Consumer Federation of America

RISING GASOLINE PRICES:
WHY CAN'T CONSUMERS CATCH A BREAK?

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SUMMARY AND PURPOSE

America's gasoline and fuel consumers are facing what could become the most expensive Spring/Summer driving season yet, despite declining gasoline demand, record stocks, more refining capacity, and growing volumes of lower-priced ethanol. While these factors should contribute to lower prices, the falling value of the dollar, OPEC resistance to increasing production, and speculation on Wall Street that have pushed the price of crude oil above $100 per barrel maintaining the upward pressure on gasoline prices.

After a decade of mega-mergers and sustained under-investment in refining capacity that contributed to relentlessly rising gasoline prices and record major oil company profits, the domestic refining industry may finally be facing market forces that could weaken the upward price spiral. With household budgets stressed by record gasoline prices and the economy slipping into recession, demand for gasoline is down. At the same time, high oil prices and public policy have expanded the supply of alternative fuels – ethanol and biodiesel – for the transportation sector. With demand weak and supply plentiful, the difference or "spread" between the price of purchased crude oil and the price for gasoline should fall, bringing some price relief to consumers. Unfortunately, the relief that could flow from the refining sector is being negated by huge increases in crude oil prices while the profits of the major international oil companies[1] remain strong because their profits on crude production are soaring, while their refining margins decline.

Exactly how the pressures on gasoline prices will play in the months ahead out remains to be seen, but given the high price of crude and likely refiner efforts to increase their margins, the possibility exists for gasoline to suffer substantial increases – on the order of $0.75 per gallon or more, which equates to a potential hit on consumer pocketbooks of $75 billion in the remainder of the year.

For refiners, late winter is typically a period of low margins on gasoline. The early spring will be a big test. As oil companies pass through the increasing crude oil prices and reconfigure their refineries from winter to summer fuels, the question will be whether enough slack (lower demand, higher stocks, more ethanol) has been created in the refining sector to avoid a run up in refiner margins that pushes gasoline prices to even higher levels.

How refiners react to increasing supplies of ethanol is also critical. Since the oil companies cannot control consumer demand (except knowing that consumers do not have much choice), they have focused their attention on the supply-side, complaining constantly about the growth of ethanol production and the pressure to blend it more extensively throughout the country. If the U.S. gasoline market does not become tight, as it has during the driving season in the past five years, not only would the downward pressure on refiner margins continue, but crude oil prices could also feel downward pressures.

The purpose of this report is to examine the shifting supply-demand balance in domestic refining, to separate the effect of refining and crude oil on gasoline prices and to

[1] ExxonMobil, ChevronTexaco, Shell, BP, and ConocoPhillips.

examine the possibility that things are about to change, at least in the domestic refining sector. In our earlier market structure analyses we explained the accumulation of market power and decline in competition that resulted from the merger wave of the late-1990s and early 2000s.[2] We will not repeat that analysis here. This new analysis examines market performance by updating the earlier discussion of consumer prices and oil company profits, then focuses in on the key market structural features that may be changing the domestic market, and highlights the potential link between U.S. market developments and the price of crude oil.

PETROLEUM PRODUCT PRICES

Price Increase

Exhibit 1 shows the price of gasoline and diesel fuel over the past decade and a half. Several dates in the 1990s are important. The Clean Air Act amendments, which affected the conditions under which refineries in America operate, were passed in 1990 and went into effect in 1995. A merger wave in the refining sector began in the late 1990s and continued through the early 2000s.

The 1990s were a period of stable petroleum product prices. There was a run up in 2000, but prices returned close to historic levels in 2002. Since then, however, there has been a dramatic increase in prices for all refined petroleum products. Our analysis focuses on gasoline prices because gasoline is by far the largest single product produced by the U.S.

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[2] Mark Cooper, "The Failure of Federal Authorities to Protect American Energy Consumers From Market Power and Other Abusive Practices," *Loyola Consumer Law Review*, 19:4 (2007), *Record Prices: Record Oil Company Profits: The Failure of Antitrust Enforcement to Protect American Energy Consumers*, Antitrust Section, American Bar Association Annual Meeting, 2004; *The Role of Supply Demand Industry Behavior and Financial Markets in the Gasoline Price Spiral: A Report for the Wisconsin Attorney General*, May 2006. Big Oil v. Ethanol, (Consumer Federation of America, July 2007; *Time to Change the Record on Oil Policy* (Consumer Federation of America and Consumers Union, August 2006; *The Role of Supply, Demand, Industry Behavior and Financial Markets in the Gasoline Price Spiral* (Prepared for Wisconsin Attorney General Peggy A. Lautenslager, May 2006); *Debunking Oil Industry Myths and Deception: The $100 Billion Consumer Rip-Off* (Consumer Federation of America and Consumers Union, May 3, 2006); *The Role of Supply, Demand and Financial Markets in the Natural Gas Price Spiral* (prepared for the Midwest Attorneys General Natural Gas Working Group: Illinois, Iowa, Missouri, Wisconsin, March 2006); *The Impact of Rising Prices on Household Gasoline Expenditures* (Consumer Federation of America, September 2005); *Over a Barrel: Why Aren't Oil Companies Using Ethanol to Lower Gasoline Prices*? (Consumer Federation of America, May 2005); *Record Prices, Record Oil Company Profits: The Failure Of Antitrust Enforcement To Protect American Energy* Consumers (Consumer Federation of America, Consumers Union, September 2004); *Fueling Profits: Industry Consolidation, Excess Profits, & Federal Neglect: Domestic Causes of Recent Gasoline and Natural Gas Price Shocks* (Consumer Federation of America and Consumers Union, May 2004); *Spring Break in the U.S. Oil Industry: Price Spikes, Excess Profits and Excuses* (Consumer Federation of America, October 2003); *Ending the Gasoline Price Spiral: Market Fundamentals for Consumer-Friendly Policies to Stop the Wild Ride* (Consumer Federation of America, July 2001)

refining industry and America's households account for the vast majority of gasoline consumption which in turn substantially affects household budgets. We include the price of diesel in Figure 1 for three reasons.

First, diesel is becoming more popular as a household transportation fuel.[3]

Second, since diesel is equivalent to home heating oil, which is consumed by households as a heating fuel, it gives an indication of how rising prices affect households that heat with number 2 fuel oil.[4] However, the primary impact of diesel on households is indirect since diesel is the fuel for heavy trucks and equipment. It affects all goods and service consumed by the public, especially food.[5]

Third, although diesel is counter cyclical with gasoline (i.e. diesel prices are high in the winter and lower in the summer, while gasoline prices are higher in summer than winter), there has been a change in recent years. In the past four winters the price of diesel has risen much higher than the price of gasoline, compared to the historic pattern (see Exhibit 2). This means that the spread or refiner margin on diesel – the share of the price that domestic refining and marketing takes – has risen dramatically. We believe that this pattern is caused by the same problem that afflicts the U.S. gasoline market. It reflects the underlying supply tightness maintained by the refining sector in the U.S. The elimination of excess refining capacity and reduction in the number of competing refiners allowed the industry to tightly manage the building of stocks as the season of heavy demand for each fuel approaches. As the summer driving season approaches and the industry changes from winter to summer fuels, until recently there has been insufficient capacity allowing markets to become tight, thereby allowing oil companies to increase prices. The same thing happens in the fall, as the winter heating season approaches and the industry switches from summer fuels to winter fuels.

The price of gasoline and diesel has doubled in six years, rising from about $1.50 per gallon in the second half of 2002 to over $3.00 per gallon in early 2008. In the past four years the price shows more volatility – larger swings between the peak consumption season and the off season, reflecting the volatility that inevitably takes place when supplies are tight and capacity inadequate to meet demand for products with low elasticities and strong seasonal patterns of demand.

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[3] Christopher Maag, "Paying at the Pump, in a Big Way: Rising Fuel Prices Sting When Half a Tank Costs $505, C-4, "Some causes of the run-up are seasonal, said Ron Planting, an economist at the American Petroleum Institute. For instance, home heating oil and diesel are close cousins, and when heating-oil demand goes up in the winter, the prices of both fuels often rise."

[4] Muffson, "Diesel," D-5, Tesoro's Wetfall had a different explanation for the recent run up in prices, however. He said unusually cold weather in Japan Europe and the United States had boosted demand for heating oil, which is essentially the same product as diesel." Maag, "Paying at the Pump," C-4, "And even in the United States, demand for diesel and heating oil grew 1.5 percent in 2007, compared with 0.4 percent for gasoline."

[5] Muffson, "Diesel," D-5, "People talk about gasoline, but it's diesel that puts the goods on the shelves…" The rapidly rising price of diesel fuel has the potential to spread through the economy, complicating the Federal Reserve's goal of containing inflation while stimulating growth. According to the American Trucking Association, trucking accounts for about 70 percent of U.S. freight transportation.

The Components of the Price Increases

The pump price of gasoline or diesel can be broken down into three primary components – the cost of crude oil to the refiner,[6] taxes, and the share of refining and marketing, which is referred to as the domestic spread. The domestic spread is calculated by subtracting taxes and crude costs from the pump price and is the basis for refining/marketing profits.

In our analysis, we exclude taxes. We start with the domestic spread, since that component receives much less attention, compared to the price of crude oil which has become a daily headline. The domestic spread, on the other hand, is never reported, even though it is a significant component of the pump price. The domestic spread also reflects the state of competition (or lack thereof) in the domestic petroleum industry.

Exhibit 3 shows the domestic spread from gasoline over the past two decades. It follows the pattern of prices. The spread was quite stable in the 1990s. It exhibited a seasonal pattern with the summer driving season yielding a spread of about $.38 per gallon and the winter yielding a spread of just under $.35 per gallon. The pattern changed after the turn of the century. The increase in the domestic spread played a part in the gasoline price spike of 2000 and 2001, after which it returned to historic levels in 2002. In 2003 through 2008 it rose dramatically and became much more volatile. The summer peaks have been two to four times as high as the historic average. Even the winter lows for the spread on gasoline have been quite high, running in the range of $.50 to $.60 per gallon. That is $.25 to $.35 per gallon more than the historic average. An increase in the domestic spread of $.25 per gallon, even in the winter months, adds over $2.5 billion per month to consumer expenditures on gasoline.

Exhibit 4 shows the relative contributions of the domestic spread and crude oil acquisition costs to the pump price. The record prices that we have witnessed in the past few years are the result of both record high crude price **and** record high domestic spreads.

The pattern of crude oil acquisition costs is different than the pattern for the domestic spread. Crude oil jumped in 2000 and declined in 2002, as did the domestic spread. Unlike the domestic spread, the price decline in crude in 2002 did not quite bring it back to the levels of the 1990s, however. Since 2003, the increase in the price of crude has been greater and more consistent than the increase in the domestic spread. Particularly in the past winter, the price of crude continued to rise, while the domestic spread experienced its seasonal decline. Looking at February spreads, 2008 is a five year low.

Given these patterns, we use 2002 as the base year to estimate and examine key aspects of recent oil market behavior. As Exhibit 5 shows, the year-long average for the

[6] Unlike non-integrated refiners, the major integrated international oil companies don't purchase a large portion of the crude oil for their refineries. Thus, the reduction in refining margins primarily affects non-integrated refiners, while the major integrated international oil companies reap enormous profits on the crude oil they produce. For example, worldwide, ExxonMobil during the fourth quarter 2007 was 44% self-sufficient in crude oil, while ChevronTexaco for the year 2006 was 87% self sufficient.

domestic spread in 2002 was just slightly above the average for the 1990s. The crude oil acquisition costs were about $.25 cents per gallon higher in 2002 than in the 1990s.

Combining and summing the increase in crude and the domestic spread since 2002 yields a total increase of about $600 billion. More than half of that total has gone to the domestic petroleum industry (see Exhibit 6). Refining and marketing account for about 28 percent of the total and domestic crude production accounts for about 25 percent. Just under half goes to imported crude oil producers. To the extent that the major integrated oil companies own foreign crude or share in the profits of production of foreign crude, they profit from the importation of that crude oil, as well.

