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The Role of Commodities as a Strategic Asset Class

By Dr. Daniel P. Ahn, Senior Advisor, Quantix Commodities

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Introduction

This report provides a broad overview of the outlook and rationales for considering commodities as a strategic asset class in a well-balanced financial portfolio.

Since the 1990s, commodities have become a central feature of the global investment landscape, with some estimates putting total Assets Under Management (AUM) through commodity indices, exchange-traded funds (ETFs), and actively managed vehicles at over $500 billion.

As financial interest in commodities has grown, understanding of its nature as an asset class and its strategic benefits in portfolio construction have also matured. We shall discuss the outlook for these rationales, such as diversification, inflation protection, and geopolitical risk insurance, going forward.

Global Demand, Global Supply, and the Commodity Super-Cycle

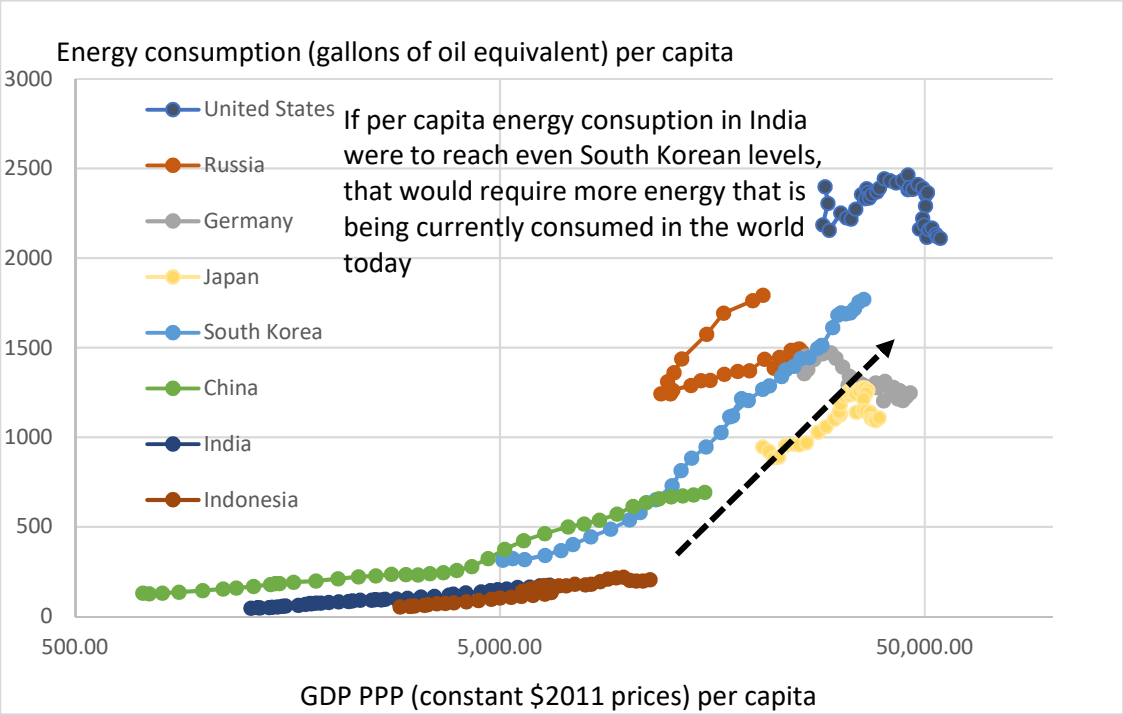
Early researchers noted the relatively uncorrelated nature of commodity returns versus standard assets classes, such as U.S. equities and bonds, and pointed to the potential diversification benefits of investing in commodities. With the benefit of subsequent experience, investors should understand that correlations between commodities and other asset classes can also *fluctuate* over time.

Prices for commodities are linked to global aggregate demand for raw materials, therefore providing an indirect exposure to emerging economies, whose growth models tend to be more materials-intensive. Recently, commodities have seen some underperformance as the Chinese economy (recently the main engine for global demand growth) has slowed. Chinese authorities are also making steps to transition its growth model away from investment in heavy industry/infrastructure/buildings and toward more household consumption and services-oriented growth.

But beyond China are literally *billions* of other denizens of emerging and developing economies aspiring toward middle-class lifestyles. According to the United Nations, the population of high-income economies is expected to grow slowly from about 1.2 billion in 2015 to 1.3 billion by 2050. Meanwhile, China's aging population is expected to *shrink* from 1.4 billion in 2015 to 1.36 billion in 2050.

At the same time, the population of lower and middle-income economies is expected to balloon from 6.2 to 8.5 billion people, with the lion's share of the growth occurring in middle-income economies such as India and Indonesia.

Figure 1: Energy Consumption (in gallons of oil equivalent) Per Capita vs. Gross Domestic Product (in constant 2011 dollar Purchasing Power Parity) per capita, 1980 to 2017



Source: BP Statistical Review, International Monetary Fund, Author's Calculations

And as Figure 1 shows, these aspiring households are currently very far away in terms of per capita commodity usage than their advanced economy peers. In 2017, the average Indian or Indonesian used about only about 150 to 200 gallons of oil equivalent in energy every year. Compare this to 1,000-1,500 used by the average German, Japanese, or South Korean, much less the over 2,000 gallons consumed by the average American every year!

