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PIRINC has prepared the enclosed report, *Refining Concentration and Industry Dynamics*.

Beginning in 1998, the oil industry has seen a series of mergers and consolidations among its largest entities. But while the industry is becoming more concentrated, as discussed in this report competition has not been reduced. The Federal Trade Commission has acted to curb what it believed were potential threats to competition, requiring divestitures in certain cases where it believed necessary while not objecting to consolidations where it saw no potential anticompetitive effects. There has been significant turnover among the largest refiners, encouraged by FTC actions. Moreover, there are important differences between the composition of the largest refiners at the national level, and the largest players within particular regions.

In 2000 and again in the first half of 2001, consumers experienced spikes in gasoline prices, with the spikes especially acute in California and the Chicago-Milwaukee area. The spikes did not reflect any lack of competition among refiners. They have resulted from infrastructure bottlenecks, including tight refining capacity, as well as stringent, location-specific policies regulating product quality. Last year's price spikes were eased first by exceptionally high refinery runs and then by a weakening economy and seasonal demand declines.

At the beginning of this year, retail prices were down about 60 cents/gallon from their spring peak, far more than the 21 cents/gallon decline in crude prices for the same period. But structural problems remain and show signs of re-emergence as strong economic recovery and rising demand, as well as rising crude prices, fuel upward movement in gasoline prices.

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Refining Concentration And Industry Dynamics

Beginning in 1998, the oil industry has seen a series of mergers and consolidations among its largest entities. The trend toward consolidation is continuing. Recent examples include the Phillips acquisition of Tosco in September 2001, Chevron's merger with Texaco the following month and the Valero purchase of Ultramar Diamond Shamrock, which closed at the end of the year. Furthermore, Phillips is planning a "merger of equals" with Conoco. There is no doubt that refining industry concentration has risen in recent years but it does not follow that competition has been reduced or that consumers have been harmed.

The Federal Trade Commission in exercising its responsibility to preserve competition has subjected each of the proposed mergers to critical scrutiny, requiring in several cases focused divestitures to prevent what it believed would be anticompetitive outcomes while not objecting to consolidations where it saw no potential anticompetitive effects. Moreover, it has ensured that where divestitures were required, assets were divested to firms who would be strong competitors in the markets they were entering. This FTC policy has contributed to significant turnover among the largest refiners. Moreover, there are important differences between the composition of the largest refiners at the national level, and the largest players within particular regions.

In 2000 and again in the first half of 2001, consumers witnessed sharp escalations in gasoline prices, with price spikes especially acute in certain parts of the country, notably California and the Chicago-Milwaukee area.¹ Price increases were beyond what might have been anticipated from changes in crude oil prices. These price movements did not result from lack of competition. Instead, they reflect factors such as strong pressures of product demand on refining capacity, increasingly stringent and location-specific policies regulating product quality and accidents knocking out refinery and pipeline capacity. Vulnerabilities to supply disruption and price spikes have been exacerbated by low inventories. A downward trend in inventories has been underway since the early 1980s as part of the ongoing effort of industry to reduce costs. Competitive pressures have insured that cost savings were for the most part passed on to consumers but at the same time, lower inventories meant less of a cushion against unexpected surges in demand or shortfalls in supply.

The first five months of 2001 saw initially tight supplies, low inventories, and sharply rising gasoline margins for refiners. Between January and May, the differential between average retail gasoline and crude prices rose from 78 cents/gallon to \$1.06.; But the supply response, particularly very high refinery runs, led to an easing of prices and margins beginning mid-year. A weakening economy and seasonal demand declines brought a further weakening of price pressures. At the beginning of this year, average US retail gasoline prices were about 60 cents/gallon below their

	Prices in ¢/gallon		
	Retail Gasoline*	Crude Oil (WTI)	Difference
1/01	148.7	70.4	78.3
5/01	173.8	68.1	105.6
8/01	146.1	65.2	80.9
1/02	114.8	46.8	68.0
Early Apr	141.2	64.8	76.4

*Average for all areas and all grades

¹Pirinc's last report on the California market, [The Gasoline Market In California: An Update](#), December 1999, is available upon request. Problems in the Chicago-Milwaukee area are discussed in the Pirinc report, [Gasoline 101: A Politically Explosive Topic](#), June 2000. This report is available from the Pirinc web site: www.pirinc.org.

