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ESSAY

## A Crude Predicament

The Era of Volatile Oil Prices

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For most Americans, from the late 1970s until just a few years ago, following the price of gasoline was like riding the Disney World attraction It's a Small World: a shifting but gentle, basically unremarkable experience. But over the past few years, it has felt more like Space Mountain -- unpredictable, scary, and gut-wrenchingly uneven. Between January 2007 and July 2008, the price of a barrel of oil rose from \$50 to more than \$140; by the end of 2008, it had crashed to just over \$30; less than a year later, it had breached \$80 again. In early 2011, on the back of strong global demand and the political turmoil in the Middle East, oil sold for over \$120 a barrel. Today, as prices continue to swing wildly, most Americans are wondering how they got on this ride and how to get off.

Over recent years, Americans have grown accustomed to considerably higher oil prices than those of the 1980s and 1990s. But they have not yet come to terms with sustained swings in global crude oil prices. High prices are easy enough to explain. Voracious demand in emerging economies is colliding with constraints on production. Old oil fields are producing less, and new fields are more expensive to develop. Governments with access to cheaper resources have restricted investment in new supplies, for various reasons. Faced with popular discontent, petrostates in the Middle East and North Africa, for example, are spending their oil revenues on trying to placate their burgeoning populations with subsidized food, gasoline, and other necessities.

The volatility of oil prices requires a different explanation. Textbook economics says that prices rise and fall in order to balance supply and demand. In the oil market, however, supply and demand are

extremely slow to respond to price shifts, which means that prices can undergo big swings before a balance is restored. Oil is a must-have commodity with no exact substitutes; when prices rise, most consumers have little choice in the near term but to pay more rather than buy less. It takes years to develop new resources, and it is difficult to turn production on or off on short notice. When new supplies (usually years in the making) threaten to flood the market or a sudden drop in demand (for example, due to a recession) leaves sellers without ready buyers, prices can plunge before producers start shutting the taps. Oil prices naturally tend toward extremes.

Yet these extremes have long been kept in check. From the inception of the modern oil market in 1859 until recently, producers have employed a variety of tools to stabilize prices, including vertical integration and market-share agreements. Since the mid-1980s, spare production capacity has been the only tool available. If demand jumped unexpectedly or if supplies were suddenly disrupted, OPEC producers with spare capacity, especially Saudi Arabia, would release more oil, obviating the need for prices to swing in order to balance supply and demand.

Now, much of OPEC's influence is gone. Saudi Arabia and its partners no longer consistently hold the large volumes of spare capacity they once did. And there are no ready replacements waiting in the wings. The oil market is in for a rocky ride, with major economic and geopolitical consequences: underinvestment in the development of energy, greater economic sensitivity to geopolitical unrest in oil-producing regions and shipping lanes, and a higher risk of recessions. The United States will find it impossible to eliminate price swings in the coming years, and so it will need to learn to live with them as best it can.

## GOOD TILL THE LAST DROP

Traditionally, oil producers were able to find new oil faster than demand for oil grew. As a result, price busts would wipe out profits and investments -- followed by rises in demand and then booms. Producers thus sought to put a floor on prices by holding oil off the market. In addition, in order to limit competition and ensure healthy demand, they also sought to cap prices, adding extra oil to the market in tighter times. In the early 1930s, Washington, other Western governments, and international oil companies took control of supplies -- and prices. Blessed with massive low-cost resources, Texas played a pivotal role by holding as much as 25 percent of its production capacity in reserve. (Conventional wisdom has it that about five percent of global supplies provides a robust buffer against surprise developments in the market.) During the June 1967 Arab-Israeli war, for example, the Railroad Commission of Texas, which regulates the Texan oil industry, helped blunt the effects of an Arab oil embargo by drawing on its spare capacity. But in 1972, faced with surging demand in the United States, the chair of the commission was forced to order full production throughout the state. Thus, when the 1973 Arab-Israeli war triggered another Arab embargo, Texas, which was already operating at full tilt, was unable to produce more oil on short notice. Prices soared.

Then, OPEC took the reins, and influence over oil prices shifted to the Middle East. For the next three decades (except briefly during the Gulf War), OPEC held the requisite spare capacity or more. Whenever surprisingly strong demand threatened to outstrip supply and send prices shooting up, OPEC released extra supplies to give the market some breathing room. For example, after demand surged in

2000 on the back of Asia's recovery from the 1997-98 financial crisis and the dot-com boom, OPEC drew on its spare capacity to increase production. In 2003, following a general strike in Venezuela, civil unrest in Nigeria, and the U.S.-led invasion of Iraq, OPEC, led by Saudi Arabia, increased production by 2.5 million barrels per day, about ten percent of its usual output.