OIL COMPANY PROFITS

Exhibit 7 highlights the dramatic change in the sources of profits of the major American oil companies. The Department of Energy tracks a consistent set of large oil/energy companies that report to the Federal Reporting System (FRS). These companies account for about half of all crude oil production but about 80 percent of all refining capacity. Since 2002, net income from domestic refining has accounted for about 44 percent of the total increase in domestic profits and grew almost three times as fast as income on foreign refining.

The tremendous run up in prices has resulted in a dizzying increase in profits. Net income for this consistent set of companies grew steadily from $20 billion in 2002 to about $100 billion in 2006 and 2007. The return on equity (ROE) reported by these companies, which is the primary measure of performance in a capitalist economy, has skyrocketed compared to the rest of the economy. Exhibit 8 shows that the oil industry not only set records for net income, but also for return on equity (ROE) in the past three years. It has enjoyed a higher ROE than all manufacturing companies in six of the past seven years, when, historically, it tended to earn about the same, or slightly less than all manufacturing. Note also that in 2002, which we have chosen as our base year, the oil industry return on equity was just equal to the figure for all manufacturing, supporting our decision to use it as the base year. **The excessive profits enjoyed by these companies since 2002, above the normal return on equity earned by all manufacturing, equals over $190 billion in after tax dollars, which makes the pre-tax total increase in income about $280 billion.**

TRENDS IN THE DOMESTIC SUPPLY

Refining Capacity

The dramatic increase in domestic refining profits coincides with increased concentration in the refining market that was brought about by strategic actions by the major oil companies. The merger wave of the late-1990s and early 2000s (see Exhibit 9) reduced the number of major refiners dramatically, allowing a few very large companies (a tight oligopoly) to gain control of supply.

Critical business decisions were made in response to the Clean Air Act Amendments that dramatically reduced refining capacity relative to demand. As the Federal Trade Commission report, which investigated the first gasoline price spike of the new millennium, concluded,

> The spike appears to have been caused by a mixture of structural and operating decisions made previously (high capacity utilization, low inventory levels, the choice of ethanol as an oxygenate), unexpected occurrences (pipeline breaks, production difficulties), errors by refiners in forecasting industry supply (misestimating supply, slow reactions), and decisions by firms to maximize their profits (curtailing production, keeping available supply off the market). The damage was ultimately limited by the ability of the industry to respond to the price spike within three or four weeks with increased supply of products. However, if the problem was short-term, so too was the resolution and similar price spikes are capable of replication. Unless gasoline demand abates or refining capacity grows, price spikes are likely to occur in the future in the Midwest and other areas of the country.[7]

Similarly, a 2003 RAND study of the refinery sector reaffirmed the importance of the decisions to restrict supply. It pointed to a change in attitude in the industry, wherein "[i]ncreasing capacity and output to gain market share or to offset the cost of regulatory upgrades is now frowned upon."[8] In its place we find a "more discriminating approach to investment and supplying the market that emphasized maximizing margins and returns on investment rather than product output or market share."[9] The central tactic is to allow markets to become tight by "relying on . . . existing plant and equipment to the greatest possible extent, even if that ultimately meant curtailing output of certain refined product."[10]

> [Indeed, many RAND discussants] openly questioned the once-universal imperative of a refinery not "going short" – that is not having enough product to meet market demand. Rather than investing in and operating refineries to ensure that markets are fully supplied all the time, refiners suggested that they were focusing first on ensuring that their branded retailers are adequately supplied by curtailing sales to wholesale markets if needed.[11]

The RAND study drew a direct link between long-term structural changes and the behavioral changes in the industry, drawing the connection between business strategies to increase profitability and pricing volatility. It issued the same warning that the FTC had offered two years earlier:

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[7] Federal Trade Commission, *Midwest Gasoline Price Investigation*, March 29, 200, at i-4.

[8] , D. J. Peterson, D.J. and Sergej Mahnovski, *New Forces at Work in Refining: Industry Views of Critical Business and Operations Trends* (Santa Monica, CA: RAND Corporation, 2003), at 16.

[9] *Id.* at 42.

[10] *Id.* at 17.

[11] *Id.* at 17.

> For operating companies, the elimination of excess capacity represents a significant business accomplishment: low profits in the 1980s and 1990s were blamed in part on overcapacity in the sector. Since the mid-1990s, economic performance industry-wide has recovered and reached record levels in 2001. On the other hand, for consumers, the elimination of spare capacity generates upward pressure on prices at the pump and produces short-term market vulnerabilities. Disruptions in refinery operations resulting from scheduled maintenance and overhauls or unscheduled breakdowns are more likely to lead to acute (i.e., measured in weeks) supply shortfalls and price spikes.[12]

The industry did not act to alleviate the tightness in the refining market (see Exhibit 10). It failed to build adequate capacity to meet rising demand. The capacity shortfall in refining that grew in the 1990s only moderated in 2002 because of the recession, leading to the decline in domestic spread that was noted earlier. However, as the economy recovered and demand increased, the industry failed to expand capacity to meet demand, leading to the return of a tight market and the skyrocketing of the domestic spread.

With the slowing of the growth of demand and a slight downturn in the past month, the capacity shortfall has declined. At the beginning of March, the *Wall Street Journal* noted that

> In the past six weeks, the nation's gasoline consumption has fallen by an average of 1.1% from year-earlier levels, according to weekly government statistics.
>
> That's the most sustained drop in demand in least 16 years…
>
> As supplies have outstripped demand, gasoline inventories have been on the rise for the past four months, reaching their highest level since February 1994.[13]

Ethanol

The bite that declining demand has taken out of the refinery capacity gap is small compared to the bite that expanding use of ethanol has taken. A 1.1% decline in demand for gasoline in a winter month is somewhat less than 100,000 barrels per day. By the end of 2007, domestic U.S. production of ethanol was over five times as high and the refining sector has taken notice. "Bill Day, a spokesman for Valero Energy Corp., the largest U.S. oil refiner, said his company foresees ethanol growth 'offsetting gasoline imports to the U.S.'"

Over the past four years the use of ethanol for blending with gasoline has grown dramatically (see Exhibit 11). The sharp increase in the spring of 2006 occurred when the oil companies decided *en masse* to stop using MTBE as an oxygenate to meet the environmental requirements of the Clean Air Act. Recently, however, discretionary, or economic, blending of ethanol with conventional gasoline has grown sharply. The one million barrel per day increase in ethanol use in reformulated gasoline for environmental purposes that occurred in

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[12] *Id.* at xvi.

[13] Ana Comoy, "Americans Start to Curb Their Thirst for Gasoline," *Wall Street Journal,* March 3, 2008, p. A-1.

2006 has been surpassed by a 1.2 million barrel per day increase in ethanol use for economic purposes in conventional gasoline. Today, two-thirds of all gasoline sold in the U.S. is blended with ethanol. However, the use of ethanol still falls far short of the maximum allowed for conventional engines. If all gasoline sold were blended to 10 percent ethanol, ethanol use would be 40 percent higher than it is today. Such an increase would equal over 200,000 barrels per day and production capacity is projected to increase by almost that much in 2008,[14] which reinforces the fact that the primary structural factor that may alter the domestic situation in the near term is the supply of alternative fuels, rather than recession driven changes in demand.[15]

Exhibit 12 shows the movement of three key factors that affect the gasoline market at the margin – the refinery shortfall, which is measured as product supplied minus refinery output, finished gasoline imports, which are used to fill the gap between refinery capacity and demand, and the total supply of ethanol. We see both a sharp drop in the capacity shortfall and imports in recent months and a steady rise in ethanol. Given the steady increase in the price at the pump and the steady growth of ethanol, the wild card this spring is the slowdown of the economy.

Slackening demand and increasing alternatives has alleviated the pressure on refineries slightly (See Exhibit 13). Capacity utilization is down from the extremely high levels earlier in the decade, when the refining sector was carrying much less spare capacity than typical of other industries.

The up tick in stocks of gasoline that is attracting so much attention is depicted in Exhibit 14, which shows the total weekly ending gasoline stocks. Although the increase in gasoline inventories is part of a seasonal pattern, the early March 2008 level was the highest absolute level since the early 1990s, as the *Wall Street Journal* noted. However, there are two other considerations that should be taken into account when analyzing inventory.

First, the gasoline system needs a large quantity of product to be always in the system to operate properly. This is called the lower or minimum operational inventory. It is not really available to meet demand, since drawing down below that level will create operational problems.

Second, the level of inventory should be examined relative to the level of demand. Exhibit 15 shows gasoline inventory above minimal operational levels divided by the average consumption to yield the stocks available in terms of days of supply. This is the relevant estimate of inventory that influences the supply demand balance. Here we get a somewhat different picture. Stocks on hand were much higher in the 1990s. The recent increase in

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[14] Jessica Resnick-Ault, "Ethanol Output May Damp Gasoline Profits," *Wall Street Journal*, March 24, 2008, C-9, projecting a 33% increase in ethanol production.

[15] Longer term, reductions in demand, driven by the increase in fuel economy standards, may play a larger role (see *A Step Toward A Brighter Energy Future* (Consumer Federation of America, December 2007) and *Not time to Waste: America's Energy Situation Is Dangerous, But Congress Can Adopt New Policies to Secure Our Future* (Consumer Federation of America, October 2007).

stocks looks like a seasonal pattern, but February did carry inventories to their highest level since the late 1990s.

HOW WILL THE INDUSTRY AND THE MARKET REACT?

The Domestic Spread

These developments seem to indicate that the domestic oil industry and the gasoline market may be at a critical juncture. Key indicators like refinery capacity utilization and gasoline inventories as well as the domestic spread are following seasonal patterns, but have carried the seasonal patterns farther toward a slackening market than in recent years. The recession will certainly reduce demand, but it is uncertain by how much.

A larger and steadier factor in terms of increased supply has been the growth of ethanol production. The oil industry has long resisted significant increases in alternative fuels, has made it difficult to bring these fuels to market, and opposed policies that would increase their production.[16] This year is no exception.

> In the push last year to increase production of biofuels, the oil industry got run over. Lobbyists for refiners advocated for a series of benchmarks that would have to be met before new production targets kicked in. The oil industry's efforts were rebuffed, however, as lawmakers saw a public policy trifecta: a chance to boost rural economies, decrease oil imports and reduce greenhouse gas emissions. This year, the industry is back, lobbying to change laws with some fresh evidence that the goals of the Renewable Fuels standard (RFS) could be hard to meet.[17]

Over the past year not only has there been a dramatic increase in the use of ethanol, but also it has been driven by economic blending, not blending to meet clean air requirements.

> At $2.60/gallon, ethanol was still about 43cts cheaper than unleaded in the Harbor once the federal blender credit was included – implying an E10 blend would still be about 4.3 cts less costly than conventional unleaded.
>
> Such calculations were reflected in discretionary blending level indications that were the highest ever, according to weekly DOE supply data. Conventional gasoline blended with ethanol reached a new record high 2.498 million b/d

[16] Mark Cooper, *Big Oil v. Ethanol* Washington, D.C. :(Consumer Federation of America, July 2007); Over a Barrel: Why Aren't Oil Companies Using Ethanol to Lower Gasoline Prices? (Consumer Federation of America, May 2005).

[17] Jim Snyder, "Oil Lobby Looks to Delay Deadlines for New Renewable Fuels Standard,' *The Hill*, February 12, 2008.

according to DOE, representing an increase of 95% compared to the same time last year.[18]

With the switchover from MTBE to ethanol complete and large quantities of new ethanol capacity coming on line, the price of ethanol, including the blender credit, has been well below the price of conventional gasoline, as shown in Exhibit 16. This has been the driver behind the huge increase in the economic blending of ethanol. The declining price of ethanol reflects a competitive market at work, where capacity expands as long as returns are reasonable. The domestic refining sector has not behaved in that way in the past, but the agricultural sector does, evidenced by the rapid expansion of ethanol production capacity. Ironically, whether consumers will actually see the potential cost savings created by falling ethanol prices depends on whether blenders pass the cost reductions through. The changing dynamic in the refining sector – a slack market – could put pressures on blenders to do so.