May peak, a far greater decline than the 21 cents/gallon decline in crude prices over the same period. However, only marginal progress has been made in easing the structural problems that contributed to past price spikes. With stronger than anticipated economic recovery and rising demand, as well as rising crude prices, gasoline prices have been moving up from their low point, especially since mid-February. Nationally, rising crude costs are playing the key role although gasoline prices have moved up by more than crude costs, pulling up refinery gasoline margins from their winter low-points. Price increases have been particularly strong in California and the Chicago-Milwaukee area, serving as reminders of their special vulnerabilities to any upsets in their delicate local supply/demand balances.

Concentration at the National Level

During the past six years a series of major mergers has brought about both consolidations of majors into giant “super majors” such as ExxonMobil and the combination of non-major refiners into huge players in the US refining sector.

This process has boosted concentration levels in the US refining sector and at the same time, changed the mix of players. The table below shows the identities of the top US 5 refiners and their share of US refining capacity as they stood at the beginning of 1996 and the beginning of this year. At the beginning of 1996, the top 5 together accounted for 32% of refining capacity (crude distillation) nationwide. As of the beginning of this year, the top 5 accounted for 44%, a significantly higher share.²

	<u>1/1/1996</u>		<u>1/1/2002</u>
Chevron	7%	Exxon Mobil	12%
Amoco	7%	Phillips 66	10%
Exxon	6%	BP	9%
Mobil	6%	Valero Energy	7%
Shell	6%	Chevron Texaco	6%
Total	32%		44%

However, rising concentration has not meant reduced competition and it would be wrong to conclude that the US refining industry has become less competitive since 1996. National concentration levels in refining remain relatively low in comparison with other US industries, and in any event, most economists — and anti-trust regulators and the courts — long ago abandoned the dogma that increased concentration in itself is anticompetitive. Not only does vigorous competition often flourish in concentrated industries, but mergers themselves frequently strengthen firms, allowing them to reap economies of scale and scope and cut costs in other ways, thus enhancing the ability to compete vigorously.

Indeed, a significant degree of turnover in the composition of the set of leading firms in an industry is a good indicator that the merger process is competition-enhancing. There certainly has been noticeable turnover at the national level, with Phillips and Valero climbing up into the

² Calculations are based on data published by the *Oil & Gas Journal*. If Valero's lease, as opposed to ownership, of Coastal's Corpus Christi refinery is counted, Valero's 2002 share of national capacity rises to 7.5% and the top 5 share to 45%. The recently announced agreement for Shell to acquire Pennzoil-Quaker State would not alter the top-5 list. The Pennzoil-Quaker State Shreveport, Louisiana refinery amounts to only 0.3% of US refining capacity.

national top five, and Shell dropping out. All of the mergers and consolidations associated with the changes in concentration and in the players were closely monitored by the Federal Trade Commission. Where the FTC found a potential for anti-competitive effects, approval was granted only when the companies involved agreed to divest refineries and/or other assets and to other commitments deemed necessary to guarantee competition. Thus, in order to win FTC approval for its merger with Amoco, BP was required to divest numerous gas stations and nine terminals, besides freeing wholesale customers in many markets to switch brands. BP was later allowed to acquire the ARCO refineries in California but only after agreeing to divest, among other assets, ARCO's interests in Alaskan oil production. Exxon Mobil was required to divest the Benicia (California) refinery as well as extensive gasoline marketing and other assets while Chevron Texaco had to agree to sell Texaco's ownership in the Equilon and Motiva refining and marketing joint ventures.³ The new entrants to the national list have been beneficiaries. Valero was the buyer of the Benicia refinery divested by Exxon Mobil. (On the other hand, the FTC required Valero to divest its Golden Eagle (California) refinery and associated retailing as a condition for approving its merger with UltramarDiamond Shamrock.)

