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A Macroeconomic analysis of Oil, Natural Gas and Coal

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I – Oil

Introduction and market considerations

There are many types of oil varying in quality, but there are only two benchmarks for this commodity. They are the Brent oil and the West Texas Intermediate oil. They differ in terms of extraction sites, chemical properties and prices. Together, they represent almost the entire oil market and all the contracts traded in the world are based on these two indices.

The Brent oil is a mix of oils extracted in the North Sea on platforms in many countries. It is considered less valuable than WTI because of its quantity of sulphur and its density. The WTI is the oil produced in USA mainly in Texas, Louisiana and North Dakota. In the past, this type of oil required higher transportation cost to the hub than Brent oil, which is extracted directly from the sea.

Nevertheless, the Brent's crude is the benchmark for more than 60% of oil contracts. It was traded in London but nowadays the main hub for this commodity is the Atlanta's Intercontinental Exchange. The WTI is traded at NYMEX.

A lot of what happens to oil spot prices is influenced by the market sentiment in the futures market. Oil is a highly sensitive commodity with both hedgers (with actual commodity needs) and speculators trying to predict the future price.

In the past there were no significant differences between their prices, but today's spread, is mainly due to two factors. In the recent decades we've been witnessing strong demand from developing nations such as China and India. The Asian demand for Brent has risen since 2010. The other element is the explosion of the USA's production thanks to the fracking technology together with the construction of new oil pipeline expected to increase the capacity and cut the transportation cost. The Secretary of Interior forecasts a daily production of more than 14 million bpd by 2020 with a net export of 3,9 million bpd in the same year. Although production is virtually at an all-time high, refinement does not seem to keep pace. Indeed, the number of active oil refineries has gone down. Many had their capacities expanded and the number of operational refineries in 2018 in US is 135.

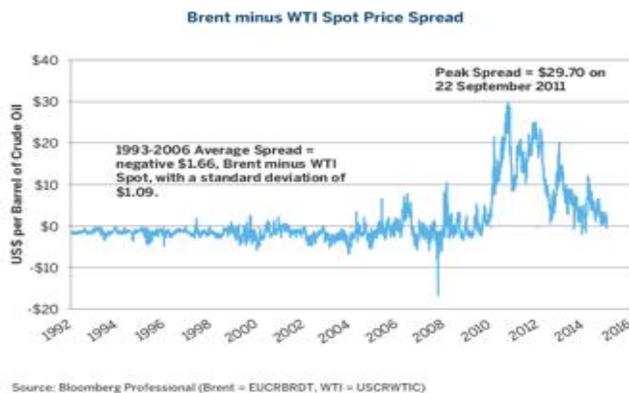


Figure 1, Brent minus WTI Spot Price Spread – Source: Bloomberg

As the cost of crude oil accounts for ~60% of gasoline price, it is easy to see how it affects the economy. More specifically, a one-dollar change in crude oil translates into a 2.4 cent change in gasoline (1 barrel = 42 gallons, 1/42 gallons = 2.4). Moreover, oil is not only used for petrol but also for cooking oils and a variety of industrial processes. It is one of the key observations of inflation. Historically, low oil prices have brought growth and prosperity to countries like the US while some others, like Russia and Saudi Arabia, hope for higher prices to sustain their budgets. Interest rates affect the price of oil through extraction and storage costs, PP&E investment and maintenance, capital structure costs and ultimately borrowing/spending ability at large.

One of the key indicators affecting the oil price and the economy is the weekly oil inventories report. Increase in the oil inventories would indicate a displacement of the offer curve to the right, leading to lower prices, and, eventually, to a sell off by the market participants. When inventories appear lower than expected by the market, the tendency of the price is to make prices higher. In its latest report, US Energy Information Administration stated that refinery inputs averaged 17.6 million barrels daily, up by 698 000 a week earlier, with refineries operating at 95.6% capacity. US commercial crude oil inventories increased by 3.6 million to 450 million barrels. Additionally, the US holds about 660 million barrels of oil in its emergency Strategic Petroleum Reserve.

So far this year, we have had a lot of volatility in the oil market. The impact of US sanctions on Iran and the consequent decline in Iranian crude exports will tighten the market, according to Bloomberg analysts. In May, after the announcement of further US sanctions, the Crude-Oil exports from Iran dropped about 830,000 barrels per day. These new sanctions could force Iran to curtail an additional 500kbpd of oil exports. Further restrictions on 4th November reduced the Iran’s exports about 35% to about 1.57 million barrels a day.

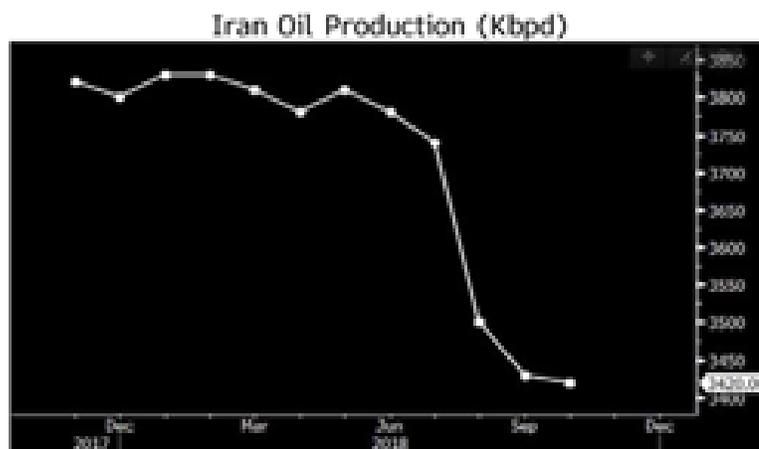


Figure 2, Iran Oil production – Source: Bloomberg

Due to the decrease in the level of output in Venezuela and Angola in the past 12 months, it would be very difficult to balance the global oil market as, also, Iran’s total exports continue to fall significantly. From May to October the oil production dropped about 10%.

