

In the Tank

Making the Most of Strategic Oil Reserves

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Summary: Oil stocks can help buffer economic shocks, but only if Washington radically reforms its handling of them.

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Since the Arab oil embargo of the early 1970s, the United States has spent nearly \$50 billion (in today's dollars) to build and maintain a huge strategic stockpile of crude oil. Stored in underground salt domes along the coasts of Louisiana and Texas, the U.S. Strategic Petroleum Reserve (SPR) now holds more than 700 million barrels of oil. Other major oil importers -- notably European countries and Japan -- have spent heavily to accrue their own reserves, and many are evaluating whether they should build even larger ones. In his January 2007 State of the Union address, President George W. Bush urged increasing the country's stocks to 1.5 billion barrels in the near future. With the price of crude oil likely to continue to rise above \$100 per barrel, the venture could cost between \$70 billion and \$100 billion. Congress has authorized boosting the SPR to one billion barrels but has not yet appropriated the necessary funds. (And in May, motivated by high oil prices and election-year politics, it temporarily blocked efforts by the Bush administration to keep filling the SPR.) After the military resources spent to keep oil supplies flowing reliably from the Persian Gulf and other significant oil-producing regions, the SPR is the United States' costliest investment in energy security.

The theory behind the effort is that a well-coordinated system of oil stocks can buffer the country against foreign and domestic shocks to the world oil market. Strategic reserves allow governments to relieve the pressure of unexpected interruptions in oil supplies by releasing some of their stocks on the market. They can help the governments of oil-importing countries dampen the effects of crises in oil-exporting regions or along critical supply routes, such as the Strait of Hormuz, through which about one-third of all the world's oil exports pass. Strategic reserves reduce dependence on pivotal suppliers prone to using oil as a bargaining chip when the market is tight, such as Iran and Venezuela. And they may reduce (at least a bit) the massive revenues that flow to oil exporters such as Russia, helping to make them less formidable troublemakers. Thus, in theory, oil reserves are an important tool of both economic and foreign policy.

In practice, however, strategic stocks can only boost energy security when they are handled properly. And on that front, the track record of most states with large holdings is discouraging. Most countries have opaque and unreliable procedures governing when their governments can fill the stocks and when they can release the oil. Washington, among other governments, makes decisions about stocking and using oil based on an outdated vision of the oil market. When the United States and other countries first built their oil caches, several major oil firms and the main oil-exporting countries controlled the reliability and the pricing of oil supplies because they held most of the world's excess production capacity. Today's market, by contrast, has little excess capacity, and supplies are priced in commodity markets dominated by massive volumes of private trading for deliveries today and in the future. Yet strategic stocks are rarely handled with an accurate view of these markets, even though effective management would mean offering reliable supplies in a crunch without undermining the enormous benefits of market speculation at other times. Bigger reserves could help improve U.S. energy security, but until the U.S. government better manages its strategic oil, spending up to \$100 billion to double the SPR -- already the world's largest and costliest system of oil caches -- would be a tremendous waste of money.

Such an effort would be warranted only if Washington radically reformed its approach to the United States' reserves and coordinated it with those of the rest of the world. Most important, the United States should shift control over its oil reserves from the president (and his political appointees in the Department of Energy and the State Department) to an independent oil reserve board. Presidential discretion, once thought to lend flexibility to the system and make the SPR a powerful foreign policy tool, now has the opposite effect. Presidential control has

politicized decisions about the reserves, especially as most U.S. presidents have proved unable to move nimbly and credibly with the commodity markets.

Furthermore, because oil is a fungible global commodity, the United States must also promote better international coordination of national reserves. The current system for international coordination has generally worked well during brief crises, such as in the aftermath of Hurricanes Katrina and Rita, but it is prone to fail when it is needed most -- that is, when interruptions in oil supplies are severe and states are most likely to help themselves first. The current metric for assessing whether importers are doing their part to protect against insecure oil supplies is how much oil they store in strategic caches. A better system would focus instead on how well they manage their stocks.

RESERVOIR DOGS

One lesson oil importers learned in 1973, after the Arab oil states reduced exports and raised prices in retaliation for Western support of Israel in the Yom Kippur War, was just how vulnerable they were to shocks in supplies: the price of crude shot up from about \$3 to about \$12, and it stayed there until 1979 -- when it shot up again. To help limit the United States' dependence on fickle oil suppliers, in 1975 Congress passed legislation that authorized the construction of the SPR in order to empower the U.S. government to acquire and store oil and release it when needed.

