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REMEMBERING THE FUTURE

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FUELING PORTFOLIOS: ENERGY ASSETS AND THEIR FUTURE

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Introduction

The world of energy can often be a dizzying subject to analyze. A long list of factors contributing some level of influence can spread the dialogue so far wide that building a foundational form of understanding can often be difficult. Depending on what you read dynamics from monetary policy, growth trajectories, spare capacity, refining compatibilities, speculators, and geopolitics all impact energy prices.

To an extent all those tools impact or are directly impacted by movements in the energy markets. However, in this newsletter we are not trying to analyze a snapshot of the energy markets today but build a streaming flow of understanding why this asset class needs to occupy a minimal strategic position in every portfolio. In building a grander context and wider outlook we build an analysis based on fundamentals in an effort to clarify the prospects for the industry. As da Vinci said "Simplicity is the ultimate sophistication." We believe that through understanding the long term fundamentals at play energy assets can have a robust role in a portfolio of diverse holdings.

Demand Factors

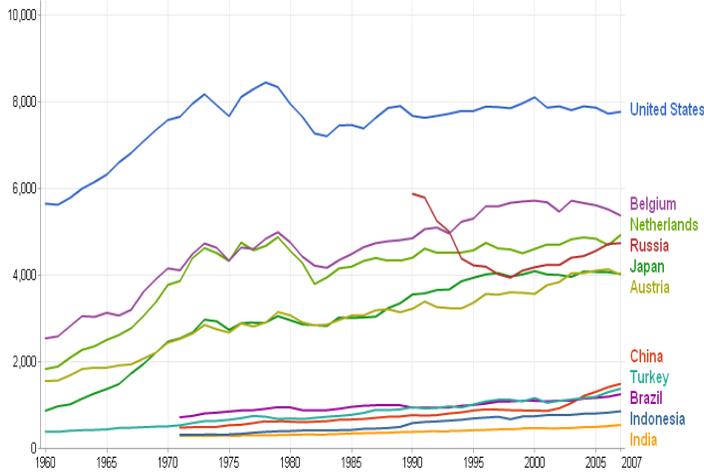
We've beaten this drum before in newsletters and in commentaries but it is foundational to our analysis and explanation for energy assets in portfolios: the

emergence of new poles in the globe's economic magnet. There are new members who are moving up to the head of table and are shaping the global economy. They all possess a growing class of consumers, an expanding industrial base and most important the potential to grow further in the future.

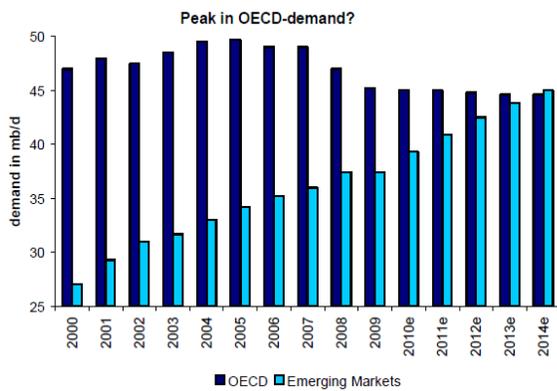
The class of emerging players is larger than the BRIC acronym that has entered the mainstream. There are also the dynamic economies of Colombia, Vietnam, Indonesia, Turkey, South Korea, South Africa, and others with some potential like Argentina, Ghana, and Uganda. Of course this is not a very exhaustive list and we hope for the sake of the billion people trapped in depravity that other nations enter this growth club.

Figures 1 and 2 below exemplify our point. Even China, which is now the world's second largest economy and the darling of the emerging market growth narrative, has not reached the level of development that commands substantial energy consumption. As the graph shows, the economies of Austria and Belgium, who hardly get mentioned for their influence on the global stage, consume more than double the amount of energy on a per capita basis compared to rising giants such as India and Brazil.

Figure 1: Energy Consumption Per Capita
Figure 2: Oil Consumption



Oil consumption (mn barrels/day) OECD vs. non-OECD



Sources: IEA, OPEC, Bloomberg, Erste Group Research

Many of these emerging economies still possess pockets or regions of considerable poverty. China in its western provinces and Turkey in the eastern portions are examples of countries riddled with regional inequality and incomplete development stories. The millions of people in China and India alone who will see their wallets get thicker will demand more refrigerators, cars, air conditioners, and higher quality food, all of which demand greater amounts of energy.