The united states has limited higher inventories of oil crude imposing economic sanctions to those buying crude oil from Iran. European refiners want to avoid legal trouble in the US, particularly those with assets with a strong exposure to American market, since companies that still have ties with Iran face the possibility of US sanctions. Some of these European oil companies - Shell, Total and Repsol - will almost certainly comply.

Italy and Greece were granted temporary waivers against US sanctions and, for this reason, they may have limited access to Iranian oil (import limited amounts of oil from Iran). Taking into consideration that Hellenic Petroleum has taken steps to sever ties with Iran, Bloomberg Analysts doubt that the company will reverse course. This compliance with US directives may come at a price since the re-imposition of US sanction on Iran means that refineries need to replace part or all of their Iranian crude input with alternative (i.e. from Saudi Arabia or Iraq). This dynamic could lead to less favorable pricing, higher transportations costs and lower margins for pure-play refiners.

Since October there has been a 30% fall in the prices of Brent and WTI. Lately, there has been rumors of supply cuts in order to stabilize the prices. Mr Putin has implied that Russia is willing, along with other OPEC members, to cut supply in order to stabilize the market. There is still considerable breathing room for Russia as it appears that 40\$ per barrel seems to be their breakeven point. Several energy ministers, including Khalid al-Falih of Saudi Arabia, have called for an internationally coordinated move to reduce production in a similar fashion to Mr Putin. On the other side, it is debatable to which extent Saudi Arabia would be willing to go, and, given the political leverage, US appears to hold in the Khashoggi case. In the unlikely event, we would experience a collapse in prices, like they did in 2016, and some oil dependent currencies could face great pressures. A lot is at stake at the OPEC meeting in Vienna next week.

Appendix

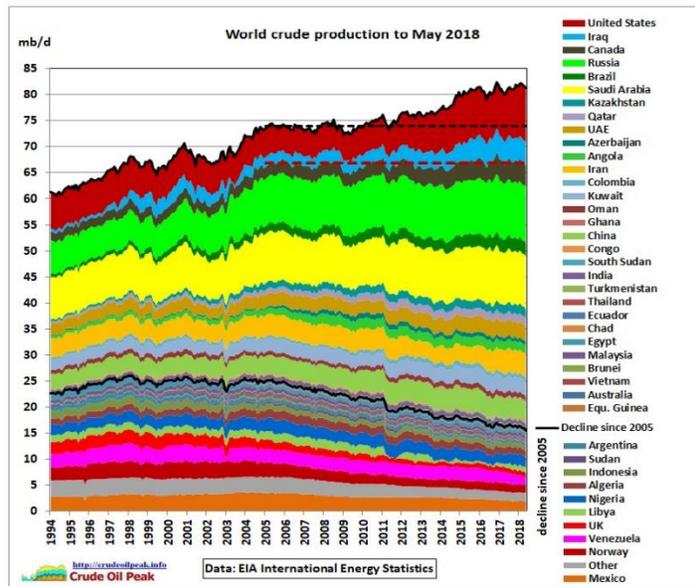


Figure 3, World crude production to May 2018 – Source: Crude Oil Peak

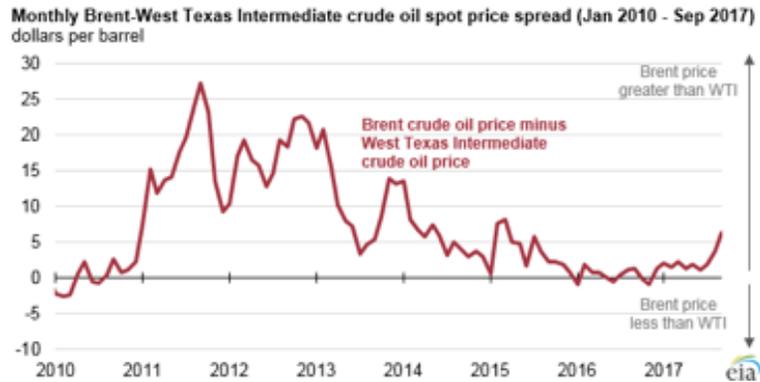


Figure 4, Monthly Brent-West Texas Intermediate crude oil spot price spread – Source: *Crude Oil Peak*

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II – Natural Gas

Introduction and market considerations

Natural gas demand is very sensitive to seasonal factors, experiencing expansions during autumns and winters and retrenchments during summer and spring. Indeed, weather conditions heavily affects its spot price. However, looking beyond these cyclical patterns, financial analysts are noticing a clear positive trend in its spot and future prices over the last two years, so that natural gas is entering the first bull market since 2008. Responsible for this upward trend in the short run are a multitude of factors related to geopolitical tensions, low inventories and weather related demand.

On the one hand, in US the injection season (meaning the period between April and November, in which storages are filled with the overwhelming production) has concluded with the lowest level of stockpiles in 13 years. Similar patterns have shown up in middle east countries. The unseasonably high temperatures of September and October have put a strain on the stocks. This rise concerns about the availability of gas as the withdrawal season kicks into gear. Up until only recently, analysts did not used to worry about gas shortages, given the soaring of natural gas production and the realization of several new pipelines, as those in the Appalachia region in US. But as winter approaches, many had to revise upwards their initial expectations to consider the risk of unavailability. For example, Barclays have risen its 4Q18 and 2019 forecast to \$2.19 and \$2.72, respectively, to reflect lower storage, stating that the market has “very little cushion to withstand weather demand swings”.

On the other hand, some observations related to geopolitical tensions deserve attention.

Today the first political topic that comes to mind concerning the natural-gas-involved countries is the ongoing gulf crisis, mostly affecting Qatar’s economy. Saudi Arabia, Bahrein, UAE and Egypt are continuing their hostility towards Qatar, but this diplomatic situation has not developed neither into the much-feared closure of the strait of Hormuz due to a possible alliance of Oman with the quartet, nor the more unlikely closure of Suez Canal to Qatar ships. Qatar is the biggest exporter of natural gas together with Russia, especially of LNG, and the increase of costs and logistic discomfort given by the quartets’ policy can reflect on higher prices. To tackle this situation, Qatar is improving its relationship with Iran, with the effect of reducing the withdrawal of gas from its gas field that is neighboring with Iranian South Pars to avoid the asymmetric exploitation of the ground, which would be detrimental for its partner.