The original model for the SPR reflected the structure of the oil market at the time, in which predictability hinged on the ability of a few major companies and producing countries to deliver extra supplies in a pinch. The 1975 statute focused on the event of a "severe energy supply interruption" and set out conditions for when the president could declare a crisis and then, through the secretary of energy, draw on government-owned oil stocks through a competitive sales process. Over the next several years, the United States steadily amassed reserves, pausing briefly in 1979-80 when the fallout from the Iranian Revolution caused oil prices to spike again and then resuming as prices abated in the 1980s. It also started to rely more on market forces at home by removing most price controls and quotas.

The first serious test to the system came in 1989, after the Exxon Valdez oil spill wreaked havoc on oil shipments from Alaska, creating shortages on local markets and boosting prices once again. President George H. W. Bush did not release SPR oil then, partly because he was reluctant to do so but partly, too, because the law gave him authority to act only in full-blown emergencies. To correct this, Congress passed legislation granting the president license to sell, loan, and swap oil in the SPR even in instances that fell short of a "severe energy supply interruption." And the new law recognized that domestic interruptions to the oil supply were as dangerous as those caused by a foreign power.

Despite these efforts, misuse of the SPR continued to undermine the stocks' purpose. Bush dealt it a blow during the Gulf War by failing to release significant stocks until after he had announced U.S. air strikes against Iraq in January 1991. Six months earlier, when Saddam Hussein invaded Kuwait and seized its oil fields, he had authorized only a five million barrel "test" sale, which accomplished little. The president finally sold 17.3 million barrels during Operation Desert Storm. Although the market did calm down, that outcome was due mainly to the coalition forces' victory on the battlefield and assurances from Saudi Arabia that it would boost production if needed. The damage to the SPR's credibility had already been done.

The reserves were also mismanaged in times of relative calm. Filling of the SPR slowed in the early 1990s, ground to a halt in 1994, and then was reversed when President Bill Clinton struck a deal with budget hawks to sell some reserves in order to help balance the budget. In doing so, he did exactly the opposite of what the situation required: oil prices were low at the time; it was an ideal opportunity to fill up. A decade later, President George W. Bush made the reverse error. After the attacks of 9/11 revived anxiety about global oil security, Congress authorized the government to bring the SPR to one billion barrels (at the time, it stood at 545 million barrels). Bush redoubled efforts to fill the SPR to its current capacity, 728 million barrels, without enough regard for how that would affect market prices. He even pushed the effort through part of the December 2002 oil strike in Venezuela, which temporarily sent prices of crude shooting up. Under the presidencies of Clinton and George W. Bush, the United States managed the SPR exactly backward -- selling when prices were low and buying when they were high -- squandering perhaps as much as \$1 billion over two decades.

Meanwhile, the SPR has still not been put to much good use. Facing low inventories and volatile prices on the eve

of the invasion of Iraq in 2003, oil traders expected Bush to release oil reserves to calm the market. Bush did not, his administration having concluded that the government should not undercut private speculation and that the nation's oil reserves should remain as large as possible in case of future need. This was a bad call because private stocks were insufficient to buffer a shock as great as a war in the Persian Gulf. Confusion and criticism followed, as well as even more volatile prices. In 2005, the Bush administration did sell or lend more than 20 million barrels of SPR oil after Hurricanes Katrina and Rita devastated the oil-supply and oil-refining systems in the Gulf of Mexico, and the move helped ease the ensuing shortages of crude oil. But what helped the most was importing extra supplies of refined products, such as gasoline, and temporarily easing environmental restrictions, which allowed fuel markets to operate more flexibly.

Thanks to the unpredictability of the United States' management of its oil stocks, the SPR's usefulness is now called into question. Unlike in the 1970s, oil security today is a function of prices that arise in complex and often shifting commodity markets -- circumstances that make it impractical for the president to act decisively. At the same time, the oil industry has shifted to a more just-in-time delivery system, with longer supply chains, which are more sensitive to disruptions than shorter ones. Geopolitical vulnerabilities have multiplied. Oil producers that used to hold large amounts of spare capacity now hold very little, so that even small disruptions in supplies can have large effects. The game for ensuring oil security has changed.

