



FACTS FROM THE CONTANGO SITUATION OF GAS AND OIL MARKETS

Sonia Benghida

Woosong University, South Korea

Djamil Benghida

Gregotti Associati International, Italy

ABSTRACT

The year 2017 has been dominated by a series of events and challenges, which among them the oil market is still challenged by high stocks and slow prices development. The overall events can be resumed to: a) OPEC and allied nations are trying to make gains in curbing oil output, not only they extend their cuts, but they also adhere to them, b) US oil production will keep growing and keep costs down, and c) oil demand growth is recently strengthening.

This paper intends to answer the question: what is the current state of the oil and gas industry and where is it heading? Since July 2014, the oil market is in a contango situation, i.e., a situation where the future price is above the expected future spot price. The market structure has been benefiting American manufacturers for almost 3 years, and this is the order that OPEC is currently trying to subvert. Much of the oil and gas industry has survived tough years with weak demand and low prices. This article describes first the evolution of the price of gas and oil in the main oil markets and second the rebalancing of the market that can push the price level upwards affecting positively the future equilibrium of many countries.

Key words: Oil market, Gas market, Contango market, Shale gas, Strategic plan.

Cite this Article: Sonia Benghida and Djamil Benghida, Facts from the Contango Situation of Gas and Oil Markets. *International Journal of Civil Engineering and Technology*, 9(1), 2018, pp. 72-78.

<http://www.iaeme.com/IJCIET/issues.asp?JType=IJCIET&VType=9&IType=1>

1. INTRODUCTION

There are a number of drivers that influence the price of gas: the weather (the demand for heating increases in cold weathers, and the demand for cooling increases during summer), the electricity consumption, the price of oil, the quantity or level of gas available in storage, the exchange rate and the global macro-economic situation, i.e., the level of economic growth, and the dynamics of shale gas imports and exports. Therefore, an isolated driver may lead to higher prices, while the influence of all drivers will lead to lower prices. We cannot consider a single driver to interpret variations in the price of gas. The price of gas results from the aggregation of all the drivers.

There are many implications that are likely to accompany the dynamic effects that can be greatly induced by the development of shale gas. Some of the probable consequences are a downward pressure on gas prices in regional markets outside North America and on price of oil around the world. According to the International Energy Agency (IEA), the oil demand grew by 2.4 percent in the second quarter of 2017 (IEA, 2017). For 2018, the IEA is predicting this growth to be at 1.4 percent. Many producing countries will face a reduction in their export revenues, as is the case at the moment.

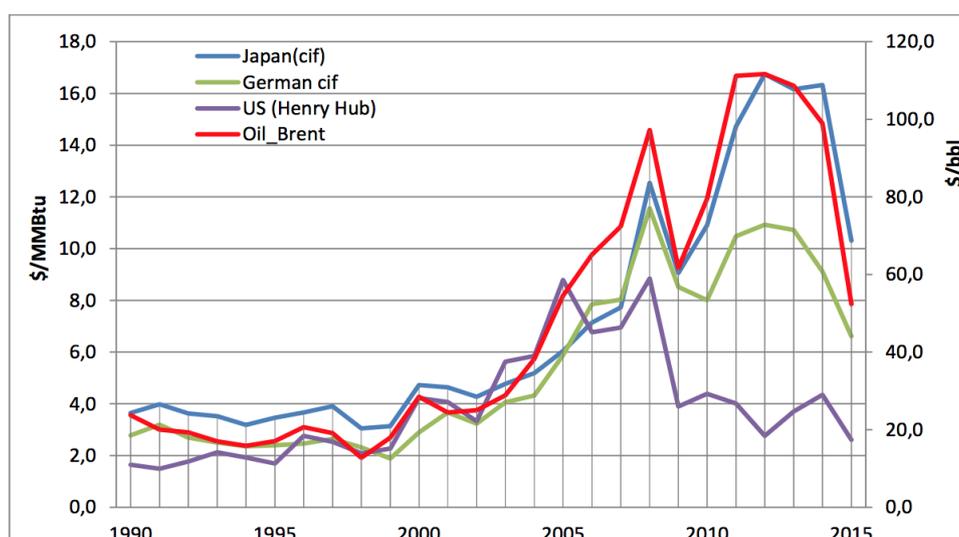
2. THE EVOLUTION OF THE PRICE OF GAS IN THE MAIN MARKETS

There are three major regional natural gas markets (North America, West Europe, East Asia) characterized by differentiated pricing mechanisms:

- The North American market is a free market; a free market is a system where the economic development is encouraged via the removal of controls or monopolies and the exchange of private entities. However, the US government has a role to play in economic affairs with some government planned economic control but more and more services come under the direct control of the public sector. So the mechanism in the US is more based on a mixed economy.
- The EU market is a hybrid market engaged in a process of liberalization and creation of a single market without borders, barriers or regulatory obstacles to allow a free movement of goods and services.
- The Asian market is a market still largely organized around monopolies and vertical integration of the gas industries.

The international gas and oil market is unstable in the world (Benghida, 2017) and the three regional markets have different ways of managing sudden price fluctuations. The price in the North American market depends on supply and demand on spot markets, the price in the EU follows a hybrid trading logic, spot price and indexed prices in long-term contracts. In Asia, the main logic is that of indexation on petroleum products.

The figure below shows the evolution of the price of natural gas in the three major markets in the world in the period 1990 - 2015.



Source : BP, 2017

Figure 1.10 The price of natural gas in the three natural gas markets and the price of oil

Prior to 2008, there is a correlation between the price of oil and gas prices in the three regional markets (Erdős and Ormos, 2012). From 2008 and at least until 2014, a certain disconnection occurs between the price on Henry Hub[Note] and prices on the other two regional markets. The price in the United States is dropping due to the shale gas revolution (Benghida, 2017), while the price in Asia is rising sharply because of the strong Asian demand following the Fukushima disaster and rising oil prices. From the drop in the price of oil at the end of 2014, the price gap between the three markets tends to decrease.

In the United States, the explosion in shale gas production has led to a sharp increase in supply leading to a fall in the price of natural gas. As a result, there has been renewed gas competitiveness for US consumers and a disconnect from oil prices. Since 2012, the price of gas in the United States is at a very low level. In February 2017 it was 2,85 USD / MMBtu.

On the European market, the price of natural gas is very different. Traditionally, prices have been linked to oil prices, by means of indexation formulas for the price of gas on the price of oil and petroleum products in long-term contracts. Due to the liberalization processes implemented in the EU, prices stemming from a confrontation of supply and demand is gradually emerging in different spot markets. They coexist with those from long-term contracts. Some major gas exporters to Europe want to maintain the link with the price of oil. But in 2012, faced with rising oil prices, this indexation led to high natural gas prices of about 12 USD / MMBtu. These penalize natural gas in its competition with coal, in particular, its main competitor in the European electricity market. However, faced with the threat of massive liquified natural gas (LNG) exports and disconnection between spot prices and long-term contracts, exporters were forced to gradually change their indexing formula to include a proportion indexed to spot prices. Until 2016, prices in Asia were higher than in the other two major markets.

In particular, after the Fukushima disaster, the price of gas in Asia has risen sharply. In 2012, the price of LNG imported into Japan was approximately 17-18 USD / MMBtu, and this price reflects the rise in oil prices at which these prices are linked in long-term import contracts. The high price of LNG in the Asian market has made the Asian market more attractive. But in 2016 a sharp drop in prices in the Asian markets was noted due to the drop in oil prices, weak demand and a large supply surplus. Asian importers have been able to renegotiate contracts with exporters to change price terms in contracts.

The IMF commodity price index fell by 5% between February and August 2017. Among the products whose prices have fallen the most are fuels:

- First, Oil prices fell 8.1% between February and August, as the Organization of Petroleum Exporting Countries (OPEC) and some non-OPEC oil exporters announced in May that they would extend production declines to the first. The fall in prices is mainly due to higher-than-expected production of shale gas in the United States and stronger than expected production increases in Libya and Nigeria. In addition, exports from OPEC member countries have remained at relatively high levels, even with lower production. The price of oil was around 50 USD a barrel end of August 2017, always less than in spring. In June 2014, it had been at 100 USD a barrel. A year later in June 2015, it was at 60 USD a barrel, and it fell to 26 USD in January 2016. In November, oil prices rose to 63 USD a barrel from 51 USD a barrel in October, the same year. Oil prices keep changing every month.
- Second, the natural price indicator, an average for Europe, Japan and the United States decreased by 9.6% between February and August 2017. This decline is mainly related to seasonal factors and robust supply from the United States and Russia as well as the decline in the price of oil, to which some natural gas prices are linked. The diplomatic dispute between

Qatar, the world's largest exporter of liquefied natural gas, and several countries in the region, including Saudi Arabia, did not affect the liquefied natural gas markets.