As for Iran, on November 5th new sanctions were imposed by US and are deemed to be the toughest ever. Additional sanctions are extended to any country, which will trade gas or oil with Iran and this will have consequences on the international market.

A very different situation occurs in Russia, where economic sanctions are not discouraging the energy sector. In fact, exports towards Europe have remarkably increased, also thanks to the depreciation of the ruble. Europe is, indeed, the first importer of national gas in the world and, thus, many countries wish to serve its market. On July 26th, after Junker’s visit to the Whitehouse, Trump stated Europe will buy more American gas. Indeed, Europe has a need for diversifying its import of gas, which is heavily dependent on Russia (40%) to avoid a gas chokehold such as the one it partially experienced in 2009 following the dispute with Ukraine. On its part, US is one of the leading exporters of LNG, due to the great shale drilling activity, and is trying to equilibrate its trade balance: increasing its export of gas could be a good deal to reduce duties on auto imports. Nevertheless, US still have to invest a lot to get the infrastructures needed to increase its LNG exports. Europe for its part has almost saturated other sources of

import, such as North African pipelines (Greenstream, Transmed, Magreb and Medgas), it also has a great number of LNG receiving terminals with unsaturated capacity and, moreover, its gas production is reducing after Nederland chose to shrink the exploitation of Groeningen gas fields (on March 29th the government decided production will be entirely shut down by 2030). Therefore, this trade would be mutually beneficial. The greatest obstacle to this diversification of supply is the low cost of Russian gas. Most of US export is directed to South America and Asia where prices are higher, so in the short run this transition is very unlikely to take place.

Finally, the situation in Libya has been an extraordinarily troubled one over the last four years as the second civil war is raging on. This may add an additional geopolitical risk premium to the price, as a significant furniture for Europe depends on the Greenstream pipeline.

As for the long run, some additional fact must be considered. A key role in global demand is played by Europe, China, India, African countries and, specifically looking at LNG, by Afghanistan.

In general, natural gas holds a paramount strategic importance in the long run. Apart from being the third most consumed energy commodity, it is becoming—especially among developing countries- a popular alternative to coal, which is significantly more polluting. As the US Energy Information Administration suggests in its International Energy Outlook, the share of total world energy consumption hold by natural gas is deemed to increase and surpass coal around 2030 (as shown in Figure 1). Many countries are shifting to lower environmental impact energetic sources.

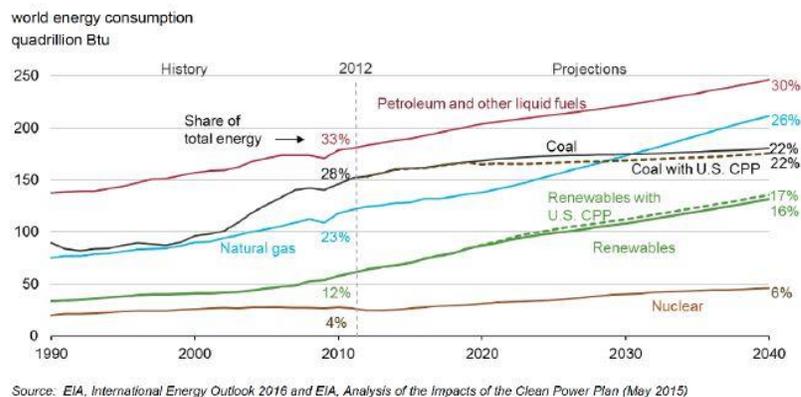


Figure 1, World energy consumption – Source: EIA

In Europe, after a first phase during the 90’s of increasing gas consumption and reducing coal and oil consumption, this structural shift to lower impact sources has developed in favor of alternative renewable sources with a significant turning point after 2008 crisis (as shown in Figure 2). This is also imputable to Europe 2020 strategy (started in 2010), which provides for a reduction in greenhouse gasses emissions, an increase in energy efficiency and an increase in the share of renewable energy in final energy consumption to 20%.

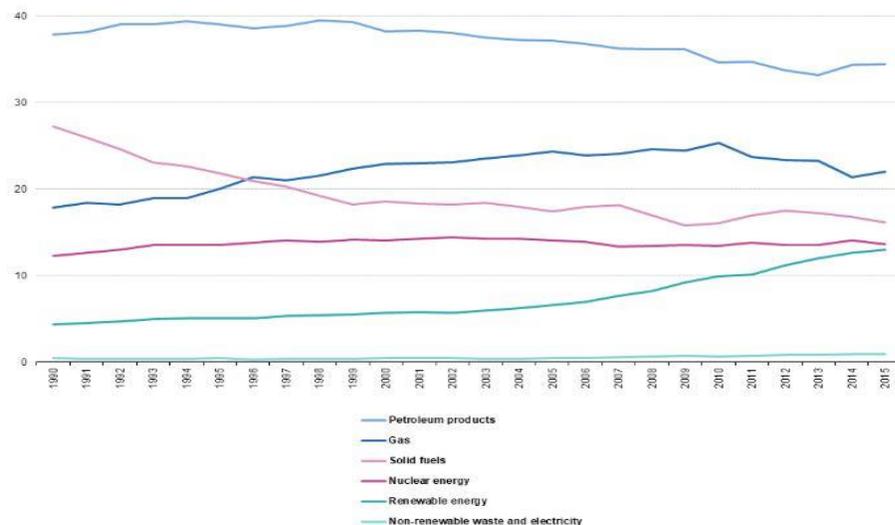


Figure 2, Europe total energy consumption (1990-2015) – Source: *The Outlook for natural gas demand in Europe*. Oxford Institute for Energy Studies

As for China, India and African countries, EIA has conducted a research study (IEO 2018) to capture how these regions develop economically, as it will have important implication for global energy markets because of increased demand from the production and provision of goods and services. “In addition, the way these countries develop economically will affect their industrial mixes, and, as a result, their energy consumption. These factors may also affect the United States as the country plays a larger role as an energy exporter”.