THE WORLD TANK

Other countries have also built -- and rarely used -- strategic oil stocks. Nearly all the members of the Organization for Economic Cooperation and Development have joined the International Energy Agency, an arm of the OECD created in 1974 to help oversee national energy policies. The IEA requires its members to stockpile enough oil to cover 90 days' worth of imports. They must also participate in the International Energy Program, a scheme that coordinates the release of strategic stocks and outlines procedures for curbing demand for oil in times of severe shortage. The International Energy Program was originally designed to be triggered when any IEA country suffered a (staggering) seven percent reduction in oil supply. But the IEA's members soon learned that setting numerical targets was a poor way to manage petroleum commodities. During the oil shock that followed the 1979 Iranian Revolution, they found the IEA's oil-sharing protocols too cumbersome to be useful in such a fast-evolving crisis: although the shortages were serious, they failed to reach the seven percent mark. Another problem was that when pressed, IEA members tended to look after their own interests first: rather than sharing oil, many of them hoarded it, causing shortages to multiply and prices to rise further still.

In response to these failures, in 1984 the IEA adopted new procedures intended to allow a more flexible and rapid response. Contingency plans based on these procedures have been drawn up four times -- on the eve of the 1991 Gulf War, in anticipation of the Y2K computer problem, shortly after 9/11, and in the aftermath of Hurricanes Katrina and Rita -- and used twice. During the Gulf War, the IEA's members committed to collectively releasing nearly two million barrels of oil stocks per day for at least ten days; after the hurricanes in 2005, they promised to release up to two million barrels per day for 30 days. In both instances, the IEA proved to be a useful forum for coordination; the system seemed valuable at least during these contained crises.

It is unclear, however, whether the IEA can be effective in the face of the type of serious shortage that prompted Western governments to build strategic oil stocks in the first place. The agency measures members' compliance according to how many days' worth of imports are covered by the stocks held in their territories. It gives almost no consideration to the factors that govern how countries actually manage their stocks or whether those stocks would be credibly available in times of crisis. Yet management varies enormously. Most countries, including the United States, concentrate strategic decision-making at the highest levels of government, meaning that, at least in theory, they can act promptly. But they generally do not, and actual policies vary as governments change, which undercuts these policies' credibility. Other states, especially European countries with long traditions of corporatist management, rely on cumbersome joint government-and-industry decision-making. (The European Union is, however, currently rewriting its rules so as to shift control of the reserves held by its members to a single EU authority, which could make stock management more transparent and more predictable.) Many states, such as Japan, also commingle the state's strategic stocks with the commercial stockpiles that oil traders use to buffer against changes in market conditions. This can be a problem because in a crisis private and public holders of stocks generally have diverging incentives, and it is doubtful whether such arrangements are flexible enough to allow the government to reliably draw on private stocks for strategic purposes. Compliance with the IEA's standards also varies so widely that the agency's 90-day rule is at best a benchmark. The United States

falls far short, with less than enough stocks to cover 60 days of imports. Japan overcomplies: it holds 160 days' worth of imports, despite both declining domestic oil consumption and the hefty costs of storing its reserves in earthquake-proof tanks.

Nobody knows how the IEA's procedures would really work in a serious crisis, but the signs are not auspicious. With spare capacity at its lowest ever, when governments next face an oil shock, they will be even more likely to adopt policies favoring their particular interests over the collective good than they did in the wake of the crises in the 1970s. International systems for coordination are always hampered by the fact that ultimate decision-making authority resides with national governments, but the IEA faces an additional hardship: the fact that key governments keep executive control over their countries' oil reserves makes it easier for politicians to meddle in the reserves' management exactly at the moments when participants in the oil market need to be confident that governments will work in concert. Compared with other international institutions, the IEA is effective, but it can do no more than what its members allow.