Saudi Arabia had been able to maintain substantial spare capacity during the last quarter of the twentieth century because global demand growth was moderate and supply was growing in most major producers outside OPEC. The Saudi government allowed its competitors to expand their market shares, content to keep some of its supplies in ready reserve and act as the central banker of oil -- and thereby make itself an indispensable partner of the United States in the Middle East.

But a decade ago, its grip began to falter. In early 2003, when the invasion of Iraq took about a million barrels of oil off the market, Saudi Arabia had to fill the gap. But then, despite major investments in supplies, it was unable to replenish its spare capacity to prewar levels because of voracious demand from the developing world and a lack of supply growth outside OPEC. It, as well as other producers, had to choose between meeting burgeoning demand and taking oil off the market to hold in spare capacity. It chose the former, hoping to stave off a spike and then a crash in prices. Ultimately, however, its production increases were insufficient.

With producers nearly tapped out amid strong demand, it took a brutal spike in prices in 2008 -- prices rose by 67 percent within six months -- along with a global economic recession, to finally bring demand in line with supply. Demand dropped by three million barrels a day, or about four percent, between the first quarter of 2008 and the first quarter of 2009. This enabled OPEC to cut production and restore some meaningful spare capacity to the system, albeit temporarily. As the global economy recovers, and supply growth starts to become sluggish again, spare capacity will dwindle once more.

A repeat of the boom-bust pattern is now more likely than not. The International Energy Agency, the U.S. Department of Energy, and many experts estimate that Saudi Arabia and its OPEC partners are not investing enough in production capacity today to meet both increasing demand and the five percent threshold for reserves. This is largely because Saudi Arabia, historically the main holder of OPEC's spare capacity, is both less able and less willing to play the part. Saudi officials say they plan to keep as spare capacity only 1.5-2.0 million barrels of oil a day, or less than two percent of global demand.

As they regularly note, holding extra capacity is expensive. For example, the Manifa oil field, Saudi Arabia's next big project to shore up production capacity and prevent its spare capacity from dropping even further, will cost about \$16 billion just to build and will add only 0.9 million barrels per day of capacity. Despite such efforts to expand production, Saudi Arabia remains worried about oversupplying the market and thus depressing prices, and so it is likely to aim low in its planning for spare capacity. It worries that if demand grows more slowly than anticipated -- demand growth in Asia is much tougher to predict than it used to be -- or other countries' supplies turn out to be larger than expected, it will be saddled with low prices or massive amounts of unused investment.

Just as Saudi Arabia's ability to hold spare capacity is declining, its incentives to do so are waning, too.

With U.S.-Saudi ties having frayed over the last decade, Riyadh's motivation to continue contributing to its security partnership with the United States by maintaining spare crude capacity has diminished. In the past, Saudi Arabia held spare capacity partly as a way of disciplining OPEC: spare capacity allowed it to threaten to punish cartel members by flooding the market if they cheated on their quotas. It also allowed Saudi Arabia to align itself with the United States by countering calls for higher oil prices by price hawks such as Iran and Venezuela. But today, Riyadh is less certain about the strength of its alliance with Washington and may thus be less willing to incur the costs and risks involved in contributing to the U.S.-Saudi partnership in these ways.

To be sure, Saudi Arabia and OPEC will maintain some influence over oil prices in the future. They can prop them up in the short term by capping production and in the long term by limiting investment in new supplies. But they will not be able to consistently put a lid on prices. U.S. officials have forecast low spare capacity through 2012 (their projections do not extend any further), and the International Energy Agency anticipates that between 2013 and 2016, OPEC's spare capacity will be below the five percent threshold. Some developments could ease the pressure on supplies: a slowdown of economic growth in Asia; improved security in Iraq, leading to increased production there; political change in Iran or Venezuela that allowed international capital and technology to flow into those countries' oil sectors. Yet any of these changes would take many years to translate into large increases in supplies. The development of alternative technologies for transportation, the faster adoption of fuel-efficient vehicles, and the greater use of natural gas in the transportation sector could also change the picture. But such transitions would also take many years, if not decades.

There are no other producers capable of stepping into Saudi Arabia's shoes. Only Russia and the United States produce volumes comparable to Saudi Arabia's. (According to the International Energy Agency, in 2010, Russia produced about 10.4 million barrels per day; Saudi Arabia, about 8.1 million barrels per day; and the United States, 7.8 million barrels per day. Iran, the world's fourth-largest producer, accounted for only 3.7 million barrels per day.) But Russian oil, which is more expensive than Saudi low-cost oil, is ill suited to serve as spare capacity, and Russia has also shown little interest in cooperating with other producers to help stabilize prices. Nor is there any prospect that the United States will step back into the swing-producer role it played half a century ago, when it held huge low-cost reserves and was not massively dependent on imported oil.