In the near term, the critical question is how much capacity will be reduced by refiners as they transition to summer fuel formulations?[19] Several companies have already announced their intention to reduce capacity utilization in an effort to reduce gasoline supplies and boost margins.[20] The response of the industry in the switchover process from winter to summer fuels and the level of refinery capacity that is utilized will have a huge impact on consumers.

Exhibit 17 shows the large difference in domestic spread from February through the peak month later in the year, as well as the average for the remainder of the year. In the 1990s the peak domestic spread on gasoline was $.05 per gallon higher than the February spread, while the average increase for the remainder of the year was just $.02. In 2002, the peak was $.14 above February and the average for the remainder of the year was $.10 higher. In 2003 the peak difference was higher ($.18) but the average increase was lower ($.05). In 2004 and 2005 (pre-Katrina), the peaks increases were similar to the 2003 but the average increase was higher. The post-Katrina peak was $.33 higher than the pre-Katrina peak and the average for the remainder of that year was $.24 higher than February. In 2006 and 2007 the peak increases were even higher and the average increase was about $.20 per gallon.

If the change in market fundamentals causes the industry to move back toward historical patterns, and the spread increases only a nickel or a dime for the remainder of the year, consumers would save a lot of money at the pump. If the increase is a nickel rather than a quarter, the consumer saves $.20 per gallon, which is worth approximately $2.2 billion a month more, or about $22 billion in the ten months after February.

Thus, there are two potential effects in the domestic market that might hold gasoline prices down. First slack demand and increased supply may put downward pressure on the domestic spread. Second, spare capacity in the refining sector may create pressures to pass the lower cost of ethanol through to consumers. Combined these two factors could prevent price increases of as much as $0.25 per gallon. While these factors cannot offset the price of

[18] Ethanol & Biodiesel Information Service, March 17, 2007.
[19] Janet McGurty, "U.S. Refinery Run Cuts May Help Life Margins-Trader," *Reuters*, January 22, 2008; Ana Campy, "Refiner Cutbacks May Not Be Felt at Pumps," *Wall Street Journal*, February 11, 2008.
[20] "Valero CEO: Some Refineries At Reduced Rates Due To Low Margins," *Dow Jones*, March 11, 2008.

crude, they could amount to tens of billions of dollars in consumer savings and they are within the scope of the domestic market and domestic policy.

Crude

As discussed earlier, crude oil has continued its price increase and these increases are not fully reflected in the pump price. The spot price of crude in November and December was a little over $88 per barrel, while the January and February prices were about $90.50. Even though U.S. refiner acquisition costs are less than the high spot prices by $2 to $3 per barrel, they do tend to track spot prices. With recent prices in the range of $100 to $110 per barrel, pass through of these crude price increases could have a major impact on prices at the pump, depending on how much has already been passed through and where prices stabilize. An increase in the refiner acquisition cost of crude of $20 per barrel translates into almost $.50 per gallon at the pump.

> "If crude stays even at $100 a barrel, then by April or May, gasoline prices have to go up another 40 or 50 cents just to follow seasonal trends and recover the costs of crude that are not being recovered and get margins back to normal summertime margins," said Lynn D. Westfall, chief economist at Tesoro, a major U.S. refiner.[21]

In the past the dramatic rise in crude prices has overwhelmingly been attributed to market fundamentals, supply and demand, but in the past couple of years two other factors have entered the analysis – speculation and the weak dollar.

On April 29, 2006, the *New York Times* ran a front-page article under the headline "Trading Frenzy Adds to Jump in Price of Oil."[22] The *Times* article opens with a brief paragraph on the conditions in the physical market but then devotes about 36 column inches to the proposition that financial markets are adding to the price increase.

> "A global economic boom, sharply higher demand, extraordinarily tight supplies and domestic instability in many of the world's top oil-producing countries – in that environment higher oil prices were inevitable.
>
> But crude oil is not merely a physical commodity . . . . It has also become a valuable financial asset, bought and sold in electronic exchanges by traders around the world. And they, too, have helped push prices higher…
>
> "Gold prices do not go up because jewelers need more gold, they go up because gold is an investment," said Roger Diwan, a partner with PFC Energy, a Washington-based consultant. "The same has happened to oil…"

[21] Muffson, "Diesel," C-4.

[22] Jad Mouawad & Heather Timmons, "Trading Frenzy Adds to Jump in Price of Oil," *The New York Times*, Apr. 29, 2006, at A-1.

> "It is the case," complained BP's chief executive, Lord Browne, "that the price of oil has gone up while nothing has changed physically."[23]

Three key factors serve to drive the price spiral higher: volume, volatility and risk. The structure and availability of markets plays a role in allowing the volumes to increase.

> Changes in the way oil is traded have contributed their part as well. On Nymex, oil contracts held mostly by hedge funds – essentially private investment vehicles for the wealthy and institutions, run by traders who share risk and reward with their partners – rose above one billion barrels this month, twice the amount held five years ago.
>
> Beyond that, trading has also increased outside official exchanges, including swaps or over-the-counter trades conducted directly between, say, a bank and an airline. . . .
>
> Such trading is a 24-hour business. And more sophisticated electronic technology allows more money to pour into oil, quicker than ever before, from anywhere in the world. [24]

The influx of new money is sustained by movements of different institutions and individuals into the market. "Everybody is jumping into commodities and there is a log of cash chasing oil," said Philip K. Verleger Jr., a consultant and former senior advisor on energy policy at the Treasury Department."[25]

This fundamental observation had been offered a couple of years earlier in a front page *Wall Street Journal* article entitled, "Oil Brings Surge in Speculators Betting on Prices: Large Investors Playing Ongoing Rise is Increasing Demand and Price Itself:"[26]

> Oil has become a speculator's paradise. Surging energy prices have attracted a horde of investors – and their feverish betting on rising prices has itself contributed to the climb.
>
> These investors have driven up volume on commodities' exchanges and prompted a large push among Wall Street banks and brokerage firms . . . . to beef up energy-trading capabilities. As the action has picked up in the past year, those profiting include large, well-known hedge funds, an emerging group of high-rollers, as well as descendants of once-highflying energy-trading shops such as Enron Corp.[27]

The notion is that the continual influx of money represents too much money chasing too few goods. By mid-2006, the Permanent Subcommittee on Investigations of the U.S.

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[23] *Id.*
[24] *Id.*
[25] *Id.*
[26] Gregory Zuckerman & Henry Sender, "Oil Brings in Speculators Betting on Prices – Large Investors Playing Ongoing Rise is Increasing Demand and Price Itself," *Wall Street Journal*, Aug. 24, 2004, at. A-1.
[27] *Id.*

Senate had concluded that the estimates of a speculative premium on oil had risen to $25 dollars per barrel, or about one third of the world price.[28]

The most recent run up in crude prices has triggered similar concerns about the impact of financial speculation and trading on prices.

> "Oil is the new gold," said James Burkhard, director of global oil market analysis at the Cambridge Energy Research Associates consulting firm. "Oil has some intrinsic value, and that value remains even if the dollar depreciates."
>
> For weeks now, oil industry analysts have watched in amazement as oil's price kept climbing, even though government statistics showed that the country had ample supplies of oil and gasoline on hand. Gloomy news about the economy should have pulled oil down, because demand for petroleum usually slumps in a recession. But the bull market barely shrugged.
>
> "If you look at the run-up we've had for the last $20 or so, there's no other explanation for it," said Michael Lynch, president of the Strategic Energy & Economic Research consulting firm. "You have days when there's absolutely no news - except the dollar going down - and oil will still go up $3."
>
> Role of big investors
>
> The role of big investors in this year's price spike infuriates some consumer advocates. Investors such as hedge funds may view oil as nothing more than a financial asset, but to the rest of the country, it's fuel. The mercantile exchange didn't even start selling crude oil futures - the most common form of oil investment - until 1983.
>
> "We're taking a financial instrument that barely existed 20 years ago and allowing it to drive a stake through the heart of our economy," said Judy Dugan, research director for the Foundation for Taxpayer and Consumer Rights.
>
> Sooner or later, analysts say, the fundamental issues of oil supply and demand should bring down oil prices.[29]

The upward pressure that speculation puts on prices is not limited to crude, but applies to the whole energy complex and recent months have seen sharp increases in gasoline prices despite weakening fundamentals.

> Nymex gasoline futures have been rising, following oil, despite growing supplies of both commodities. Blame the falling dollar, which has made dollar-denominated oil contracts irresistible to foreign investors and to any investors looking for a safe haven for their money during a turbulent time in the stock

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[28] Permanent subcommittee on Investigations, Committee on Homeland Security and Governmental Affaires, United States Senate, *The Role of Market Speculation in Rising Oil and Gas Prices: A Need to Put the Cop Back on The Beat,* June 27, 2006.

[29] David R. Baker, "Blame the Dollar for High Gas Prices," *San Francisco Chronicle,* Mark 18, 2008.

market.

> This buying by investors has pushed oil futures to a series of records in recent weeks, and the rest of the energy complex -- which includes gasoline futures -- has followed.
>
> Unfortunately, consumers pay for this investment frenzy in the form of higher pump prices. And despite mounting evidence that Americans are cutting back on their gasoline habit -- and may cut back even more drastically as gas gets more expensive -- it may be some time before prices start responding to lower demand.[30]

THE UPWARD SPIRAL

A good argument can be made that the price of gasoline has been setting the target for the price of crude. The U.S. gasoline market accounts for about one quarter of all the gasoline consumed in the world and one-eighth of the entire refined petroleum product. Thus, it is by far the single largest product market in the oil sector. As gasoline prices rise, OPEC receives the signal that the market will support higher prices. As refiner margins rise, OPEC, which is a rent seeking cartel, pushes for higher crude prices to recapture 'its' share of the available rents. Aspects of this process have been commented on by the Department of Energy and the Wall Street Journal.

The Department of Energy noted that price setting was taking place in the tight U.S. market. Things have gotten so bad in the U.S. gasoline market that even the Energy Information Administration, in one of its weekly reports recognized that the tight U.S. gasoline market may be "pulling up" the price of crude. "In other words, if U.S. gasoline markets are tight, they may 'pull up' crude oil prices to a degree, given that tight downstream capacity makes each gallon of product produced that much more valuable, increasing the value of the crude used to produce the refined product."[31]

A *Wall Street Journal* story made a similar point.

> Two years ago when gasoline prices in the U.S. surged to the then-lofty level of $2 a gallon, the Organization of Petroleum Exporting Countries sprang into action, seeking to provide relief by pledging to boost oil production.
>
> Now with gasoline topping an average of $3.20 a gallon nationwide, OPEC officials say they see no reason to open the oil spigot.
>
> OPEC's new attitude reflects a tug of war in the global oil patch over how the profits from a barrel of oil are divided up between the world's producers –

[30] John Wilen, "If people are driving less, why are gas prices rising?," *South Florida Sun-Sentinel.com*, March 18, 2008.

[31] Energy Information Administration, *This Week in Petroleum*, May 3, 2006, p. 2

> which develop oil deposits and pump oil and its refiners – who process it into fuels like gasoline.
>
> In recent years, the balance in the world's oil-supply system has shifted, giving the refining industry more power and more profit…
>
> Privately, OPEC members are irked that U.S. refining margins – the profit refiners make in turning crude into gasoline and other products – have soared in recent months…
>
> OPEC officials say that if they pump more oil and depress world oil prices, U.S. gasoline prices might remain high, and the result would be even wider refining margins. In essence, OPEC would be putting more money into the pockets of refiners while its own revenue would be hurt by declining crude prices.[32]

OPEC's response to rising crude oil prices continues to be to point the finger back at the consuming nations. "Chakib Kheilil, the president of the global cartel, who is also the Algerian Energy Minister, said: "There are big pressures on OPEC and some consuming nations would like to present OPEC as being behind current high prices. But the truth is the current prices are linked to US economic problems as well as to the value of the dollar."[33]

CONCLUSION: CAN THE SPIRAL UNWIND?