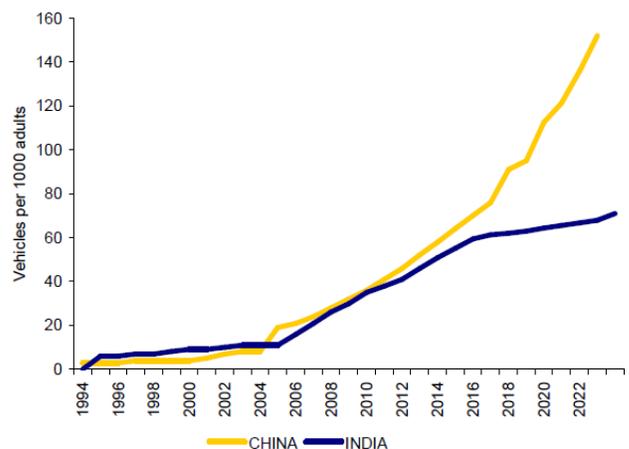
A very significant portion (to be specific close to 63%) of oil consumption is used in the transport sector, and many of these emerging economies will see automotive demand rise, putting additional strain on oil prices.

Separately, some of these countries also have considerable work to do in moving up the value chain. They will eventually produce goods of greater worth and sophistication as their populations become better educated and trained, and as their citizens have greater access to capital.

Up to the present day it has been the Emerging Markets group that has driven oil prices higher due to their growth tracks. Figure 2 demonstrates the trend of stable demand in the developed world versus rising demand in less developed countries. The International Energy Agency expects oil demand to rise by about 10% of today's total in 2015. BP's energy outlook towards the year 2030 estimates an increase in energy consumption of 40% with an astounding 93% of such increased demand coming countries outside the OECD.

Figure 3: Cars per 1,000 citizens in China and India until 2022

Passenger cars per 1,000 citizens, China and India until 2022



Source: CEIC, Bloomberg, Erste Group Research

Figure 3 testifies to the car dynamics as related to demand for energy for two developing giants. The demand factors at work point to significant increases in energy prices for the next 10-15 years, assuming that the sky does not fall upon us!

On the supply side there are doubts that today's providers of oil can keep pace with the demands of the global economy. Libya has lost about 1 million barrels of production per day with the upheaval in the country and Edward Morse, an oil economist, estimates these supplies will be off-line for at least one year. Reports have surfaced that U.S. officials in the State Department believe Saudi Arabia has been completely accurate about its own spare capacity to the tune of 1-2 million barrels a day. With fears about the stability of the Kingdom's eastern province and other oil producers like Nigeria and Angola, oil markets have become antsy over global spare capacity. The New York Times reported earlier this month that Russia (the #1 global producer) was already operating at full capacity.

A New Era? Political Factors and the Price of Oil

One of the consequences we anticipate as a result of the uprisings across the Arab world is the birth of a new social contract between governments and their people in certain parts of the region. Authoritarianism, repressing dissent, elitism, poverty, and social indignity were the popular elements in the old relationship between Arab regimes and their citizens. Not all countries will participate in the new venture. Rather they will clamp down, a la Gaddafi in Libya and to a lesser extent King Khalifa in Bahrain. Others however will reform the structure of their governments and their economy, or at

least attempt to. Saudi Arabia and Jordan announced billions in welfare programs to quell protest rumblings. Morocco and Yemen have also promised to make changes to their political or economic systems or both. These are of course cosmetic changes which won't do much to reverse the entrenched inequality and unemployment in these economies. But, for the energy producers who embark on such schemes, there could be repercussions in energy markets. Expansionary fiscal policies that aim to support welfare will need to be paid for and could result in a higher break-even oil price for government's budgets, and the contracts on oil drafted for collateralization/securitization and credit expansion purposes, leading to higher energy prices.

Lack of employment opportunities was and is an enormous motivating factor in the calculus of the protestors. The economies in Egypt, Tunisia, Libya, Syria, Saudi Arabia and others were riddled with kleptocrats, squeezing out the masses, even those with advanced degrees. These economies will need a facelift. In order to do so, the region's governments will need capital and a lot of energy.

Restructuring an economy and moving up the value chain is tough enough; it is even harder to do so when moving away from a commodity foundation. Governments and societies are much more apt to just extract their minerals/assets out of the ground and consume the profits today as opposed to preparing for tomorrow. But building robust and enduring sectors, such as manufacturing, allows for greater security and prosperity over the long term. These industries offer jobs to a greater number of people, longevity of employment (compared

to a natural resource that may dwindle in supply), macrostability, while allow capital to be extracted out of dormant resources with the help of technology and human capital.

Expanding opportunities and instilling an inclusive atmosphere into the economy is a political choice in many of these countries that have witnessed people take to the streets. Should these governments choose to open up and get to work, the development potential in the heart of the energy world will increase demand for fuel.