As their economies develop and billions of consumers enter the middle class, the energy consumption of each is expected to increase at least several fold. Hence, immense new quantities of energy and other commodities would be required to realize that vision.

Some economists and other forecasters have suggested that at least in advanced economies, "peak" oil demand is nigh. They point to the rapid growth and economic viability of renewable energy sources (such as solar and wind power), the roll-out of electric vehicles, and the promise of digital technologies and autonomous vehicles to radically transform the transportation and energy landscape.

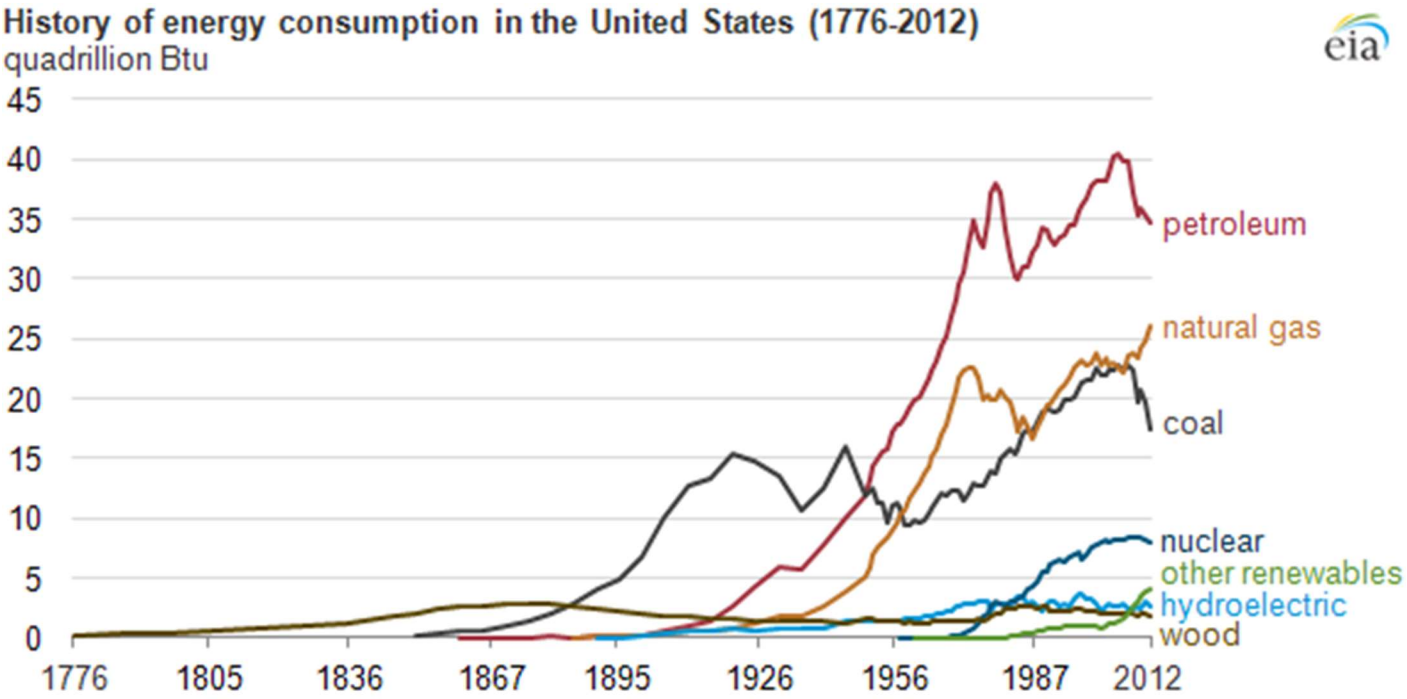
It is difficult to precisely predict exactly what technological developments will eventually prove economical and what repercussions that would have on ultimate energy/commodity complex. But history is a graveyard of defunct prognostications, and it is important to maintain a healthy and hard-eyed skepticism at starry-eyed claims of wholesale paradigm shifts in commodity usage.

Certainly, recent declines in the cost of solar and wind power has been impressive (although this cost deflation has undoubtedly been exacerbated by Chinese state subsidization of manufacturing capacity as part of its broader industrial policy). And recent technological developments and commercial investments have made electric vehicles more attractive from both a performance and economic perspective.

But cars and other light vehicles represent only about half of the U.S. transportation demand for liquid fossil fuels, and the likelihood that oil would no longer be used in trucks, aircraft, and large ships seems more remote. Despite continued improvements in battery technology, it has been difficult to find energy sources that supersede the combination of density, compactness, cheapness, and convenience of fossil fuels.

And technological shifts, while phasing out one commodity, tends to only shift demand towards others. Back in the 18th and early 19th Century, wood was the primary source of U.S. energy consumption, but was then superseded by coal, and later, oil and natural gas (Figure 2).

