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PIRINC has prepared the enclosed brief report entitled, *Oil Prices: Just "Passing Through."*

During every period of rising oil prices, there is intense public interest in finding out who or what is responsible with the implication that there is something beyond market forces at work. Now, the public is experiencing much lower oil prices. But there is a lingering suspicion among many that prices to consumers take the elevator on the way up and the slower, escalator on the way down. This report considers briefly how particular developments of the past several months have pulled down crude oil prices and then focuses on how the changes in crude prices have been passed through to consumers.

As would be expected in a competitive market, declining crude prices have been passed through to wholesale spot product prices and in turn to the prices paid by the end-use consumer. The pass-throughs have been virtually penny-for-penny, although the timing of the pass-throughs differs by product and season.

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

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Oil Prices: Just "Passing Through"

Introduction

During every period of rising oil prices, there is intense public interest in finding out who or what is responsible with the implication that there is something beyond market forces at work. Now, the public is experiencing much lower oil prices. They see the headlines about world oil markets and they see the prices dropping at the pump. But there is a lingering suspicion among many that prices to consumers take the elevator on the way up and the slower, escalator on the way down.

Prices to consumers depend to a great extent on the price of the raw material, crude oil, but not entirely. Local product market conditions also play a role. These can include normal seasonal factors, exceptional weather conditions, spot shortages or surpluses as a result of local technical problems at refineries, pipelines, or terminals, taxes, and regulatory changes. Sometimes these factors can indeed cause product prices to move differently from crude prices and from similar product prices in different markets. But in recent months, the fall in crude prices is by far the dominant influence. The declines in crude prices have been passed through very rapidly to the consumer, as would be expected in a competitive market. Such a market responds quickly to events and expectations, moving crude and product prices up or down depending on global and local circumstances.

To illustrate just how the market works, this report considers briefly how particular developments of the past several months have pulled down crude oil prices and then focuses on how the changes in crude prices have been passed through to consumers. As would be expected in a competitive market, declining crude prices have been passed through to wholesale spot product prices and in turn to the prices paid by the end-use consumer. The pass-throughs have been virtually penny-for-penny, although the timing of the pass-throughs differs by product and season. Since October, retail gasoline prices have moved nearly in step with spot prices, while retail heating oil prices have moved down more slowly. But compared with year-ago prices, residential heating oil prices have come down in line with spot prices.

On March 22, the key oil producers, Saudi Arabia, Mexico and Venezuela announced commitments by themselves and other producers to reduce production. The agreement caused an immediate rise in crude prices, which has since been partially reversed. These latest movements, both initially up and then edging down, were also reflected promptly in the product markets.

What Happened to the Crude Price?

In October, the beginning of the current heating season, the spot price for a barrel of West Texas Intermediate (WTI) crude oil was a little over $21. In mid-March, the price dipped below $14. Immediately after the March 22 announcement, it rose to nearly $17 but has

since fallen back to about $15.50. The reasons for the depressed crude price environment can be found in physical supply/demand developments over the past several months, and most recently, in changing market psychology.

World demand is lower than anticipated earlier, primarily due to the economic crises in Asia and an exceptionally mild winter in the Atlantic Basin, courtesy of *El Niño*. At the same time, OPEC production has expanded substantially over the past year. In both 1995 and 1996, OPEC crude production expanded by about 0.8 million barrels a day (MBD). In 1997, the increase was 1.2 MBD and as of March
, the year-on-year production increase is about 1.7 MBD, reflecting in particular the return to market of Iraqi oil. Higher production and lower growth in demand have meant rising inventories. At the end of 1997, OECD oil inventories were up about 3% from year-earlier levels. In the US, where more timely data are available, inventories of crude and products at the end of March were up by about 6% from March 1997 levels. Thanks to the warm winter, distillate inventories were up 18%, although they have come down slightly from their February peak level.

