten estimates – all involving either conventional or reformulated gasoline – found that mergers increased wholesale fuel prices by 0.15 cents per gallon to 1.3 cents per gallon. Although mergers were found to increase wholesale California gasoline prices by 7-8 cents per gallon, the results were not at a level of confidence normally thought of as statistically significant. The GAO study also did not find a statistically significant increase in wholesale gasoline prices in the Eastern United States. U.S. General Accounting Office, “Energy Markets: Effects of Mergers and Market Concentration in the U.S. Petroleum Industry,” May 2004.

¹⁰ Federal Trade Commission, “Staff Analysis of General Accounting Office Report,” Memorandum prepared by Bureau of Economics, Federal Trade Commission, submitted as an appendix to the prepared statement by William Kovacic, General Counsel of the Federal Trade Commission, before the Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives, hearing on Status of U.S. Refining Industry, July 15, 2004.

¹¹ The FTC also highlighted several problems related to GAO’s analysis of particular mergers – see pp. 16-19.

¹² Retail competition may prevent service stations from passing on higher prices. Moreover, a significant amount of gasoline reaches the pump without going through wholesale markets.

Vapor Pressure rules for gasoline, the price of the fuel oxygenate MTBE, and incompletely controlled for the refinery and pipeline shutdowns that contributed to the Midwest gasoline price spiral in 2000 and changes in gasoline formulation rules that affected numerous markets in that same year.

- The study did not compare changes in wholesale market prices in areas affected by a merger with changes in wholesale market prices in those areas not affected by the merger. Accordingly, the study did not adequately control for external factors that may have affected prices.
- The GAO examined the impact of market concentration in regional refining districts (PADDs in industry jargon) but not in any particular retail market. But since wholesale gasoline markets do not coincide with PADDs (there are many of the former in the latter), the GAO's metrics for market concentration are flawed.
- The GAO measured market concentration by the number of refineries supplying fuel to the region, but ignored the impact of supplies brought by pipelines or ships. Accordingly, its definition of market concentration is frequently too high.

The second study, published by University of Texas economists Nicholas Oxedine and Michael Ward, constructed a simple market structure model (known to economists as a structure-conduct-performance model, or "SCP model") and concluded that mergers since 1990 have increased retail gasoline prices by 0.6 – 1.2 percent. As the authors concede, however, studies such as this are incapable of differentiating between

mergers that create more efficient (albeit higher) prices and mergers that produce market power and correspondingly inefficient prices.¹³

In the Oxedine & Ward model, industrial competitiveness is greater if the number of sellers is greater. But economists no longer view competition this way. The modern view is that industries are competitive to the extent that entry is possible. As long as firms can freely enter the market, there is little risk that a large market share will translate into monopolistic behavior.¹⁴ That's because once a firm begins to restrain production and increase price, others can enter that sector and offer more products at reduced prices.

The only barriers of consequence inhibiting entry in domestic oil or gasoline markets are those that have been erected by state and local governments.¹⁵ In particular, laws prohibiting retail gasoline outlets from pricing "below cost" (such as a mandatory minimum markup above a legally defined wholesale price) exist in 17 states.¹⁶ Several other states have more general minimum mark-up laws that pertain to gasoline as well as other products. Six states prohibit vertically integrated oil companies from owning retail gasoline outlets.¹⁷ The intended effect of such laws is to keep some entrants out of the

¹³ Nicholas Oxedine and Michael Ward, "Price Effects from Retail Gasoline Mergers," Working Paper, April 2005, available from authors. For a critique of SCP modeling, see Harold Demsetz, "Industry Structure, Market Rivalry, and Public Policy," *Journal of Law and Economics* 16, 1973, pp. 1-10.

¹⁴ See William Baumol, "Contestable Markets: An Uprising in the Theory of Industrial Structure," *American Economic Review* 72:1, 1982, pp. 1-15 and William Baumol and John Panzer, *Contestable Markets and the Theory of Industrial Structure* (New York: Harcourt Brace Jovanovich, 1982). Subsequent empirical work, however, suggests that numerous competitors may well indeed be needed to discipline firms' pricing behavior. For a discussion of the effect of potential versus actual competition in the airline context, see Severin Borenstein, "The Evolution of U.S. Airline Competition," *Journal of Economic Perspectives* 6, Spring, 1992, pp. 45-73.

¹⁵ For a summary of the literature concerning the impact that state and local policies and regulations can have on gasoline prices, see Federal Trade Commission, "Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition," 2005, pp. 103-124.

¹⁶ Alabama, Colorado, Florida, Georgia, Louisiana, Maine, Maryland, Massachusetts, Minnesota, Missouri, New Jersey, North Carolina, Pennsylvania, South Carolina, Tennessee, Utah, and Wisconsin.