Phillips vaulted into the ranks of the top 5 through its merger with Tosco, a merger which was not opposed by the FTC with the Commission noting "We are satisfied that the Phillips/Tosco merger is not likely to harm competition and consumers."⁴ The Commission noted that the two companies substantially operated in different parts of the country and in certain areas where their interests did overlap they had a relatively low combined market share. Both companies had benefited by earlier divestitures of larger companies. Phillips acquired ARCO's Alaska interests divested by BP while Tosco acquired over 1,700 gasoline stations divested by Exxon Mobil.

The outcomes of the divestitures required by the FTC reflect that Agency's deliberate policy of seeking strong purchasers. In approving purchasers for Valero's Golden Eagle refinery, the FTC has stated, "The Commission will consider, inter alia, whether the acquirer has the business experience, technical judgment, and available capital to continue to invest in the refinery in order to maintain California Air Resources Board (CARB) gasoline production, even in the event of changing environmental regulation."⁵

As its decision to approve the Phillips Tosco merger indicates, the FTC focuses on conditions in specific geographic markets, not national concentration statistics. Any assessment of the impact of recent mergers on competition must also consider regional impacts rather than simply changes in national aggregates.

³ Equilon is a joint venture originally between Shell and Texaco combining mid-western and western refining and marketing assets while Motiva is a joint venture originally between Shell, Texaco and Saudi Refining Inc. combining Shell and Texaco east and Gulf coast refining and marketing assets. The FTC required the divestiture of the Anacortes refinery on the west coast as one of the conditions for its approval.

⁴ Federal Trade Commission, Statement of the Commission, Phillips Petroleum Corporation/Tosco Corporation, September 17, 2001.

⁵ Federal Trade Commission, Analysis of Proposed Consent Order to Aid Public Comment, December, 2001.

Concentration by PADD

The next table considers shares of capacity owned by the largest refiners within each PADD, in declining order of concentration. The top half focuses on the largest refiners within each PADD regardless of their national ranking. On this basis, concentration levels are much

The Top 5 Refiners' Share of Refining Capacity by PADD						
%	<u>US</u>	<u>PADD 1</u>	<u>PADD 5</u>	<u>PADD 4</u>	<u>PADD 2</u>	<u>PADD 3</u>
1/1/2002	44	90	69	62	56	53
1/1/1996	32	71	61	59	48	40
Share of National Top 5 in PADD Refining Capacity						
1/1/2002	44	27	56	20	33	39
1/1/1996	32	19	28	27	28	25

higher than the national figures shown in the first column indicate, with shares of the top 5 at the beginning of this year ranging from a high of 90% in PADD 1 (the East Coast) to 53% in PADD 3 (the Gulf Coast). Top 5 shares in all PADDs were higher in 2002 than in 1996, with PADD 1 showing the highest increase.

There is an important distinction between the largest refiners on a regional basis and the largest refiners nationally. The distinction is highlighted in the lower half of the table, which shows the shares of the top 5 national refiners within each PADD. In PADD 1, the national top 5 currently have only a 27% share of refining capacity, up somewhat from 19% in 1996 and well below the current 90% share of the top 5 refiners operating within the region. Of the national top 5, only Phillips and Valero have any refining capacity within the region. The largest refiner within PADD 1 is Sunoco with a 32% share of local capacity (as opposed to a 4% share of national capacity in 2002). None of the mergers of recent years has involved an FTC required divestiture of PADD 1 refining assets, in part reflecting the relatively modest presence of the largest national refiners.⁶ PADD 1 is also a market easily reached by competing sources of supply from elsewhere. Last year, net shipments of product into PADD 1 from other PADDs were 2.76 MMB/D, providing 48% of the region's consumption. Even if, hypothetically, the group of leading refiners in PADD 1 — Sunoco, Phillips, Motiva, Valero and Coastal — were to seek relatively high product prices, leading national refiners with no presence in PADD 1 such as Exxon Mobil and BP would have a strong incentive to increase their shipments into PADD 1. Likewise, PADD 1 markets would tempt other suppliers, including foreign refiners, to enter the market. Indeed, imports are already an important source of supply, accounting for nearly 14% of gasoline supply in 2001 as well as 22% of distillate.