China is a fast-developing manufacturing country (EIA assumes an average rate of 5.7% up to 2040) but, as the report says, its energy consumption may differ depending on whether a transition from investment- and export-led growth to a more consumption-led growth pattern will happen or not. In the first case, growth will be of 25% higher than IEO2018 reference case, in the second it will be 20% higher. What is sure is that China is the economy characterized by the greatest energy consumption in the world (over 130 quadrillion Btu per year) and that, so far, it is relying on coal as principal energy source (according to the national bureau of statistics coal as a percentage of the energy mix of 62% in 2015, after two years of reforms). Moreover, in 2013 it implemented the Clean Air Action, a controversial strategic plan to tackle air pollution setting PM2.5 targets for key regions (e.g. -15% in Pearl River Delta and -33% in Beijing), which was very effective and exceeded the stated targets. For example, in Beijing this was done closing coal-fired power stations and banning people in surrounding areas from burning coal for heat. People in several areas were asked to move to natural gas heating or electric heating and the overwhelming majority opted for gas powered heating. This year, Li Ganjie, the Chinese minister of ecology and environment, launched the new “Action plan for winning blue sky war” for the period 2018-2020 to set tougher goals in a new three-year “green” plan to improve air quality and tighten regulation. In general, China is going to increase its national demand for natural gas and the national supply is not sufficient. Chinese gas fields are more scattered and situated more in depth than in US, making it more costly to withdraw it. Moreover, gas fields abound in arid areas of China so that hydraulic fracturing could worsen water scarcity. Chinese demand is therefore going to affect significantly the global natural gas market.

Also, India and Africa are expected to impact significantly the global market. According to IEO2018, India is going to increase its energy consumption between 26% and 33% relative to IEO2018 reference case by 2040. However,

historical levels of energy use per capita in other large economies are higher than projected for India in the IEO2018 reference case and India still does not reach these levels in the IEO2018 high economic growth cases by 2040. Regarding African scenarios, higher economic growth in Africa will lead to an expansion of the manufacturing sector and an increase in industrial energy use because of possible regional competitive advantages. This will lead to a 33% higher per capita energy consumption relative to IEO2018 reference case, which is remarkable considering the average demographic growth in the continent.

Finally, Pakistan deserves a specific mention as it is one of the biggest importers of LNG. Over the last year several mega LNG-fired power houses have been installed with a view of replacing oil-fired power plants. According to the Pakistan Bureau of Statistics, import of LNG in July grew by 144% to \$332 million, compared to \$136.2 million in July 2017.

To sum up, in the long run, geopolitical tensions together with the growing demand for natural gas may substantially increase the price of this commodity relative to other traditional energy commodities, as oil and coal, and this may have a strong impact on its price.

Main market movements in 2018

2018 has been an interesting year for energy commodity markets. Natural gas, in particular, has had some big movements. The analysis will be focused on the nature of the two periods of high volatility that were observed in January and November 2018 (Figure 3).



Figure 3, Movement in price of Natural Gas over the past year – Source: FT (Henry Hub Natural Gas Front Month Futures)

These fluctuations in price are interesting when compared to the price of oil over the same period (Figure 4). The most interesting observation from this chart is the most recent one: the sharp divergence in prices in November

2018. On the following section, the cause of these movements is going to be explored, starting from the most recent one, while being aware that the situation is still developing.



Figure 3, Comparison of the price movements of Brent Crude Oil (in blue) and Natural Gas (in yellow) in the past year – Source: FT

November Price Volatility

On the 14th of November, US Natural Gas had its biggest one-day price rise in eight years. The rise in price by 18% (Nymex gas) was largely seen as a result of doubts about the ability of producers to meet rising demand.

The coming winter was forecasted as an exceptionally cold one, which leads to the expectation of higher gas demand. This came just after an exceptionally hot summer where consumption of natural gas was already very high (Figure 4). The stock of natural gas in the U.S. for this time of the year was, thus, unusually low. In light of the low temperatures forecasted after a very hot summer, concerns were raised that this year it would be harder to meet the expected demand.



Figure 4, Natural Gas consumption in the U.S. in the past three years. The annual peak summer consumption has been indicated – Source: St. Louis Fed.

Warning



As observed earlier, this rise in price came at about the same time as the fall in oil prices, but it does not appear that natural gas' rise was due to oil's fall. Certainly, lower oil prices will lead to lower investment in U.S. shale, thus reducing the supply of the associated gas produced from oil drilling. However, this will likely squeeze the supply of natural gas in the long-term. The large price gains in natural gas have mostly been seen in its short-term futures.

The story does not end here. On the 30th of November 2018, prices saw a sharp drop. This was mostly due to largely increased U.S. production according to new information released that week. In addition, weather forecasts were revised to show a warmer winter than expected. While the price remains well above the levels in October, this highlights the large volatility of natural gas prices.

January 2018 Price Rise

Natural gas prices sharply rose in January too, albeit not as much as they did in November this year. This was a direct result of extreme cold weather and winter storms across the U.S. last winter. The price rise was partially offset by high reserves of natural gas, which was a product of the booming shale oil industry.

Going forward

These events reaffirm that the biggest driver of natural gas prices is the weather. Cold weather increases the demand for heating and hot weather increases the demand for electricity for air conditioning. For the time being, we can expect this relationship to hold true. This may come as a warning sign as global climate change weighs on people's minds. Extreme weather in future will likely cause greater volatility in prices. Oil prices remaining low will also be a concern in future as lower investment in oil drilling will result in lower natural gas production.