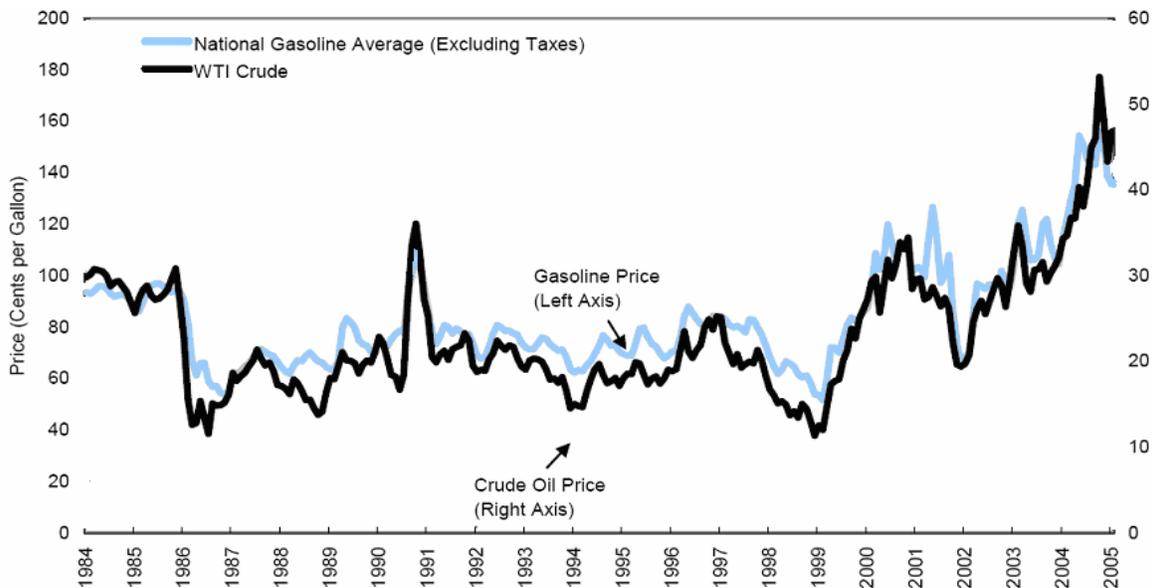
¹⁷ Connecticut, Delaware, Hawaii, Maryland, Nevada, Virginia, and the District of Columbia. Federal Trade Commission "Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition," 2005, fn 59, p. 132.

market – primarily, (i) those who might sell gasoline at or near acquisition cost in order to encourage traffic and thus sales of other more profitable products and (ii) those who might undercut the prices charged by “mom and pop operations.” Most analysts believe that those laws have succeeded in their aims to the detriment of gasoline consumers.¹⁸

The Relationship Between Crude Oil and Gasoline Prices

Regression analyses of the data portrayed in Figure 1 conclude that 85 percent of the variation in the price of gasoline can be attributed to changes in world crude oil prices¹⁹

Figure 1: Comparison of the National Average Price of Gasoline and the Price of West Texas Intermediate Crude, 1984-2005



¹⁸ Rod Anderson and Ronald Johnson, “Antitrust and Sales-Below-Cost Laws: The Case of Retail Gasoline,” *Review of Industrial Organization* 14, 1999, pp. 189-204. Politicians have long acted to restrain competition in gasoline markets. Rob Bradley, *Oil, Gas, and Government: The U.S. Experience*, Vol. II (Lanham, MD: Rowman & Littlefield, 1996), pp. 1596-1603.

¹⁹ Federal Trade Commission, “Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition,” 2005, p.15.

Source: Federal Trade Commission “Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition,” 2005, p. iv, figure 2-1.

But crude and gasoline prices can diverge even in perfectly competitive gasoline markets.²⁰ The temporary increase of gasoline prices following Hurricane Katrina illustrates the point. Approximately 2 million barrels of refining capacity a day – about 10 percent of total U.S. refining capacity – were shut down as a consequence of the storm and gasoline pipelines capable of delivering fuel from Gulf Coast refineries were significantly disrupted.²¹ That greatly decreased the supply of gasoline at retail outlets and, hence, increased retail prices beyond what might otherwise have been expected from the 1.9 percent decrease in world crude oil production as a result of the storm.²² Hurricane Rita reduced additional refining capacity. As of October 25, 2005, 1 million barrels of gasoline production a day was still shut-down as a result of the hurricanes.²³

How Competitive are Crude Oil Markets?

The ready availability of futures, spot, and contract markets suggests that market prices accurately reflect international supply and demand for crude oil. But many believe that OPEC member states restrain crude oil production. So even though international oil

²⁰ An unpublished manuscript written by economist Donald Nichols at the University of Wisconsin notes that gasoline prices since April 2005 have risen significantly compared to the rise of world crude oil prices over that same period. That manuscript has been cited by many who believe that forces other than simple supply and demand are at work in gasoline markets. Professor Nichols, however, observes that “It is possible that this spike was a result of normal market factors and that no individual or company had control over what happened,” and his paper makes no argument to the contrary. Donald Nichols, “Gasoline Prices in 2006,” unpublished manuscript available from authors, September 27, 2005, p. 1.

²¹ Energy Information Administration, “Special Report: Hurricane Katrina’s Impact on U.S. Energy,” September 1, 2005; http://tonto.eia.doe.gov/oog/special/eia1_katrina_090105.html.

²² Authors’ calculation based on data provided in Energy Information Administration, “International Petroleum Monthly,” August 2005, table 1.1c; <http://www.eia.doe.gov/emeu/ipsr/t11c.xls>, and “Short Term Energy Outlook,” September 2005, p. 1; <http://www.eia.doe.gov/pub/forecasting/steo/oldsteos/sep05.pdf>.

²³ Energy Information Administration, “Daily Report on Hurricane Impacts on U.S. Energy, October 25, 2005; http://tonto.eia.doe.gov/oog/special/eia1_katrina.html.

markets efficiently price and allocate the crude oil being produced, most (but not by any means all) economists believe that the amount of crude oil being produced is a function of market power and that this exercise of market power produces greatly inflated world crude oil prices.²⁴ For instance, Francisco Parra, former Secretary-General of OPEC, maintains that:

The Middle East with its vast reserves (65 percent of the world total) and highly prolific oil wells could have, if it had been so minded, developed reserves to produce and sell enough oil to satisfy total world demand at under \$5 per barrel, and still enjoy substantial government revenues. That is what would happen in a highly competitive world.²⁵

If the OPEC cartel does raise world crude oil prices by constraining production, are price controls warranted? From an economic perspective, the answer is “no.” Domestic price controls will not reduce OPEC’s market power.²⁶ The manner in which domestic price controls were implemented in the U.S. in the 1970s actually increased the demand for OPEC imports and thus its profits and punished domestic producers who are not at fault for OPEC production decisions. Price controls also reduce incentives to