PADD 5 is different. Here not only is the share of the largest regional refiners high at nearly 70%, but the presence of the largest national refiners is high as well. Moreover, the particular CARB reformulated gasoline specifications have left this market less accessible to suppliers from outside the region. This is the region where the FTC has been most active in requiring divestitures of refining assets. The Exxon Mobil and Chevron Texaco mergers both involved

⁶ There have however been significant FTC-inspired divestitures of marketing assets, most notably the 1,740 Exxon and Mobil branded stations mentioned earlier that were sold to Tosco.

divestitures of PADD 5 refining assets of one or the other of the merging companies. As noted earlier, when Shell and Texaco established Equilon, they were required to divest the Anacortes refinery, located in Washington, to satisfy FTC concerns about the potential loss of competition, particularly in the supply of CARB gasoline. The BP acquisition of ARCO's refining assets was allowed because BP was itself a newcomer to West Coast refining.

The most recent indication of the FTC's determination to maintain competitiveness in PADD 5, more specifically, within particular markets in the region is the consent order requiring Valero to divest the Ultramar Golden Eagle refinery in Avon, California (along with bulk gasoline supply contracts and 70 Ultramar Northern California gasoline stations) as a condition for approving the Valero-UDS merger. The FTC's concern was the impact of the merger on the refining and bulk supply market for CARB gasoline in California, and in particular Northern California. Without the divestiture of Golden Eagle, the post-merger company would account for about 12% of refining capacity within PADD 5, and about 19% of capacity within California. Of more specific concern was that before the merger five California refiners supplied "more than 94% of the CARB gasoline consumed in Northern California," a number that would be reduced to four without divestiture.⁷ In early February, Tesoro Petroleum Corporation agreed to buy the Golden Eagle refinery (and other assets subject to the divestiture order) from Valero, a purchase which must be approved by the FTC. With the purchase, Tesoro's share of mainland PADD 5 refining capacity rises from 5% to 9%, making it the fifth largest refiner in the region. However, Tesoro's current PADD 5 capacity is the Anacortes refinery in Washington. It would be a new player in terms of owning capacity in California as a result of the purchase. Moreover, as the FTC has noted, Tesoro is a very minor player in California. According to the the FTC Analysis, Tesoro, along with Kern Oil, currently account for only about 6% of the Northern California CARB gasoline market and together account for only about 3% of CARB gasoline consumed in the State.

In PADD 4, (the Rocky Mountain states) the top 5 local refiners have a 62% share of that region's capacity, up only marginally from 1996. The region currently has the lowest share, 20%, accounted for by the top 5 national refiners---including Phillips with a 4.5% share. Conoco is the leading local refiner with a 21% share of PADD 4 capacity. The proposed merger with Phillips would raise the combined company's market share to 25% and the top five share to 66%. PADD 2 (the Midwest) has seen only a modest increase in local refiner concentration as measured by top 5 share, from 48% in 1996 to 56% in 2002. The share of the 5 largest national refiners in the region is much lower, 33% in 2002, and only marginally higher than in 1996. The largest refiner within the region is Marathon Ashland, with about an 18% share of PADD 2 refining capacity---as opposed to a 5.5% share of nationwide capacity. This region is also open to competition from suppliers outside the region. External supplies, mainly from PADD 3, account for almost 20% of the region's demand. External supply potential is growing with the introduction of the Centennial Pipeline running from Beaumont, Texas to Bourbon, Illinois.

⁷ This discussion and quotations are derived from the previously cited FTC's Analysis of Proposed Consent Order to Aid Public Comment released in December 2001.