A final political piece to the global energy puzzle going forward deals with a range of supply/demarcation security issues. For instance, debate over oil and gas rights in the Caspian region has gone on for years and will only increase as giant powers and corporations try to secure supplies. The possibility for major energy discoveries in the Arctic has caught the attention of Russia, Scandinavia, and Europe. The supply bottlenecks in the Persian Gulf and the Strait of Malacca is always a concern for current and future industrial powers. The battle for pipeline politics in Eastern Europe continues to be waged with Russia and the European Union racing against each other, while liquefied natural gas (LNG) technology makes progress towards diversifying supply routes. Same kind of politics and antagonism is expected in the greater Mediterranean Sea where claims over potential pockets of oil and natural gas will be made by Lebanon, Israel, Turkey, Greece, and Cyprus. Shale and offshore sources still have many questions to deal with. Japan has reminded us of the fears many still have regarding nuclear power despite its climate consciousness.

In all these aforementioned issues there is some element of political/state calculation, though in varying degrees, towards addressing questions with each source. Markets can get spooked pretty easily with political headlines in either a short term (Gaddafi threatening to nationalize oil fields) or long term capacity (Iranian Revolution of 1979).

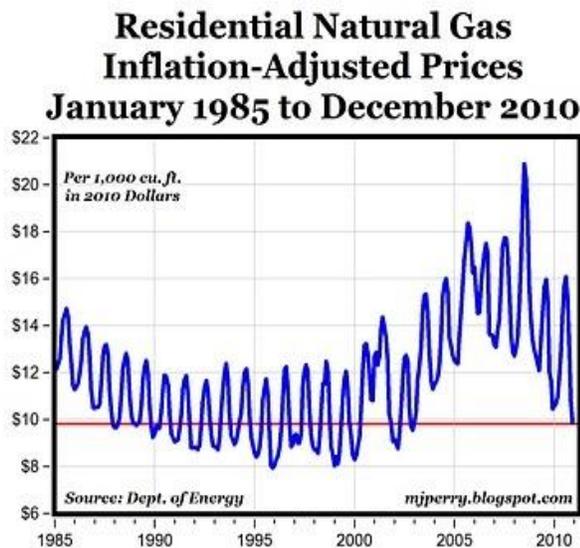
A Future Outside of Black Gold

In the wake of the disaster in Japan and the uprisings in the Arab world a lot of commentary has arisen discussing the prospects for increased demand in natural gas. Technological improvements in gas extraction as well as transporting it in liquid form, have increased appeal for this energy source. It emits half the carbon dioxide of coal, which China is heavily dependent upon for electricity production, while it possesses far fewer safety risks than nuclear power. The scare brought upon various sections of the world with the events in Japan has caused economic giants such as Germany, India, and China to adjust or reevaluate their plans for nuclear energy as a source of diversification and Finland and South Africa announced that they will do so in the future. Energy analysts, including Daniel Yergin, expect natural gas to play a larger role in Europe's energy plans over the short and medium term as it aligns with the continent's climate agenda. Yergin even expects substantial gas discoveries in Europe to be made in the future.

Thus while supplies may be rising, we anticipate that a structural shift may take place where demand factors will outpace supply capabilities, positioning natural gas as a good place to park cash in the minimal strategic energy consideration we are proposing.

Since hitting their peak in 2008, prices for natural gas have fallen considerably around the world. But that hasn't stopped major corporate investments into securing their place in the natural gas market, an indicator of the increasing popularity of natural gas. Royal Dutch Shell actually produced more gas than oil last year. Exxon and Chevron are making large capital investments to streamline supply routes of LNG in Asia and the former has gained extraction rights in the Middle East (Yemen which is in the news these days is an important player via the French company Total S.A.) and as mentioned earlier, the Caspian and the Mediterranean Seas remain an enormous source of future gas supplies. We doubt natural gas prices could fall much further and have a positive outlook as an investment opportunity.

Figure 4: U.S. Natural Gas Prices, Department of Energy



Another source of alternative energy that has seen some growth over the past few years and continues to maintain popularity, at least in political circles, is the use of biofuels.