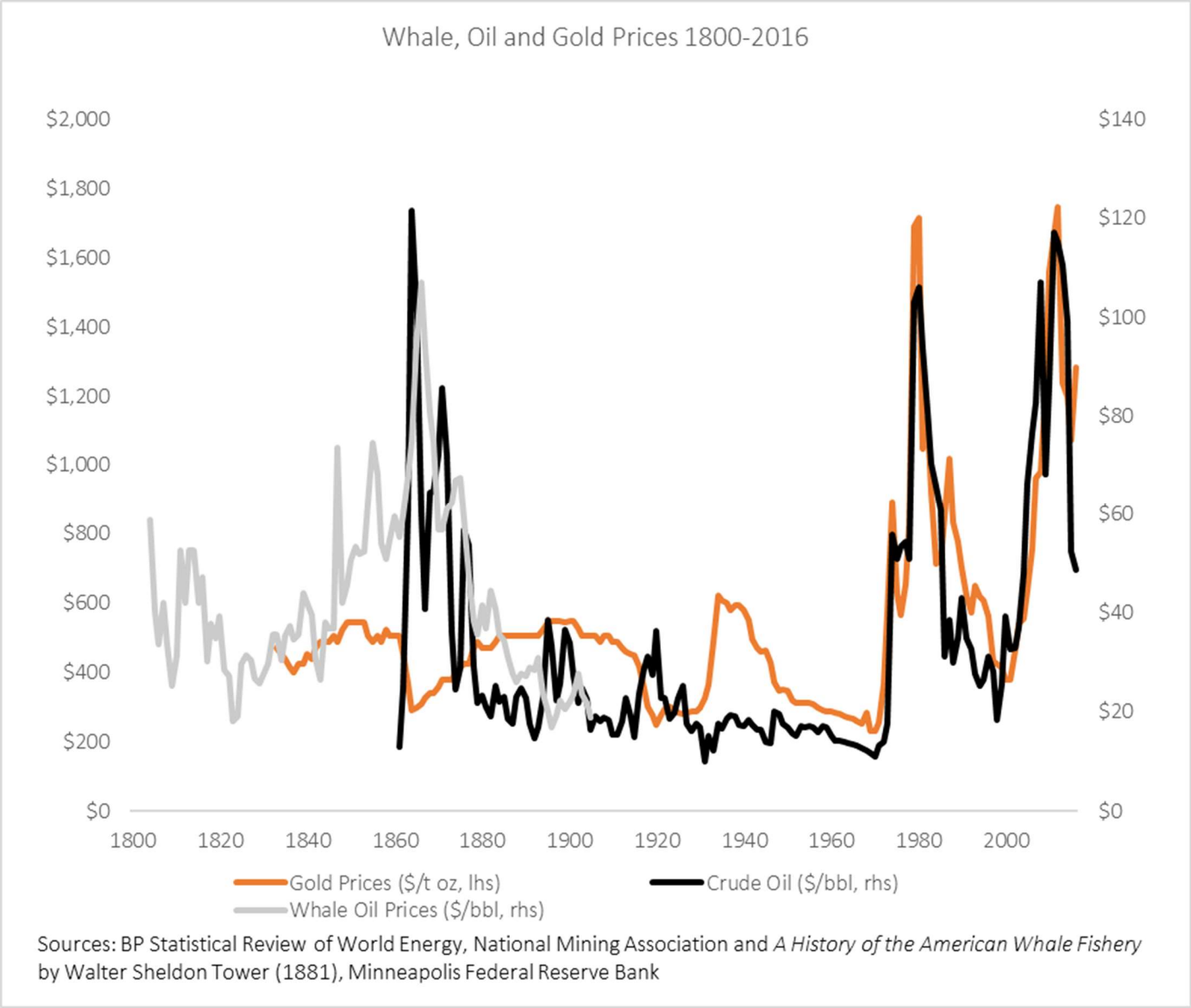
Figure 2: History of the Sources of U.S. Energy Consumption, 1776 to 2012



Source: U.S. Energy Information Administration

Once upon a time, whale oil used for illumination was one of the most valuable commodities in the world, but now has been replaced by electric lights. More recently, demand for lithium and cobalt used in electric batteries have skyrocketed. One way or another, human civilization will continue to demand commodities, and the super-cycle for commodities should continue to turn (Figure 3).

