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PIRINC has prepared the enclosed report, *Energy Supply Risks: Perspectives in Light of Venezuelan Developments*

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This brief report first discusses the particular aspects of the Venezuelan developments on the US oil market and its oil policy implications. Although less immediately visible to consumers, and for different reasons, natural gas markets have also been showing signs of supply stress, which could be longer lasting and could spill over to the oil markets. The report discusses these stress factors and their policy implications.

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

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Energy Supply Risks: Perspectives in Light of Venezuelan Developments

Summary

Until very recently, all discussion of energy supply risks has been focused on the oil supply fall-out of a potential US-led war with Iraq. While these concerns remain, since early December they have been overtaken in the market by the outright and ongoing loss of supply from Venezuela. In effect, the country has been given a strong reminder that energy supply risk encompasses far more than worries about the Persian Gulf. This brief report first discusses the particular aspects of the Venezuelan developments on the US oil market and its oil policy implications. Although less immediately visible to consumers, and for different reasons, natural gas markets have also been showing signs of supply stress, which could be longer lasting and could spill over to the oil markets. The report discusses these stress factors and their policy implications.

Venezuela and the US Market

On December 6th the Venezuelan national oil company, PDVSA, declared "force majeure," thereby officially acknowledging its inability to meet its international supply obligations as a result of the national strike which began four days earlier. While exact production figures are not known, on December 16th the President of PDVSA in a national broadcast indicated that production had been cut to one-third of its pre-strike level. PDVSA's production of crude oil prior to the strike was about 2.7 MMB/D. Foreign operators are responsible (through joint ventures with PDVSA) for an additional 0.4 MMB/D of oil, mainly unconventional heavy crude. These operations are being curtailed as well. Prior to the strike, Venezuela was the third ranking producer within OPEC, behind the leaders, Saudi Arabia and Iran, and ahead of the fourth ranking member, Iraq. In November, Venezuelan production exceeded the Iraqi level by about 0.7 MMB/D. For the US, Venezuela is important not simply because of the physical volumes supplied to the US but also because of its proximity to the US market. The table below summarizes by volume the major sources of crude and product imports for the first 9 months of this year.

US Oil Imports by Major Source
January-September 2002

	MB/D	%
Total	11,269	100%
Canada	1,893	17
Saudi Arabia	1,508	13
Mexico	1,495	13
Venezuela	1,401	12
Other OPEC	1,683	15
Virgin Islands & Netherlands Antilles	298	3

Of the 11.3 MMB/D of oil imports, the four largest suppliers, Canada, Saudi Arabia, Mexico, and Venezuela accounted for nearly two-thirds of the total. All other OPEC countries together accounted for an additional 15% (with Nigeria and Iraq accounting for about 600 and 500 MB/D respectively). Since the US import total includes only imports into the 50 states, there is an undercounting of Venezuela's total contribution. Venezuela is the major supplier of crude to the St. Croix, Virgin Islands refinery---jointly owned by Amerada Hess and PDVSA--- and the PDVSA-leased Isla refinery on Curaçao, Netherlands Antilles. Production at both refineries has been impacted by the strike, with the Isla refinery reported to have halted operations entirely. The Virgin Islands and Netherlands Antilles together supplied about 300 MB/D of additional oil imports, all refined products rather than crude.

Unlike the rest of OPEC, Venezuela is a short-haul supplier, with its crude able to reach US Gulf Coast refineries within a week, far less than the 40 days or so for a cargo from the Persian Gulf. While proximity is normally an advantage, loss of nearby supply becomes a problem that much faster when there are no other proximate suppliers available to make up the difference. While there is some spare in Mexico, nearly all the world's spare producing capacity resides in the long-haul Persian Gulf, too far away to fill the immediate gap in supply and of course the subject of its own set of supply risks.[1]

In this situation, there is only one source to tap for immediate supply, inventories, including both commercial and government stocks. References to inventories usually refer to inventories already in hand on-shore but in the current context, it should be kept in mind that inventories in the form of oil on the water, i.e., oil already produced but not delivered, are playing an important role. Before the Venezuelan political crisis began, and although Iraq was always in the background, the focus of oil markets was on OPEC overproduction and the potential for a supply glut. Indeed, the recent OPEC meeting attempted to deal with this very problem by a combination of raising official quotas while cutting actual production toward the new officially agreed levels. The results of the overproduction are still arriving in the US and other major markets, helping to cushion the immediate call on on-shore stocks.

US Mid-December Inventories – MMB

	2002	2001	97-01 Ave.
Commercial			
Crude Oil	287	309	311
Products	690	710	696
Gasoline	203	210	203
Distillate	125	139	134
Total	977	1,019	1,007
SPR	598	548	

The table on the left summarizes US inventories as of mid-December of this year, the year before, and the mid-December average for the 5 years, 1997-2001. Commercial crude oil inventories are down 23 MMB or 7% from year-ago levels and 24 MMB versus the 5-year average level for 1997-2001. Overall product inventories are down by 20 MMB versus last year. Among the products, gasoline inventories are down by 7 MMB or 3% and distillate by 14 or 10%. The declines are somewhat less when measured against a 5-year average. So far, the visible impact of the Venezuelan supply curtailment on commercial inventories has been minimal. The mid-December levels for commercial crude and total products are within 1 MMB of their levels at end-November. Nonetheless, the supply