While these "fundamentals" of the oil market were at work, there was an important, offsetting, psychological factor, uncertainties arising from Iraq's decision in November to expel American arms inspectors and the threat of military action, led by the United States in response. This psychological offset was removed with the agreement negotiated by the UN Secretary-General at the end of February that returns the inspectors to Iraq. The UN Security Council has also agreed to a substantial increase in the value, and effectively the physical volume, of oil Iraq can sell for humanitarian purposes. The fundamentals and psychology were moving together in favor of low crude prices.

The March 22 announcement of commitments by oil producers to cut production had, as would be expected, a positive impact on prices. The major producers were acting to remove what all analysts agreed was excess supply from the market. But there are ongoing questions that limit the impact of the agreement, including: has the impact of Asia's economic crisis on demand been fully assessed, how much room is there to store further supplies given already high inventories, and perhaps most important, will the committed production cuts fully materialize.

Consumers of course buy refined oil products not the raw material that goes into making them so the issue is how much of the changes in crude prices have passed through to products.

Crude Oil Costs and Product Prices to the Consumer

The cost of crude oil is the largest single component of product prices paid by the consumer---followed by taxes in the case of gasoline. The table on the right illustrates the share of crude oil costs in retail gasoline and heating oil prices in 1997.

1997 Refiner Acquisition Cost of Crude =45.4 ¢/gallon

	Retail Price-¢/gal.	Crude Cost as %
Gasoline inc. tax	123.1	37%
ex taxes	86.4	52%
Heating Oil	101.4	45%

Crude costs amounted to 37% of the retail

price of gasoline and 45% of the price of home heating oil. On an ex tax basis, crude costs amounted to 52% of the gasoline price. When taxes are netted out, costs other than crude are somewhat more significant for heating oil. It should be kept in mind that distribution costs are higher for a product that exhibits strong seasonality and must be delivered to each customer at home than for a product whose customers come to a filling station to collect it.

Changes in Spot Crude and Changes in Spot Product Prices

The chart below addresses the first step in the price chain, the relationship between changes in the crude price and changes in the wholesale spot prices of two major products, gasoline and heating oil. It shows changes in the daily prices for WTI crude and the New York Harbor Barge Prices for Unleaded Gasoline and the distillate that is used for home heating oil and diesel fuel, versus their October 1997 averages in cents per gallon. Prices are through the end of March. Note that the October spot crude price is nearly 90% of the spot gasoline and distillate prices.

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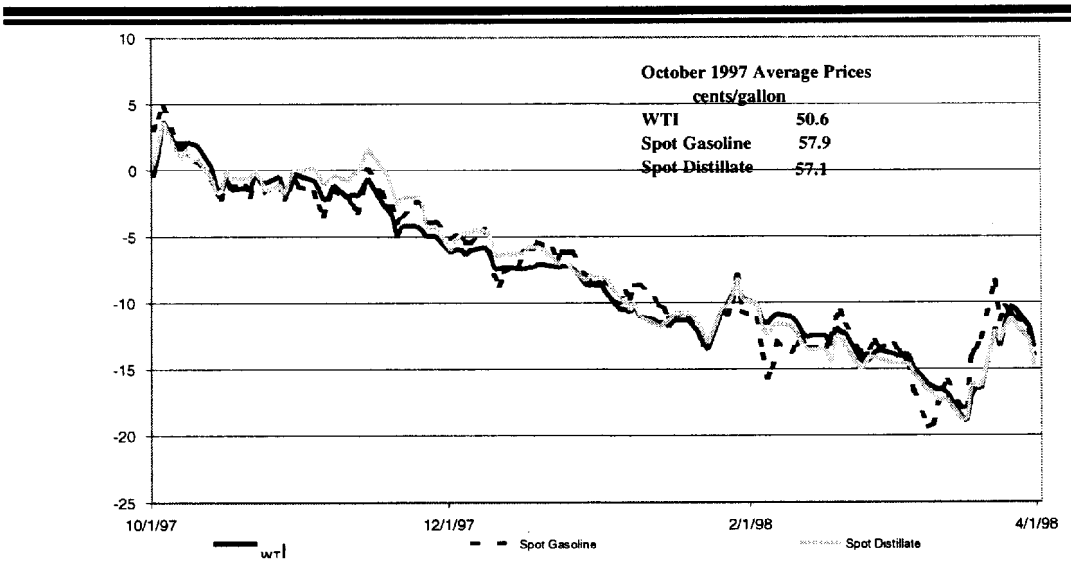
Changes in Daily Prices of Spot Crude, Gasoline and Distillate Since Their October 1997 Averages - Cents/Gallon



