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PIRINC has prepared the enclosed report, *Gasoline 101: A Politically Explosive Topic.*

Few subjects attract as much public outcry as rising gasoline prices. The past several weeks have seen both, especially in certain areas of the Mid-West. As has happened before, there have been numerous calls for investigations of industry price “gouging. A significant increase in US gasoline prices was inevitable, given the worldwide increase in crude oil prices since early last year. But the gasoline price increases exceeded the increase in crude prices, adding to public concern that prices are, in the words of one public official, “unfair and inappropriate.”.

This report focuses on the factors contributing to the gasoline price increases both nationally and in the most severely impacted parts of the Mid-West. Apart from higher crude prices and low stocks, other domestic factors include the problems associated with the introduction of more stringent, Phase II reformulated gasoline. These have inhibited both domestic production and imports. The UNOCAL patent infringement case further inhibited supply. Disruptions to the logistics system, notably pipelines serving the Mid-West, and problems of blending ethanol as opposed to MTBE in making Phase II gasoline contributed to price spikes in parts of the Mid-West. Each of these domestic factors individually had only a minimal impact. But together, they produced a noticeable shortfall in supply of an extremely price inelastic product and therefore a sharp increase in gasoline prices. As these problems are overcome, prices are already beginning to moderate. However, until inventories are rebuilt, the system remains vulnerable.

If you have any questions or comments, please call John Lichtblau, Larry Goldstein or Ron Gold.

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Petroleum Industry Research Foundation, Inc.

3 Park Avenue • 26th Floor • New York, NY 10016-5989

Tel.: (212) 686-6470 • Fax: (212) 686-6558

Gasoline 101: A Politically Explosive Topic

Few subjects attract as much public outcry as rising gasoline prices. The past several weeks have seen both, especially in certain areas of the Mid-West. In mid-June, the U.S. average gasoline price was up by about 50 cents/gallon versus the same time last year (\$1.66 versus \$1.15/gallon) with about 20 cents of the increase coming since the beginning of May. The overall averages conceal some very wide geographic disparities. On the East Coast (PADD 1) the year-on-year increase in gasoline prices averaged about 47 cents a gallon while in the Mid-West (PADD 2), the increase averaged 71 cents, and in reformulated areas, 85 cents/gallon.¹ These gasoline price increases far exceeded the increase in crude prices, which went up by 33 cents a gallon versus mid-June, 1999. As has happened on previous occasions, there have been numerous calls for investigations of industry price “gouging,” including a request by Clinton Administration for an expedited review of price developments by the Federal Trade Commission.

This note focuses on the factors contributing to the gasoline price increases both nationally and in the most severely impacted parts of the Mid-West. Many commentaries have made the point that the price increases, especially in Chicago and Milwaukee, have far exceeded the apparent costs of producing the new Phase 2 reformulated gasoline required this year under EPA mandate. This discrepancy is then cited as evidence that prices are “unfair and inappropriate.”² But while costs are important, price in the short term is determined by the interaction between supply and demand. Price serves a critical function in a competitive market, namely adjusting demand to accommodate changes in supply conditions. When price is not allowed to play this role, the result is long lines at the pumps, rationing, or outright shortage. Consumers require a relatively stable amount of gasoline for their normal routines, with limited possibilities for using less when the price goes up and not much reason to use more when the price goes down, especially in the near-term. Thus, in economic terms, demand for gasoline, a necessity for most consumers, has a very low near-term price elasticity. As a result, the price adjustments tend to be disproportionately large.³ Over time however, history shows that they are also self-correcting.

There are several identifiable factors that contributed to the run-up in prices. These include the rise in world crude prices and low world stocks resulting from OPEC’s production decisions. Within the U.S. interrelated problems associated with the introduction of more stringent, Phase II reformulated gasoline this year inhibited both domestic production and imports. The UNOCAL patent infringement case further inhibited supply. Disruptions to the logistics system, notably pipelines serving the Mid-West, and problems of blending ethanol as opposed to MTBE in making Phase II gasoline contributed to even sharper price increases in the Mid-West than

¹ RFG areas are ozone non-attainment areas where reformulated gasoline is required. Note the sharp price increases in the Mid-West RFG areas, especially Chicago and Milwaukee did not occur in other regions. In PADD 1, prices in RFG areas went up by about the same 47 cents/gallon as the overall average for the region since mid-June 1999.

² “We think the prices that are being charged are unfair and inappropriate,” Robert Perciasepe, assistant administrator at the Environmental Protection Agency, as reported by Reuters on June 13.

³ That is to say, a relatively large change in price is required to elicit a small change in demand. For example, if price elasticity = -0.1, a 10% increase in price reduces demand by only 1%. If price elasticity = -1 (called unit price elasticity) demand would be reduced about in proportion to the price change. The price elasticity for gasoline in the very near term is even smaller than -0.1, as is discussed later in the note.