²⁴ The source of that market power is in dispute. The most recent empirical test to find support for the conventional view of OPEC’s role in international oil markets is Robert Kaufmann, Stephane Dees, Pavlos Karadeloglou, and Marcelo Sanchez, “Does OPEC Matter? An Econometric Analysis of Oil Prices,” *Energy Journal* 25:4, 2004, pp. 67-90. Oil economist A.F. Alhajji, however, maintains that true market power within OPEC resides almost exclusively with Saudi Arabia. A.F. Alhajji and David Huettner, “OPEC and World Crude Oil Markets from 1973 to 1994: Cartel, Oligopoly, or Competitive?” *Energy Journal* 21:3, 2000, pp. 31-60. James Smith argues that OPEC is a bureaucratic cartel somewhere between a benign oligopoly and a perfect cartel. He finds little evidence to support the proposition that Saudi Arabia is the leader of the cartel. James Smith, “Inscrutable OPEC? Behavioral Tests of the Cartel Hypothesis,” *Energy Journal* 26:1, 2005, pp. 51-82.

²⁵ Francisco Parra, *Oil Politics: A Modern History of Petroleum* (New York: I.B. Tauris, 2004), p. 337. Parra’s beliefs in this regard are consistent with other economic narratives of the history of world crude oil markets. See, for instance, M.A. Adelman, *The Genie Out of the Bottle: World Oil Since 1970* (Cambridge, MA: MIT Press, 1995).

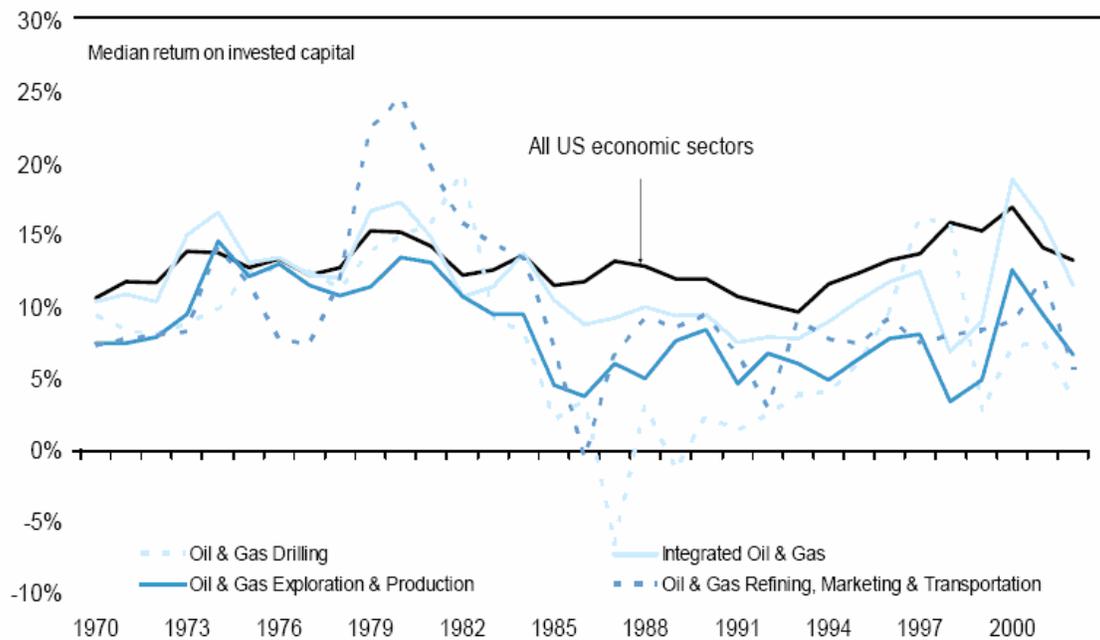
²⁶ In fact economists suggest a tax on gasoline use as the antidote for its market power. Adelman, p. 330. In his economics column, Hal Varian, Professor of Economics at Berkeley, reviews the economic arguments for coordinated gasoline taxation among consuming nations as a method to transfer OPEC rents from producer to consuming nations. See Hal Varian, “Economic Scene,” *New York Times* October 19, 2000 p. C2.

increase production – and thus, reduce supply – whether OPEC is strangling the market or not. Domestic price controls thus assist the cartel’s attempts to restrict supply.

“Illicit” Profits?

How profitable are oil companies? The best metric is return on investment capital.²⁷ Figure 2 examines returns on investment capital for four separate sectors of the U.S. oil and natural gas industry from 1970-2003. Surprisingly, the oil and gas sector has been less profitable than the rest of the U.S. economy over the past 33 years.

