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PRACTITIONER INSIGHTS

"MANAGING THE SPR IN THE FACE OF UNCERTAINTY"



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Managing the U.S. Strategic Petroleum Reserve in the Face of Uncertainty

The U.S. Strategic Petroleum Reserve (SPR), “the world’s largest supply of emergency crude oil was established primarily to reduce the impact of disruptions in supplies of petroleum products and to carry out obligations of the United States under the international energy program,” notes the U.S. Department of Energy.¹ Dr. Ilia Bouchoev is an expert on the U.S. SPR, and as such provided testimony on March 8, 2023, regarding this topic to a subcommittee of the U.S. House Committee on Oversight and Accountability, specifically the U.S. House Subcommittee on Economic Growth, Energy Policy, and Regulatory Affairs. Dr. Bouchoev is a Managing Partner at Pentathlon LLC and is also an Editorial Board member of the Commodity Insights Digest (CID). The following is Dr. Bouchoev’s testimony to the U.S. House Subcommittee; and of note, all views expressed in the CID are those of the individual authors or presenters and not necessarily those of its sponsors or donors.

Introduction

My name is Ilia Bouchoev. I’m an energy consultant and an educator. I’m an adjunct professor at New York University and a research associate at The Oxford Institute of Energy Studies. Prior to that, I spent over 20 years managing global derivatives trading business for Koch Supply & Trading.

In my testimony, I would like to focus on two principal points. One is how storage of limited resources, such as the U.S. Strategic Petroleum Reserve (SPR), must be managed in the presence of uncertainty, and second is how this uncertainty and the price of oil relate to global financial markets.

The SPR Strategy: Risk-Free Return or Return-Free Risk?

Any storage capability is an extremely valuable asset. Storage literally buys time. It allows supplies to be shifted from times of relative abundance to times of scarcity. The problem of optimal storage decisions goes back to the very beginnings of human civilization. It is a very difficult problem, as the decision today depends on what might happen tomorrow, which, of course, we don’t know with certainty.

Let me illustrate it with an example of Robinson Crusoe, who lives on a remote island and has a limited supply of food. Every day, he needs to allocate between consuming some food today and keeping some for tomorrow, since he does not know how much more food (if anything) he might be able to find tomorrow. If he is very confident of being able to find more food tomorrow, then he can take his chances and consume the entire supply of food today. However, such a decision is not rational, as he would be taking too much risk with his life. At the same time, keeping the same supply of food always intact is not optimal either, as some food might get rotten like raw fish, or it can be eaten by animals. The optimal resource allocation between today and tomorrow is somewhere in between.

Conceptually, a similar problem arises in managing oil inventories, whether such inventories are commercial or government-owned. One naïve strategy would be to sell oil out of storage, when the price is high in the hope to replenish it later when the price drops. This strategy is highly speculative, as the price of oil is largely unpredictable. Such a decision is not rational, as the storage manager would be taking too much risk with his job. A more prudent strategy, which is what commercial traders do, is to lend oil to the market when the market needs it. This usually occurs when the spot price exceeds the futures price. For example, if today’s oil price is 20% higher than forward price, then for every 100 barrels lent to