Outlook

Natural gas supplies 22% of the energy used worldwide. Its relevance and growth can be explained by the advantages that it has compared to fossil fuels when pollution and air quality are taken into consideration.¹

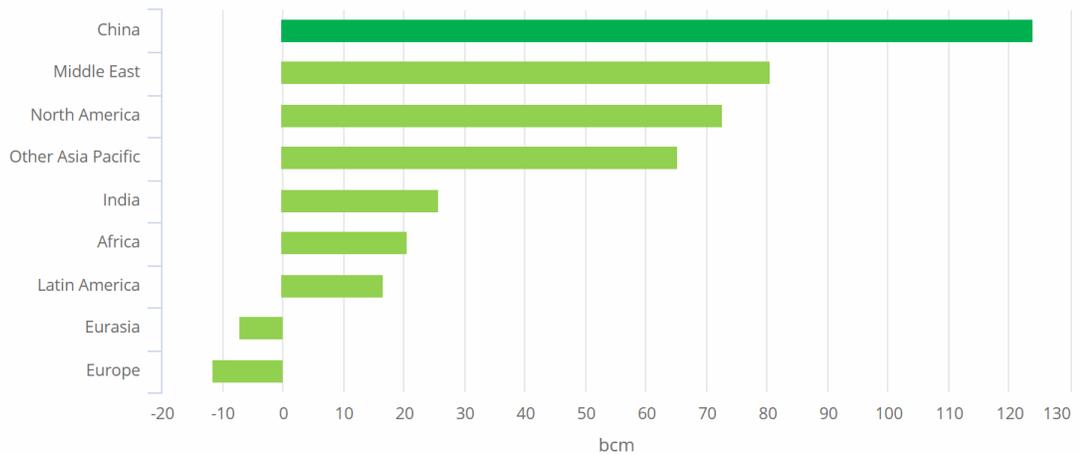
According to the International Energy Agency, there are plenty of reasons to support the idea that natural gas prices are going to increase in the next 5 years.

The IEA forecasts demand to increase by an average 1.6% every year between 2018 and 2033, thanks to, in particular, an increase in imports from China (Figure 5). The country, in fact, plans to reduce pollution by replacing coal with gas, and is expected to become the largest importer of natural gas by 2019. The increase in demand led by this kind of policies, combined by growing industrial demand, should lead to a surge in prices. Demand is also expected to increase in the Middle East and North America, due to the availability of local supply and an increase in use in power generation and industry production.²

¹ <https://www.iea.org/topics/naturalgas/>

² <https://webstore.iea.org/download/summary/1235?fileName=English-Gas-2018-ES.pdf>

Natural gas consumption growth, 2017-2023



© OECD/IEA

Figure 5, Natural gas consumption growth between 2017 and 2023– Source: <https://www.iea.org/topics/naturalgas/>

The increase in industrial production, again mostly driven by Asia, is expected to be one of the main drivers of growth in natural gas demand. While in the past power generation has been the main contributor to demand growth, the use in the petrochemical sector, industrial processes and chemicals/fertilizers will bring a major contribution in the next 5 years. Power generation will not expand as fast as it used to mostly because of a slower growth in global electricity demand and competition from renewable electricity sources, whose prices are getting lower and lower.³

Production in the United States, already the largest producer of natural gas in the world, is forecasted to keep increasing, with a very important contribution from liquid natural gas (LNG). LNG, in particular, has been and is expected to be the main contributor for the growth of inter-regional natural gas trade. US’ LNG is characterized by flexible destination and gas-indexed pricing, which are completely different from the traditional fixed delivery and oil-indexed pricing contracts. Since the majority of the new liquefaction capacity will be operational by 2020, there is likely to be a surplus in supply: customers will likely not have in place the required infrastructure to receive the increased production. However, the increasing demand in Asia is forecasted to absorb the excess production and bring the average utilization rate back at the current levels by 2023 (Figure 6). It will then be important to look at LNG producers’ investment plans over the long-term.⁴

³ See 2.

⁴ See 2.

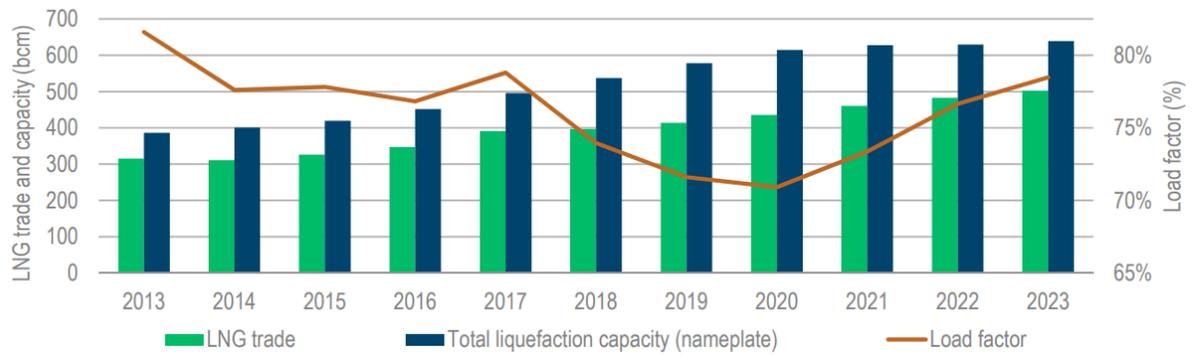


Figure 6, LNG liquefaction capacity and utilisation, 2003-2023– Source: <https://webstore.iea.org/download/summary/1235?fileName=English-Gas-2018-ES.pdf>

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III – Coal

Introduction and market considerations

Nowadays coal remains an important source of energy production, mainly used in electricity generation and in the manufacture of iron and steel. There exist various types of coal, among which the largest chunk consists of so-called Bituminous Coal, which, according to data from the World Coal Association, accounts for 52% of the total world reserves. This comprises the most widely spread coal sub-species, namely Thermal Coal (also known as Steam Coal) and Metallurgical Coal (or Coke Coal). To have a clearer idea of how important coal is in our societies and how many key economic sectors still rely on coal-based products, it is useful to point out that, according to recent data, 37% of the world’s electricity production is generated by coal-fired plants (as can be seen from Figure 1, coal is the main source of electricity worldwide, in large advantage of renewables and natural gas). Furthermore, 70% of the world’s steel production and 50% of aluminum’s is dependent on the use of coal. In addition, a large part of the energy required in the production of cements and related products is connected to coal and this is also used to produce fuels, providing an important source of needed power for the growing transport sector. However, coal is the commodity that is most affected by the debate on climate change, the Paris agreement has in fact targeted the reduction of 50 percent of the production of this commodity in the next decade. Furthermore, the competition with natural gas, considered a less polluting commodity, is starting to have consequences on coal consumption (especially in Europe).