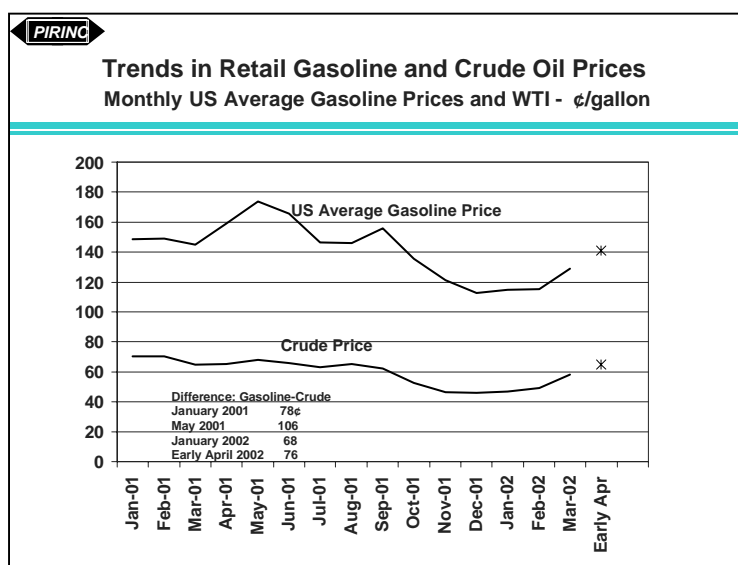
PADD 3, (the Gulf Coast) shows the lowest regional refiner concentration of any of the regions, with the top 5 local refiners accounting for only 53% of regional capacity in 2002. The region does show the largest increase in share versus 1996 of any region apart from PADD 1. The region also has, apart from PADD 5, the largest share for the top 5 national refiners and the largest growth in national refiner share. This is also the only region where the leading national refiner Exxon Mobil is also the leading regional refiner with a 20% share in 2002. The share was boosted by the combining of the pre-merger Exxon (12% share of capacity in 1996) and Mobil (7% share in 1996) refineries in the region. The FTC did not require a divestiture of either company's refining capacity in this region as a condition of the merger nor has the FTC required refinery divestitures in PADD 3 in the case of other mergers, strongly suggesting that competition among refiners has not been impacted by the consolidations that have taken place. A key market feature of PADD 3 is that its refineries produce far more product than consumed within the region and thus not only compete for customers at home but compete against refiners elsewhere for outlet. Last year, product shipments from PADD 3, primarily to PADDs 1 and 2, amounted to nearly half of finished products produced by the region's refineries. Shipments of finished gasoline amounted to about 40% of local gasoline production.

Recent Trends in Retail Gasoline and Crude Prices

While close examination of recent mergers indicates they have not diminished competition among refiners, what then led to the gasoline price spikes of the past few years? Of course the most recent escalation in gasoline prices intensifies interest in such questions. The answer is complex, but to start, the recent trends in retail gasoline prices are consistent with what would be expected in a competitive environment. The chart below shows trends in the US average gasoline price for all grades and areas since the beginning of 2001 and the price of crude, the single largest variable cost in the production of gasoline, as represented by WTI. The table on the bottom left shows differences between the two prices at various points in time.

In January 2001, the differential stood at 78 cents/gallon. By May, rising gasoline prices despite more-or-less flat crude prices pushed up this differential to an extraordinary \$1.06/gallon. The rise in gasoline prices was spurred by the exceptionally low level of inventories at the start of the driving season, a condition aggravated by the refiners' emphasis on distillate production for longer than usual in response to feared natural gas shortages, and problems with MTBE production.

However, the wide margins encouraged allout production of gasoline, as would be expected in a



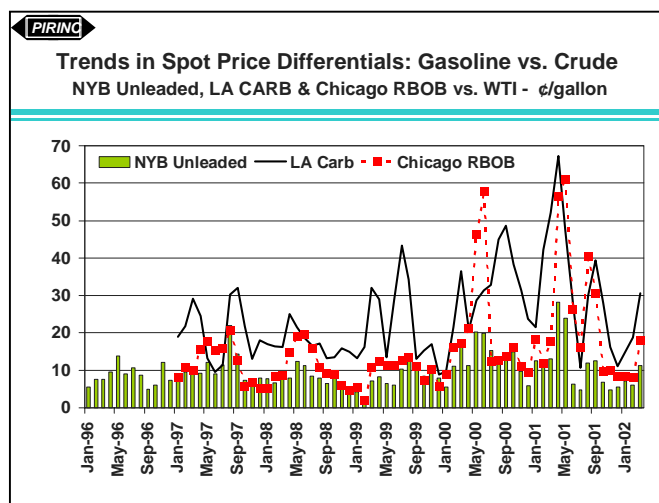
competitive market, and a subsequent sharp narrowing of the differences. By August, the difference narrowed to 81 cents as average gasoline prices fell by 28 cents/gallon relative to a 3 cent/gallon decline in crude prices. Economic slowdown, the end of the driving season, and the aftermath of September 11th pushed differentials down further. By January of this year, gasoline prices averaged 59 cents/gallon below their May peak, while crude prices were down only 21 cents. The difference between the retail gasoline price and crude this January was 10 cents/gallon less than a year earlier.