While gasoline and crude oil chase each other up through rent seeking by refiners and crude producers, spurred on by speculators and tight markets, the great unknown is what happens when the fundamentals start pointing in the opposite directs, particularly when gasoline markets are loose. Will high inventories, increasing, low cost ethanol supplies and slackening demand keep the pressure on refiner margins? Will the softness in the gasoline market point the way down for crude prices? Or will refinery runs be cut back to alleviate the pressures?

Predicting prices in the energy complex is a risky business and the participants are uncertain, but there is no doubt that the stakes are huge. Producers are talking about a price range for crude that was almost unthinkable a couple of years ago. "OPEC President Chakib Kheilil said on Saturday oil prices would range between $80 and $110 a barrel for the rest of 2008."[34] And refiners are talking about passing the costs through.

What is uncertain is exactly what the "normal summertime margin" is and how much influence a weak gasoline market can have on the price of crude. At $110 per barrel and summertime margins from the past couple of years, the potential price increase could be as

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[32] Bhusahn Behree and Ana Campoy, "Why OPEC Idles as Gas Prices Reach New Higher: Cartel Balmes Refiners, Cites Flush Oil Supplies, Tug of War Over Profits," *Wall Street Journal*, May 25, 2007.

[33] Suzy Jagger, "Oil Prices Could Stay as High as $110 a Barrel this Year, says OPEC," *Timesonline*, March 24, 2008.

[34] Ikuko Kao, "Oil Slips Toward $101 on Profit Taking," *Reuters*, March 24, 2008.

much as $0.75 or more. If a soft market drops the price of crude to $80 barrel, keeps summer margins to the much lower levels that obtained in the 1990s of even 2002 and 2003, and lower cost ethanol continues to create slack in the refining sector, we could be looking at gasoline prices that are flat, which is exactly what happened in 2002. The stakes for consumers are huge, as much as $0.75 per gallon, or $75 billion in the final three quarters of the year.

As consumers anxiously eye the fluctuations in the price at the pump, policy makers should cast a wary eye on refiners. Our analysis has shown that since the turn of the century the tight oligopoly in the refining sector has played a key role in the price escalation, but the industry always responded that it was just supply and demand.[35] Now that the supply and demand fundamentals are pointing in a downward direction, it will be interesting to see if the industry comes up with another excuse, if prices continue to rise.

It is critical for policy makers to ensure that the 2007 Energy Independence and Security Act" is implemented vigorously since it emphasized the two key long-term elements that can help consumers escape from the grip of both the domestic refining oligopoly and the crude oil cartel – expansion of alternative fuels and reduction of demand through increased fuel economy.

[35] See note 1.

Exhibits

The following exhibits are based on the Energy Information Administration (EIA) database, relying primarily on monthly figures. Where recent monthly figures are not available, four week moving averages are used for the last week in the month.

Prices
http://tonto.eia.doe.gov/dnav/pet/pet_pri_gnd_dcus_nus_m. htm
http://tonto.eia.doe.gov/dnav/pet/pet_pri_allmg_d_nus_pta_cpgal_m.htm
http://tonto.eia.doe.gov/dnav/pet/pet_pri_rac2_dcu_nus_m.htm
http://tonto.eia.doe.gov/dnav/pet/pet_pri_wco_k_w.htm

Financials
http://www.eia.doe.gov/emeu/perfpro/news_m/consistent.html

Product supplied
http://tonto.eia.doe.gov/dnav/pet/pet_cons_psup_dc_nus_mbblpd_m.htm

Refinery net production
http://tonto.eia.doe.gov/dnav/pet/pet_pnp_wiup_dcu_nus_4.htm
http://www.eia.doe.gov/emeu/perfpro/btab26.html

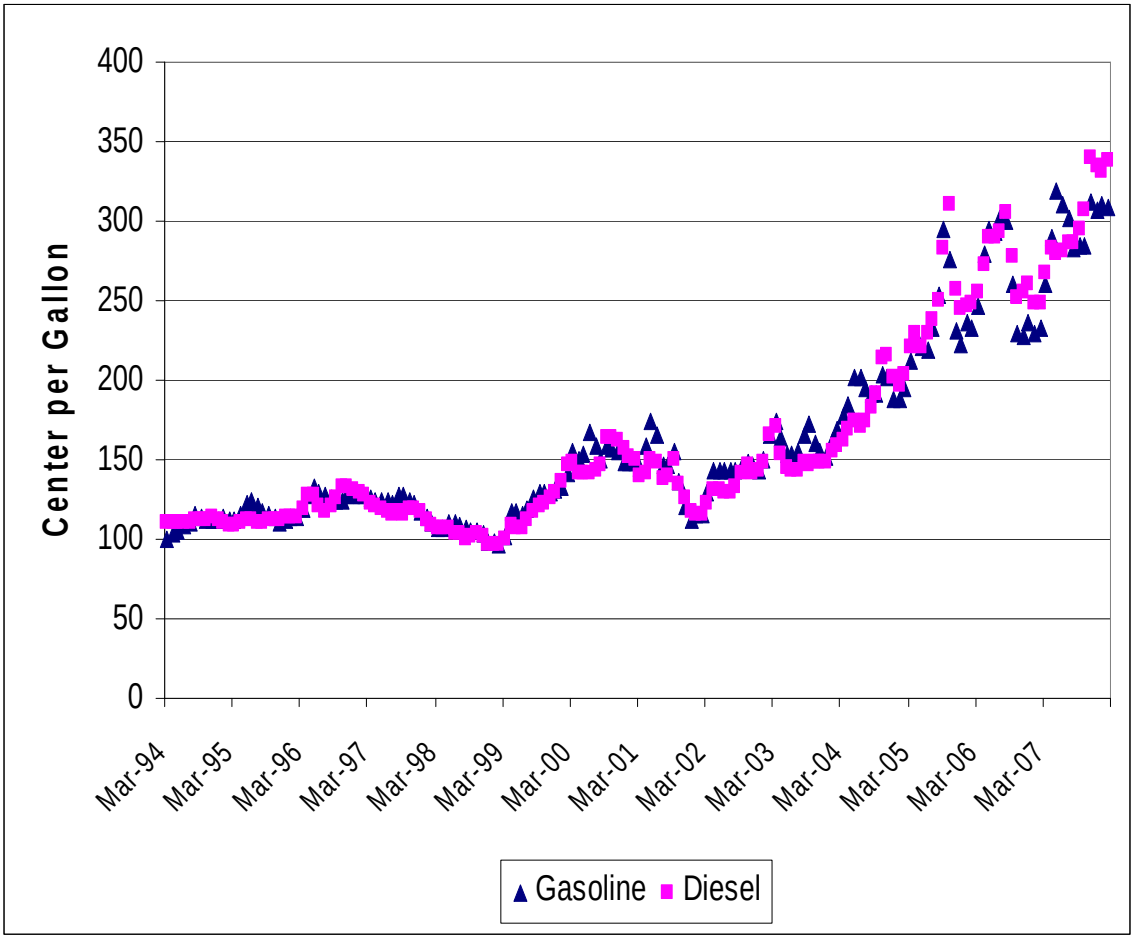
Imports
http://tonto.eia.doe.gov/dnav/pet/pet_move_wkly_dc_nus-z00_mbblpd_w.htm

Refinery Utilization
http://tonto.eia.doe.gov/dnav/pet/pet_pnp_unc_dcu_nus_a.htm

Stocks
http://tonto.eia.doe.gov/dnav/pet/pet_stoc_typ_d_nus_sae_mbbl_m.htm

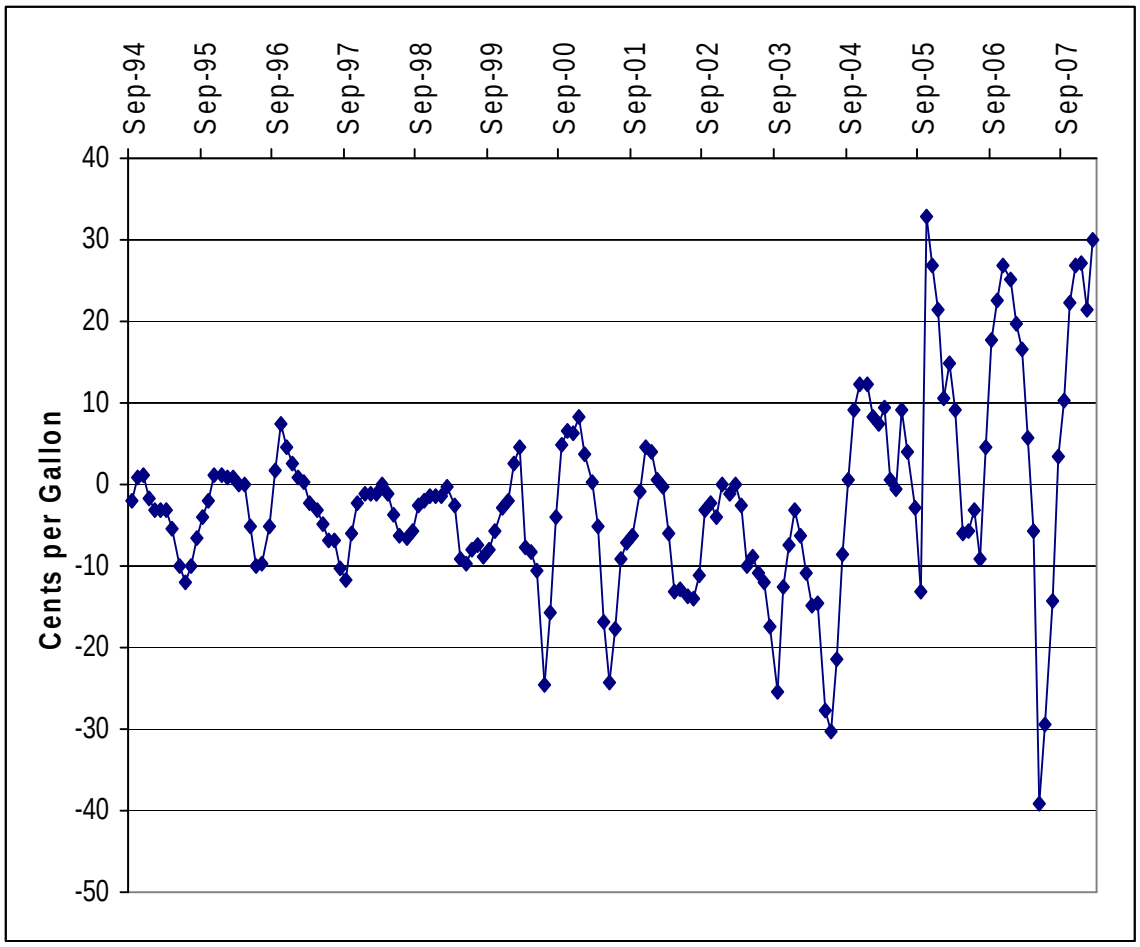
Ethanol Supplies
http://tonto.eia.doe.gov/dnav/pet/pet_sum_sndw_dcus_nus_w.htm