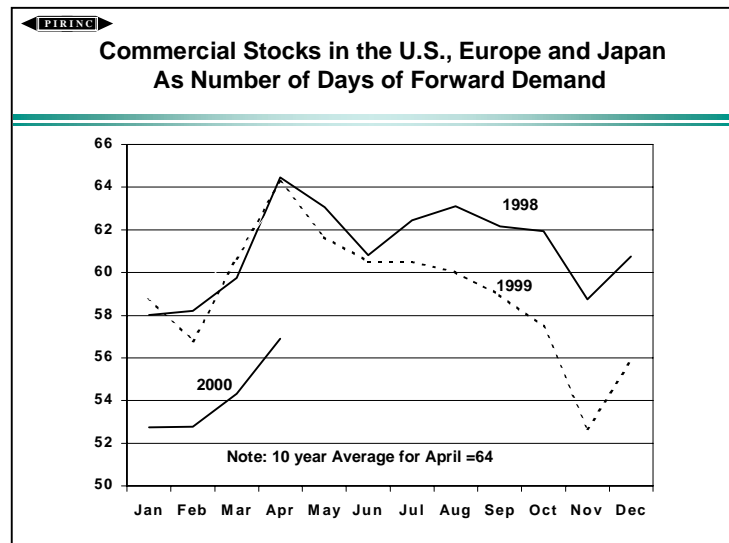
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elsewhere. Apart from the increases in crude prices, and the exceptionally low level of stocks, both globally and within the U.S., none of the other factors by themselves would have had more than a minimal impact. But together, they produced a noticeable shortfall in supply of an extremely price inelastic product and a sharp increase in gasoline prices. As production and logistics problems are overcome, prices will moderate, indeed this is already happening. However, until inventories are rebuilt, the system remains vulnerable.

Global and National Considerations

A significant increase in US gasoline prices was inevitable, given the world-wide increase in crude oil prices that began early last year. From its low-point of about \$12/barrel, or 29 cents/gallon, in February of last year, the price of WTI rose to nearly \$18 (or 43 cents/gallon) by June 1999, and has since risen further to \$32 (or 76 cents/gallon) as of mid-June of this year. Another key element influencing prices is the exceptionally low levels of inventories in the US and elsewhere.

The chart on the right shows commercial oil stocks for the three major OECD consuming regions, the U.S., Europe and Japan. Stocks are measured in terms of days of forward, or anticipated, demand that they would cover and are shown by month since the beginning of 1998. In 1998 and through early 1999, stocks were at extremely high levels. April stocks for both years amounted to just over 64 days of forward demand, well above the 1995-2000 average of 61, and higher than any year since 1993. These



high inventories were a major depressing influence on the world oil market. OPEC's decisions in March 1998, June 1998, and March 1999 to cut production were designed to bring down inventories and thereby strengthen the world crude market. The first two production cuts were overwhelmed by the reductions in demand resulting from the fall-out of the Asian financial crisis and recession. But the third, coming at a time of economic recovery in Asia and improved growth elsewhere, has had the intended effect. Since March of last year, commercial stocks in the main OECD regions have moved sharply lower. Indeed, stocks so far this year are running at historically low levels.

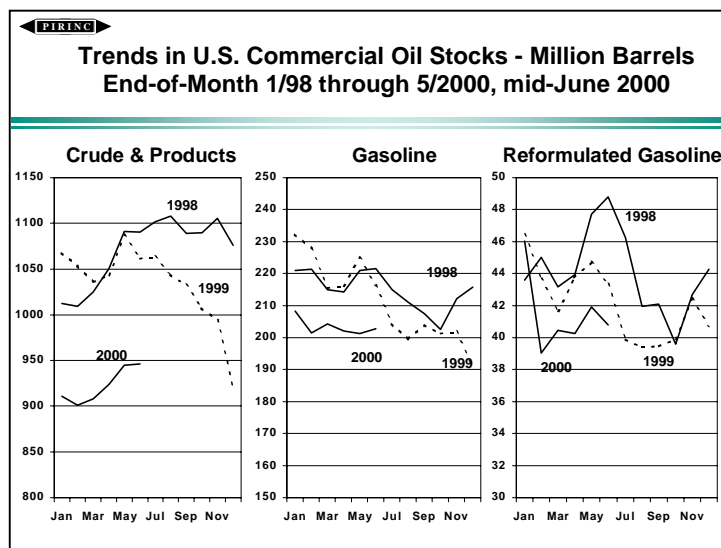
The extremely low level of stocks has not only helped push up prices, as OPEC originally intended, but has also left the world oil market without the cushion of high inventories and therefore extremely vulnerable to any supply interruptions, or sudden surges in demand. While OPEC intended crude oil prices to move up, it has become concerned about the extreme vulnerability of the market, and has moved to raise official production ceilings, first in March of this year, and again this month. Nonetheless, it will take time for inventories to be rebuilt to "normal" levels and a market safety margin re-established.