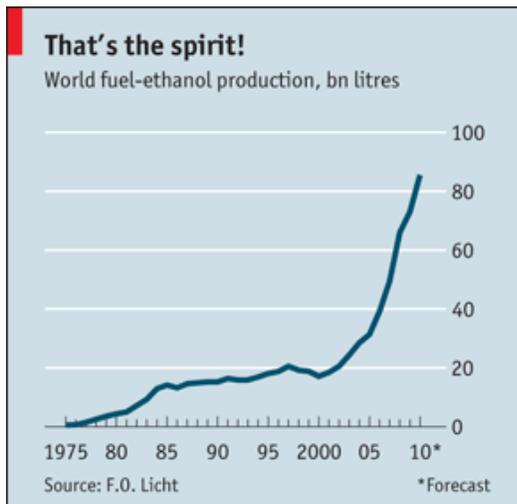
Figure 5: U.S. Energy Consumption by Source, 2004-2008, Department of Energy

Table 1.1 U.S. Energy Consumption by Energy Source, 2004 - 2008 (Quadrillion Btu)

Energy Source	2004	2005	2006	2007	2008
Total	100.334	100.468	99.790	101.502	99.438
Fossil Fuels	85.828	85.815	84.687	86.223	83.532
Coal	22.466	22.797	22.447	22.749	22.398
Coal Coke Net Imports	0.137	0.045	0.061	0.025	0.040
Natural Gas ¹	22.931	22.583	22.224	23.679	23.814
Petroleum ²	40.292	40.391	39.955	39.769	37.279
Electricity Net Imports	0.039	0.084	0.063	0.106	0.113
Nuclear Electric Power	8.222	8.161	8.215	8.455	8.427
Renewable Energy	6.247	6.407	6.825	6.719	7.367
Biomass ³	3.010	3.117	3.277	3.503	3.852
Biofuels	0.500	0.577	0.771	0.991	1.372
Waste	0.389	0.403	0.397	0.413	0.436
Wood and Derived Fuels	2.121	2.136	2.109	2.098	2.044
Geothermal Energy	0.341	0.343	0.343	0.349	0.360
Hydroelectric Conventional	2.690	2.703	2.869	2.446	2.512
Solar Thermal/PV Energy	0.065	0.066	0.072	0.081	0.097
Wind Energy	0.142	0.178	0.264	0.341	0.546

Biofuels have maintained considerable political support due to their ability to serve the farming sector in the U.S. through new market opportunities. As a result, greater subsidies have been granted as well as legislative programs to support demand for ethanol fuel but there are upper bound limits to the potential biofuels, particularly maize-based ethanol, can have in the economy of the United States.

Figure 6: World Ethanol Production, The Economist



Too much ethanol can have corrosive effects on engines. Environmental advocates dislike the additional harm by increased usage of pesticides. Most importantly, maize-based ethanol has substantial scalability issues. New engines for cars and planes need to be constructed in order for someone to take advantage of the alternative fuel, and that is a costly endeavor.

However, last October The Economist profiled the development of a new stage in the biofuels sector: drop-in fuels. The greatest advantage of drop-in fuels is that it avoids a facelift in energy infrastructure. The fuel, once developed, can be “dropped in” and operate within existing designs, including being used as aviation fuel or diesel. Drop-in fuels also less dependent on starch molecules, instead picking up where previous efforts at developing cellulosic biofuels had failed by using genetic engineering.

Drop-in fuels also offer the biofuels industry quite a bit of diversification. Getting off of maize and into sugar (of which Brazil is a prime market to supply) drop-in fuels have

made advances with butanol, an alcohol, and algae. These more recent developments still have quite a way to go to serve the masses but the potential is there, especially on cost, and a number of institutions are realizing it. ExxonMobil, Royal Dutch Shell, and other energy companies are building partnerships with labs to develop the enzymes to carry out engineering of the fuel, while the U.S. Navy has been experiencing trial runs with the algae-based fuel as part of an effort to get half of its energy from renewable sources by 2020.

Correlated Reasons

Last month our newsletter centered on rising food prices and explained that the phenomenon is nothing irrational. The core of global economic growth is being driven by the upper echelon of the developing world: China, India, Brazil, Indonesia, and so forth. While this group is becoming more and more influential of global economic activity, they still only possess pockets of wealth and have considerable work to do to elevate millions out of poverty.

For those clawing their way out of depraved situations they will begin to eat greater quantities, but the real push on global food markets will come when millions of people eat higher quality food, particularly protein. Livestock demand far more grains than people do. So what does this have to do with energy and the rising oil prices as shown below?