## A MORE DANGEROUS WORLD

The world will be stuck with wild price swings for the foreseeable future. Already, the consequences for economics and geopolitics are stark. Big shifts in oil prices complicate economic decisions. Companies in many sectors avoid investing in new facilities and equipment that may be profitable at low oil prices but are all but useless if prices soar. Individual consumers are buffeted as their disposable incomes drop when their gasoline and home heating bills rise. Basic decisions become more difficult: it is not so easy to choose whether to buy a gas-guzzling SUV or a hybrid Prius if you do not know whether gasoline will cost \$3 a gallon or \$5 in a few years. Airlines, petrochemical producers, and other oil-intensive industries also face much greater uncertainty about costs and profits. Companies that make investments on the basis of low oil prices and are later forced to pay more wind up cutting back

on spending elsewhere, depressing the entire economy.

Greater oil price volatility will also bedevil macroeconomic policy officials and central bankers. Policymakers may have to compensate for depressed demand by lowering interest rates or pursuing fiscal stimulus. On the other hand, rapidly rising oil prices could fuel inflation, prompting monetary policy officials to raise interest rates, which could further hamper economic growth. The precise causal links between oil prices and the well-being of national economies are murky and much debated, but as the economist James Hamilton has noted, all but one of the 11 recessions the United States has experienced since World War II were associated with a rapid increase in the price of oil. U.S. policymakers will inevitably worry that greater swings in oil prices will translate into greater macroeconomic volatility and respond accordingly.

Developing economies, many of which are particularly dependent on oil, will also be hurt. And their attempts to insulate themselves from price volatility will have global reverberations. These states have historically subsidized gasoline and diesel prices at home in order to shield their citizens and domestic companies from international volatility. But these subsidies have had pernicious effects on prices worldwide. With prices kept artificially low in the parts of the world with subsidies, the burden of adjusting to the mismatch between global demand and global supply has fallen on the smaller subset of consuming countries that do not have subsidies. There have been some tentative moves away from gasoline and diesel subsidies in the last few years, most notably in China and India, because these incentives have placed unsustainable strains on government treasuries. The G-20 has also launched an effort requiring its members to develop plans to phase out inefficient subsidies in the medium term. But further reforms may stall in the face of renewed price swings and popular demand for protection; in the worst cases, recent improvements might even be reversed.

Low levels of spare capacity will also complicate U.S. foreign policy. The smaller the spare capacity, the bigger the threat of a price spike from any political disruption. These higher stakes will put pressure on the United States -- still the indispensable nation when it comes to providing global stability -- to intervene in conflicts that threaten even relatively small volumes of oil, whether in West Africa, the Middle East, or Central Asia. Similarly, as U.S. policymakers ratchet up pressure on Tehran over Iran's nuclear program, they are considering crimping Iran's crude oil exports. But with OPEC's spare capacity now barely larger than Iran's exports, that strategy could send oil prices spiraling upward -- even if Iran did not threaten the Strait of Hormuz and even if the United States and its allies released oil from their strategic reserves.

## LEARNING TO SWING

Great oil price swings are here to stay, and there will be little refuge from their pernicious consequences. Nonetheless, there is much that the U.S. government can do to avoid the worst. No one measure can transform the situation, but by pressing for change on many fronts at once, the United States can limit its vulnerability to volatile prices.

A sensible and prudent approach would start by ensuring that the market has as much information about supply and demand as possible. More reliable data would dampen short-term volatility by

reducing uncertainty and facilitate timely investments in production capacity, limiting the amplitude of price extremes over the long term. Industrialized countries should start by getting their own houses in order, improving the quality, timeliness, and frequency of their oil market data. (The United States and Japan are the only major countries whose governments collect and publish reasonably timely, accurate, and broad data on their own oil supplies and demand.) They should then push for more comprehensive and timely data on spare capacity and production trends from the OPEC states, which have historically been tightlipped, by arguing that a change in approach would benefit OPEC itself. The oil market is increasingly distrustful of the numbers published by OPEC members, and if that trend continues, these states will lose more of whatever leverage over prices they still have. More information sharing may be their only chance of preserving their influence.

Because of rapidly increasing consumption in Asia, the U.S. government should also seek to draw Asian governments into international efforts to share data on consumption, stockpiles, and production, by allowing these states to join the International Energy Agency (which provides such services for members of the Organization for Economic Cooperation and Development) or another institution. The secretive Chinese government has been particularly reluctant to participate in such arrangements so far. But as its oil consumption balloons, China increasingly stands to gain from tamping down volatility, too.