Figure 3: The Long-Term Super-Cycle in Whale, Oil, and Gold Prices, 1800-2016

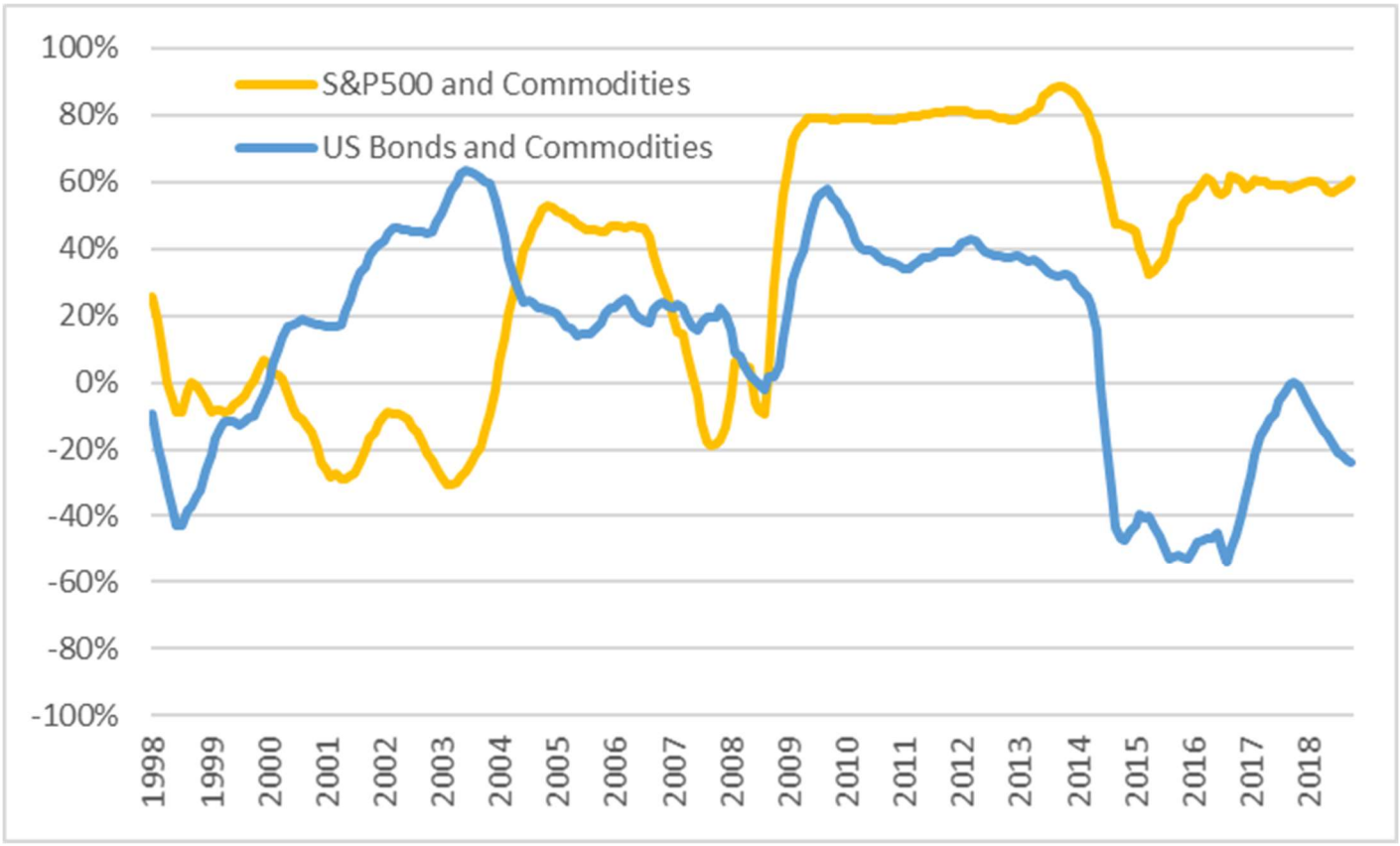


Sources: BP Statistical Review of World Energy, National Mining Association and *A History of the American Whale Fishery* by Walter Sheldon Tower (1881), Minneapolis Federal Reserve Bank

The extent to which the technological life-cycle of these commodities and the growth path of resource-hungry developing economies in the developed world are synchronized with the economic performance of advanced economies determine the degree of correlations between commodities and advanced economy equities.

Since the global financial crisis of 2008-09, correlations with stocks have risen from previous levels (Figure 4), unsurprisingly as it caused a synchronous cyclical downturn across both the advanced and emerging economies. But they can become neutral/negatively correlated when developed and developing economies "de-couple."

Figure 4: Rolling 3-Year Correlations of Year-on-Year Returns on the S&P 500, the U.S. Aggregate Bond Index, and Commodities, 1998-2018