Exhibit 1:
Gasoline and Diesel Prices



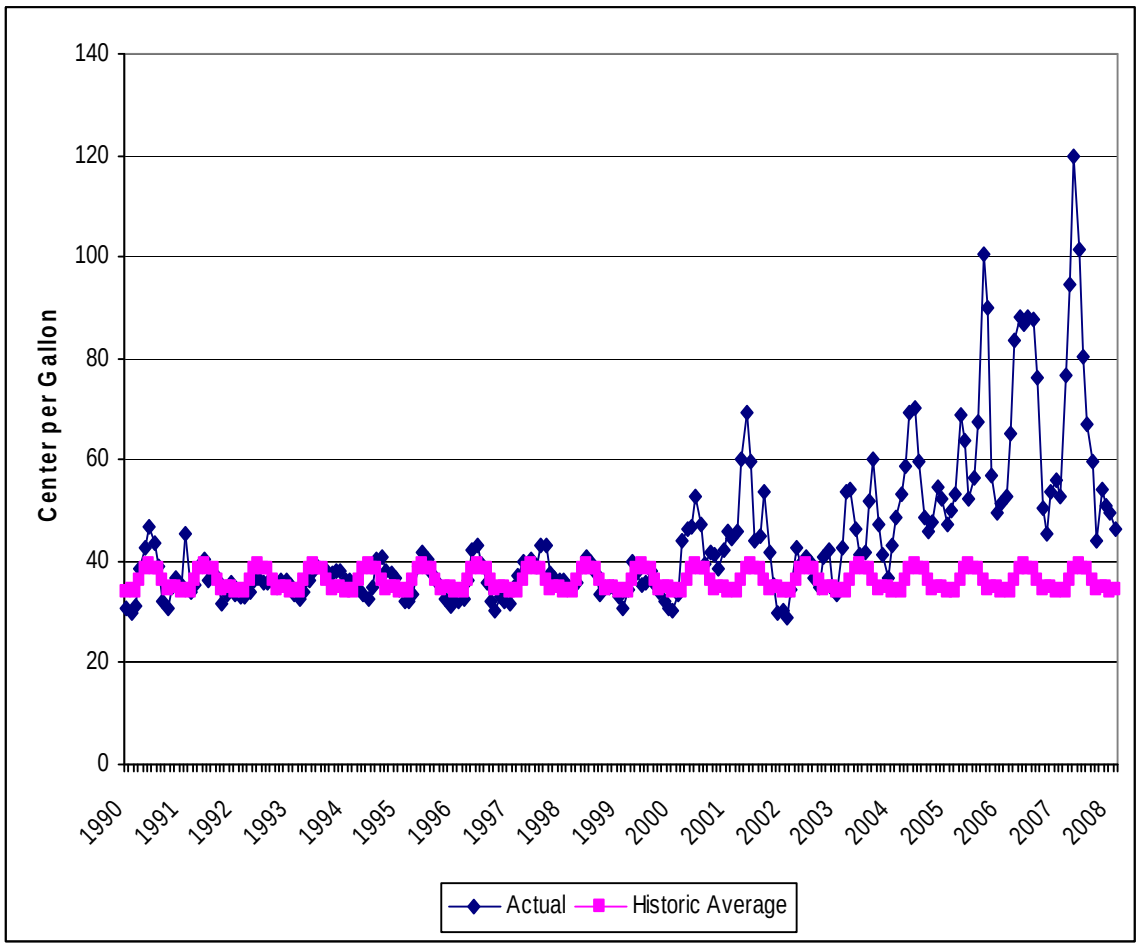
Source: EIA, Data Base

Exhibit 2:
The Difference between Diesel Prices and Gasoline Prices



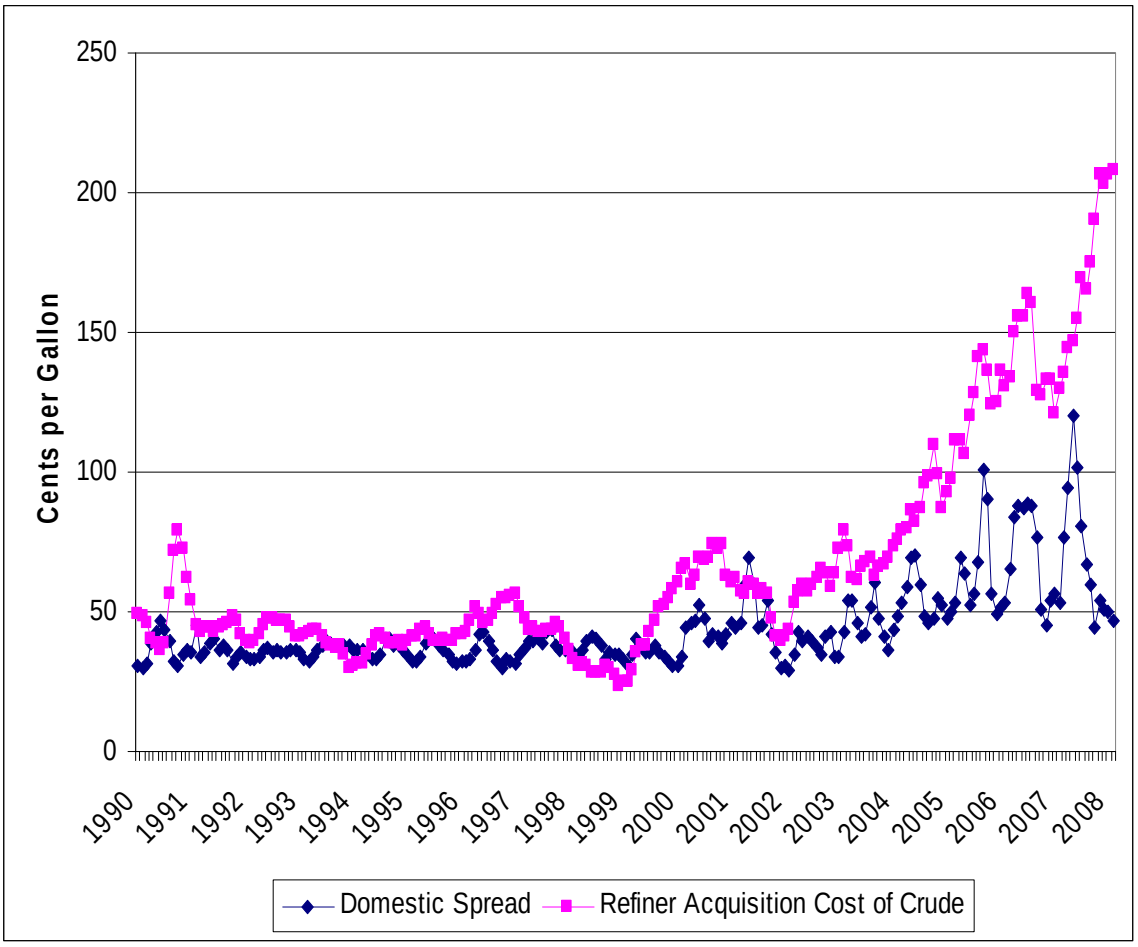
Source: EIA, Data Base, Exhibit 1.

Exhibit 3:
Domestic Spread on Gasoline
(Pump Price minus Crude and Taxes)



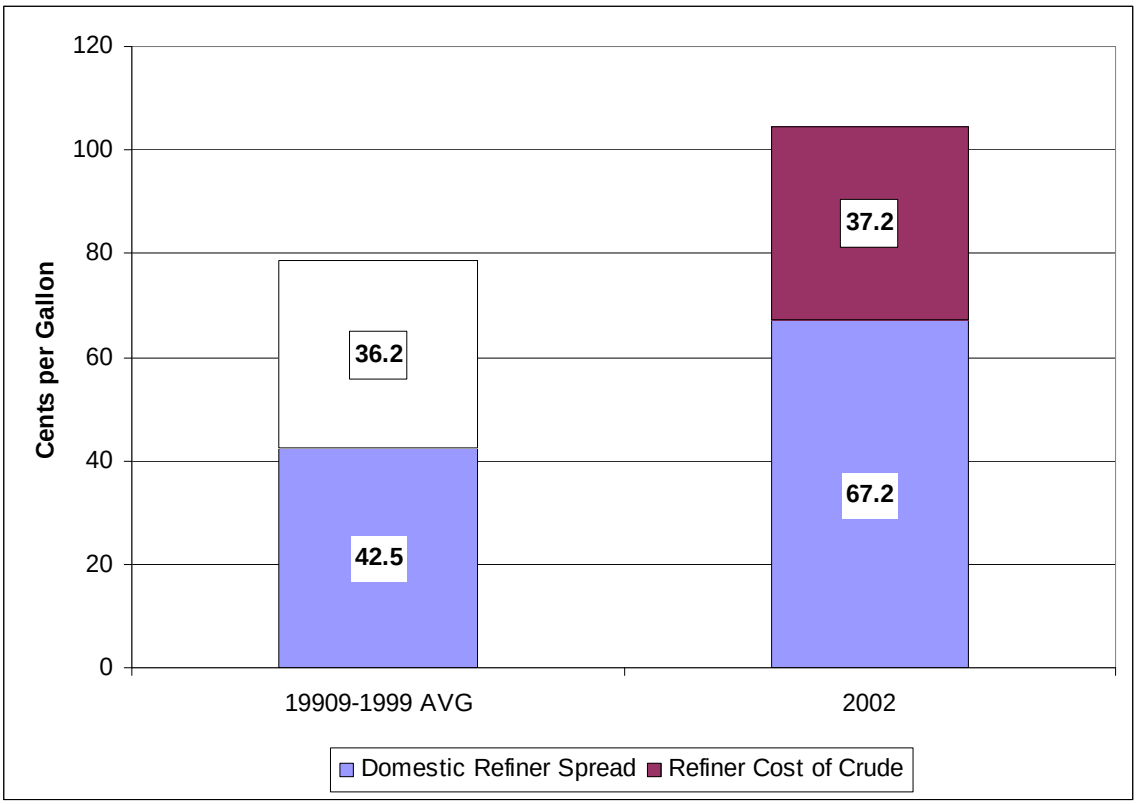
Source: EIA, Data base.

Exhibit 4:
Increases in Crude Oil Acquisition Costs and Domestic Spread



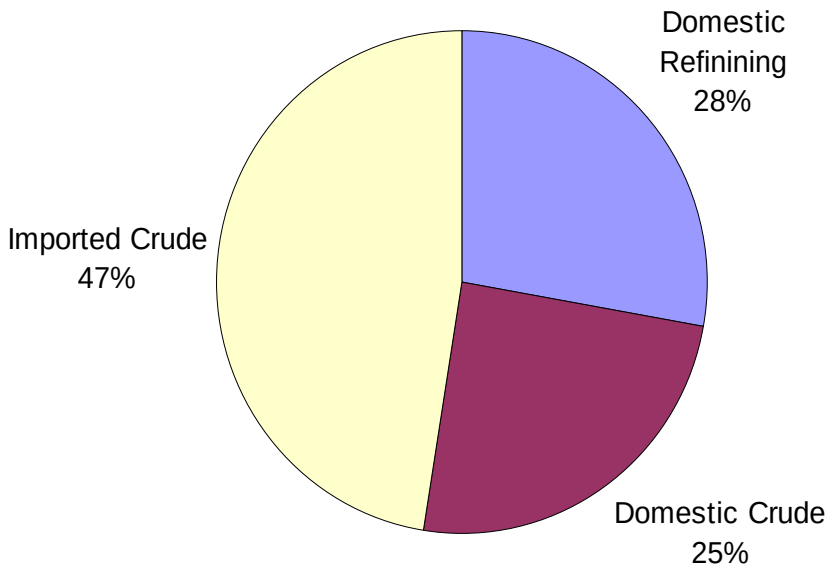
Source: EIA, Data base.