Yet price swings will persist. In order to help consumers and companies deal with unpredictable oil prices, the United States should encourage more hedging through the financial markets. This idea may trouble those who blame speculators for price swings, but careful studies by the U.S. Energy Information Administration and the U.S. Commodity Futures Trading Commission have found that medium-term and long-term price shifts are primarily a function of changes in global supply and demand. Policymakers should help facilitate more hedging by encouraging the development of well-regulated financial markets: the point is to relieve those who are exposed to price risks today -- from motorists to airlines and other oil-intensive industries -- and transfer those risks to speculators, who are more willing and better able to bear them. The Dodd-Frank financial reform legislation of 2010 took some helpful steps in this direction, such as requiring that most transactions be conducted on regulated exchanges and that the Commodity Futures Trading Commission collect and publish better data on a wider range of transactions.

U.S. officials, both in Congress and in the executive branch, should take care not go too far, however, and prescribe overly harsh limits on speculative bets on energy futures or set other costly barriers for firms that need to hedge. A blanket crackdown on speculation would only increase the exposure of firms and consumers to volatility by shrinking financial markets and chasing hedging to less transparent and less regulated venues.

As it becomes clearer that OPEC has lost control, people will clamor for the United States to use its strategic reserves to moderate prices. But it would be unwise for Washington to use these supplies for purposes other than responding to substantial supply disruptions, such as those caused by turmoil in a major oil-producing country or a critical shipping lane. Officials are unlikely to know when and how much oil to add to or subtract from the global market in order to keep prices stable, and they could

exhaust the country's strategic reserves before they managed to flatten prices. (Unlike a central bank, which can always print more money, the U.S. Strategic Petroleum Reserve can quickly bring online only a finite amount of extra oil.) The use of strategic reserves would also introduce new uncertainty -- as well as greater economic vulnerability -- into the market by giving both companies and consumers less reason to limit their own exposure and by deterring the buildup of private stocks. At the same time, Washington should reinvigorate efforts to draw the new major oil-consuming states, such as China, into coordinating their policies on strategic reserves. Now that China is finally building strategic reserves, it should share the burden of responding to disruptions with the United States and others. A coordinated policy would make the world better able to respond to supply disruptions and thus limit unnecessary price swings.

The United States will also need to redouble its efforts to discourage subsidies to consumers. The G-20 initiative to reduce subsidies has been a third-tier priority for U.S. economic policymakers, partly because they see it as an element of climate policy. But curbing subsidies would help blunt volatility, and thus improve economic performance; therefore, even policymakers who care more about economic growth than greenhouse-gas abatement should embrace it. Progress will be difficult, however, because subsidies are fundamentally rooted in the domestic politics of the countries that pursue them and fall outside the United States' leverage.

Policies that aim to increase global oil supplies, and thus reintroduce a modicum of spare capacity to the market, will be equally challenging. Efforts to promote security in Iraq, address Tehran's nuclear program, and encourage positive political evolution in Iran and Venezuela could not only remove regional security threats but also significantly increase global oil supplies. (The logic behind each of these efforts is not primarily determined by energy policy, but their potential payoffs in terms of energy policy should inform U.S. strategy.) The U.S. government should also encourage countries with large, low-cost oil reserves to invest in more production capacity. (Although Saudi Arabia's recent decision to speed up investment in the Manifa offshore project is encouraging, it will not fundamentally change the situation.) But persuading producers to spend more on new supplies will be an uphill battle both because increased volatility has made them more cautious investors and because they may face limits on how much their production can expand. Although all these initiatives are tall orders, given the potential benefits, they are well worth a try.

The United States has much more leverage at home. With the risk of price spikes high, it should help insulate its economy by encouraging more domestic oil production. Smart U.S. policy could help promote domestic production: regulations that are cost-effective, clear, and consistent, and that ensure environmental protection, are essential. Similarly enlightened policy on natural gas could also pay dividends in the long term, especially if it helped transform the transportation sector.

Ultimately, however, demand-side policies must be at the core of any serious strategy for coping with volatile oil prices. The goal should be to help consumers protect themselves from fluctuating oil prices while accelerating investment in fuels and technologies that can scale up and eventually displace oil. The transition away from oil in the transportation sector will take decades, but it is inevitable and it can be hastened. The U.S. government should reallocate funds currently spent on mature energy

technologies toward research and development for alternative technologies at the early stages of development. In the context of serious fiscal reform, it should also gradually raise taxes on gasoline and diesel (while compensating for those hikes by lowering payroll taxes). This shift would not only discourage consumption (while rewarding work); it would also shield consumers from price volatility: if taxes accounted for a larger fraction of the pump price of gasoline and diesel, swings in the underlying price of crude would be less consequential. Such taxes have been politically toxic in the past, but they may be more palatable than many of the other options that would be considered in any serious budget debate.

Wild fluctuations in global oil prices are here to stay. The economic and national security implications are stark, and the United States has little choice but to adjust and absorb some of the blows. Policymakers can neither banish big oil price swings nor reasonably hope to wean the United States off oil in the foreseeable future. But the right policies can improve the country's economic resilience and minimize the geopolitical complications of this new and challenging time.

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