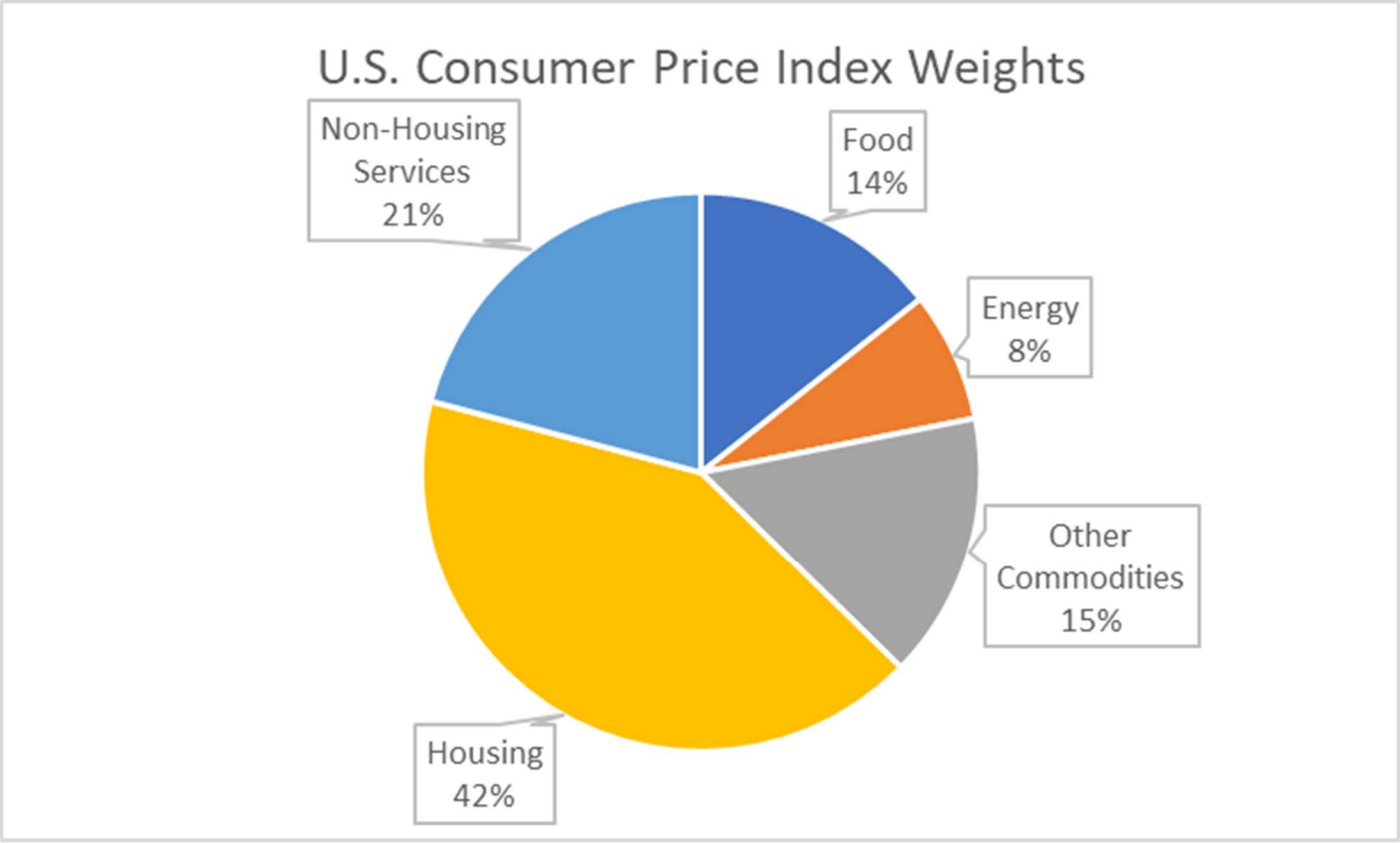
Source: Bloomberg, Author's Calculations

However, commodities generally have been more negatively correlated with U.S. bond performance, which gets us to the next major strategic rationale for commodities as an asset class: protection against inflation.

Inflation Outlook and the End of China-Led Global Value Chain Deflation

Investing in commodities can also provide protection against inflation that can erode the real performance of portfolios. First, there is the direct preservation of purchasing power from rising commodity prices. At the moment, commodities themselves (through food, energy, and other goods) consist of almost 40 percent of the U.S. consumer price index (Figure 5).

Figure 5: U.S. Consumer Price Index Weights, December 2017

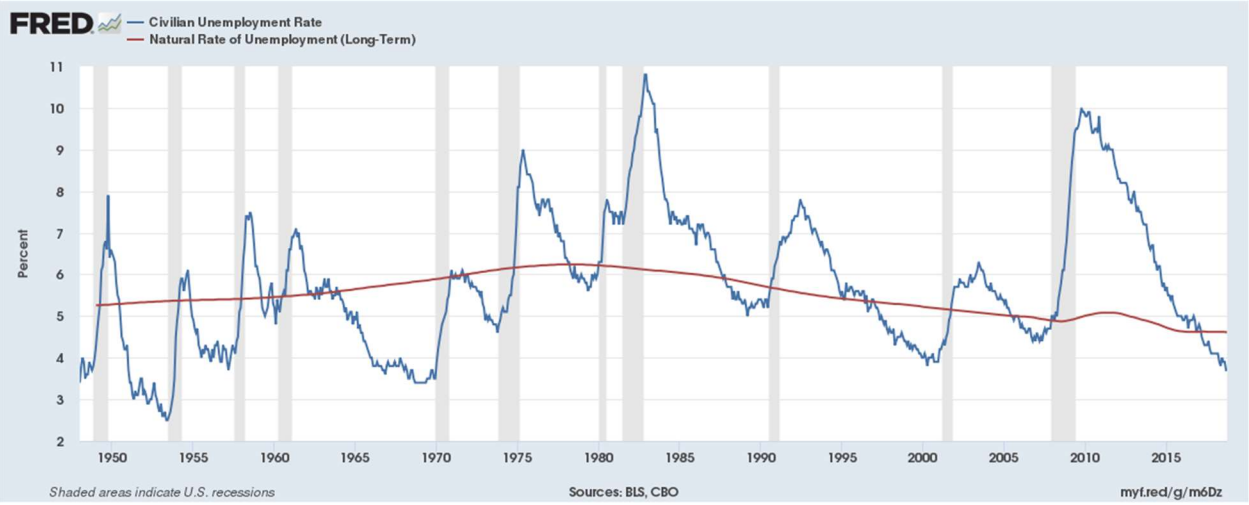


Source: U.S. Bureau of Labor Statistics

It is true that other financial instruments, such as U.S. Treasury Inflation-Protected Securities (TIPS), can provide direct protection against inflation. But this is protection against *expected* inflation, while commodities particularly shine in protecting against *unexpected* inflation shocks.