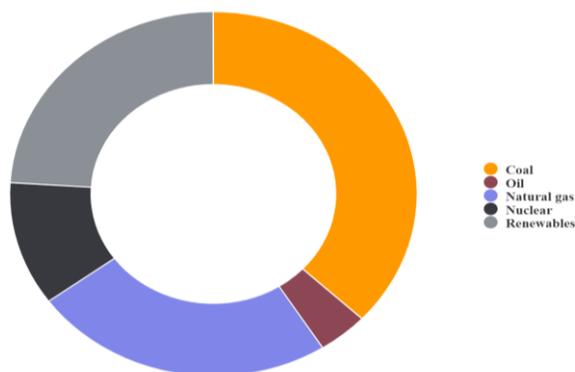


Figure 1, Breakdown of electricity production by source – Source: World Coal Association, available at: <https://www.worldcoal.org/coal/uses-coal/coal-electricity>

From the supply side perspective, the world’s largest coal producer is China, which increased its global share of coal production from 13.6% in 1973 to nearly 50% at the end of 2017. The second largest producer is India, accounting just for slightly more than 9% of total coal mining, while the second largest coal producing region comprises the OECD countries, which generate nearly a quarter of total supply. Looking at demand, through 2017 the greatest net importers of coal were Australia and Indonesia, confirming a well-established historical position.

Considering the fundamentals of the coal market in the recent past, we can see a pick-up in coal production as of the end of 2017, which increased by 3.1% year-on-year, after a 3-year decline started in 2014, that saw the first decrease in global coal production over a century (see Figure 2).

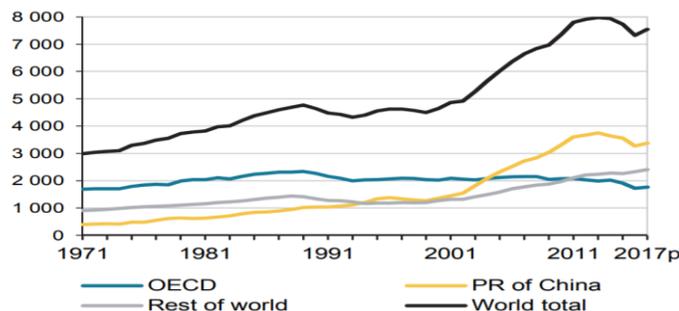


Figure 2 , World Total Coal Production (Mt) – Source: International Energy Agency, available at: https://webstore.iea.org/download/direct/1136?fileName=Coal_Information_2018_Overview.pdf

This may show a renewed supply side confidence in the future market outlook for coal and it is also driven by an increase in demand. Indeed, coal demand for energy-based purposes rose by 1% worldwide in 2017. It is important to notice how these signs may be interpreted as a renewed strength for the coal market after the slump. Nevertheless, supply outpacing demand is set to provide downside risk for coal prices in the near future. Moreover, it is also interesting to consider that coal demand and supply are increasingly less driven by European economies, with OECD countries steadily declining their role in coal production and consumption (Figures 3 and 4). As mentioned above, it is important to say that only the Asia-Pacific area (mainly China and India) has seen an increase in coal consumption in the last year.

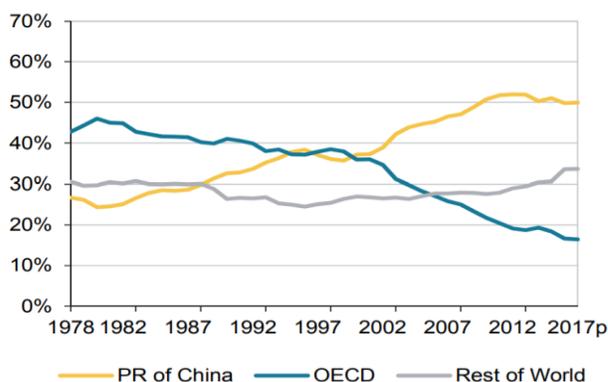


Figure 3, Shares in world coal production, Source: International Energy Agency, available at: https://webstore.iea.org/download/direct/1136?fileName=Coal_Information_2018_Overview.pdf

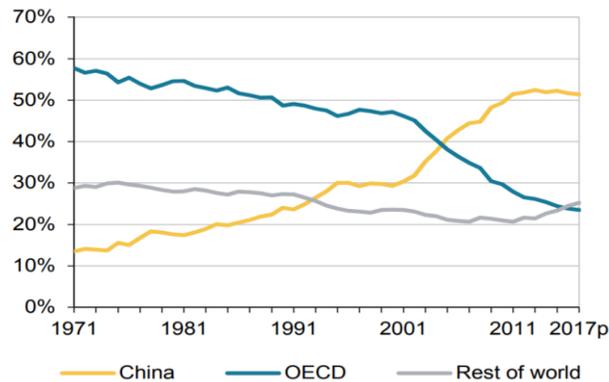


Figure 4, Shares in world coal consumption, Source: International Energy Agency, available at: https://webstore.iea.org/download/direct/1136?fileName=Coal_Information_2018_Overview.pdf

