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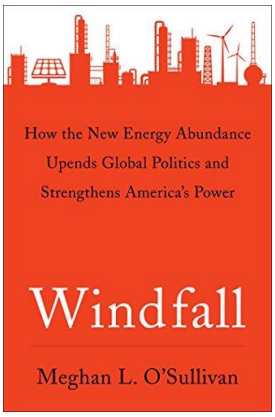
Windfall and the New Energy Abundance

In the last couple of years a number of useful books have been published offering their perspective on the Shale Revolution. *The Domino Effect* provides helpful background on the technological changes behind America's increased hydrocarbon production which led, through a seemingly inevitable series of steps, to where we are poised to surpass Saudi Arabia this year in oil production. *The Age of Oil* recounts the history of oil and was updated in 2008. *The Green and the Black* offers a financier's view of investing in the Shale Revolution, while *The Moral Case for Fossil Fuels* builds a powerful case for seizing the ethical high ground from environmentalists. We reviewed all of these last year, not just because they're worth reading but also to distract investors from temporarily disappointing investment returns in energy infrastructure.

Windfall: How the New Energy Abundance Upends Global Politics and Strengthens America's Power by Meghan O'Sullivan provides a detailed analysis of the geopolitical consequences of the resurgence in U.S. hydrocarbon production. O'Sullivan's public policy experience, both within the Federal government and at the Brookings Institution, leaves her well-placed to contemplate the results.

The book methodically begins with Section One: The New Oil Order, that shocked the world into recognizing growing U.S. production when it led to the Oil Crash of 2014-16. In Section Two: The American Phenomenon, O'Sullivan reviews why the Shale Revolution is a quintessentially American phenomenon, because no other country possesses all the requisite ingredients (geology is only one – see a more complete description in America Is Great!). A chapter on Energy Abundance, Climate and the Environment is remarkably balanced for someone who is currently in academia, employed as a senior fellow at Harvard University's John F. Kennedy School of Government.



Section Three: The International Environment, builds on the foundation O'Sullivan has constructed in the first two sections. Although the Shale Revolution is American, its consequences are global. O'Sullivan analyzes the impact on major oil producing and consuming nations, arriving at some surprising insights. Notably, the conclusion that a reduced dependence on OPEC will lessen U.S. interest in the Middle East is simplistic. ISIS and al Qaeda will continue to pose a threat to U.S. and American cities. Israel will still count on American support, and the price of oil is set globally, so supply disruptions impact everyone through higher prices. Time in Iraq and Afghanistan allows O'Sullivan to occasionally add first hand anecdotes of discussions with Middle Eastern leaders. She concludes that pressure on OPEC budgets is likely to continue, since U.S. production is depressing prices. Political instability in the region is therefore more likely.

Russia's use of natural gas to exert political pressure on neighbors is waning, as growing sources of Liquified Natural Gas (LNG) have allowed buyers to diversify their suppliers. Ukraine cut its Russian imports to zero in 2016, having previously experienced Gazprom's tendency to resolve contract disputes during winter, when uninterrupted supply is crucial to warming Ukrainian homes. The U.S. Shale Revolution's impact on LNG is, in some ways, a bigger story than its impact on oil. LNG trade flows are increasing dramatically, with floating storage regasification units sidestepping some onerous onshore regulations as they pose less risk. This in turn is increasing demand. In 2014 Lithuania's first LNG storage vessel, aptly named *Independence*, heralded their greater choice of suppliers.

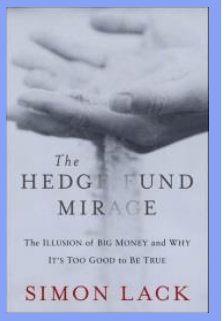
The growing trade in LNG is creating a global market that's replacing regional ones. Nonetheless, large global price disparities persist – in December, Japanese wholesale natural gas prices were $7-9 per

thousand cubic feet (MCF), compared with $3 in the U.S. This is because the logistics of moving LNG dominate the economics, with transportation costs often exceeding the value of the commodity itself. Natural gas has to be chilled so as to reach 1/600th of its volume for marine transport, following which it's regasified for commercial use. For the foreseeable future, LNG is unlikely to be moved, and therefore traded, as freely as oil. Nonetheless, the developing global LNG market reduces its use for political purposes.

In an interesting twist, we also learn that Russia is alleged to have secretly partnered with several European environmental groups opposed to developing domestic sources of natural gas, so as to perpetuate dependence on Russian supplies. It turns out the 2016 U.S. Presidential election wasn't the first instance of Russian political interference. In 2014, NATO's then-Secretary-General claimed such Russian meddling had taken place.

Over the last decade, policymakers' fears that the U.S. would increasingly depend on foreign supplies of natural gas have been upended. Russia was even once regarded as a potential supplier, if not a very attractive one. Today, most regions of the U.S. have benefitted, although New England, with its dysfunctional approach to energy infrastructure (see An Expensive, Greenish Energy Strategy), has been forced at times to import Russian LNG.

In 1973 President Nixon declared, "…Let us set our national goal…that by the end of this decade we will have developed the potential to meet our own energy needs without depending on any foreign sources." Over the next 30 years U.S. oil imports more than tripled, even though every president since Nixon has called for Energy Independence. Not all of them have pursued supportive policies or maintained energy independence as a priority. The current Administration looks beyond independence, intending to achieve "Energy Dominance." Investment returns should surely follow. Coincidentally, this year U.S. crude production will finally eclipse the prior record set in 1973.



Windfall is full of many useful facts. The Pentagon is the world's largest single consumer of oil, in 2013 using 103 million barrels of petroleum products (the same as Nigeria; population: 160 million). The oil collapse saved the U.S. Defense Department $6BN annually. There are sixty-two underground salt caverns along the Gulf coastlines of Texas and Louisiana, the largest of which could house Chicago's Willis Tower (2nd tallest building in North America). Although environmentalists often oppose all fossil fuels including natural gas, we learn that the shift away from coal to gas for electricity generation has reduced U.S. carbon emissions by twice the Kyoto Protocol's goal for the rest of the world! The Shale Revolution might be the most environmentally positive development in history.

Although the book is well researched, O'Sullivan is confused about the impact of U.S. tight (shale) oil on price volatility. In one section she argues that, "…tight oil will **increase** (*emphasis added*) volatility in price by shortening the response time between price change and production adjustment of conventional oil." Only one page later, she continues"…it is likely to help keep prices within a band at a moderate price level for some time." In fact, her second assertion was the correct one, as we've noted ourselves (see The U.S. Lowers Oil Volatility).

One of the huge benefits of the Shale Revolution is the arrival of "short-cycle" projects. Wells are drilled frequently for low cost and high initial output leads to faster investment payback. Drilling takes place when output can be hedged profitably; when that's not possible, new activity slows. By contrast, conventional projects typically require a substantial up-front investment that's recouped over many years, with most output too distant to be easily hedged. Short-cycle projects reduce price volatility by allowing output to more rapidly adjust to demand changes. Sure enough, crude oil trading has been thankfully unexciting since early 2016, as the world has adapted to resurgent U.S. production.

Putting aside this minor quibble on volatility, O'Sullivan closes a thoughtful tome strongly: "…there is no question that the balance sheet of American strengths and vulnerabilities has been profoundly altered by the energy boom – and overwhelmingly, if not uniformly, in the interests of the United States."

We heartily agree.