U.S. Inventory Levels

The specific U.S. inventory situation also shows exceptional tightness, both overall and for the product currently in the headlines, gasoline. The chart below shows commercial inventory levels since January 1998 for total crude and products, gasoline, and reformulated gasoline. Figures are in millions of barrels.

The left panel shows the trends for crude and products. By the end of 1999, total commercial stocks had fallen by 15% relative to their end-1998 level. There has been only minimal improvement since then. As of mid-June, total stocks were over 100 million barrels, or 11%, below year-earlier levels.

The middle panel shows the trends for total gasoline. These stocks have been running about 10% below year-earlier levels with no sign of any significant spring build as occurred in the prior years. The situation for reformulated gasoline, which accounts for about 30% of total gasoline sales, is shown in the right panel. Stocks at the beginning of the year were similar to levels in 1998-99 but fell sharply in February with only a marginal recovery since that low-point. The new Phase II standard came into effect on May 1, except at the retail level where the deadline was June 1.⁴ The run-down in inventories started at the beginning of the year in anticipation of the changeover to the new standard. The problem has been the insufficient build-up of the new Phase II product. Mid-June stocks are 6% below the June 1999 level and 16% below their June 1998 level despite the fact that demand is up.



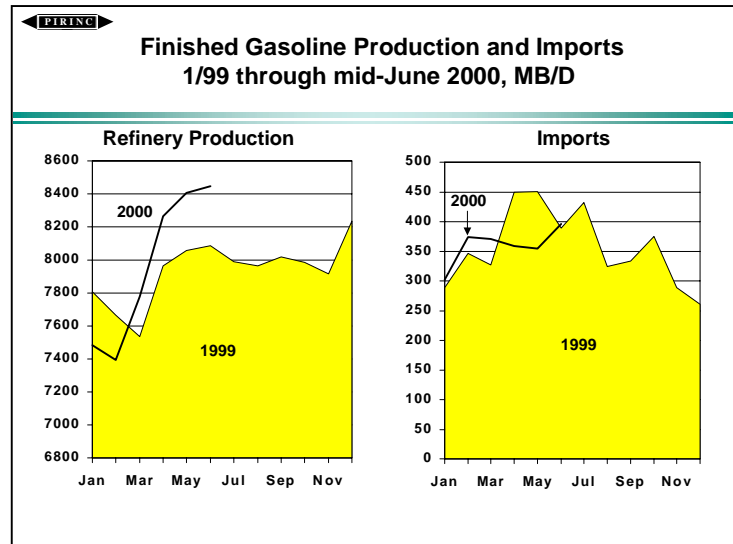
Trends in U.S. Gasoline Supplies

Low gasoline stocks mean there has been minimal flexibility to meet unanticipated supply/demand developments---which have indeed occurred. A year ago, the Department of Energy, in its June 1999 Short-Term Energy Outlook, projected about a 2% growth in gasoline demand for 2000 versus 1999 and an average retail price of \$1.20/gallon. The 2% figure was reasonable given their moderate price assumption and anticipated economic growth of 3.6% for 1999 decelerating to 1.7% this year. Gasoline stocks were assumed to remain about level. Implicitly, supplies of gasoline from domestic and foreign refineries were assumed to grow in line with projected demand. However, this did not happen. The chart below summarizes trends in refinery production and imports.

⁴ January 2000 was the first month in which Phase II standards applied to gasoline production and imports, although effectively, since the oxygenate and benzene standards were unchanged, the program impacted the supply chain when the more severe summer VOC standard came into effect.

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The panel on the left shows refinery production of finished gasoline. Since February, production has been running above 1999 levels. For the year to date, production is up about 100 MBD versus 1999, an increase of about 1.5%. The panel on the right shows imports of finished gasoline. Since February, imports have been running below 1999 levels. For the year to date, imports are running about 15 MBD below year-ago levels, a decline of about 4%. Total supplies of finished gasoline from domestic production and imports are up only about 1% or about 85 MBD so far this year---