It is beyond the scope of this report to provide a full macroeconomic outlook for the inflation across the advanced and emerging economies. But certainly, with the United States labor market historically tight and unemployment below the Natural Rate of Unemployment (NAIRU), the U.S. economy is primed to begin over-heating and inflationary pressures should be on the minds of every central banker and investor (Figure 6).

Figure 6: U.S. Unemployment Rate and the Natural Rate of Unemployment, 1949 to 2018



Source: Federal Reserve Bank of St. Louis

Inflationary pressures should also be elevated due to recent trade tensions between the United States and major trading partners like China that threaten to impose tariffs on a large swath of goods. Tariffs are (by definition) taxes on (imported) goods and should increase final prices for consumers, directly causing inflation.

But there are also more indirect and pernicious ways in which trade tensions can contribute to inflation. Recent trade spats between nation-states and a reversion toward protectionism across the political spectrum has forced many companies to recognize the vulnerabilities of globally scattered supply chains deepened over decades of "globalization."

Furthermore, Chinese state capitalism, which required many companies to hand over intellectual property and operate amid a regulatory opaque landscape, have also soured many firms over the initial benefits of value-chains integrated with Chinese manufacturers.

Companies have begun a process of minimizing or disengaging from China, with some looking to other low labor-cost economies like Vietnam or Bangladesh, while others have considered bringing elements of their value-chains closer to home.

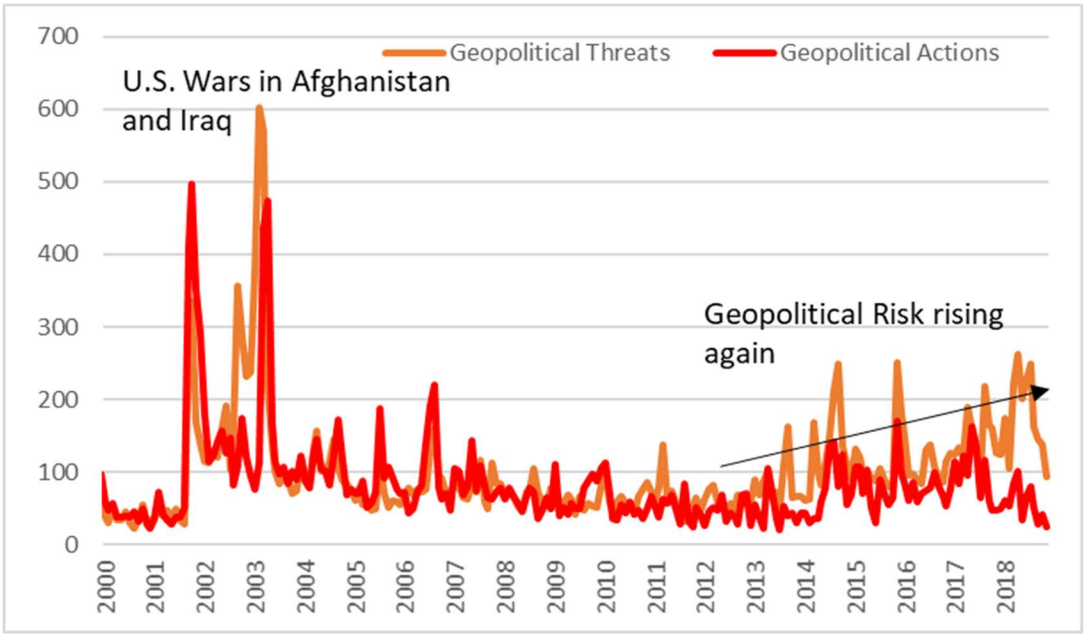
But regardless of its merits or ills, global value chains and cheap inputs from China had played a major role in structurally reducing inflation over the preceding years. Now, the process of "de-globalization" should reverse this trend and potentially revive inflation as one of the major economic forces in the global economy.

Rising Geopolitical Tensions

The final rationale for having commodities in a well-balanced portfolio was to provide insurance against geopolitical risk, and never was a rationale more timely.

Since hitting a relative low in 2011, the years since have seen an continued increase in geopolitical tensions, particularly in the form of threats. Figure 7 shows the history of a risk index constructed by economists at the U.S. Federal Reserve by tracking articles in major U.S. periodicals covering geopolitical threats and actions.