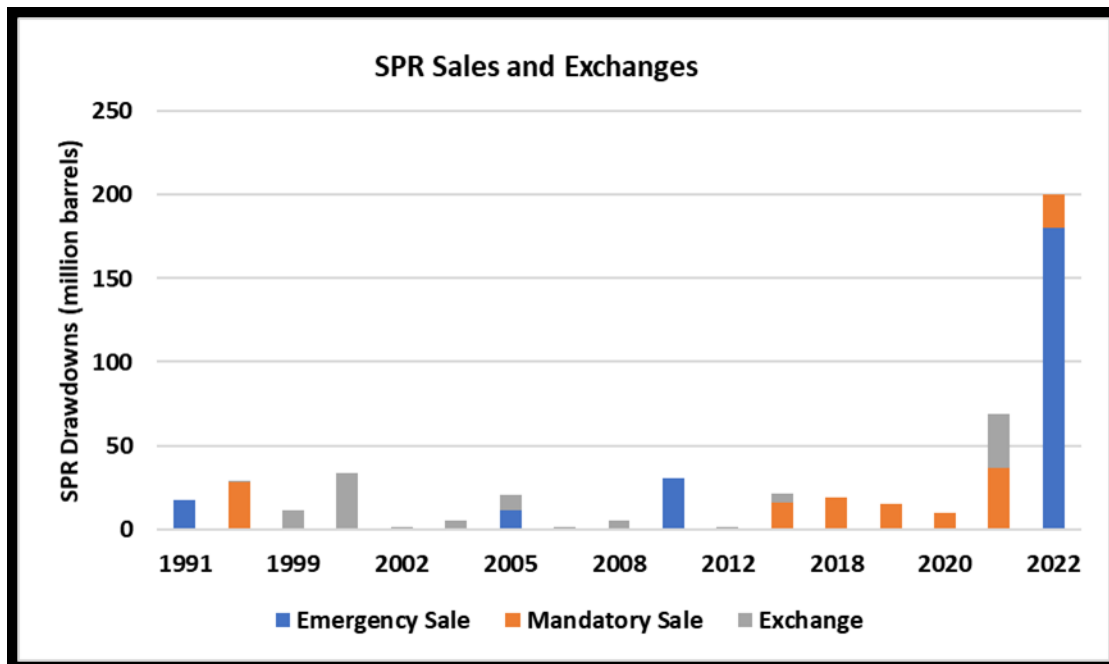


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the market, one receives approximately 120 barrels back, essentially for free. In other words, this strategy generates a return with no risk.

By and large, the same two strategies are available for the management of the SPR. The President of the United States is authorized to sell oil in the case of emergency and to lend it to the market with more barrels to be returned at a later time. Last year the strategy of selling oil was utilized very aggressively. Its magnitude was truly unprecedented. To put things into perspective, the sale of SPR barrels was three times larger than all previous emergency sales combined over the past 40 years (Figure 1).

Figure 1
The History of SPR Sales and Exchanges



Source: U.S. Department of Energy, The Oxford Institute for Energy Studies, and Pentathlon Investments.

The loan strategy was also used in November 2021, but for a much smaller volume. This loan will generate approximately 9% guaranteed return to taxpayers essentially with no risk, when borrowed barrels are returned to the SPR next year. In contrast, the sale strategy with the hope to buy it back creates a lot of risk with a very limited return.

This brings me to my second point on why benefits of such an aggressive and risky strategy are very limited.²

Oil and Financial Markets

I call the SPR sale strategy a return-free risk because, contrary to common beliefs, the price of a physical oil barrel is largely determined in the futures market. Unfortunately, many mistakenly believe that futures