[1] On December 16, Mexico's Energy Secretariat announced plans to increase crude oil exports by 100 MB/D beginning in January. Near-term Mexican exports could be increased by a draw down of crude inventories.

losses are occurring at a time when commercial stocks, the prime cushion against supply shortfalls are relatively low.[2]

While commercial stocks are relatively low, the SPR as of mid-December stands 50 MMB above its year-ago level, an amount greater than the 43 MMB decline in commercial crude and product inventories for the same period. To a limited extent, the SPR is already being used to ease the supply shortfall. Press reports indicate that as of December 19, nearly 8 MB of crude oil due to be delivered by US companies to the SPR in December-January under the royalty-in-kind program have been deferred. While this action adds to available commercial supply, the volume involved to date is equivalent to less than 5 days of lost normal direct and indirect oil imports from Venezuela. Since supply curtailments from Venezuela have gone on for 18 days (as of December 19), and with no end in sight further action may be required. So far the Administration has strongly resisted going further, in particular it has declined to enter into crude exchanges with impacted companies facing the most acute shortfalls in supply. But this decision may require reconsideration. The scramble for replacement oil in commercial markets has already pushed spot crude prices above the $30/barrel level. The daily loss of production in Venezuela is already in excess of the entire production of Iraq and more than double the official production cuts agreed to at the recent OPEC meeting.

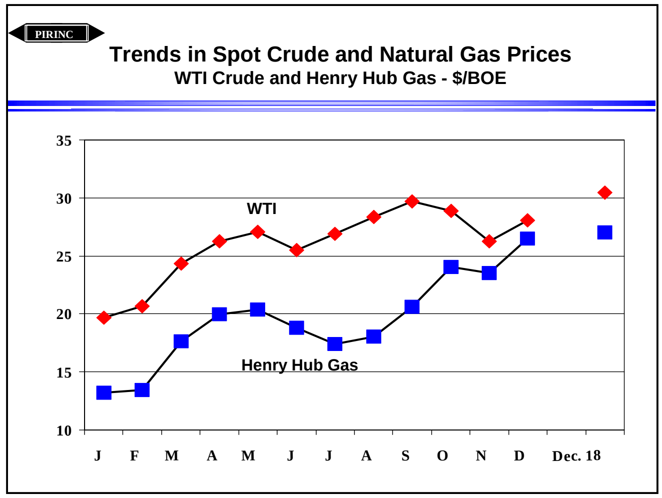
There is a further strategic consideration. During the 1990-91 Gulf Crisis, Venezuela was a source of plus supply. In the months after the Iraqi invasion of Kuwait in August 1990, Venezuela raised its production by about 350 MB/D (January 1991 versus July 1990). This time, the world is approaching a potentially imminent war with Iraq with the possibility that substantial Venezuelan supplies could still be off the market and with much of the world's spare capacity committed to replace it. The world has been counting on this spare to moderate any adverse impact of an Iraq war on oil supplies. In its absence a risk premium could start to be reflected in the world oil market. In such a situation, and with commercial inventories under pressure, timely use of the SPR may be essential to avoid sharp surges in oil prices.

Natural Gas: Under Stress But Less Visible

While the public's focus is on oil, the US gas market has tightened considerably, with spot prices moving up even more drastically than oil prices. The chart below shows trends in WTI crude and Henry Hub gas prices over the course of the year to date, with both measured in $/barrel-of-oil-equivalent (BOE).

[2] Although absolute commercial stock levels may nonetheless seem high, nearly a billion barrels of crude and product, about 90% of the total are operational, on ships, in pipelines, tank bottoms, etc., and thus not available for draw down.

In the first few months of the year, gas prices were averaging about $13.50/BOE while WTI prices were averaging about $20. With the onset of the winter heating season the gap between the two has narrowed considerably to about $3 in November and about $1/BOE in December to date. As shown by the prices for December 18th, the latest date at the time of this report, the gap has widened somewhat as the Venezuelan crisis has pulled up oil prices. Nonetheless, the gas price has more than doubled since the beginning of the year.



As discussed in a prior PIRINC report, US gas production, as well as production in our most important foreign supplier, Canada, has been falling, putting more of a burden on gas in storage to meet winter demands.[3] Although gas in storage was at comfortable levels at the beginning of the winter heating season, colder-than normal weather has led to significant draw downs. As of mid-December, working gas in underground storage was down about 17% from a year ago as opposed to being about in line with year-earlier levels at the end of September.

The fly-up in gas prices, particularly since the summer, has had minimal impact so far on residential customers since their supplies are tied to long-term contractual arrangements. It is the spot buyers and interruptible customers who are immediately impacted by gas supply strains. Their problems have potential to spill over into oil markets at a very awkward time since oil, particularly distillate, fuel oil, and propane, is the most immediate substitute.

The higher prices are having negative effects on the economy. Certain industries that rely heavily on natural gas, chemicals, petrochemicals, and fertilizer, are already being adversely affected by the higher gas prices. The price increases have been temporarily hidden from consumers but as they flow through, the higher gas prices, in addition to the higher oil prices, act as a broad-based consumption tax, reducing real disposable incomes available to support spending on other goods and services.

[3] **Energy This Winter: Prospects and Risks for the Northeast**, November 2002