GETTING ONBOARD

Before it spends as much as \$100 billion to double the SPR, the U.S. government should manage its existing stocks more effectively, as well as encourage other countries to do the same. Its first step should be to create a new, independent oil reserve board that would take over nearly all the SPR responsibilities currently assigned to the president, the Department of Energy, and the State Department. The board would be the IEA's main point of contact in the United States and would decide when to stock oil and when to release it, with a view to building the U.S. government's ability to respond efficiently to large geopolitical shocks in the world oil market. (It would not, however, act to influence oil prices on a regular basis, which is best left to market forces.) Such independent management would boost the SPR's usefulness and allow for better syncing with commodity markets. The board would have a broad mandate to release oil when it determined that the markets could not generate an orderly response to a shock on their own. Using this broad authority, it would not only release oil when necessary but also announce ahead of crises under what conditions it would step in. Such signaling would help reduce some of the confusion that reigns today. The board would also tailor its measures to the particular problems that needed solving. If an oil shock prompted concerns over inflation, for example, then the board might urge adjustments in monetary policy by the Federal Reserve, which would be more effective in that case than a release of oil stocks.

This new management system would require Congress to pass new laws, including one updating the SPR's size. For now, the best approach in this regard would probably be to expand the SPR so that it covered 90 days' worth of imports (the IEA's requirement anyway), which, at current import levels, would be about 1.2 billion barrels. But the new legislation should also empower the Oil Reserve Board to adjust that figure if it could justify that a larger or smaller cache was required.

The Oil Reserve Board's success will hinge on how the market responds to it. Today's SPR is huge -- although assessments vary, it is believed to be about twice the size of all the private stocks on U.S. soil -- but little is known about how private stocks are managed. The board would help gather and publish more information on such stocks in the United States and contribute to the varied international efforts to improve data on oil production, trade, and storage. Such information is now surprisingly poor given the importance of oil to modern economies, the tightness of today's oil market, and the necessity of understanding the exact relationship between public stocks and private stocks. Also, poor management of strategic reserves can discourage private investors from building stocks of their own. There appears to be little such crowding out today, but that could simply reflect the fact that the SPR is largely considered to be dormant or "dead." But a more effective SPR would amplify the danger, and so the board would have to be especially vigilant and make sure to devise clear rules allowing use of the SPR only in the face of severe and unexpected shocks.

The Oil Reserve Board would also periodically assess whether the U.S. government needed other types of reserves, such as of gasoline, jet fuel, and other refined products. Such stocks, which are very costly to build and maintain, do not appear to be warranted now. They were not warranted in the aftermath of the 2005 hurricanes because the temporary easing of U.S. environmental standards allowed more such products to be sold on the domestic market and ample additional supplies were redirected from Europe. The situation could change, however, as the United States increasingly depends on large imports of refined products from distant locations that could be more vulnerable to disruption.

There are no perfect models for an effective stockpile system, but a good example can be drawn from the U.S.

Federal Reserve's role in monetary policy. Much as with the Federal Reserve's Federal Open Market Committee, the point of creating the Oil Reserve Board would be to vest critical economic decision-making power in an authority that is relatively independent of political meddling and yet also subject to political oversight. During crises, the Oil Reserve Board would also have the independence to make difficult decisions that could cause near-term harm -- as did the Federal Reserve when it chose to take actions that prompted the inflation-taming recession of the early 1980s. But there would also be important differences between the two bodies. For instance, the Oil Reserve Board would do little much of the time because its role would be to act only in the context of large geopolitical shocks to the oil market. Thus, it might be best to embed the Oil Reserve Board within the Federal Reserve system, whose large and competent staff could be drawn on when the normally dormant board surged into activity. The board could be an arm of the Federal Reserve Bank of Dallas (which has the most expertise in energy markets) or the Federal Reserve Bank of New York (which is best equipped to interact with the commodity markets).

The Oil Reserve Board would need to control the funds to support itself, maintain existing oil stockpiles, and, especially, purchase additional oil for the SPR. Unlike the Federal Reserve, which pays for most of its activities with the securities and other financial instruments it holds, the Oil Reserve Board would best be financed through direct authorization from Congress. If Congress balks at this proposal, a less-than-perfect alternative would be to fund the Oil Reserve Board's activities by channeling to the board oil delivered to the country by producers instead of paying federal royalties on that oil into the SPR (currently the government's favorite strategy for stocking the reserves while hiding the real costs of doing so). Such "royalty in kind" oil or, perhaps, the proceeds from an oil-import fee could be earmarked for the board and put into a trust fund managed by the Treasury Department.