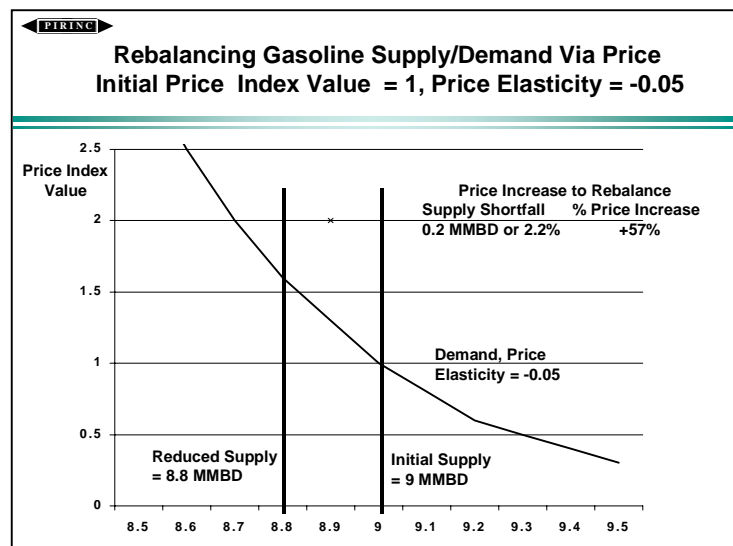


about 1% below demand as anticipated by the Department of Energy last year. Moreover, economic growth has been much stronger than anticipated. GDP growth this year in the latest Short-Term Energy Outlook is now projected at 4% (other outside forecasters are projecting still higher growth, 5%), well above their projection made a year ago. The much higher projection indicates that, in the absence of the sharp price increases seen this year, demand growth would have been well above the 2% rate.

Implications of a Low Price Elasticity

As noted earlier, consumers find it extremely difficult to cut back their normal use of gasoline for commuting, shopping, vacation travel, etc., especially in the short-term. Since gasoline is therefore price inelastic, price increases tend to be disproportionately large for what appear to be very modest shortfalls in supply. A reasonable estimate, in line with recent experience, would place the short-term price elasticity for gasoline at about -0.05 . The implications of such a low figure are illustrated in the chart below.

The chart shows a downward sloping demand curve with a constant price elasticity of -0.05 intersecting an initial supply curve fixed at 9 MMBD at a price index value of 1.0.⁵ If supply is suddenly reduced to 8.8 MMBD, a decline of 2.2% from its initial level, the price has to rise by nearly 60% to clear the market.⁶ For the week ending June 19, the Department of Energy



⁵ Last year gasoline demand for June through August was about 8.8 MMBD. A 2% increase for 2000 would raise demand to about 9 MMBD. Supply is production plus imports plus stock change.

⁶ For an 0.1 MMBD or 1.1% reduction in supply, the price increase would be 25%. For an 0.3 MMBD loss of supply, or 3.3%, the price would have to double to clear the market.

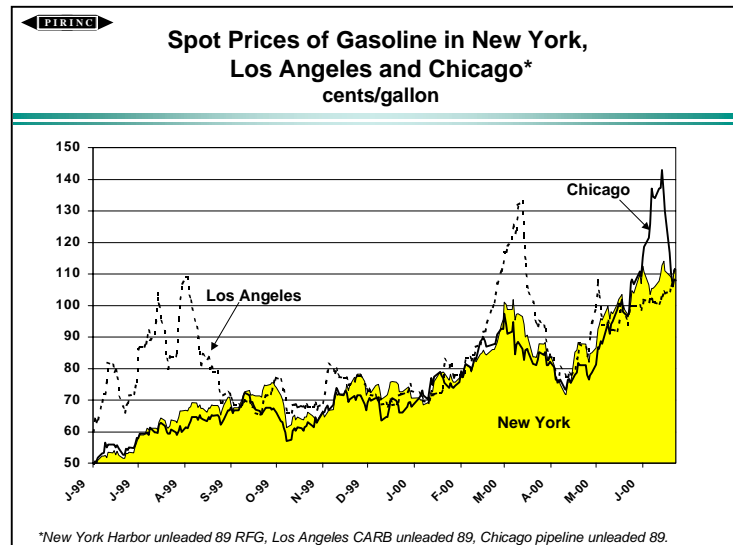
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reports U.S. gasoline prices averaging about \$1.70/gallon, up 56 cents, or about 50% from their average a year ago. This is approximately the increase required at the national level to offset a shortfall in anticipated supplies of about 2% given the low estimated price elasticity of gasoline.

The 2% figure is about in line with estimates of short-term supply losses (2 to 3%) arising from the impact of the more severe RVP requirements for Phase II gasoline, the effects of the UNOCAL patent infringement judgement on refiners and blenders, and the more limited availability of imports. These problems apply only to summer specifications for reformulated gasoline and will not apply to supplies after September 15.

Regional Price Disparities: Mid-West Consumers Paying California Prices

So far, the discussion has focused on national trends but this year in Chicago and Milwaukee, and last year in California, the public has been concerned about local price spikes in excess of the national trends. The chart on the right shows daily movements since last June in spot prices for gasoline in New York, Los Angeles, and Chicago. The prices used are the New York harbor price for reformulated unleaded 89 octane, Los Angeles CARB (reformulated) 89 octane, and Chicago unleaded (nonreformulated) 89 octane. At this time last year, spot prices in Los



Angeles were running far above New York and Chicago prices, with differentials exceeding 40 cents/gallon at their peak. Los Angeles also experienced a very brief, price spike again this year in March. Recently, Los Angeles prices have been at or slightly below New York levels. Until nearly the end of May, Chicago spot prices tended to run slightly below the New York prices. But toward the end of the month a substantial differential opened up as Chicago prices rose to peaks in the second week of June roughly 30 cents/gallon above New York prices. They have subsequently declined, slipping below New York prices as of June 21. However, these price movements don't fully capture the price developments in the Chicago area.