Figure 2: Return on Investment Capital, 1970-2003

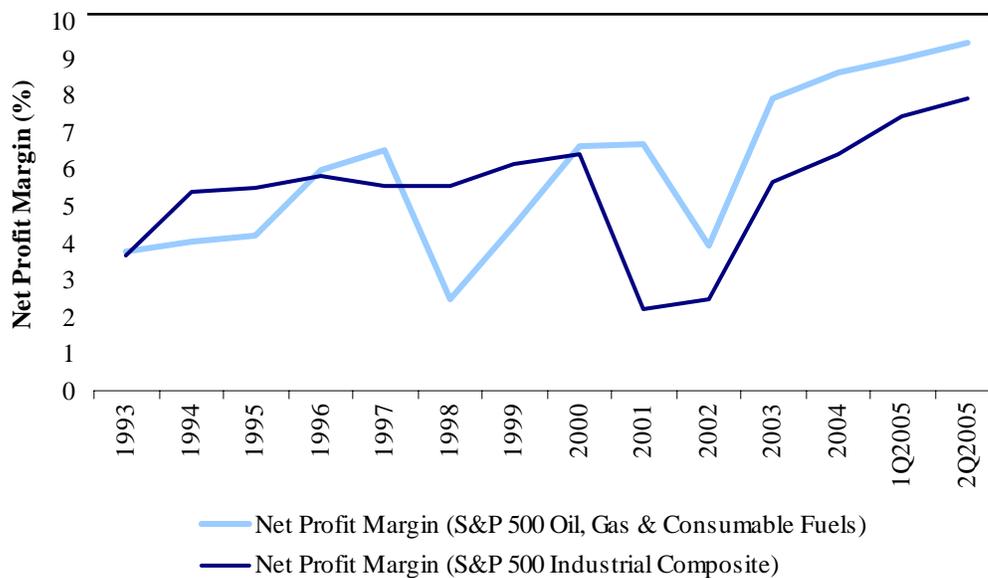


Source: Philippe Petit, “The Use of Hedging in a Prudent Purchase Strategy for Gas,” presentation at AgroEnergy Conference sponsored by Goldman Sachs, April 5, 2005, p. 11: <http://www.agro-energy.nl/aanmelden/Goldman%20Sachs%20presentatie.pdf>.

²⁷ For a discussion of how ROIC is calculated and why it is a better metric than the alternatives, see Dale Wettlaufer, “A Look at ROIC,” The Motley Fool, undated: <http://www.fool.com/school/roic/roic.htm>.

Oil company profits have increased over the past two years²⁸ but are still not particularly impressive. Although the data necessary to calculate industry return on investment capital are not publicly available for the most recent financial quarters, second-best calculations demonstrate that recent oil company profits are not quite what the public believes them to be. Figure 3 compares the net profit margin (net income divided by revenue) of oil and gas companies in the S&P 500 with the composite average of all companies on that exchange from 1993 through the 2nd Quarter of 2005.

Figure 3. Net Profit Margin of S&P 500 Oil, Gas & Consumable Fuels vs. Industrial Composite



Source: Authors' calculation from data found in Energy Information Administration, "Monthly Energy Review," September 7, 2005, Table 9.1 Crude Oil Price Summary; <http://www.eia.doe.gov/mer/pdf/mer.pdf> and Corporate Scorecard for 900 Companies, *Business*

²⁸ Between 2003 and 2004, the net incomes of the nine integrated oil companies in the United States rose by 39 percent. Net incomes of independent oil and gas producing firms rose by 37 percent over that same period.. Robert Pirog, "Oil Industry Profits: Analysis of Recent Performance," CRS Report for Congress, Congressional Research Service, RL33021, August 4, 2005, p. 2. Twenty five major oil and natural gas companies reported that earnings increased by 39 percent from the 2nd Quarter of 2004 to the 2nd Quarter of 2005. Energy Information Administration, "Financial News for Major Energy Companies," undated, http://www.eia.doe.gov/emeu/perfpro/news_m/index.html.

Week,

http://bwnt.businessweek.com/corp_profits/2005/q1_index.asp?sortCol=current_qtr_margins&sortOrder=DESC&pageNum=1&resultNum=25&industry=1 and
http://bwnt.businessweek.com/corp_profits/2005/q2_index.asp?industry=24.

Regardless of the relative magnitude of oil company profits, many believe that a large percentage of oil company profits today are unearned in the sense that little or no additional cost or effort was incurred to generate them. Profits from the current price increase are an unforeseen and unanticipated windfall that does not rightly belong to producers. Restricting the size of those “gifts from heaven” – particularly if they come at the expense of overall consumer welfare – is therefore morally appropriate, or so the argument goes.

Moreover, if excess profits (termed “rents” by economists) are defined as returns above the normal profits that could be earned through investments in other markets, then the extraction of those rents by governments would seem to be costless because the supply of capital willing to invest in crude oil exploration should not be diminished. Efficient rent extraction, however, is possible only through auctions in which participants bid for the right to extract natural resources. Such bids take into account risk and uncertainty about likely outcomes ranging from no discovery to discovery plus low prices to discovery plus high prices.

Current policy proposals to extract rents after the fact are not efficient because they violate investor expectations and change the rules of the game after investments have been made. If investors think that they can keep natural resource rents, they will accept risk because the rewards are potentially quite high. If after investment occurs, the government reneges and taxes windfall profits when investments are successful but does not correspondingly help investors when returns are below expectations, then going

forward investors will reduce their participation in energy markets because “profits” in energy attract too much political attention relative to investments in other areas of the economy.

Denying investors profits, but allowing them to book losses, amounts to one-way capitalism. As figures 2 and 3 show, oil profits are not typically that impressive.

Denying the industry the opportunity to make substantial profits when supplies are tight is both unfair (unless their losses are likewise alleviated during low-price periods) and counterproductive, in that it will discourage investment in the oil business.

The Weak Case for Intervention

We find no theoretical justification for gasoline price controls. The academic literature strongly suggests that retail gasoline markets are quite competitive. Supply and demand factors – not producer conspiracies – are responsible for price movements. Even those who hold that recent mergers and acquisitions in the oil sector have made gasoline markets less competitive cite studies that – even if correct – suggest that prices are only a couple of pennies more per gallon than they would have been absent those mergers.

Corporate oil profits are also less robust than popularly believed. Profit margins provide no evidence that markets are uncompetitive or that consumers are being unfairly victimized by producers.

The case for leaving market prices alone, then, is the same as the case for capitalism in general. Free markets are more efficient than controlled markets, and goods and services are more available and less expensive in the former than the latter.

Restricting product prices or profit opportunities invariably reduces investment in conservation and new supply.