Spot prices are for West Texas Intermediate, and New York Harbor Barge Prices for Unleaded and No. 2 Oil

By and large, prices for spot crude, gasoline and distillate heating oil declined in lock-step from October until the announcement of production cuts by the major oil producers on March 22. They then rose briefly and fell back together. At the end of March, prices of spot crude and gasoline were down 13.4 and 13.9 cents/gallon respectively. Spot distillate was down slightly more, 14.7 cents/gallon, reflecting the impact of the warm winter on this product.

Impact on Retail Product Prices

The next chart focuses on the relationships between wholesale spot prices and prices paid by consumers. The left panel shows the changes in monthly average prices since October 1997 for spot gasoline, retail gasoline, and retail diesel. The March average spot price for gasoline was down about 14 cents from October. Retail gasoline prices were down even more, about 23 cents. Retail diesel prices were down somewhat less, about 12 cents. This decline took place despite strong growth in industrial production, which pushed up demand for diesel, the fuel used to move goods by road and rail. Recent

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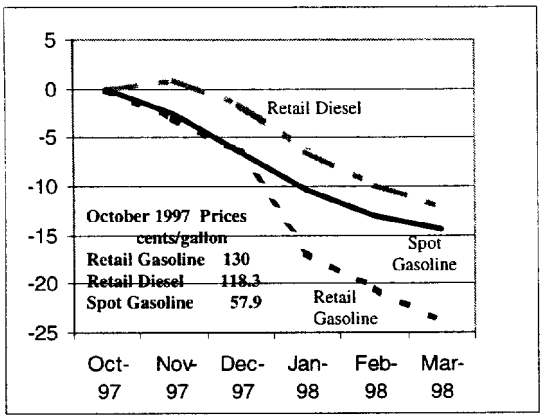
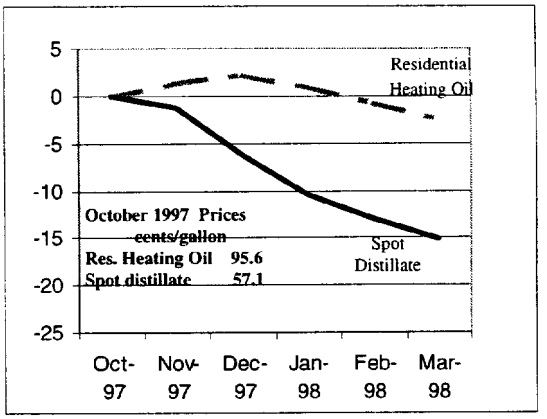
Changes in Spot & Retail Prices Since October, 1997
Monthly Averages - Cents/Gallon

Spot & Retail Gasoline, Retail Diesel



Spot & Residential Heating Oil



Spot Prices are NY Harbor Barge Prices for unleaded gasoline and No. 2 oil.

demand for diesel may be up as much as 8% versus its year-ago level.

The right panel of the chart shows changes in spot distillate prices and in the prices to residential customers of heating oil. In March, the price of spot distillate was down about 15 cents from October while the decline in the residential heating oil price was much less. To a great extent, price pass-throughs, both up and down, for residential customers of heating oil are moderated and delayed by seasonal budget and price protection plans. These features also moderate and delay the impact of spikes in wholesale spot prices.[1]

[1] It might at first appear that the more rapid decline in spot distillate prices relative to residential heating oil prices led to higher dealer profits. But the apparent increase in dealer margins was more than offset by the negative impact on demand of *El Niño*. The weather in January and February was probably the warmest on record.