The Chicago prices shown are for nonreformulated unleaded regular gasoline while prices shown for New York and Los Angeles are for reformulated gasoline. Chicago (and Milwaukee as well) is an ozone nonattainment area as designated by the EPA and is required to use reformulated gasoline. Both Chicago and Milwaukee use a reformulated gasoline with ethanol as the oxygenate, as opposed to MTBE, generally used elsewhere in the country. Because ethanol is not a petroleum product, it must be segregated from other gasoline components up to the rack, the point just before delivery to the pump. At that point it is added to a reformulated gasoline blendstock for oxygenate blending---or RBOB---specially formulated to be used with ethanol. RBOB accounts for about 90% of the total volume of a gallon of reformulated gasoline made with ethanol. The spot price of Chicago RBOB is typically about the same as the price of

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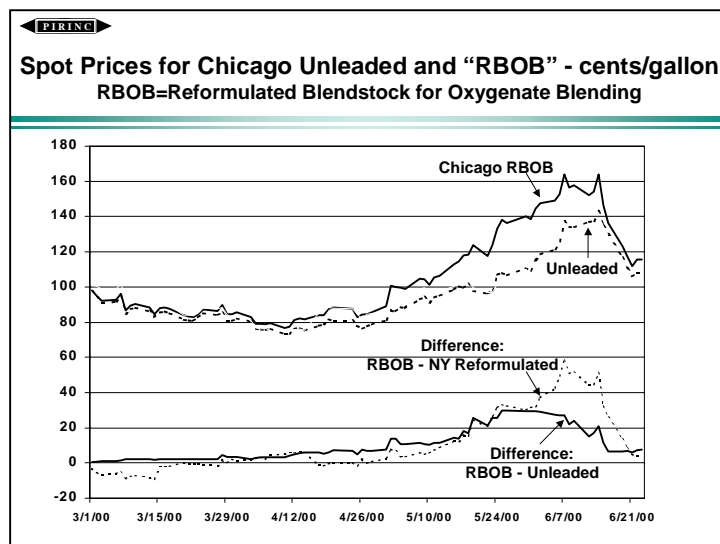
unleaded regular shown in the chart above. But this year has been very different. As shown in the chart below, in early March of this year, Chicago spot price of RBOB was almost identical to the price of the unleaded regular. By mid-April, the differential had widened to about 5 cents/gallon and by early May, 10 cents. By late May into early June, the differential reached about 30 cents/gallon. Since then, the differential has fallen back to about 7 cents.

The dotted line toward the bottom of the chart shows the differential between the spot price of Chicago RBOB and New York reformulated unleaded. In early June, the differentials peaked at nearly 60 cents/gallon. As of late June, the differential is down to about 4 cents/gallon.

Retail Price Developments

For consumers, the sharp rises in spot prices for ethanol-based reformulated have meant exceptionally sharp increases in pump prices in Chicago and

Milwaukee. The table below shows pump prices for unleaded regular in Chicago, Milwaukee, selected other Mid-West cities, as well as Los Angeles and New York for June 9, 1999, March 29, 2000 and June 7, 2000.⁷ The left three columns show actual prices while the three right columns show price changes between the periods. The Mid-West cities are shown in descending order of the June 1999 to June 2000 price changes. Between June 1999 and March of this year, the pump price increases for the Mid-West cities shown ranged between 30 and 42 cents/gallon, with neither Chicago nor Milwaukee standing out. Note the exceptionally low price change for Los Angeles, a result of the price surge the year earlier in California as a result of supply problems discussed below.



		6/9/99	3/29/00	6/7/00	6/99 to 3/00	3/00 to 6/00	6/99 to 6/00
Chicago	RFG area	126.8	164.7	210.9	37.9	46.2	84.1
Milwaukee	RFG area	115.4	149.2	191.8	33.8	42.6	76.4
Louisville	RFG area	108.3	145.2	170.4	36.9	25.2	62.1
Cleveland		106.8	149.2	164.9	42.4	15.7	58.1
Detroit		111.5	147.5	161.8	36	14.3	50.3
Kansas City		107.3	138.5	157.3	31.2	18.8	50
Indianapolis		112.4	150.6	159.6	38.2	9	47.2
St. Louis*	RFG area	109.9	140	156.2	30.1	16.2	46.3
Minn.-St. Paul		118.4	150	160.5	31.6	10.5	42.1
Los Angeles	RFG area	141.6	155.4	163.6	13.8	8.2	22
New York	RFG area	133.5	159.1	169.5	25.6	10.4	36

* Temporary waiver granted in June due to pipeline problems.