Our opposition to price controls is not just based on theory. America has already experimented with oil price controls and windfall profits taxes. The results of those experiments underscore the fact that the orthodoxy among economists on those matters is orthodox for a reason. It is correct.

Oil Price Controls: 1971-1980

The 1970s saw an array of price controls and allocation regulations imposed on crude oil and refined products. The academic consensus is that those controls had significant negative effects on both oil producers and consumers.²⁹

Even a brief summary of the regulations is tedious. The laws were complicated. Unintended negative consequences were the rule, not the exception, and the attempts to address them made the regulatory regime even more complicated.

What follows, then, is intended for mature audiences only, the equivalent of NC-17 in movie jargon. Those who wish to skip the details should move on to the subsection "The Economic Cost of Price Controls," where we review the studies that have attempted to quantify the economic costs of those price control regimes. While we understand that the discussion below may prove boring to many readers, we review the details because they illustrate the complications involved in controlling prices and the unanticipated problems that arise in the course of doing so. The history of those efforts provides an important reminder of why we should be leery about repeating them.

²⁹ This section draws upon Joseph Kalt, *The Economic and Politics of Oil Price Regulation: Federal Policy in the Post-Embargo Era* (Cambridge, MA: MIT Press, 1981), pp. 9-23, 26-31.

Nixon's Price Controls

It was a Republican – President Richard Nixon – who launched America's grand experiment with price controls by robust use of the broad powers Congress gave the president under the aegis of the Economic Stabilization Act of 1970. His price control regime had four phases.

Phase I, which lasted from August 1971 through November 1971, applied to all wages and prices throughout the economy. Fortunately, global oil prices during those three months were stable so Phase I had only a minor effect on oil markets.

Phase II, which lasted from November 1971 through January 1973, allowed all firms, except those in the oil or gas sectors, to increase prices above Phase I ceilings to reflect increases in production costs. Multiproduct firms outside of the oil industry were also given some flexibility to freely price individual product lines as long as they comported with a weighted average of firm-wide price increases. Heating oil shortages arose during the winter of 1972-1973, but most other oil products were unaffected by the price controls given that global prices remained soft during this period as well.

Phase III, which lasted from January 1973 through August 1973, initially made Phase II price controls voluntary, albeit with heavy political pressure to encourage compliance. A jump in heating oil prices in early 1973, however, caused the Nixon administration in March 1973 to issue "Special Rule No. 1," which reimposed strict price controls on the 23 largest domestic oil companies, which accounted for 95 percent of the industry's gross sales. Smaller oil firms, however, were exempt.

Special Rule No. 1 and the subsequent phase III price controls had a significant effect on the market because most independent gasoline stations at that time received their fuel from the 23 large companies. Because the largest companies were subject to price controls – and because provisions in Phase III prevented them from recouping the rising costs of crude imports if they refined the crude into products – the large companies reduced their imports of crude and their sale of refined products to others. Independent marketers, distributors, and other bulk consumers accordingly found it increasingly difficult to find fuel for their customers, setting off political demands for sharing shortages equally. That pressure resulted in the passage of the Emergency Petroleum Allocation Act in November 1973.

The Emergency Petroleum Allocation Act of 1973

EPAA was adopted to address the anger expressed by owners of independent gas stations who were cut off by the majors because of the latter's rational response to the incentives created by Special Rule # 1 and Phase III. Thus a central element of the legislation was a freeze on buyer-seller relationships as they existed in 1972. Any substantive changes in buyer-seller relationships or ownership required federal approval, enmeshing regulators in many of the day-to-day operations of the industry.

EPAA also enacted a two-tier system of price controls on domestic oil. Oil that had previously been discovered and developed was defined as "old oil" and the price for that oil was strictly controlled.³⁰ "New oil," on the other hand, was decontrolled.³¹ In

³⁰ The means by which the law defined "old oil" was quite complicated. Output from a domestic property in each month of 1972 was defined at that property's base period control level (BPCL) for that month. If a property had once produced more than its BPCL, the amount by which production in any subsequent month

November 1973, all stripper oil (defined as oil coming from wells that produced fewer than 10 barrels of oil per day) was also released from the price control regime.

The EPAA created an important allocation problem. Imported oil was the most expensive source of crude necessary to meet domestic demand, and it was not subject to price controls. Hence, the cost of imported oil determined the marginal costs (price) for gasoline sold in the United States. But many refiners had access to domestic “old” oil, which was subject to price controls. Accordingly, refiners who had access to “old” oil made much larger profits on their gasoline sales than refiners who depended on “new,” stripper, or imported crude oil.

In response, the Federal Energy Administration (FEA) adopted an “old oil entitlements” program in December 1974. The federal government issued entitlements on a monthly basis to individual refineries. Entitlements were granted to equate each refinery’s access to “old” oil to the national average refinery access to “old” oil. Those refineries that used more controlled oil as a percentage of operations than the industry average had to buy entitlements from those refineries that used less than the average amount of controlled oil.

An important consequence of this program was to increase imports. That’s because the best way for many refineries to reduce its reliance on “old” oil so that they were entitled to subsidies (payments from other refineries) was to increase imports. The incentive to increase imports continued until the value of entitlement tickets equaled the

fell short of the BPCL was added into a property’s current cumulative deficiency (CCD). Output in any month less than or equal to the sum of the BPCL and the CCD was defined as “old oil.”

³¹ Output greater than the sum of a property’s BPCL and CCD, or from properties not producing in 1972, was defined as “new oil.” Each barrel of “new” domestic oil brought to market allowed a producer to release a barrel from its “old oil” classification.

value of the rents created by the price controls (the difference between the world price for oil and controlled prices times the volume of old oil).