Exhibit 5:
Domestic Spread and Crude Acquisition Costs, 1990s and 2002



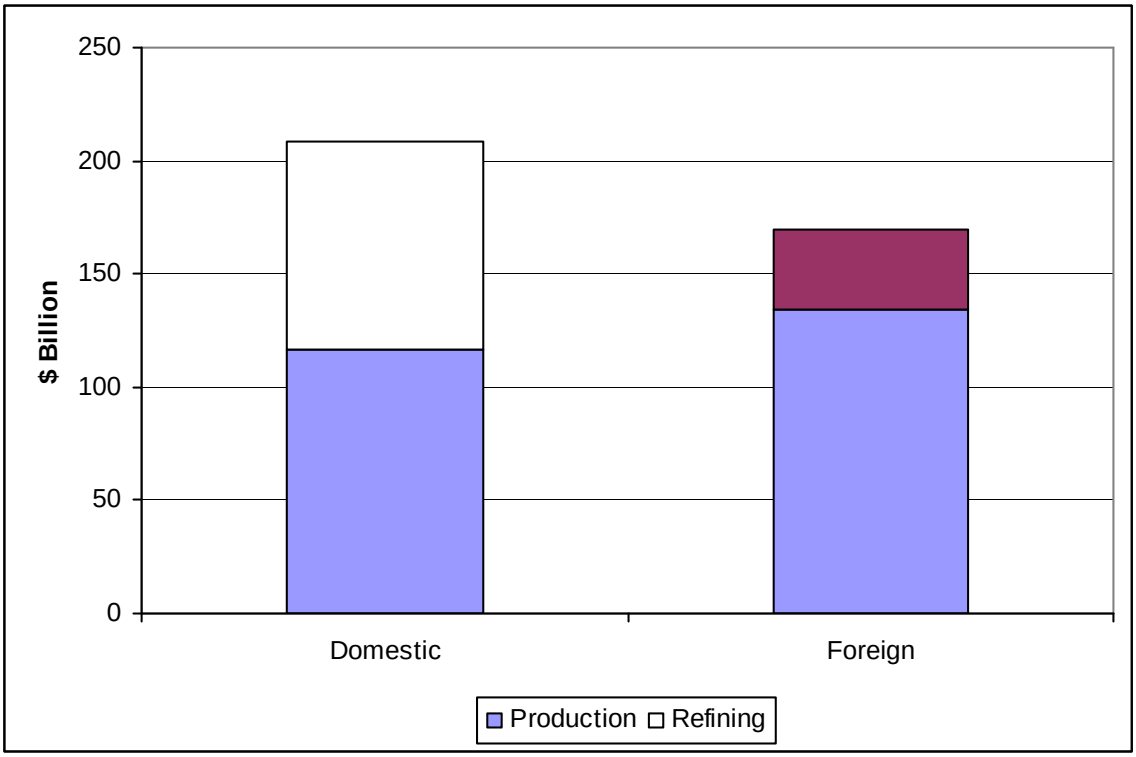
Source: EIA, Data base. Exhibit 4.

Exhibit 6:
Shares of Refining, Domestic Crude and Imported Crude in Gasoline Price Increases



Source: EIA, Data base. Imported and domestic crude are assumed to have the same price, per oil company accounting practices. Imported product is assumed to come from refineries owned by domestic companies running foreign owned crude. This underestimates the share of oil company profits, as opposed to imported crude since a significant share of the crude refined in the foreign refinery operations of domestic companies is owned by those companies.

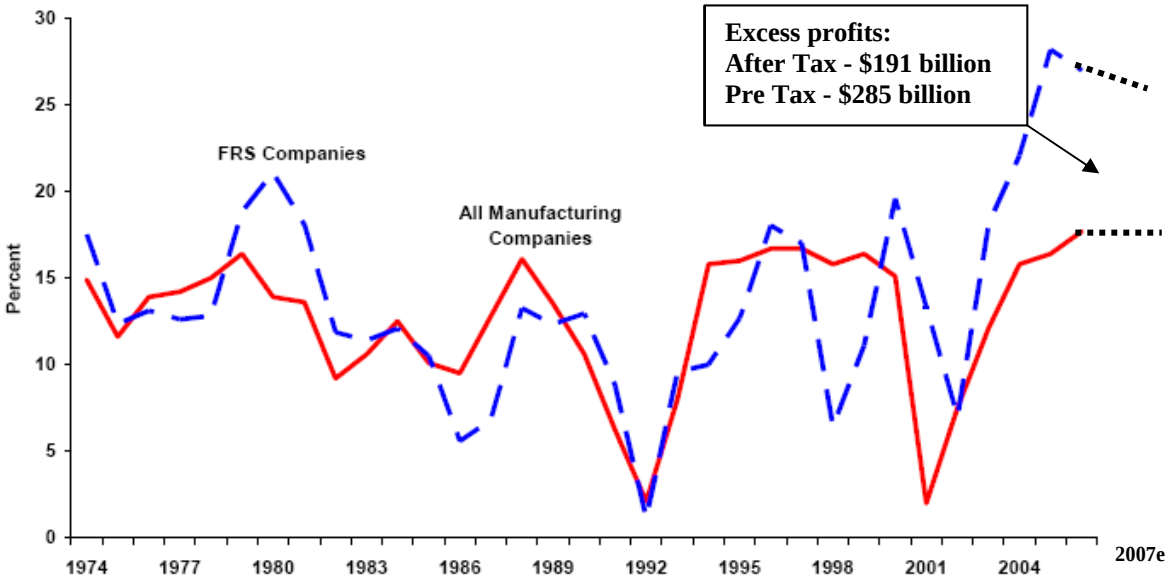
Exhibit 7:
Increase in Net Income:
Foreign and Domestic Production and Refining and Marketing



Source: EIA database, Quarterly Financial data.
http://www.eia.doe.gov/emeu/perfpro/news_m/consistent.html

Exhibit 8:
Return on Equity and Excess Profits

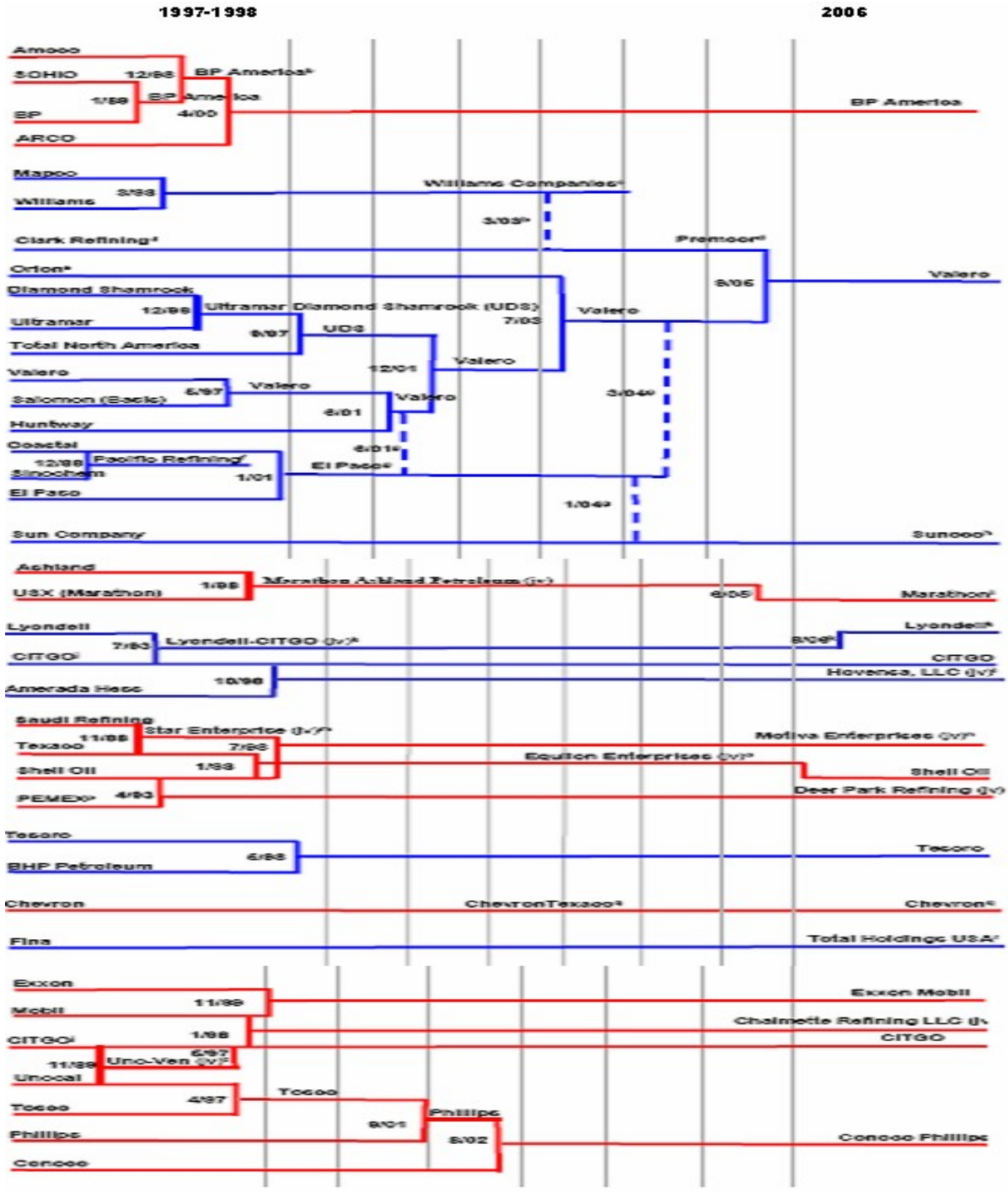
Figure 2. Return on Stockholders' Equity for FRS Companies and All Manufacturing Companies, 1974-2006



Sources: **FRS Companies**: Energy Information Administration, Form EIA-28 (Financial Reporting System). **All Manufacturing Companies**: U.S. Census Bureau Quarterly Financial Report, All Manufacturing Companies.

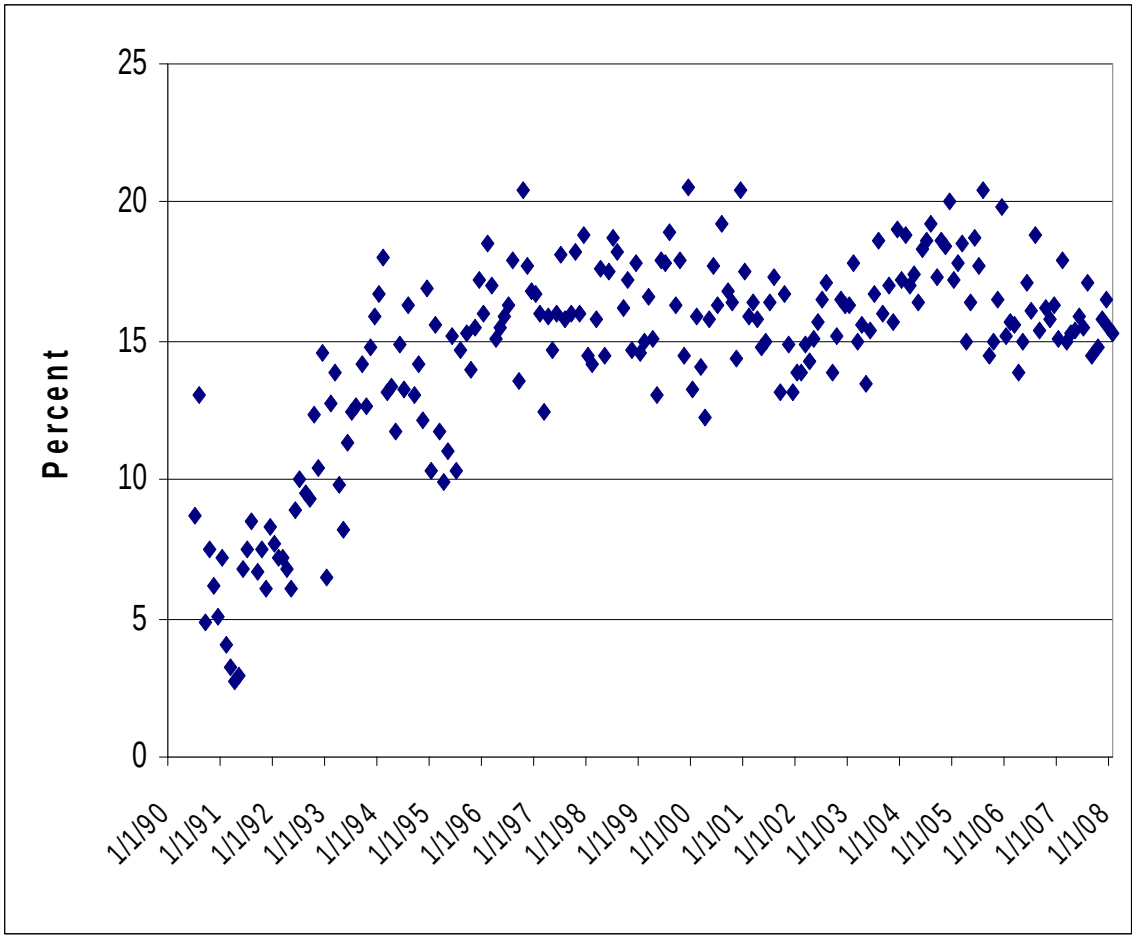
Source: EIA, Performance Profiles of Major Energy Producers 2006, (December 2007), p. 3, 2007 estimated based on EIA, Quarterly financial data and