IT'S A SMALL WORLD

The better management of oil reserves in the United States could help with reserves worldwide by allowing Washington to lead by example and exert more leverage with other IEA members. For starters, new standards are needed to better reflect the realities of the oil trade today. The IEA rule requiring that members hold reserves to cover 90 days of imports is arbitrary and ineffective: with domestic markets integrated into global ones, the exact volume of a country's oil imports is unimportant. All IEA members should instead be required to hold reserves in proportion to the amount of oil they consume, and the IEA should develop metrics that could be used to adjust members' reserve requirements according to their exposure to interruptions in supply and delivery. That approach, rather than a focus on the sheer volume of imports, would give countries incentives to invest in securing their supply networks -- in the case of the United States, for example, the oil platforms and ports along the Gulf of Mexico. The IEA should also assess its members' compliance based on their reserve management. Reserves that are overseen by independent professional authorities and are fully integrated into the IEA's reserve-coordination system -- such as would be the case under the Oil Reserve Board -- would be deemed most reliable because the IEA could count on their being more readily available in times of need than those managed by opaque and unpredictable processes or institutions vulnerable to political interference.

The IEA should also encourage countries to count the stocks they hold outside their territories as part of the fulfillment of their reserve obligations. This approach would encourage Japan and South Korea, for example, to satisfy their reserve requirements by holding strategic stocks anywhere along the supply chain, from the Persian Gulf to their own shores, at a fraction of current costs. (Japan currently relies heavily on steel tanks on high-value property at home to store its reserves.) This approach would also make for a more constructive interaction between producers and consumers: it would encourage producers to keep their oil stocks in large importing countries, which would mean more reliable deliveries and so be good for consumers, too. South Korea already counts as part of its strategic reserves oil stored for it by Norway's StatoilHydro, and Saudi Arabia is exploring a similar option with Chinese and Indian companies.

Oversight of the strategic-oil-management procedures of the IEA's members could be added to the agency's existing reviews of national energy policies. The IEA's review teams should grade each country's strategic-oil-reserve system according to the credibility, transparency, and independence of its management. Such an approach on the part of the IEA would make it easier for states to integrate their choices about strategic oil reserves with other aspects of their energy policies. For example, a country that could reliably reduce its demand for oil in a crisis -- by either using other fuels or relaxing environmental standards temporarily to allow for the use of high-sulfur crude -- would not be required to hold as large a stockpile as one that could not. With such a

system in place, the international management of oil stocks would in time come to be less dominated by energy ministries and more by the type of coordination exercised by central bankers and financial-market regulators.

SHOCK ABSORBERS

Much of U.S. energy policy to date has focused on measures that poll well but do not have much impact on real security, such as expanding mandates for the production of corn-based ethanol (a very costly way to save oil and one that wreaks ecological havoc). Many elements of a sensible energy policy, such as increasing energy efficiency and boosting investment in research and development, are well known. But others, including a better management system for the SPR, have largely been ignored.

This is unfortunate because in addition to increasing U.S. energy security, the better management of the country's oil reserves would create a tremendous opportunity to engage the rising powers of China and India. Both countries have recently become major oil consumers, but, unsure how best to manage their growing needs, they have tried to promote their energy security by seeking direct access to supplies overseas -- a practice that has bred instability in already fragile countries and undercut patient efforts by the West to promote good governance there. They have also started building oil reserves (China is filling a cache with 100 million barrels) but have not signaled how they will manage them. A first step toward helping these countries understand that energy security comes above all from well-functioning markets is to enlist them in the IEA and reform the agency's standards so that it prizes good and independent management. A better-run and better-coordinated international system of oil caches (including greater reserves of their own) could help convince China and India that treating oil as a true commodity and trusting the markets more are better ways to improve their energy security than pursuing oil mercantilism.

The better management of strategic reserves at home and worldwide will not by itself eliminate the United States' and the world's excessive dependence on oil. Solving that problem will require a comprehensive strategy that limits overall demand for oil, develops more sources of supplies, and encourages the use of alternative types of energy. But the current system will not turn on a dime, and such a comprehensive strategy would not bear fruit for decades. In the meantime, shock absorbers such as properly managed strategic oil reserves have a central role to play in limiting the effects of the crises that periodically convulse the world oil market.