While the purpose of the original entitlements program was to equalize profits across refineries, subsequent interventions favored some refineries at the expense of others. The most important was the “Small Refiner Bias” regulation, which gave small refineries extra entitlements to old oil. Numerous other entitlements also were granted by regulators as “hardship relief” under the FEA’s exemptions and appeals process.

The Energy Policy & Conservation Act of 1975

The Energy Policy and Conservation Act (EPCA) amended the EPAA and officially took effect in February 1976. The law essentially expanded price controls to cover the “new” oil produced from domestic fields subsequent to the establishment of the EPAA – creating a three-tier price control regime to replace the older two-tier regime – and instituted a binding average price for domestic oil of \$7.66 per barrel, a figure that was permitted to increase up to 10 percent annually to account for inflation and various incentive payments.³² In September 1976, EPCA was amended to allow average domestic prices to rise 10 percent a year without regard to the inflation rate or regulatory

³² Under the Energy Policy & Conservation Act, the BPCL for a property in any month was defined as the lesser of average monthly output of “old oil” in 1975 and the average monthly output of all oil in 1972. “Lower-Tier” oil was defined as output not in excess of that property’s BPCL plus CCD. “Upper-Tier” oil was defined as production from pre-1976 properties in excess of the associated lower-tier output and production from properties that began producing after 1975. Lower-Tier oil sold at its May 15, 1973 price plus inflation and incentive adjustment factors determined by the U.S. Department of Energy. Upper-Tier oil sold at its September 30, 1975 price less \$1.32 plus inflation and incentive adjustment factors. Alaskan North Slope crude oil was treated as upper-tier crude for regulatory purposes. Crude from the Federal Naval Petroleum Reserves and incremental production from tertiary oil recovery projects was not controlled. The oil release program (established as part of the EPAA) under which increases in production above base period 1972 levels would not only be free of price controls but also remove an equivalent amount of old oil from controls was repealed.

incentive adjustments. In the meantime, EPCA removed price controls for all major refined oil products except for gasoline, jet fuel, and propane.

This new three-tier regime required changes in the old oil entitlements program because there were now two categories of “old oil” – lower tier (less expensive) and upper-tier (more expensive). Accordingly, each barrel of upper-tier oil was granted a fraction of the entitlement given to lower-tier oil.

Special exemptions to the old oil entitlement program continued. Beginning in April 1976, residual fuel imports into the East Coast were eligible for partial entitlements and middle distillates were granted similar partial entitlements in February and March of 1977 in response to the severe winter that year. Salable partial entitlements were also granted to middle distillate imports from May-September 1979. Special allocations of entitlements to refiners were also granted through the exceptions and appeals program for the use of low-quality California crude oil, certain uses of nonpetroleum fuels, and Puerto Rican petrochemicals. The federal government also received marketable entitlements for purchases of crude oil for the Strategic Petroleum Reserve.

Happily, the EPCA gave the president the authority to place the petroleum price controls on standby status any time after May 1979. The Carter administration used that authority quite energetically. Jet fuel prices were immediately decontrolled. In June 1979 price controls were lifted from oil properties not producing in 1978 and from offshore properties leased after December 1978. In June 1979, 80 percent of the production from marginal (almost stripper) lower-tier properties were decontrolled. Also in June 1979, producers were allowed to redefine the amount of oil allocated between lower-tier

and higher-tier categories.³³ On August 17, 1979, heavy crude oil was decontrolled. In January 1980, 4.6 percent of a property's upper-tier output was decontrolled each month and smaller amounts of lower-tier oil were decontrolled to offset expenses associated with newly-undertaken tertiary recovery projects.³⁴

In short, President Carter largely dismantled the price control regime through administrative action. In one of his first official acts as President, Ronald Reagan finished the job and abolished all remaining controls in January 1981. Congress made no effort to reauthorize the program and the EPCA formally expired in September 1981.

The Economic Cost of Price Controls

During the EPAA & EPCA regimes, roughly 60-70 percent of domestic output was subject to federal price controls.³⁵ As a result, average domestic oil prices were reduced typically \$3-5 per barrel below market levels.³⁶ The oil price increases in 1979, however, greatly increased the gap between regulated and market prices. In 1980 "old oil" sold for about \$6 per barrel while spot prices averaged \$24.23 per barrel.³⁷

In 1981, Harvard economist Joseph Kalt undertook what remains the most comprehensive examination of the EPAA/EPCA regime.³⁸ Kalt found that from 1974-

³³ Producers were allowed to redefine the BPCLs of lower-tier properties to the average output in the six months ending March 1979 and to establish CCDs at zero. Thereafter, BPCLs were reduced by 1.5 percent a month in 1979 and 3 percent per month between 1980 through October 1981.

³⁴ Primary production methods utilize natural gas or water pressure. Secondary recovery methods inject water or natural gas into wells to force the oil to the surface. Tertiary methods recover oil by reducing its viscosity (resistance to flow) through heating (usually steam injection) and sometimes the use of soap to dissolve the crude in water.

³⁵ Kalt, p. 17.

³⁶ Kalt, p. 17.

³⁷ Salvatore Lazzari, "The Windfall Profit Tax on Crude Oil: Overview of the Issues," CRS Report 90-442E, Congressional Research Service, September 12, 1990, p. 7, and Energy Information Administration, Annual Energy Review, DOE-EIA 0384, August 2005, Table 5.21, p. 173, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5_51.pdf.

³⁸ The figures offered in this subsection can be found in Kalt, pp. 285-290.