⁷ Prices are for self-service unleaded as published in the *Oil & Gas Journal*.

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The pattern of price changes is very different for March-June of this year. Chicago and Milwaukee show by far the largest price increases, up 46 and 43 cents/gallon respectively. Louisville, another RFG area is next with an increase of 25 cents. Elsewhere the price increases ranged from 8 to 16 cents.

It is precisely these large local price spikes at the pump that trigger public anger, confusion, and demands for investigations. Of course, if gasoline were a uniform, fungible, easily transportable product, then in a competitive market such large spikes should not occur---and if they did, the public would have every reason to be suspicious about just how competitive the market really is. But the problem is that regulatory developments have made gasoline less uniform, or fungible, and more difficult to transport, thereby reducing the ability of the supply system to respond quickly to threats of shortage. As is discussed below, the most vulnerable areas of the country to this problem, and therefore price spikes, are the two that have had them, California and Chicago-Milwaukee.

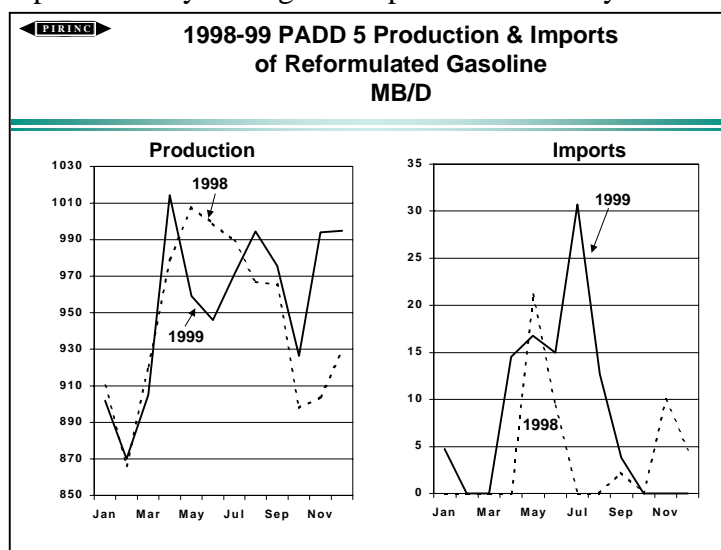
The “Islands” of California and Chicago-Milwaukee

Although California and the Chicago-Milwaukee sections of the country are geographically very different, with respect to gasoline, they are both “islands,” dependent primarily on local sources for supply and very difficult to reach from elsewhere. Their isolation from the rest of the country is the result of their dependence on “boutique” fuels, not readily available elsewhere.

California

California has imposed more severe requirements for reformulated gasoline than the rest of the country. In 1999, a series of refinery problems reduced production at a time of rising local demand. The left panel of the chart on the right shows monthly trends in PADD 5 production of reformulated gasoline in 1998 and 1999. In May and June of 1999, production was down by about 50 MBD or about 5% from the year before. This was the period in 1999 of the sharpest spikes in spot Los Angeles CARB gasoline prices. Only in August did production finally return to about year-earlier levels, and in November-December significantly exceed 1998 levels. (New refinery problems in March of this year resulted in temporary production losses and the price spike that occurred at the same time.)

Refiners elsewhere in the world have some limited capability to make CARB standard reformulated although those that do so must take into account the time and cost required to ship the product to California as well as the additional cost of making it.⁸ As shown



⁸ For U.S. refiners, an additional cost element is the requirement to use U.S. flag ships.

in the left panel of the chart, imports of reformulated gasoline into PADD 5 did indeed move up, reaching a peak of 30 MBD in July versus none the year before. The higher imports, coming from as far away as Finland and Asia, moderated the price spike but only a return to normal refinery operations brought it to an end.

Chicago and Milwaukee

Chicago and Milwaukee are “islands” for a different reason, their use of ethanol as the oxygenate for reformulated gasoline. This year, Phase II reformulated gasoline requirements came into effect. While the introduction of Phase II gasoline began in January at the refinery level, the more critical summer standard (with lower VOC emissions) did not apply until May 1, or in the case of retail facilities, June 1. At the national level, the more severe requirements had certain particular consequences, especially on availability of imports. So far this year, U.S. total production of reformulated is slightly above last year’s levels, but imports are down. The table on the side summarizes the key figures. Production for the first 6 months of this year (more precisely, production through June 16th) has been averaging 12 MBD above year-earlier levels, a growth rate of only 0.5%. Imports, however, are down 28 MBD over the same period, indicating some loss of ability to supply the reformulated product under the new, more severe standards.

