

## **WHEN THE OIL SPIGOT IS SUDDENLY TURNED OFF: Some Further Thoughts**

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**WHEN THE OIL SPIGOT  
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Some Further Thoughts**

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An incipient oil crisis might be dealt with by quickly imposing a large tariff on imported oil: Philip Verleger advocated such a policy in a note "When the Oil Spigot is Suddenly Turned Off," in Volume 1, Number 4 of this *Journal*. We suggest that, as is often the case with federal intervention, the cure will be worse than the disease. We share Verleger's view that private "hoarding" is a primary cause of oil market chaos, and offer an alternative proposal to reduce world oil prices.

To discourage hoarding in the anticipation of ever-higher prices, Verleger proposes that "governments and oil companies in consuming countries should take the lead in accelerating the price increase." But his recommendation to accomplish this with a large tariff is a classic example of solving the wrong problem.

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Policy-makers ought to be concerned with mitigating the economic damage attending an oil supply disruption, and not merely with calming oil markets in turmoil. Unfortunately, a large tariff is likely to exacerbate the former problem in battling the latter.

In order to capture the effects of oil market-directed policies on the economy as a whole, we have linked a small oil market model (similar to Verleger's in many respects) to a larger, short-run model of the economy. An oil supply interruption, not surprisingly, drives up spot and contract prices, which then feed through the economy, resulting in a higher inflation rate, lost output, and increased unemployment. Slapping on a large tariff when prices are rising rapidly succeeds in lowering world oil prices, but fails to mitigate the economic effects of the shock.<sup>1</sup>

A natural alternative policy is "do nothing," but this is politically difficult at the same time that it fails to address the economic damage problem. The Reagan administration's response to the need for an insurance scheme has been to expedite the filling of the Strategic Petroleum Reserve. Current policy is to use the reserve in a crisis, but to stay out of the oil market otherwise.

We applaud this action, and concur with Verleger's recommendation to "provide quick and easy access" to the reserve. Difficulties arise, however, in determining how to use the reserve; mere access does not address the private hoarding problem, especially since the reserve is small in comparison with private stockpiles.

Why does hoarding occur during a disruption? Simple profit maximization suggests that speculative stocks should be built when expected future prices are high relative to today's price and drawn down when the reverse is the case. Inasmuch as rising prices are characteristic of disrupted markets, the observed accumulation of private inventories is hardly surprising. The link between expected future prices and speculative stockpiling provides an opportunity for policy intervention if the government can affect price expectations. It is here that the Strategic Petroleum Reserve can play a role. The announcement that some of the reserve will be released in the future (say, in three to six months) reduces expected profits from speculation. This in turn reduces inventory demand, hence easing pressure on spot markets today.

The problem with this strategy is credibility. The prospective stockpiler may be skeptical that the government will actually follow through on the future actions announced during a crisis. We propose, therefore, that the government sell futures market contracts for oil in the Strategic Petroleum Reserve at the onset of the crisis, rather than immediately sell the oil itself. These contracts would serve to bind the government legally, thereby imparting credibility to announcements of future release.

Futures contracts recommend themselves for other reasons as well.

First, through its effect on inventory demand, selling futures contracts facilitates a reduction in the spot price before a drop of oil is released. The futures option thus buys time and flexibility for the government, which is likely to be short on both in a crisis. If

for extraordinary reasons it is later decided that the reserve should not be drawn on (for instance, the crisis worsens to the point where the petroleum reserve is better withheld for the national defense), the government can turn around and repurchase the contracts, albeit at higher prices.

Second, should the crisis evaporate and the spot price fall (as happened in late 1980 with the Iran-Iraq war), those holding futures contracts will be better off buying in the spot market and the government will not have to release any oil.

Observe that the government loses money in a severe crisis and profits if the crisis fails to materialize — just the attribute required of an insurance scheme. On average, such a scheme will lose money,<sup>2</sup> so we would not expect it to be undertaken by the private sector. Indeed, the argument for having a petroleum reserve rests on the divergence between private and social costs; individual agents do not take into account the macroeconomic damage occasioned by the shock as they make their stockpiling decisions.

The case for selling futures contracts has been tested by Devarajan and Hubbard,<sup>3</sup> using the model mentioned above. A hypothetical loss of 6 million barrels per day of production capacity in 1983 was assumed. The model indicated that if the government followed a hands-off policy, spot prices would increase by \$20-\$30 per barrel and inventory accumulation would run 90-100% higher than in the absence of disruption.

Two other strategies were investigated. The first involved selling, in the second quarter of the disruption, one million barrels per day of oil from the Strategic Petroleum Reserve. The second strategy involved a sale of futures contracts in the second quarter at the same daily rate, for settlement in the third quarter. Both active strategies were effective in dampening spot prices compared with the do-nothing option. The spot market strategy reduced prices by \$2.80 in the second quarter. The futures market strategy reduced prices by \$1.25 in the same quarter, but the futures sales also led to a lower spot price trajectory in succeeding quarters. By guaranteeing additional supplies to the market at a later date, the futures sales reduced private inventory accumulation by just over 200,000 barrels per day in the second quarter, and just over 100,000 barrels per day in the third quarter compared with the do-nothing policy. Furthermore, the futures policy held down inventories by roughly 100,000 barrels per day in each quarter compared with the spot sale policy. As a result, U.S. imports of high-priced oil were reduced, the trade balance was improved, and losses to the gross national product were diminished.

What about the technical and political feasibility of selling futures contracts? Petroleum product futures (heating oil and gasoline) are already being traded on the New York Mercantile Exchange, and the possibility of trading crude oil is being investigated. To a significant extent, the necessary expertise and infrastructure are in place. It is hard to imagine a group that, while favoring spot market sales by the government, would oppose selling futures. This is not to say that such a scheme would be

problem-free, however, or that it could be applied overnight. More investigative work needs to be done in this area.

The sale of futures contracts for oil in the Strategic Petroleum Reserve merits serious consideration. Those who look on modeling with a jaundiced eye may, we recognize, wish to take our empirical results *cum grano salis*. To them we would argue that at the very least the use of a futures market increases flexibility; the government can at the same time deal with the problem and keep its options open. In this sense, our proposal is the opposite of the one recommended by Verleger—act quickly and forcefully. If a large tariff had been imposed when spot prices started to climb following the outbreak of the Iran–Iraq war in late 1980, the United States would have looked foolish in retrospect. The beginning of an oil crisis is likely to be characterized by great uncertainty and confusion, and seems a particularly inopportune time to call out the big guns. Sometimes a little muddling through is called for, at least until the conditions become clearer. A futures market for the oil that is in the Strategic Petroleum Reserve is a step in the right direction.

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- NOTES
1. A detailed description of the model and an evaluation of the disruption tariff can be found in Hubbard, R., and Fry, R., "The Macroeconomic Impacts of Oil Supply Disruptions," Energy and Environmental Policy Center Discussion Paper Series E-81-07, Harvard University, June 1982.
  2. Insofar as minimizing GNP losses leads to greater tax revenue, the government may well come out ahead even in a severe disruption, since even a small percentage increase in revenue is sufficient to offset futures market losses.
  3. Devarajan, S., and Hubbard, R., "Drawing Down the Strategic Petroleum Reserve: The Case for Selling Futures Contracts," Harvard Energy Security Program Discussion Paper Series, June 1982. The following analysis is taken from that paper. The paper can be obtained from the authors, or through the International Association of Energy Economists, 1982 conference archive.