1980, federal oil price controls (primarily through the old oil entitlements program) transferred \$9-32 billion per year from producers and large refiners with access to “old oil” to smaller refiners with less access to “old oil.” End-use consumers received a transfer of \$5-12 billion annually from the same. Aggregate wealth transfers were estimated to range from \$14-50 billion.³⁹

The wealth transfers and moderate consumer savings, however, came at a cost. Kalt notes that price controls and the incentive to import created by the entitlements program reduced the incentive to bring new domestic oil to market, and as a result, he calculates that domestic production was 0.3-1.4 million barrels per day lower than it would have been otherwise. And the wealth losses of crude oil producers exceeded the gains obtained by refineries and crude oil consumers. The difference between the two figures is referred to by economists as “deadweight loss,” which Kalt estimates at between \$1-6 billion annually from 1975-1980.

Not included in such calculations are less easily measured costs of the price control regime such as the cost of regulatory administration, enforcement, compliance, and political lobbying. Nor do they include the inevitable but difficult to quantify economic distortions that arise under such an all-encompassing regulatory regime, which favored some investments at the expense of others; the reduced ability of the economy to respond to shocks in world oil markets; the excessive reliance on foreign oil that resulted from domestic price controls; or the environmental costs of the extra oil consumed as a response to subsidized prices for crude.

³⁹ From 1975 through the second quarter of 2005 prices have increased about 3 times as measured by the change in GDP deflator (111.6 / 38). To convert Kalt’s figures to current dollars multiply by about 3 (2.94).

While Kalt's analysis is impressive, it assumed that world oil prices were unaffected by U.S. controls. But economist R.T. Smith calculated that EPCA price controls *increased* world crude oil prices by 13.35 percent.⁴⁰ Economist Robert Rogers, who incorporated Smith's findings into an econometric model, found that EPCA did not on balance reduce domestic oil prices at all. In fact, Rogers found that EPCA was more likely to raise domestic oil prices than not.⁴¹

A few observations about the price control experience of the 1970s jump out at the analyst. First, price controls are simple ideas in theory but extremely complicated exercises in practice. Second, a tremendous amount of political pressure inevitably arises under price control regimes to provide regulatory benefits to favored producers at the expense of less favored producers, thus distorting markets even further. Third, price controls have unintended consequences and often exacerbate the problems they ostensibly are designed to address. Few economists doubt that the economy would have been far better off had they never been adopted in the first place.

The Windfall Profit Tax: 1980-1988

The Crude Oil Windfall Profit Tax (WPT) was enacted in April 1980 to replace the EPAA/EPCA oil price control regime that was scheduled to expire in September 1981.⁴² The name of the tax was somewhat of a misnomer because it was not a tax on profits at all. It was, in fact, an excise tax on domestic oil production effective March 1,

⁴⁰ R.T. Smith, "In Search for the 'Just' U.S. Oil Policy: A Review of Arrow and Kalt and More," *Journal of Business* 54, 1981, pp. 87-116.

⁴¹ Robert Rogers, "The Effect of the Energy Policy and Conservation Act (EPCA) Regulation on Petroleum Product Prices, 1976-1981," *Energy Journal* 24:2, 2003, pp. 63-94.

⁴² The WPT was a legislative compromise between the Carter administration, which supported decontrol of oil prices, and congressmen who feared that decontrol would lead to steep price increases. Many analysts had long argued, however, that a windfall profit tax was a much more efficient and less economically destructive means of transferring wealth from major oil producers to politically favored beneficiaries.

1980, and those taxes were paid before profits from the sale of oil were determined.

Accordingly, profits had no bearing on how much windfall profit tax was paid.

Producers, however, could deduct those taxes from income tax liabilities because it was considered a cost of doing business.

The excise taxes were imposed on the difference between the market price for oil and a designated “base price” adjusted quarterly for inflation and state severance taxes.

The taxes were applied at the point of first sale, generally to a refiner. The rates were:

- 70 percent for Tier One oil, which included most domestic oil in reservoirs that were productive before 1979. The law established a base price for Tier One oil equally to the May 1979 upper-tier base price established under the EPCA, adjusted for inflation;
- 60 percent for Tier Two oil, which included stripper oil and oil from the Naval Petroleum Reserve. The law established a base price for Tier Two oil equal to the Tier One price plus \$1. Stripper oil was exempted completely from the tax, however, under the Economic Recovery Act of 1981; and
- 30 percent for Tier Three oil, which included output from newly producing post-1978 properties, heavy crude oil, and incremental oil from tertiary recovery. The law established a base price for Tier Three oil equal to the May 1979 upper-tier ceiling under the EPCA plus \$2. The tax on newly discovered oil was gradually reduced, however, to 22.5 percent.
- Independent producers with sales of less than \$1.25 million per quarter or with fewer than 50,000 barrels of production per day were taxed only on the first 1,000

barrels of oil per day. Moreover, they paid reduced taxes on that oil; 50 percent for Tier One oil and 30 percent for Tier Two oil. Such independents only paid 30 percent on Tier Three oil with an exemption for the first 1,000 barrels per day.

- Exemptions to the tax were provided to oil produced by State or local governments, educational or charitable medical institutions, Indian tribes or individual Indians over which the U.S. exercised trust responsibilities, new oil produced from much of Alaska, and the first increments of tertiary oil.

The Windfall Profit Tax was scheduled to phase-out over 33 months after January 1988 or the first month (but not later than January 1991) after federal revenues from the tax equaled \$227.3 billion. The tax was repealed in 1988, however, because it imposed significant administrative burdens on both government and the private sector while generating no revenue at all after 1986.⁴³

There is little scholarly literature available on the economic impact of the Windfall Profit Tax because the oil price collapse of 1986 rendered the tax unimportant. Even prior to the price collapse, the tax generated less revenue than expected because oil prices did not increase as steeply as economists expected and domestic production was not as robust as anticipated.⁴⁴ The WPT generated \$40 billion for the federal treasury compared to the \$175 billion projected by federal budget analysts.⁴⁵ Because the Windfall Profit Tax made investment in domestic production less attractive than it

⁴³ Salvatore Lazzari, "The Windfall Profit Tax on Crude Oil: Overview of the Issues," CRS Report 90-442E, Congressional Research Service, September 12, 1990, p. 21.