Exhibit 9:
A Decade Long Merger Wave Has Dramatically Reduced the Number of Major Refiners



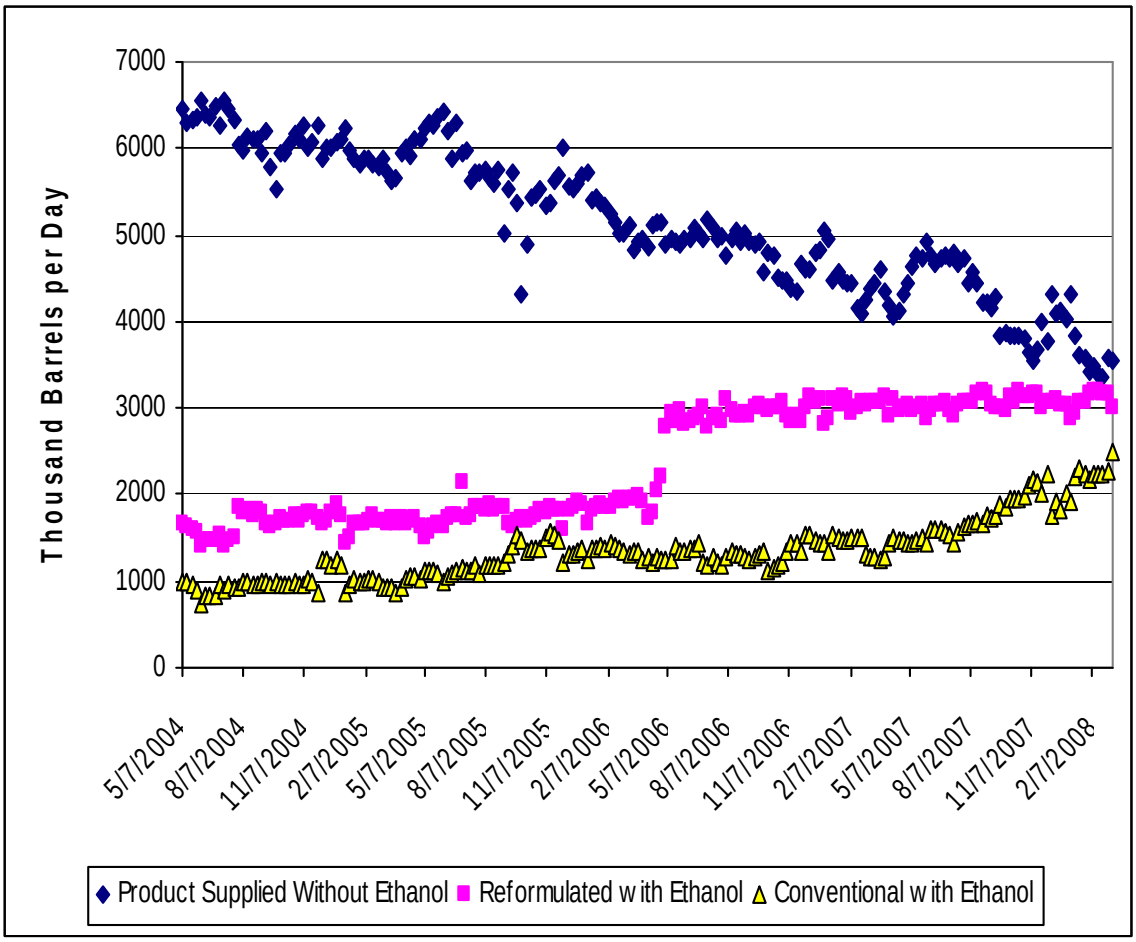
Source: EIA, http://www.eia.doe.gov/emeu/finance/mergers/dwnstream.pdf

Exhibit 10
Refinery Capacity Shortfall as a Percent of Product Supplied



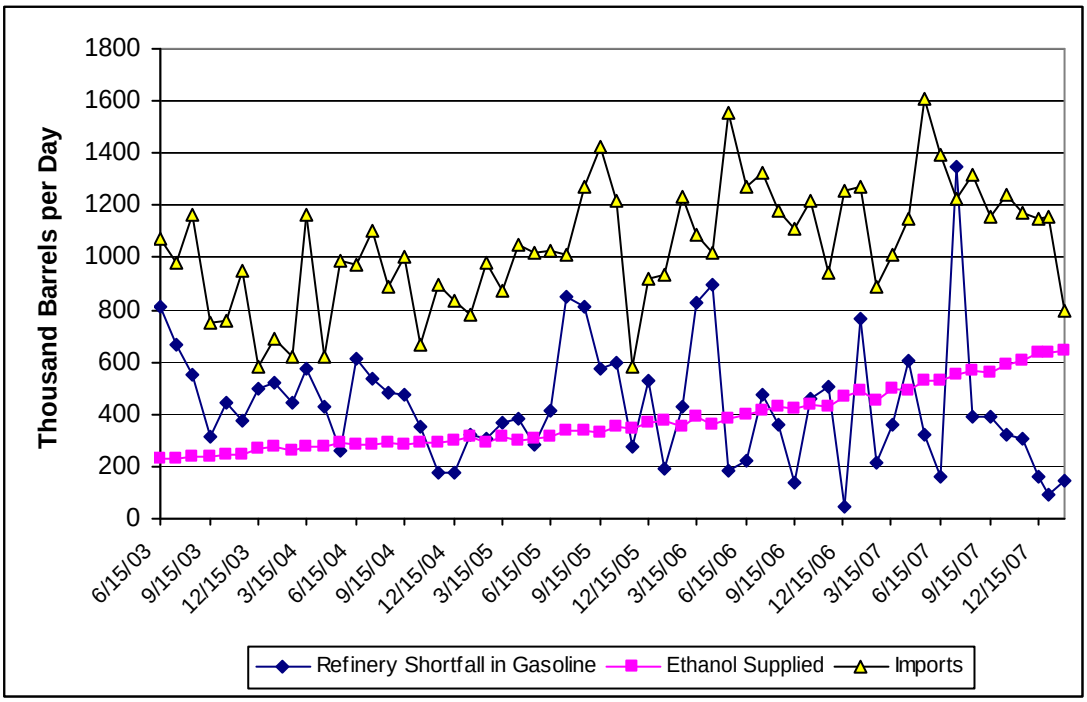
Source: EIA, Data base.

Exhibit 11:
The Increasing Role of Ethanol in Gasoline Supply



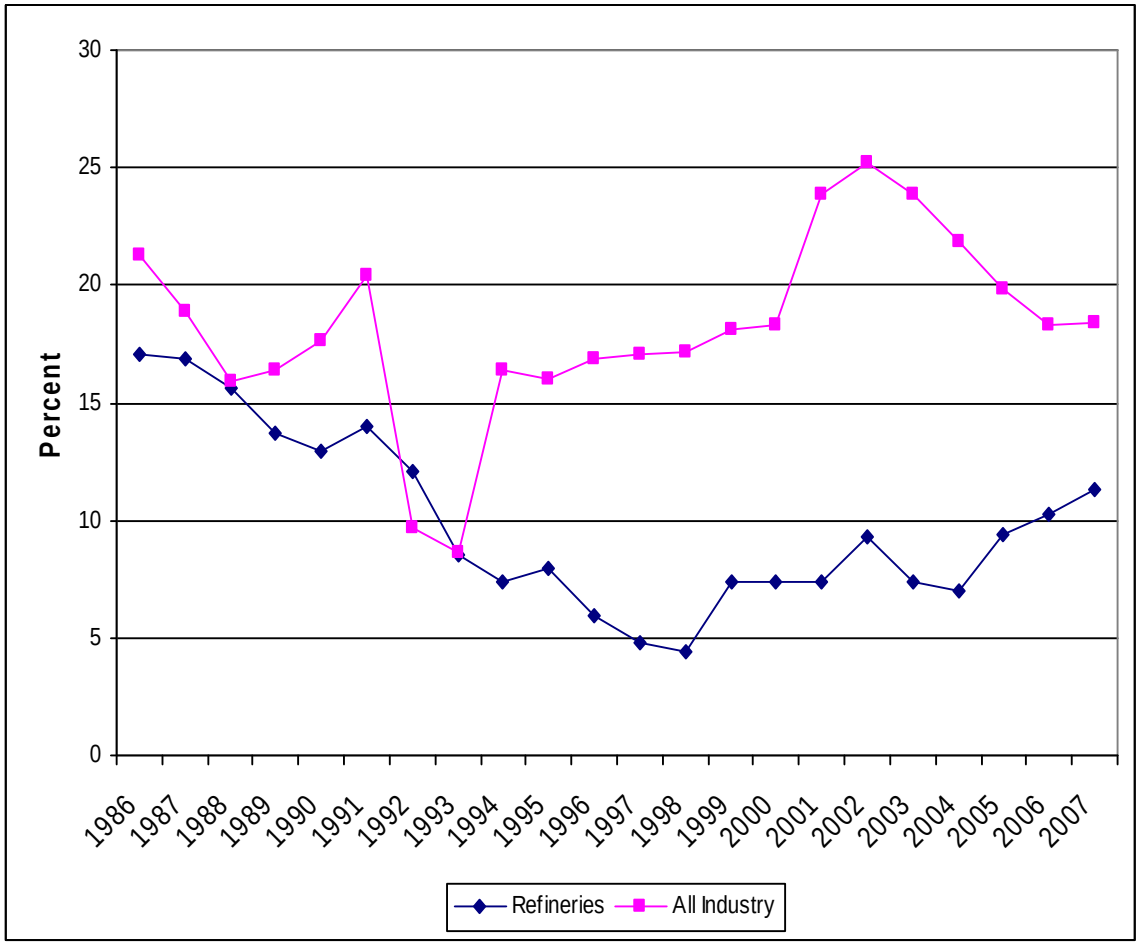
Source: EIA, Data base.

Exhibit12:
Ethanol Production as a Percent of Refinery Capacity Shortfall



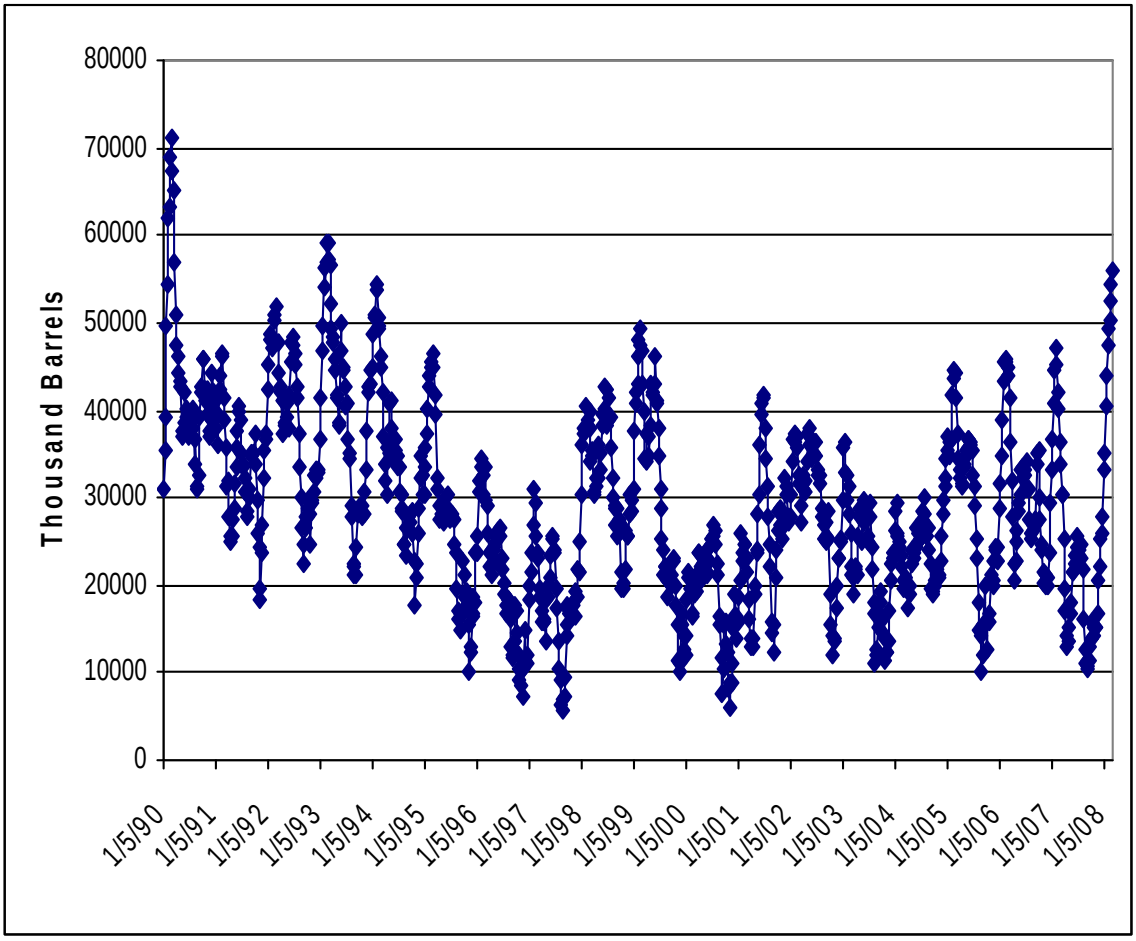
Source: EIA data base.