Beginning in mid-February, both crude and retail gasoline prices moved up significantly, with new tensions in the Middle East adding further upward pressure. As of early April, gasoline prices were up about 26 cents/gallon from their January average, with crude prices up about 18 cents/gallon. The price difference reached 76 cents/gallon in early April, an increase of 8 cents since January but far below the 94 cent/gallon average prevailing in April 2001. In response, refinery utilization rates, discussed in more detail later, are moving up. While the March average utilization rate was 86.4%, the rate rose over the course of the month from about an 85% rate early in the month to 88% by the end. Finished gasoline production in March was up an average of 2.5% from the March 2001 level, with the last week showing a gain versus year ago of 5.2%. These latest actions suggest refiners are already responding in a manner that should head off the price extremes experienced last year---provided current international tensions do not lead to world oil supply disruptions.

Movements in average national retail prices are not a precise indicator of developments at the refining level, the focus of concerns over industry concentration. Retail prices are impacted by trends in marketing costs, transportation, taxes, etc., as well as costs of acquiring gasoline at refineries. Moreover, national averages obscure developments in local markets. For these reasons, the next section of the report focuses on spot prices for specific types of gasoline sold in particular markets and their relationship to crude costs.

Trends in Spot Price Differentials

The next chart considers movements since the beginning of 1996 in spot gasoline prices relative to crude oil. Specifically, the chart shows monthly average differentials versus WTI for NY Barge Unleaded 87 octane, a more-or-less generic gasoline, and two regionally-specific products, Los Angeles CARB gasoline, and Chicago RBOB (the special blend stock required for blending with ethanol to produce the reformulated gasoline used in that area). The 1996-2002 time frame corresponds to the time frame of the refiner concentration tables shown earlier.



Focusing first on New York Barge Unleaded, for all the months shown the differential has averaged about 10 cents/gallon. There have been times when the differential has moved significantly higher. This happened briefly in August, 1997 but each of the past two years has witnessed more sustained spikes. In 2000, the differential reached 20 cents/gallon in May and June and in April of last year the differential reached nearly 30 cents. However, these differentials eroded rapidly, and have been at or (mainly) below the 10 cent/gallon level from June of last year through early March of this year. In March, the differential stood at 11 cents/gallon (and in early April 13.5 cents). As is discussed below, the erosion of the initial spikes reflects both competitive market responses by refiners and subsequent market weakness due to economic slowdown.

The spikes in differentials for New York Unleaded pale in comparison to the spikes in differentials for CARB gasoline and Chicago RBOB. The California gasoline market has frequently been the subject of analysis---and investigations---with virtually all concluding that California's unique product specifications and normally tight local supply/demand balance leave the market exceptionally vulnerable to price spikes. In September 2000, the price differential between Los Angeles CARB gasoline and WTI reached nearly 50 cents/gallon. Last April, the average differential reached nearly 70 cents/gallon. Recently, the Governor of California took action to avoid aggravating still further that market's vulnerability to even minor local supply interruptions by postponing for one year the ban on MTBE originally scheduled to take effect at the end of this year.⁸

The movements in the differential between Chicago RBOB and WTI indicate the California paradigm has moved to the Midwest, particularly the Chicago-Milwaukee area where the reformulated gasoline sold uses ethanol as its oxygenate. While ethanol is widely used in the Midwest, its use in reformulated gasoline, especially the more stringent Phase 2 reformulated, requires a special gasoline blendstock (RBOB) which is difficult to make, effectively cutting refining capacity, and barring co-mingling with other gasolines, thus requiring segregated handling, distribution and inventories. These constraints make it difficult to bring in supplies from other areas to make up for any disruptions in local supplies of the required blendstock. The EPA has raised slightly the RVP limits for ethanol-based Phase 2 reformulated, easing production problems somewhat but still leaving the Chicago-Milwaukee area vulnerable to local supply disruptions.