⁴⁴ Domestic oil prices were expected to rise to at least \$50-60 per barrel by 1985. The average price of domestic crude for refiners in 1985, however, was \$26.66 per barrel. Salvatore Lazzari, "Oil Price Projections and the Windfall Profit Tax on Crude Oil," CRS Report 88-147E, Congressional Research Service, February 17, 1988, pg. 13, 15, and Energy Information Administration, Annual Energy Review, DOE-EIA 0384, August 2005, Table 5.21, p. 173, http://www.eia.doe.gov/emeu/aer/pdf/pages/sec5_51.pdf.

⁴⁵ Salvatore Lazzari, 1990, p. 1.

otherwise would have been, analysts at the CRS estimate that the tax reduced domestic oil production by 3-6 percent and increased foreign oil imports by 8-16 percent.⁴⁶

Price Gouging Legislation: “Kinder & Gentler” Price Controls

The experience of the 1970s has left much of the public quite skeptical about the merits of fuel price controls. That skepticism has not, however, led to widespread abandonment of the belief that the government must nonetheless do something about “profiteering” at the gasoline pump. The popular remedy today is embodied in legislation that prohibits “price gouging.”

Although there is no federal law prohibiting price gouging (the federal government can only act against oil pricing practices if they find evidence of collusion or other acts that violate antitrust statutes⁴⁷), 13 states have passed laws prohibiting price gouging in the event of a declared emergency in that state.⁴⁸ Typically, price gouging laws prohibit businessmen from posting prices that exceed the price charged for that good or service immediately before the declaration of emergency. Exemptions are often provided for price increases that reflect increased procurement costs or “national or international market trends.”⁴⁹

⁴⁶ Ibid.

⁴⁷ For an overview of federal authority over oil industry pricing practices, see Janice Rubin, “Price Gouging, the Antitrust Laws, and Vertical Integration: How They Are Related,” RS22262, CRS Report for Congress, Congressional Research Service, September 15, 2005.

⁴⁸ Those states include Alabama, Arkansas, Florida, Georgia, Indiana, Louisiana, Mississippi, New York, North Carolina, South Carolina, Tennessee, Virginia, and West Virginia. Other states may have the authority to prosecute price gouging under general deceptive trade practice laws depending upon the state law in question and the specific circumstances under which price increases occur. Angie Welborn and Aaron Flynn, “Price Increases in the Aftermath of Hurricane Katrina: Authority to Limit Price Gouging,” RS22236, CRS Report for Congress, Congressional Research Service, September 2, 2005, p. 1.

⁴⁹ Ibid., p. 2.

In sum, price gouging legislation imposes price controls only during a state of emergency. While the duration of the price controls are thus limited, their impact is often more acute in that emergency conditions often result in physical shortages, skyrocketing demand, or both. Laws that impose price controls in the midst of such emergencies will cause more economic harm than those imposed during more normal conditions. Accordingly, the same arguments against price controls apply against price gouging legislation.

Many politicians who resist price gouging legislation nevertheless publicly inveigh upon the industry to *voluntarily* price gasoline below what the market would bear (“jawboning” in industry jargon). But it makes no difference whether prices are voluntarily or involuntarily posted below the market clearing price. Scarcity will result in either case. The reason that gasoline disappeared from a number of service stations in the aftermath of Hurricane Katrina was because station owners weren’t “gouging” with sufficient gusto. Whether out of a misguided sense of kindness, concern about what politicians might think, fear of bad press, or the desire to keep customers happy, they priced below what the market would otherwise bear and, as a result, their inventory disappeared.

“Jawboning” also ignores the fact that oil companies do not dictate gasoline prices in the first place. Contracts between oil companies and refineries – and between refineries and retail outlets – typically tie the purchase price to the spot market price in whatever trading exchange is most convenient. Hence, fuel prices are ultimately established by thousands of market actors engaged in spot markets – a group that is

almost certainly immune to “jawboning” and incapable of fixing prices even if they wished.

There is simply no benign means by which politicians can control prices or restrict industry profits.

Conclusion

The observation that price controls induce scarcity and impose net losses on the economy is as uncontroversial among economists as are observations about gravity among physicists. The experience of the 1970s further suggests that price controls may not even achieve their stated goal of reducing consumer prices.

Intervention in oil markets has historically been more concerned with improving the welfare of politically popular market actors (primarily small, independent oil producers and small refinery owners) than with improving the welfare of consumers. Whether politicians intended that to be the case is unclear. Regardless, if wealth redistribution is the rationale for price controls and windfall profit taxes, then there are certainly less costly and more equitable ways of going about that project than through a return to ruinous energy interventions of the 1970s.

People often support price controls and windfall profit taxes despite such findings because they simply don't believe that oil producers have a moral right to higher-than-normal earnings. There is a widespread sentiment that it is somehow wrong for owners of fixed, low-cost assets to profit when exogenous events greatly inflate the value of the commodities they produce. Yet those who hold that opinion do not generally begrudge homeowners the same high profits when they put their houses on the real estate market.

In fact, the public tends to cheer rising home prices and reacts to falling home prices as problems to be solved. Why it is morally wrong for some parties but not others to periodically earn “windfall profits” is a mystery that we cannot solve.

Regardless of the moral issues involved, federal efforts to take excess profits from oil companies – whether via price controls or excise taxes – have proven to be ruinous exercises. Such policies fail to achieve their proximate aim, which is to reduce prices paid by retail consumers, but do manage to reduce supply, increase imports, and impose steep costs on the economy as a whole.