Figure 7: Spot Price of Brent and WTI

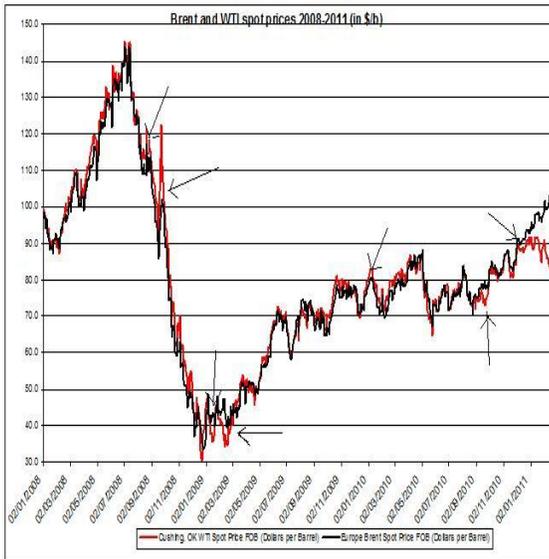
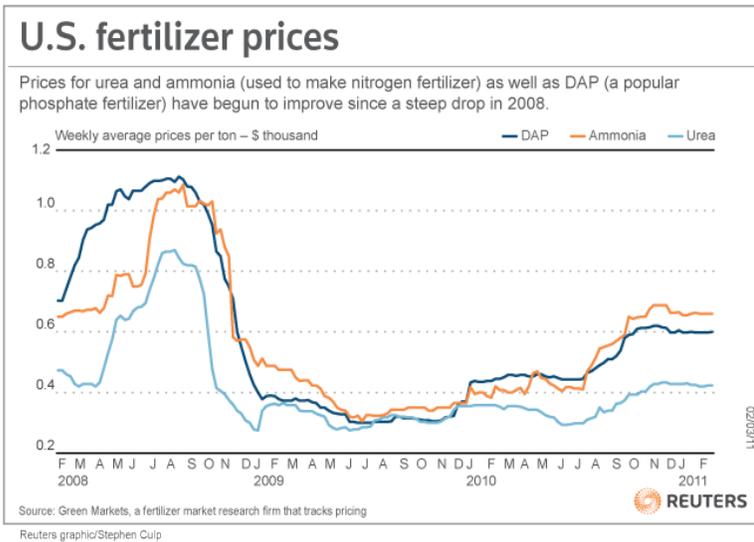


Figure 8: U.S. Fertilizer Prices



Petrochemicals are a critical input into the production of fertilizer and thus are vital to agricultural prospects. Figures 7 and 8 demonstrate that there is something of a general relationship between the price of oil and fertilizer in terms of a broad trend. Both peaked around the same time, due to black gold’s record rise, fell considerably, and now are trending upward due to demand/recovery factors.

As mentioned earlier, biofuels have gathered the greatest momentum as an alternative energy source compared to some of its competitors, despite significant debate and inefficiencies surrounding the material. If corn ethanol continues its popularity rise, either by more people using ethanol systems or higher concentrations of the substance, fertilizer demand will also rise due to the vast higher amount of fertilizer and other chemicals needed for corn compared to other plant life. Even if corn ethanol’s prospects have indeed peaked already, biofuels and biomass may still have a bright future indeed with technological advancements, such as the development of drop-in fuels we profiled earlier.

Regardless of the future of biofuels and biomass as an alternative to more traditional sources of fuel increased demand for petroleum-based products outside of transportation, heating, and cooling needs, is more than likely to rise. The price index produced by the Food and Agricultural Organization of the United Nations has passed its previous high from 2008 but fertilizer prices have lagged behind as Figure 8 shows. Demand for food is bound to rise with the world’s economic growth and there are still vast parts of the world which lack appropriate farming inputs.

Conclusion

There isn't a lot of economic activity around the globe that doesn't involve some form of participation in energy markets. Even basic farming activity is linked with the fluctuations of oil prices. The use of energy from one source or another is always around us, will always be needed, and will be in high demand as the global economy attempts to revitalize and recover from the turmoil brought about by the crisis.

Demand pressures for the coming years should serve investors well if targeting energy assets such as oil, gas, and, if persistence in their development remains, alternative sources could pose some nice returns as well. As we've discussed, demand pressures will also come from sectors outside of fuel purposes, such as fertilizers, and from additional factors as well.

Political stability or lack thereof, has been and always will be a factor that influences oil prices. What will come about from the protest movements and rebellions across the Arab world is unknown but just because there is turmoil currently doesn't mean large investors don't already have their eyes on the region as a possible investment target. Many parts of the region, including countries that have experienced revolutions, score high on social indicators such as health and education. Due to these pillars, along with some corporate potential, energy assets could serve as a bridge to a more robust, diversified, and balanced growth model for producing nations. To those lacking substantial energy deposits, the economic growth potential will certainly demand higher quantities of energy to further develop and raise living standards.

In closing let us reiterate that energy holdings should be viewed with a long-term planning horizon of at least 5-6 years. The global vessel still sails without an anchor, and a major storm (let alone a perfect storm) could ground the vessel for quite some time, hence the need for the long-term view.

Ode, to the day when the fears of the lacking anchor will be behind us!

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