As of the beginning of this year, the price differentials versus crude for New York Unleaded, LA CARB and Chicago RBOB had fallen back to very low levels, especially after September 11th. But with approach of the driving season and strong economic recovery, price differentials have been widening. The differential for New York Unleaded averaged 11 cents/gallon in March, about the average for March over the past 5 years and up by about 4 cents since January. The average March differential for Chicago RBOB reached 18 cents/gallon, about 10 cents above its January level, while the differential for LA CARB reached 31 cents/gallon, up 16 cents from

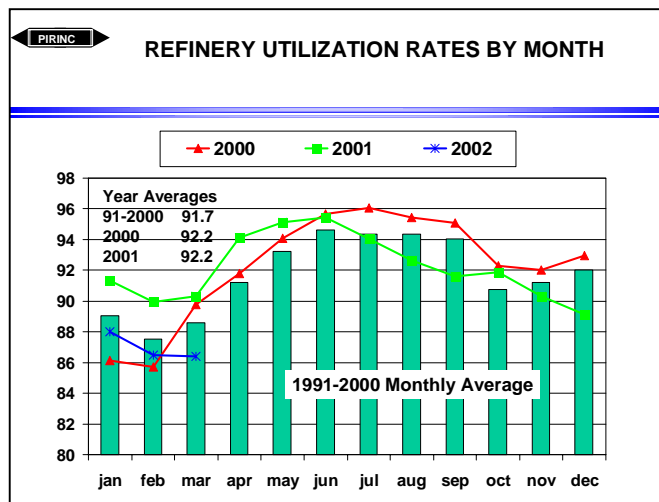
⁸ Issues concerning MTBE are addressed in Pirinc's report, [MTBE, Ethanol – Sorting Through the Oxygenate Issues](#), December 2001 can be accessed from the Pirinc website, www.pirinc.org.

January. The sharper increases in differentials reflect the ongoing vulnerability of the two areas to even modest interruptions in local supply.⁹

The far more subdued peaks in differentials for New York Unleaded reflect that region's greater access to supplies from elsewhere in the US and from abroad. As a result, there is less reliance on price movements alone to clear the market when local supply/demand imbalances develop. When access to alternative supply is restricted, more drastic, and more persistent, price movements are required to clear the market.

Trends in Refinery Operations

In a competitive market, price surges provide strong incentives for increased supply, which ultimately moderate prices. At the national level, trends in refinery operations show the response to price incentives. The chart on the right shows monthly trends in refinery utilization rates. The bars show 1991-2000 averages and the lines monthly rates for 2000 through mid-March.



From March 2000 through June 2001, refinery utilization rates were above the 1991-2000 average. Rates reached 95% or higher in June through September of 2000 and again in May and June of last year. These extremely high utilization rates not only helped moderate gasoline prices but also helped head off a widely anticipated crisis in heating oil supplies for the winter of 2000-01 as a result of shortfalls in natural gas supplies. Utilization rates fell back as demand weakened, particularly winter demand for distillates in the face of exceptionally warm weather and ample, low-cost supplies of natural gas. Rates will be moving up to meet higher gasoline demands. Indeed, as mentioned earlier, they were already moving up during March. But while high national utilization rates can moderate national prices, prices in California and Chicago-Milwaukee remain vulnerable to local supply conditions.