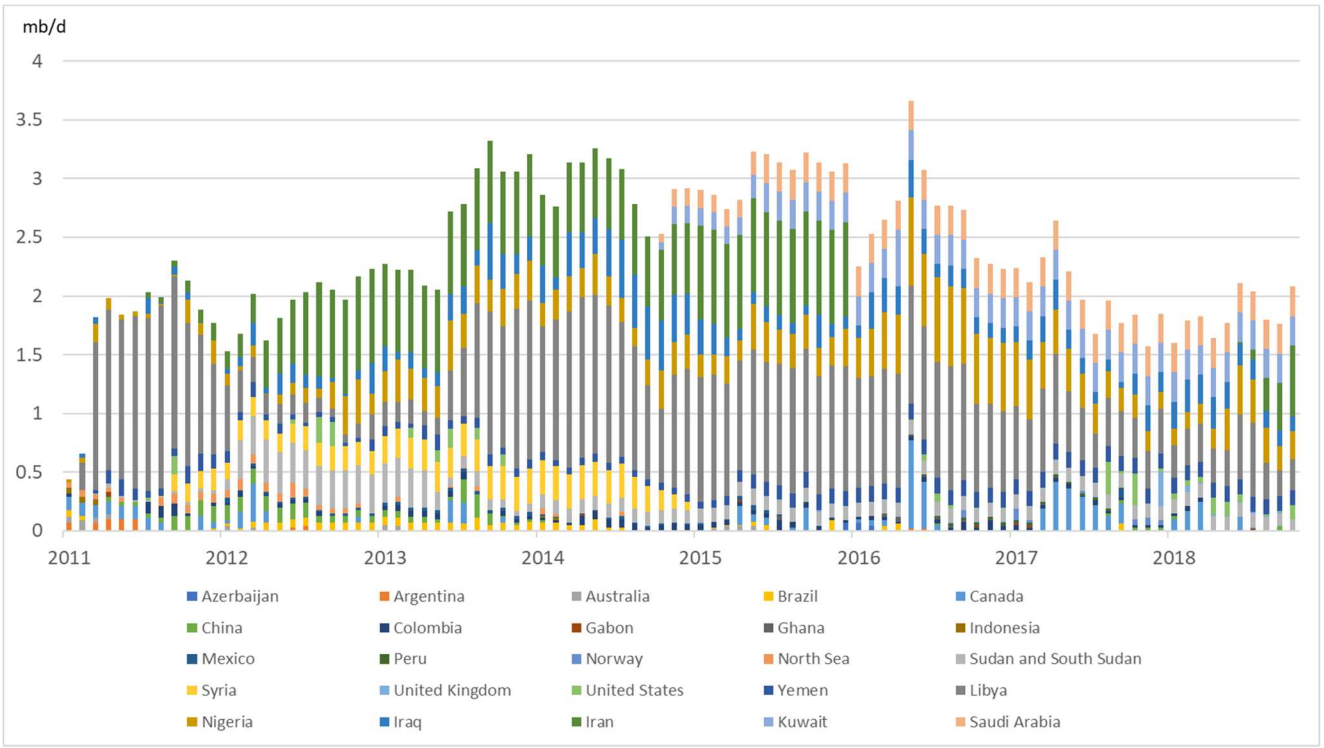
Figure 7: Geopolitical Threats and Actions Index, 1985 to 2018



Source: Caldara and Iacoviello, "Measuring Geopolitical Risk," Federal Reserve Board, 2017

Unsurprisingly, these elevated geopolitical risks have affected global energy and commodity supplies. Notably, oil production has been recently been disrupted in Iraq, Libya, and Nigeria, among others since 2016 (Figure 8).

Figure 8: Estimated Unplanned Oil Production Outages, 2016 to 2018



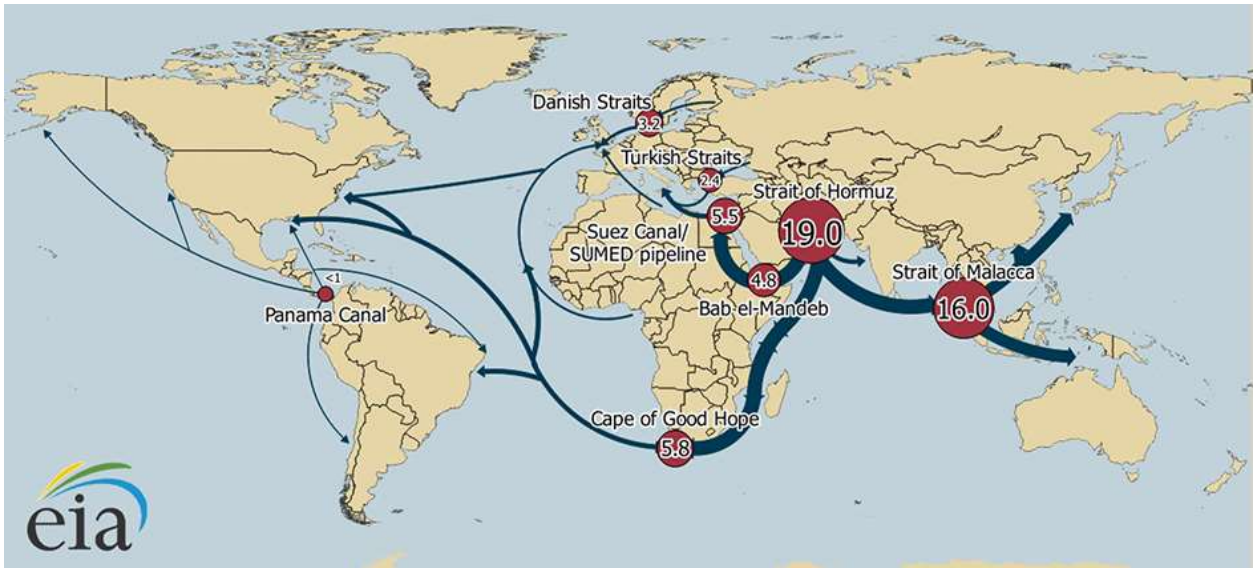
Source: U.S. Energy Information Administration