In its Fact Sheet on Reformulated Gasoline issued in November, 1999, the EPA estimated that additional costs of phase II reformulated would be on average about 1 to 2 cents/gallon more than Phase I, with costs somewhat higher for some parts of the country and some refiners.⁹ The Fact Sheet went on to state:

U.S. Production and Imports of Reformulated Gasoline, 1st 6 months 2000 vs. Year Earlier		
MBD		
	2000	1999
Production	2,532	2,520
Imports	172	201

“It is not possible to accurately predict the retail price of Phase II RFG in the year 2000 because it will be influenced by many factors including production costs, weather, crude oil prices, taxes and local and regional market conditions. It is important to note that, at the start of the Phase II RFG program, retail prices may be higher or fluctuate more.”

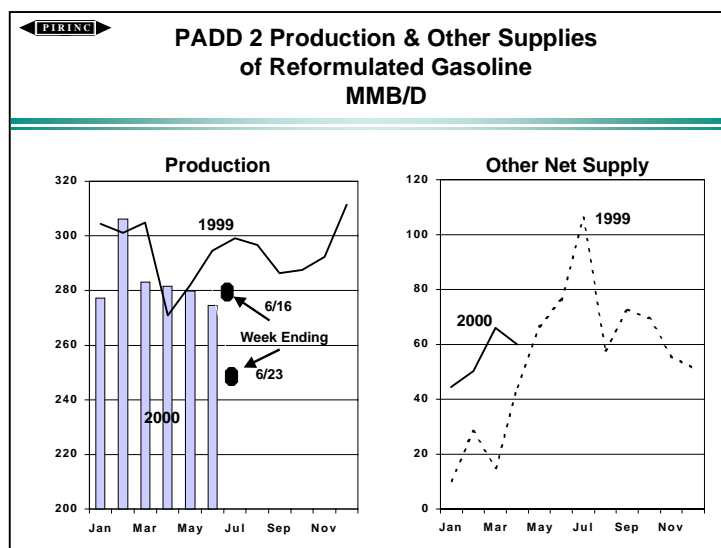
Clearly this was indeed the case for Chicago and Milwaukee, where “local and regional market conditions” were particularly adverse. Chicago and Milwaukee are the principal areas in the Mid-West required to use reformulated gasoline. St. Louis voluntarily opted in to the program in 1999 but received a temporary waiver in June in the face of significant loss of supplies due to problems with the Explorer pipeline. The Cincinnati and Louisville areas also opted into the program but have had no comparable supply difficulties. Even though Chicago and Milwaukee are far away from other consuming centers, this alone would not account for their problems. After all both are ports and of course Chicago is a major rail, road, and pipeline center. But they are unique in their reliance on ethanol as the oxygenate for reformulated gasoline. When it turned out to be more difficult than anticipated to make the ethanol-based Phase II product, there was no where else to turn for immediate relief. Ethanol-based reformulated requires a unique

⁹ The complete Fact Sheet may be accessed on the internet at www.epa.gov/oms/f99040.htm. The underlining is PIRINC’s

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blendstock (RBOB) generally not made elsewhere, and any MTBE-based reformulated gasoline could not be co-mingled with the local supply and therefore could not be moved through normal distribution channels.

Specific supply figures for Chicago and Milwaukee are not available, but overall figures for PADD 2 indicate what has happened. The chart below summarizes supply conditions for reformulated in PADD 2. The panel on the left shows local monthly production of reformulated for 1999, the solid line, and 2000 through June, the bars, with June represented by production through mid-month. In general, production has been running below year-earlier levels, with shortfall especially noticeable in June, the start of the Phase II program at the retail level. The most recent data for the weeks ending June 16 and June 23, show no consistent improvement. So far this year, PADD 2 production of reformulated gasoline is running about 3% below year-ago levels. This is different from the national situation where production is slightly above year-ago levels. For the June to date, the situation is much worse, with production in PADD 2 running about 7% below June 1999 levels.



In principle, a shortfall in local PADD 2 production could be moderated, or even eliminated by increased supplies from other sources, imports, stocks, or shipments from other regions of the country. In reality, imports of reformulated gasoline are virtually zero and stocks are typically very low, in the 1 to 2 million barrel range, or about 2 to 4% of the U.S. total reformulated stocks, well below the PADD 2 share, about 10%, of U.S. total reformulated demand. The absence of imports and low stocks of reformulated gasoline are consistent with a disproportionate reliance on ethanol, since problems of co-mingling severely limit prospects for imports and make holding of the finished product difficult. The panel on the right shows trends in net supply of reformulated gasoline excluding local production. By default, the figures reflect almost exclusively shipments from elsewhere in the country, primarily PADD 3. The latest data available are only for April of this year. Early in the year, shipments were running well ahead of year-earlier levels. But shipments fell back in April to year-earlier levels. The Explorer pipeline, the major carrier of oil products to the Mid-West was shut down for 10 days in March and has run at reduced levels since then.