The results for gasoline and heating oil are in part influenced by the seasonal time frame selected. October to March covers approximately the beginning to nearly the end of the heating season, and just after to just before the driving season. Another approach would be year-on-year comparisons, which abstract from seasonal factors, including price protection and budget plans. These are shown in the table to the right.

Spot and Retail Prices -cents/gallon	March 97	March 98	Change
Retail Gasoline	129.3	106.1	-23.2
Spot	60.7	43.6	-17.1
Residential Heating Oil	107.9	93.1	-14.8
Spot Distillate	54.7	42	-12.8
WTI	49.8	35.9	-13.9

The March 1998 vs. March 1997 comparisons still show retail gasoline declining by more than the spot price and both declining by slightly more than the crude price. Residential heating oil prices show a more significant decline than previously, nearly 15 cents a gallon, slightly larger than the decline in the spot distillate price. Both are about in line with the decline in spot crude prices.

Prices Over the Longer Term: Crude Oil and Gasoline Since 1981

Over the longer term, the price of, gasoline, the main product bought by consumers, has been strongly influenced not just by the crude price but by government tax and regulatory policy. The table below on the right shows costs and prices in cents a gallon for crude and gasoline in 1981, the first year of price decontrol, and 1997. The cost of crude to refiners fell by nearly 39 cents/gallon between the two years while the retail price of gasoline fell by only about 6 cents. But most of the difference is due to increases in gasoline taxes. Combined Federal, state, and local taxes rose by about 24 cents. The price of gasoline ex taxes fell by nearly 31 cents, much closer to the decline in crude costs. It should be kept in mind that gasoline itself is not the same as it was in 1981. Leaded gasoline has been phased out and in recent years, cleaner, reformulated gasolines have been brought to market in response to Federal and state regulation, particularly in California. These changes have pushed up the cost of making the gasoline used today compared to the product used in 1981.

Costs & Prices ¢/Gallon	1981	1997	Change
Cost of Crude to Refiners	83.9	45.4	-38.5
Retail Gasoline Price	135.3	129.1	-6.2
Federal Tax	4	18.4	14.4
State & Local Tax	9.2	19.1	9.9
Total Taxes	13.2	37.5	24.3
Price ex taxes	122.2	91.6	-30.6
Retail Price in 1997 ¢/Gallon			% Change
including tax	238.9	129.1	-46%
ex tax	215.7	91.6	-58%

To this point the discussion has been in terms of ***nominal*** prices. Since 1981, overall consumer prices have risen by about 77%. As shown at the bottom of the table, on an inflation-adjusted basis, the retail price of gasoline, including tax, in 1997 was 46% less than in 1981. On an ex tax basis, the price was down 58%.

Concluding Comments

In recent months, the workings of the competitive market have passed on the full benefits of lower crude oil prices to consumers in short order. The decline has been most visible at the gasoline pump but the lower crude prices have also meant lower prices for other products as well such as heating oil, diesel fuel and jet fuel. This is the case longer term

as well, but then other factors, particularly government tax and regulatory policy, have a strong influence on the price to consumers.

It should be kept in mind that a competitive market does not always mean low prices. Competition assures an ongoing push for efficiency in all aspects of oil industry operations---exploration, production, refining and distribution---which helps hold down costs for consumers. However, competitive markets also translate quickly any changes in both current and anticipated supply demand balances into price movements. These price movements, as has been amply demonstrated by experience, can be up as well as down.

It's understandable that the public, government, and media are more concerned when prices move up sharply than when they go down. A means of coping with these concerns is coming from markets themselves, particularly the financial futures markets. By offering contracts and options for future deliveries of oil at set prices, the futures markets offer increasing opportunities for oil buyers and sellers to hedge themselves against price risk.

Ultimately, consumers need protection against outright supply disruption, with its potential for sudden, drastic price movements, or, if prices are not allowed to clear the market, shortages. The best protection against this risk is a secure, standby, supply of oil, which exists already in the form of America's Strategic Petroleum Reserve. Maintenance of an adequate reserve is a key element in the functioning of a competitive oil market and therefore in maintaining overall economic stability.