Inventory Trends

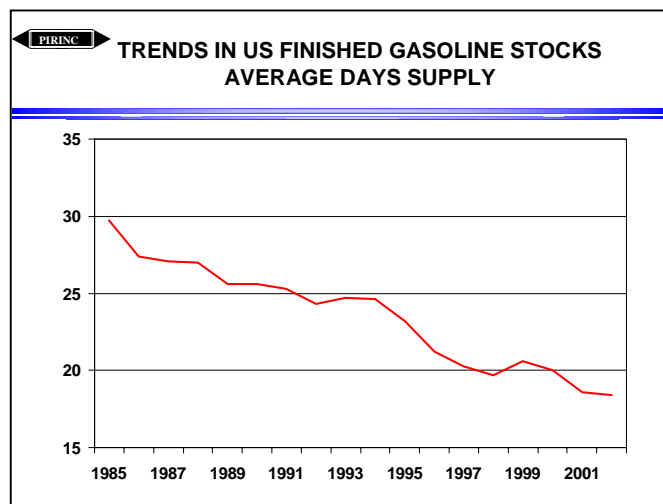
While competition encourages supply responses that moderate price increases to consumers, competitive pressures have also lessened over time a cushion for consumers against the unexpected, namely inventory levels. Stocks have several functions, including maintaining minimum operating levels, meeting seasonal demand peaks, evening-out short run fluctuations in

⁹ The early-April differential was up by about 1 cent/gallon versus the March average for New York Unleaded and up by another 5 cents for Chicago RBOB. The differential for LA CARB fell back by 5 cents to 26 cents in early April.

supply and demand and hedging against future price movements. Holding inventories involves storage and capital costs, which are born by the refiners, terminal operators or others holding the stocks, and also yields benefits, for instance allowing such firms to meet seasonal variations in demand patterns without matching variations in output.¹⁰ However, there are sometimes alternatives to holding stocks; if refiners have under-utilized capacity, they can raise output to meet sudden demand increases rather than relying on inventory drawdowns. When refinery utilization is high however, lower inventories mean limited possibilities to respond to unanticipated demand increases or supply shortfalls other than by price increases that, with demand, near-term, highly inelastic, frequently become “spikes.”

The move toward lower inventories has been underway for many years. As shown in the chart on the right, finished gasoline stocks at the national level fell from 30 days supply in 1985 to about 20 in the late 1990s and drifted down to 18-19 in 2000-2001. In physical terms, inventories averaged 199 million barrels in 1985 and 158 million barrels in 2001.

Not only have national stocks declined, they are not as “fungible” as they once were. As the EIA recognized, “Product proliferation has necessitated greater segregation at storage terminals, further complicating logistics. Terminaling facilities associated with pipelines are also faced with having to separate RFG, oxygenated, and conventional stocks at different grades and RVP levels.”¹¹ In short, not only do legal requirements force costly changes in operating and sometimes investment practices, but operators are now far less able to utilize a single pool of inventories to meet the needs of a variety of market areas. Since “boutique” gasolines require “boutique” inventories, data on average days supply *overstate* availability, and *understate* system vulnerability and the risk of sharp spikes.



Conclusions

The US already enjoys strong and effective anti-trust policies regulating mergers and competitive practices generally. While capacity shares of the country’s largest refiners have moved up as a result of recent mergers, the combination of FTC actions, the emergence of new entrants to the top refiner category, and the presence of strong local refiners in different regional markets has assured ongoing, vigorous competition. Competitive responses to market conditions have helped moderate price spikes and assure that consumers see the benefit whenever physical

¹⁰ See, for instance, Robert S. Pindyck, “The Dynamics of Commodity Spot and Futures Markets: A Primer”, *The Energy Journal* (Vol. 22 No. 3), 2001, pp. 3-4

¹¹ US Department of Energy, Energy Information Administration, *Demand and Price Outlook for Phase 2 Reformulated Gasoline*, 2000, p.10.

market conditions ease. The sharp decline in spot and retail gasoline prices from their peak last May through the beginning of this year---a decline far in excess of the decline in crude costs--- illustrates the point. However, underlying structural problems remain, and show signs of re-emergence as strong recovery and rising demand, as well as rising crude prices, fuel upward movement in gasoline prices.

While competitive pressures have produced benefits for consumers through lower costs they have also resulted in a reduced cushion of inventories against supply interruptions. However, vulnerability to supply disruption has proven most acute in areas where regulatory actions have resulted in relatively isolated markets that cannot draw easily on supplies from elsewhere in the event of local supply problems. Some steps have been taken to ease local problems---or at least to avoid further aggravating them. But more is needed. Misplaced concerns over industry concentration must not divert policymakers from a serious discussion of this issue.