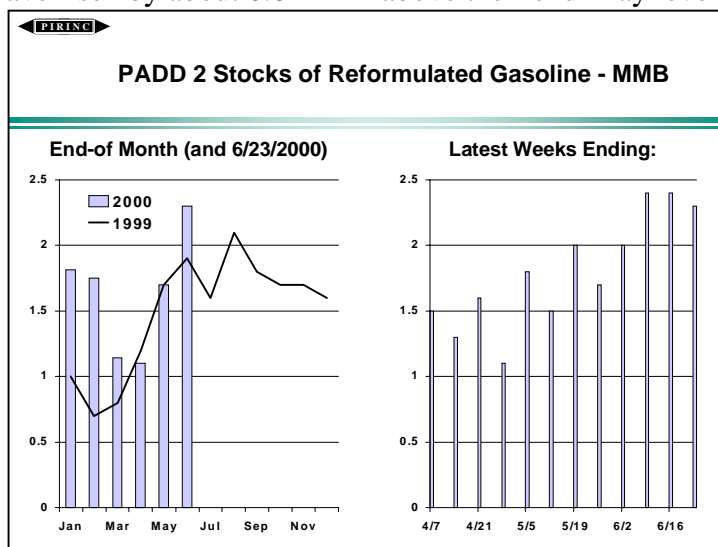
Signs of Improvement

Although data are sparse, there are already some tentative signs of improvement. The disruptions in the logistics system are of course being addressed. However, the sharp run-up in Chicago area prices appears to have encouraged extra-ordinary efforts to bring in supply. This is showing up in a recent rise in stocks of reformulated gasoline in PADD 2, although as noted

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earlier, they remain low relative to other parts of the country. The chart below summarizes these trends. While end-of-month stocks in January-February of this year were ahead of 1999 levels, they fell back in March-April to about year-earlier levels. In May as well, they tracked levels of a year ago. As of June 23, inventories have risen by about 0.6 MMB above their end-May level and 0.4 above their level at the end of June 1999. As the weekly data indicate, the build-up was particularly noticeable in the first two weeks of June. This build-up, although modest in overall volume, came despite lower production of reformulated gasoline within PADD 2 itself.

In effect, the modest inventory build in the face of a production decline could only occur if extraordinary efforts were underway to make and ship the product from elsewhere by barge, rail, or even tanker trucks.



The latest Department of Energy statistics indicates the improved local supply situation is filtering through to retail prices. They report that the average price of gasoline in PADD 2 reformulated areas fell from \$2.01/gallon on June 16 to \$1.92 on June 23, a decline of 9 cents a gallon. This was a larger decline than reported for the U.S. as a whole of 2 cents/gallon (from \$1.71 to \$1.69) for all gasoline (and from \$1.73 to \$1.71 for gasoline sold in RFG areas). Retail prices in Chicago and Milwaukee should continue to decline.¹⁰

Issues for the Future

While this summer's immediate gasoline problems are easing, they highlight serious regulatory issues that remain with us. None of the individual problems contributing the national, and especially local, gasoline price run-ups were major in and of themselves. However, they came together in the context of a tight global oil market. This condition may persist for some time.

The regulatory system currently in place adds significantly to national, and local vulnerabilities. The multiplication of "boutique" gasolines reduces the flexibility of the distribution system to respond to local supply problems. When they do develop, the regulatory authorities are then faced with a choice of going back on their standards, at least temporarily, or standing by and accepting the inevitable, necessary price spikes.¹¹ If standards are waived, then those in the industry who made the greatest effort to meet the standards are penalized relative to those who did the least. Creating a "no good deed goes unpunished" precedent sends exactly the wrong

¹⁰ It should be kept in mind that retail prices move more slowly, both up and down, than spot prices. Just as the price increases seen by consumers lagged prices paid by dealers, so too will the price declines as dealers return to more normal margins.

¹¹ The authorities seem to have chosen a modified version of this alternative, namely stand by and demand investigations.

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signal for future compliance efforts. Moreover, there are other regulatory actions that could lead to similar choices. The EPA and many states are moving towards a three-year phase-out of MTBE (penalizing those who invested to produce it in the first place). Because of current oxygenate requirements for reformulated gasoline, this phase-out will mean greatly expanded use of ethanol in producing the Phase II product. Given the problems encountered with ethanol this year, it would be rash to assume a smooth path in the future.

The requirement for the use of an oxygenate is itself questionable since vehicles with fuel injection instead of carburetors (fuel injectors have been in use since 1983) don't need it. California, the country's leader in fuel stringency, has asked that the oxygenate requirement be waived.

There is no argument about the need to improve local air quality and that vehicle emissions will continue to be a legitimate, prime target of regulatory concern. But recent price developments are an urgent signal of the need to reassess the process in view of the supply risks associated with the present system, especially if tight global market conditions persist.