Exhibit 13:
Spare Capacity in Refining Compares to All Industry



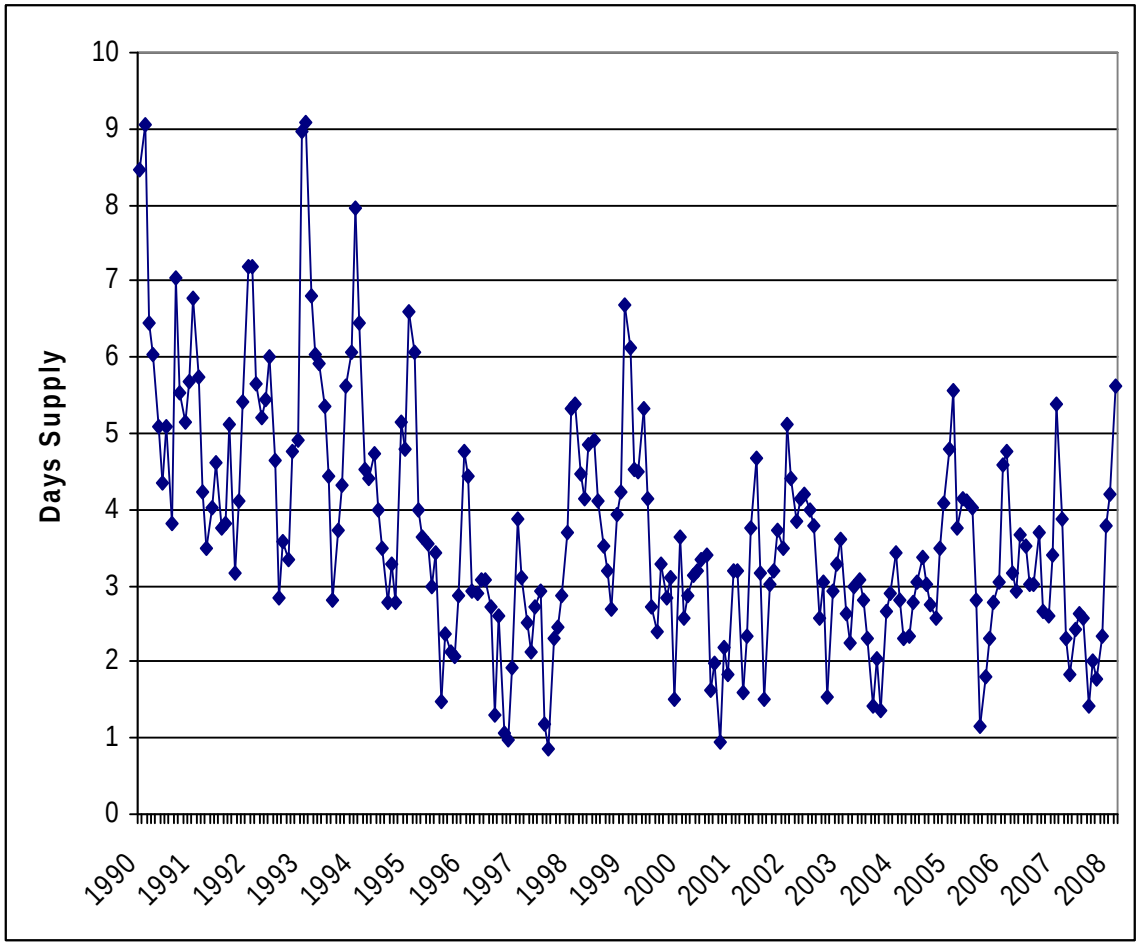
Source: Calculated from Board of Governors of the Federal Reserve System, *Federal Reserve Statistical Release, Industrial Production and Capacity Utilization; http://www.federalreserve.gov/Releases/g17/Current/table11.htm* Energy Information Administration, U.S. Department of Energy, *U.S. Percent Utilization of Refinery Operable Capacity.* http://tonto.eia.doe.gov/dnav/pet/pet_pnp_unc_dcu_nus_m.htm

Exhibit 14:
Weekly Finished Motor Gasoline Stocks (Thousand Barrels)



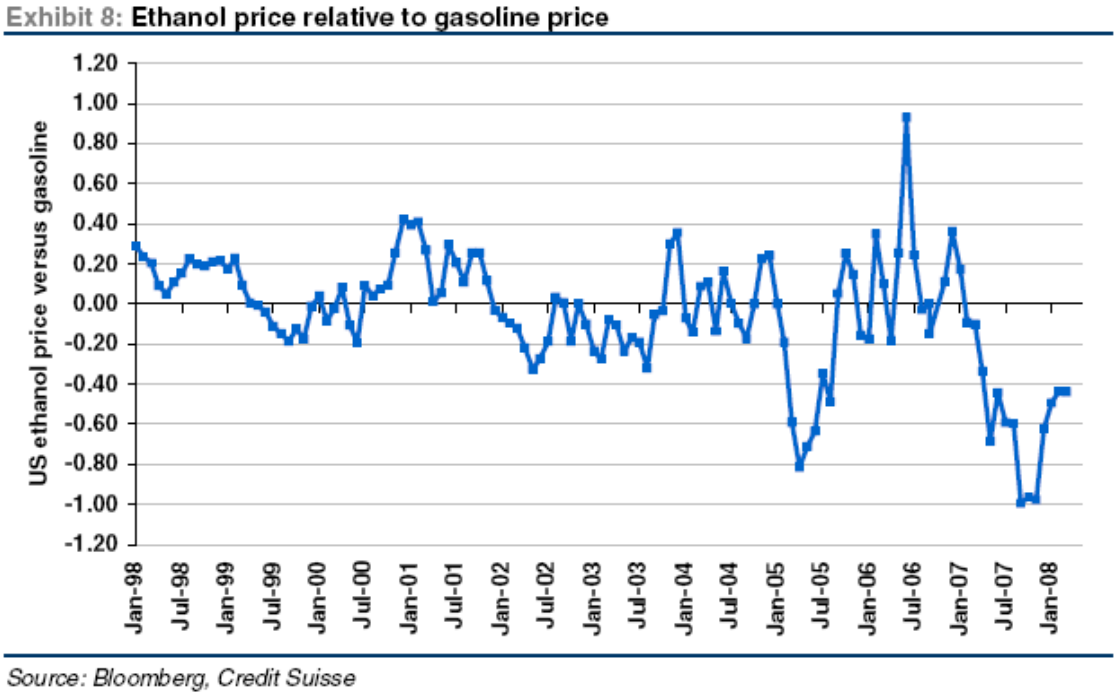
Source: EIA database

Exhibit 15:
Average Monthly Gasoline Stocks Expressed as Days Supply
Above Lower Operational Inventory



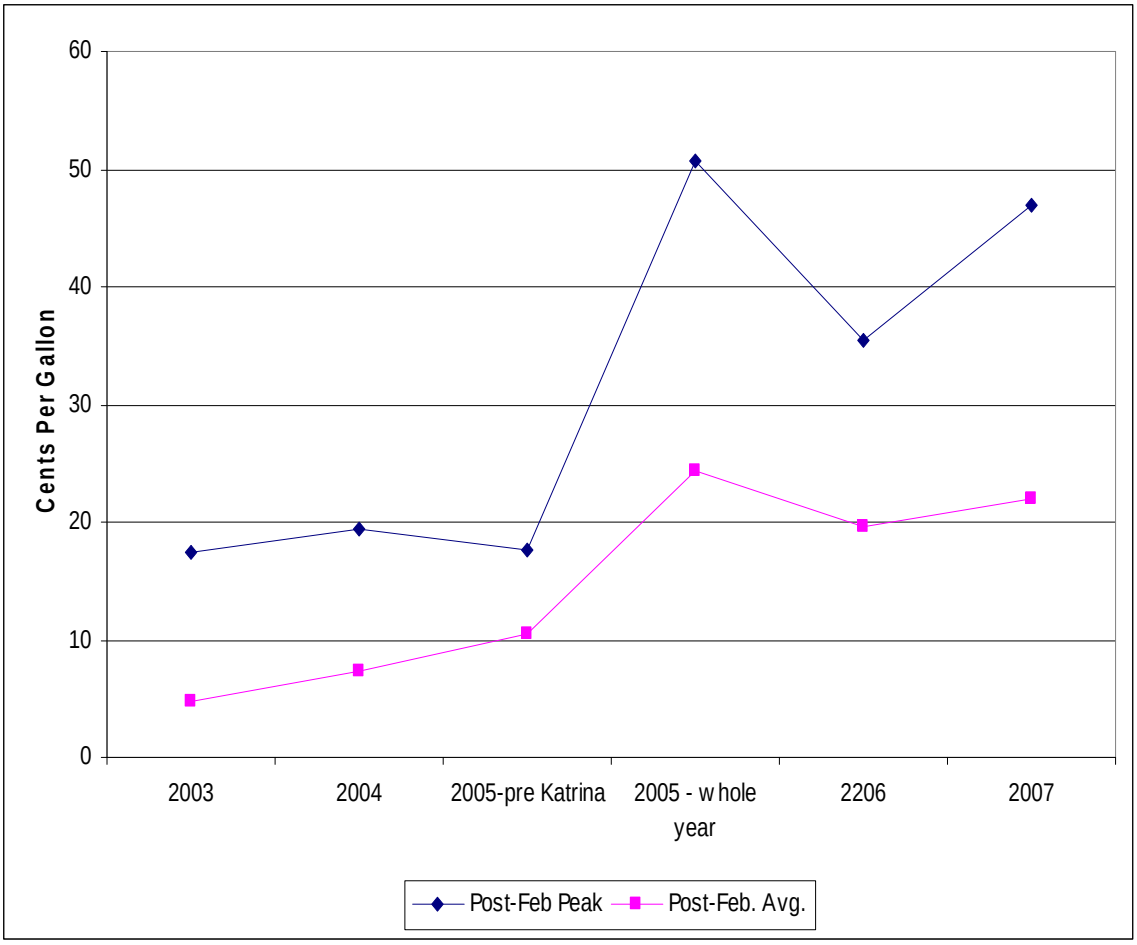
Source: EIA Data Base: http://tonto.eia.doe.gov/dnav/pet/hist/wgfrpus24.htm

Exhibit 16:
Ethanol Price Relative to Gasoline (Including Blender Credit)



Source: Credit Suisse, *US Independent Refiners: The Summer May Be Broken*, March 19, 2008.

Exhibit 17:
Increases in Domestic Spread – February to Driving Season Peak and Post February



Source: EIA, Data base.