As for what concerns the broad coal market outlook, according to 2018 projection by the International Energy Agency, the share of coal in global primary energy supply is set to remain constant over the next decade, based on the agency's assessment of current policies. In general, it can be argued that the fundamentals of demand and supply in the coal market are not bad, but worries about the possibility that demand may have peaked in 2013 and that the recent revival may be short-lived, coupled with projections pointing to oversupply in the Chinese market suggest a

grim short-to-medium term perspective for the performance of the sector. There also other signs that may lead to consider the recent rebound of the coal market during 2017 as being just a correction and not a broader trend reversal. According to Bloomberg Intelligence analysts, coal demand is set to decline further in Europe and other major developed countries where a rotation from coal to gas is increasingly gathering pace. Furthermore, the analysts expect this trend to be followed in the medium term by China, India and the other major EM economies that have been driving strongly coal demand in the recent past. Despite a pick-up in Q3 and Q4 2017, CAPEX for major coal producing companies decreased in the first two quarters of 2018 and seems to confirm a longer-term trend that has seen investments in coal steadily decline from 2012. This is mainly driven by energy companies repositioning to compete in the growing natural gas market, switching away from coal amid increasingly widespread government environmental policies (Figure 5).

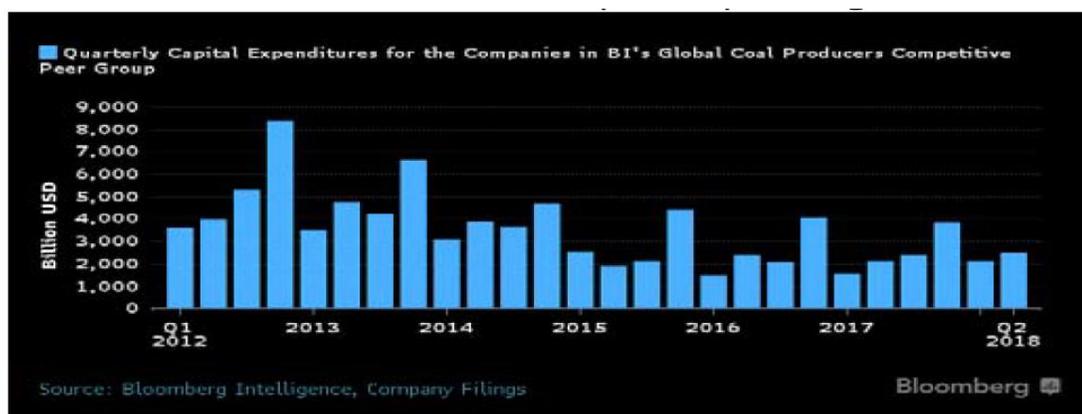


Figure 5, Coal Producers' Capital Spending – Source: Bloomberg Intelligence, Company Filings

Finally, new policies adopted by EU lawmakers at the start of the year aiming to curb the supply of carbon emissions permits will probably further increase the costs of coal producing companies, thereby hurting their performance. Focusing on EU, it is important to pay attention on the market of carbon permits. The writer's opinion is that making the carbon allowance much more expensive, thanks to a combined strategy of permits restriction and market dynamics, could quicken the transition from coal to natural gas and renewables.

The carbon permits market (EU ETS) was created in order to exchange allowances to emit Co2 in Europe. After the boom before the 2008-2009 crisis, the market of those allowances was depressed for almost six years. The surge during last year can be addressed to the restrictions on carbon permits that the European Commission has imposed to all member-states (see Figure 6).



Figure 6, Co2 European Emissions Allowance Price – Source: Business Insider, available at: <https://markets.businessinsider.com/commodities/co2-emissionsrechte>

This means that in order to emit in EU, which is fundamental for companies with coal factories, corporations must pay an allowance three times greater than one year ago.

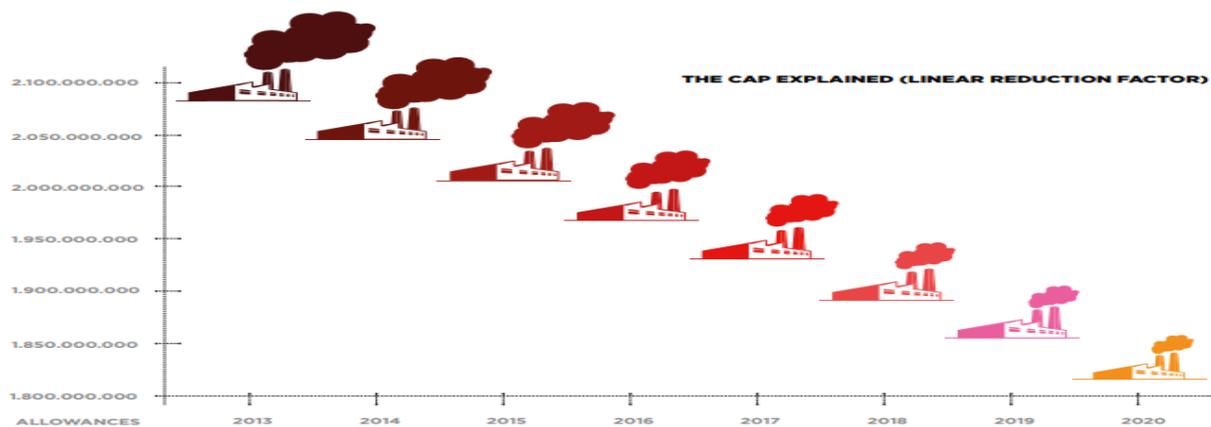


Figure 7, Carbon market watch, a guide to European Climate Policy – Source: Carbon Market Watch, available at: <https://carbonmarketwatch.org/our-work/carbon-pricing/eu-carbon-market/>

According to Bloomberg, European companies that are considered as “big polluters”, such as Volkswagen and RWE, are adapting to the new policies by phasing-out to coal. This increase in the price of allowances has weakened the position of steel companies that hold their factories in Europe, marking a disadvantage compared to their competitors in US and Asia. Hence, it is plausible that the EU will abandon coal much before the other continents, fulfilling completely the Paris agreement on Climate Change.