And while immediately disrupted output has receded slightly from over 3.5 million barrels per day in 2016 to about 2 million barrels per day in October 2018, the prospect of further disruptions, both planned and unplanned, loom large. A full accounting of the myriad geopolitical risks is again beyond the scope of this report, but the list is very long:

In the Middle East, the United States has recently pulled out of the Iran nuclear deal (aka, the Joint Comprehensive Plan of Action (JCPOA)) and re-imposed sanctions on Iran, which has had recently elevated oil prices to over $80 per barrel. While ISIS direct territorial control in Iraq and Syria has receded for now, they remain a potent threat and geopolitical tensions in the region between Iraqis, Kurds, Turks, Iranians, and Syrians remain high.

Proxy wars between Iran and Saudi Arabia, two of the largest oil producers, also simmer in Lebanon and Yemen. In the latter, the fighting lies geographically near the 19 million barrels of oil (about a third of all maritime oil flows) that transit every day through the narrow 21-mile wide Strait of Hormuz that marks the boundary between the Islamic Republic of Iran, Oman, and the United Arab Emirates (UAE) (Figure 9).

Figure 9: Daily Transit Volumes through World Maritime Oil Chokepoints



Source: U.S. Energy Information Administration

In the Americas, decades of gross economic mis-management raises the specter of a complete implosion of the Maduro regime in Venezuela, another major oil producer. In Europe, Russia shows no sign of returning Crimea to Ukraine and its economic isolation is expected to continue. Germany continues to remain ambivalent about the planned expansion of the NordStream-2 natural gas pipeline to Russia, and NATO recently conducted one of its largest exercises in response to Russia's military build-up.

The December 2017 U.S. National Security Strategy heralded a return to traditional great power competition with peer adversaries such as China and Russia, highlighting among other things maritime tensions in the South China Sea, where vast quantities of oil currently transit around the Strait of Malacca and more reserves await. And the odious and ever unpredictable regime in North Korea has made alarming progress in both its thermonuclear weapons and its delivery platforms.

Investors need not look hard to find latent geopolitical risk in their investment portfolios and there are very few asset classes that fundamentally outperform in periods of high geopolitical tension. But when geopolitical events disrupt

commodity production and transit, prices of commodities such as oil can rise. Investors also may flee to "safe-haven" assets such as gold and silver.

Hence, almost uniquely among asset classes, commodities such as oil and gold remarkably can provide such geopolitical risk insurance services to investors. In these unsettled times, investors may wish to consider some allocation to commodities as a natural hedge against the many threats present in the current geopolitical landscape.

Final Thoughts

This report provided a brief overview of some of the primary reasons why commodities should be part of every balanced and strategically resilient portfolio.

We went over the concept of portfolio diversification, inflation protection, and geopolitical risk insurance, before discussing some factors in the current economic and political outlook that should affect the efficacy of commodities as a strategic asset class.

Omitted from this report was a discussion of some of the *tactical* considerations associated with portfolio allocation into commodities (like basis risk and roll yields). But the potential strategic benefits of an allocation to commodities as a portfolio asset class are real, especially in the current economic and geopolitical climate. Commodities should be part of any intelligent fund construction decision to maximize these strategic benefits.

Appendix

Biography

Dr. Daniel P. Ahn is currently a Professorial Lecturer at Johns Hopkins School of Advanced International Studies, where he teaches graduate courses on energy economics and conflict, a Senior Advisor at the Rapidan Energy Group, and an advisor/consultant for the U.S. government.

He was previously the Chief Economist at the U.S. Department of State, where he advised the Secretary and senior principals on a wide range of international economic and security topics relevant to U.S. foreign policy, including global macroeconomic growth, financial stability, economic sanctions, counter-terrorist financing, international trade, and energy security.

Prior to public service, Dr. Ahn was the chief economist for commodities at Citigroup in New York and also held senior positions at Citadel, Barclays Capital, and Lehman Brothers. He has also held research and teaching positions at Harvard University, the National Bureau of Economic Research, Columbia University, the Council on Foreign Relations, and the International Monetary Fund. He is the author of multiple research articles, Congressional testimony, and a forthcoming economics textbook, *Principles of Commodity Economics and Finance* with MIT Press. He was featured in Forbes Magazine as one of 30 under 30 in Finance.

He completed his A.B. in economics and finance with honors from Princeton University, and his Ph.D. in economics from Harvard University.

Contact Information

Quantix Commodities LP
16 Old Track Road, Suite A
Greenwich, CT, 06830

t: +1.203.864.3388
info@quantixcommodities.com

QUANTIXCOMMODITIES.COM

Don Casturo
Founding Partner, Chief Investment Officer

Tom Glanfield
Founding Partner, Portfolio Manager

Daniel Cepeda
Founding Partner, Portfolio Manager

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