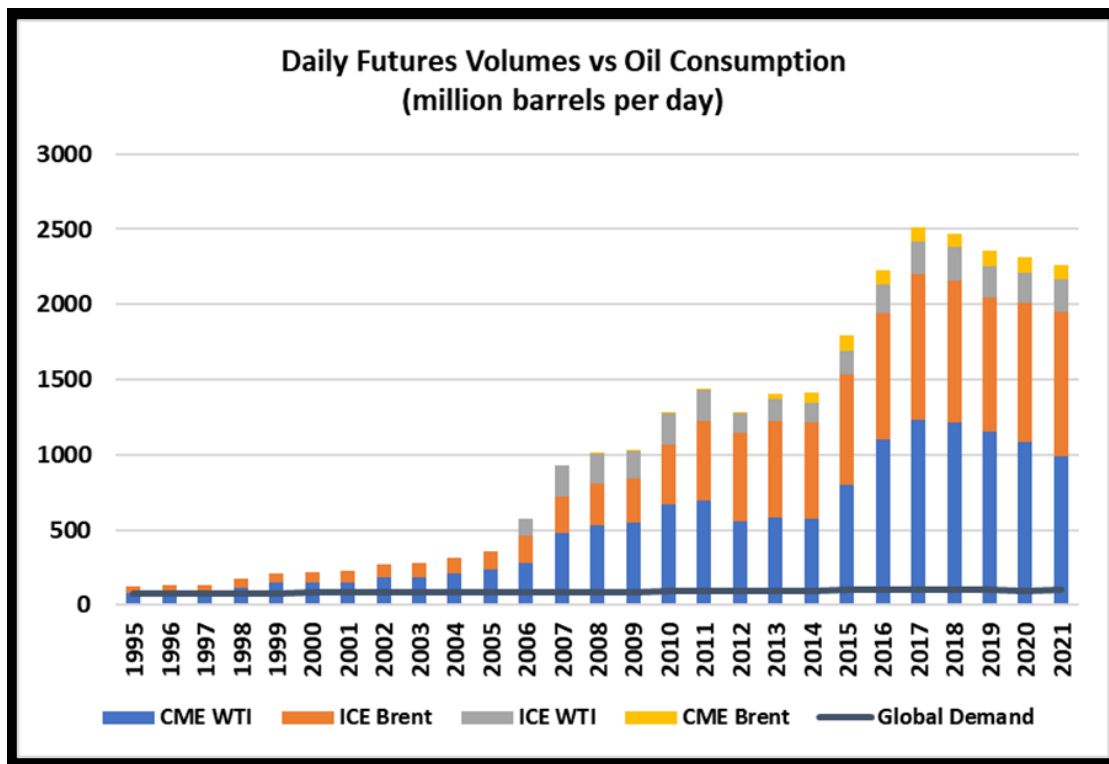


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are some sort of derivatives of physical oil prices. In reality, it is the other way around. The actual price of oil is determined in the futures market and physical oil transactions are priced as a differential to futures. In other words, in the oil market, the physical oil price can be viewed as a derivative of futures.

The problem is that the financial market for oil futures is substantially larger than the market for physical oil barrels. The world consumes approximately 100 million barrels of oil per day. At the same time, the daily trading volume of oil futures, options and over-the-counter derivatives is at least 5 billion barrels per day, i.e., 50 times larger (Figure 2). While daily volume is not the only metric that can be used to compare the relative sizes of two markets, financial oil markets are nevertheless much larger.

Figure 2
Average Daily WTI and Brent Futures Volume vs Global Oil Consumption



Note: Futures volumes are reported only for two primary oil contracts, WTI and Brent. They do not include options, futures on other petroleum contracts and over-the-counter swaps and options.

Source: CME, ICE, and Pentathlon Investments.

The SPR alone is unlikely to have any material impact on the price of oil because financial flows will always dominate the direction of price. For example, the primary drivers behind weaker prices in the second part of last year were not the SPR sales, but rather global macroeconomic factors, such as rising interest rates, increasing probability of recession, and Covid-related demand restrictions in China. The SPR has very little power to affect market prices of energy commodities, such as gasoline. This price will always be



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determined by supply and demand and not only for physical barrels, but supply and demand for financial barrels as well.

Conclusion

To summarize, storage is a very valuable asset for the national security and must be managed prudently. Depleting it too aggressively could result in an economic waste with no return. Not managing it at all is also suboptimal, as its value, for example, can be eroded by inflation. One way to manage the SPR more effectively would be setting up a rigorous rule-based systematic program of oil loans that takes advantage of favorable market conditions and brings benefits to taxpayers with no risk. However, such a program can be created only after previous sales are bought back.

I view the current SPR strategy as a speculative oil trade. Fortunately, the SPR trade is currently in-the-money, but its ultimate outcome will not be known until the trade is closed, and barrels are repurchased before oil prices rise again. This should be done sooner rather than later, as risk always grows with time. Waiting much longer would be akin to Robinson Crusoe playing with the fire.

Endnotes

Dr. Bouchouev's testimony can be viewed at the following link: <https://oversight.house.gov/hearing/burning-the-midnight-oil-why-depleting-the-strategic-petroleum-reserve-is-not-a-solution-to-americas-energy-problem-part-i/>. Dr. Bouchouev is a frequent commentator on commodities on Twitter @IliaBouchouev and on LinkedIn.

1 The SPR is formally described at the following U.S. Department of Energy webpage, <https://www.energy.gov/ceser/strategic-petroleum-reserve#:~:text=About%20the%20SPR,under%20the%20international%20energy%20program>, as accessed on May 3, 2023.

2 A more detailed analysis of alternative SPR strategies is provided in Bouchouev (2022).

Reference

Bouchouev, I., 2022, "The Strategic Petroleum Reserve Strategies: Risk-Free Return or Return-Free Risk?", The Oxford Institute for Energy Studies. Accessed via website: <https://www.oxfordenergy.org/publications/the-spr-strategies-risk-free-return-or-return-free-risk/>.



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