Investment considerations

Coming to investment considerations, from a portfolio management perspective, when it comes to investing in coal, as with all major commodities, the exposure must be carefully weighted and shall, in the opinion of the writer, be considered only as a tactical short-term tilt. An allocation into coal, in addition, is particularly difficult, given that coal is mainly traded OTC. For what concerns listed instruments, the main available products are options and futures, with maturities no longer than 2022. Additionally, the only significant coal-focused ETF is the US NYSE listed VanEck Coal ETF, which tracks the Stowe Coal Index, providing exposure to companies that earn at least 50% of their revenues from coal-related activities. The fund, however, is a relatively expensive ETF (60% of expense ratio) and has had a dismal performance (down 11.8% YoY). As can be seen from Figure 8, no technical sign indicates a rebound for the price of the fund, which, instead, appears to continue in its downward move. Another note of caution for this investment is provided by the low volumes, which were a constant over the whole year to November 2018.



Figure 8, price performance of VanEck Coal ETF over the last year – Source: Stockcharts.com, available at: <https://stockcharts.com/h-sc/ui>

For what concerns futures and options, the main exchange venues are the Nymex, the ICE and Global Coal. On the Nymex, there are mainly 6 types of futures contracts and 4 options listed. For the sake of this analysis we have considered only one of such options and 2 of the future contracts, being the only ones showing an acceptable degree of liquidity (measured through the open interest). The volume is still considerably low, though, except for one of the futures. These contracts are the following:

Coal (API2) CIF ARA (ARGUS-McCloskey) Futures

Coal (API4) FOB Richard's Bay (ARGUS-McCloskey) Futures

Coal (API2) CIF ARA (ARGUS-McCloskey) Calendar Option

For the first futures, it can be seen from the exchange data that all prices are currently decreasing from a peak earlier this year that concluded a rally started in 2017. This is consistent with the rebound of the coal market during the year, but with a market expectation of decreasing coal prices over the short and medium term (maturities for this

instrument range from the last Friday of November 2018, to the third week of December 2022). Figure 9 exemplifies this trend, by showing the chart for the monthly prices of the December 2018 contract.



Figure 9, Coal (API2) CIF ARA (ARGUS-McCloskey) Futures Price – Source: CME Group, available at: <https://www.cmegroup.com/trading/energy/coal/coal-api-2-cif-ara-argus-mccloskey.html>

The situation is practically equivalent for the Coal (API4) FOB Richard’s Bay (ARGUS-McCloskey) Futures, currently trading at a price of 90.85\$ (for delivery at December 2018) down from the August 1st peak of 102.80\$. This amounts to a 13,5% slump, meeting the usual definition for a correction, and according to the above motivations, seems set to continue sliding into a bear market. Nevertheless, the year-to-date return is of 6,68%. The situation is similar for longer maturities.

Lastly, the Coal (API2) CIF ARA (ARGUS-McCloskey) Calendar Option trades with extremely low volumes and is written on a future on the API2 index. Hence, we do not consider this investment worth of consideration. Besides, the price performance of the underlying futures is dismal, with a steep dive from the peak reached on September 28th, 2018 supported by high volume suggesting a move into a markedly lower trading range.

The range of coal futures and options (on futures) offered by the ICE is vaster. Indeed, there are contracts based on the world’s most important international coal hubs, namely:

- Rotterdam
- Newcastle (AUS)
- Richard’s Bay (South Africa)
- South China
- Indonesia
- CSX, Illinois Basin and Powder River Basin (US)

However, this market is mainly populated by companies for hedging purposes, hence we have a low volume across almost all contracts and maturities. We focus, for this reason, only on the Rotterdam API2 Coal Futures. Considering as a reference maturity January 2019, we see from Figure 10 that the price of the contract has fallen by 21.80% from the October 6th peak, entering in a bear market.

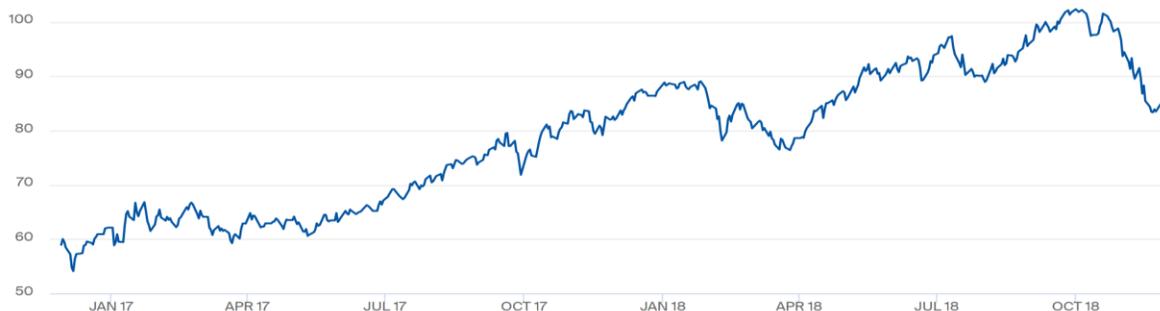


Figure 10, Rotterdam API2 Coal Futures Jan 2019 on the ICE – Source: The Intercontinental Exchange, available at:

<https://www.theice.com/products/243/API2-Rotterdam-Coal-Futures/data?marketId=661438&span=3>

All this confirms that companies and traders are judging the 2017 revival of the coal market as just a short-term bounce and the expectation is of a renewed and sustained fall of coal prices over the next year.

In conclusion, we may expect a reinvigorated pressure on coal over the coming period and, aside from liquidity consideration, a tactical short exposure to the sector may provide additional fuel to boost portfolio performance. This bearish stance on coal could perhaps be coupled with a long positioning on natural gas, in order to exploit the rotation between the two fuels and the resulting price movements. The final suggestion could therefore be the coupling of the core portfolio exposure with a long-short portfolio comprising a broader energy tilt on natural gas (long) and coal (short).

Sources

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