3. OIL PRODUCTION CUTS: THE ACTUAL SITUATION

Over the first half of 2017, the effectiveness of oil production cuts by exporting countries seems ruthless. The overwhelming goal of this six-month agreement was to rebalance the global market, which was oppressed by a condition of over-supply that has lasted for two years. By decreasing production, and consequently exports, Saudi Arabia and Russia were hoping to reduce the level of stocks stored in OECD countries, smoothing the five-year average to an acceptable level. However, by the same admission of the OPEC, the inventories have dropped only slightly, remaining largely above the 2012-2016 average. As a result, the price of crude has never given real signs of recovery, stabilizing at 50-55 USD per barrel.

Indeed, in March 2017, just during CERAWEEK, the world was shaken by a revival of the American shale, which extraction activity has increased for 18 weeks, opening again a new way to the non-traditional crude oil. Due to these geopolitical intensities, Saudi Arabia Energy Minister Mr. Khalid Al-Falih was forced to respond in real time to the failure of the OPEC-non-OPEC agreement.

Libya, Nigeria and Iraq have exploited this opportunity to raise their exports and the benefit of the “Hedge funds” (mainly Americans) The following months have been equally tense, with countries exempt from cuts such as Libya, Nigeria and Iraq that have exploited the opportunity to raise their exports and managers of hedge funds (mainly American managers) who have registered a record number of future contracts of crude oil, never sold at this level since November 30, 2016 (which is a date in which the production cuts were unveiled).

At the end of May 2017, at the OPEC headquarter in Vienna, an agreement was reached to extend the cuts for another 9 months. After months of rhetoric, it is not surprising if the market did not react immediately with a rise in prices (in fact, they fell 5 points just after signing). The operators had already anticipated the news, waiting for it for some time. Indeed, in recent months the OPEC countries have not fully understood the financial markets which, more than all the other economic-technical factors, relies on prices.

In this regard, many think that it is the lack of an exit strategy from these potential 15 months of productive tightness that does not convince the operators. The lack of cohesion between the exporting countries and the second shale boom, which sees American producers still drilling at full power, seem to condemn the OPEC strategy. Moreover, the stability brought about by the extension of the agreement could allow American producers to settle down and continue to plan investments.

Others, like the market analyst John Kemp, have realized that they are purely financial logic to motivate the trend in oil prices. In an analytical article on Reuters, he explains that the oil market is characterized by two different structures:

- Contango
- Backwardation

The first one is a typical of situations of over-supply or of an expected increase in stocks, in which spot prices are lower than their corresponding futures. Contango implies that futures prices are falling over time. The second one which is the contrary, is found when the demand is more intense than supply or when inventory is expected to decrease; this causes an

inversion of the relationship between spot and futures with the former becoming larger than the latter (Kemp, 2017). So, backwardation implies the futures prices are increasing.

In fact, since July 2014, the oil market is in a contango situation, i.e., a situation where the future price is above the expected future spot price. This situation has benefited the hedgers, who have managed to achieve higher prices than non-hedgers. In other words, the market structure has been benefiting American manufacturers for almost 3 years, and this is the order that OPEC is trying to subvert. While its economic objective is to reduce inventories in OECD countries, the financial goal is to send a signal to the market, trying to move from contango to backwardation. So the contango and normal backwardation refer to the specific pattern of prices rising or falling over time.

4. GOLDMAN SACHS SOLUTION PLAN

According to report released by Goldman Sachs in May 2017, there are only 3 point-level strategies which the OPEC could use to find a solution:

- a. The cartel must be able to smooth the stocks at the average five-year level. And that's what they're trying to do since November 2016.
- b. Once the first step is completed, the investment bank's advice is to gradually return to pre-cut production levels, placing the “futures prices” under bearish pressure. This would serve to consolidate the transition to backwardation.
- c. Finally, in order to stabilize the new structure, the OPEC should start keeping pace with global demand, increasing production if necessary.

An optimistic plan but difficult to apply. Financial strategies do not always take economic fundamentals into account. The decrease in OECD stocks would not only have a financial consequence (the downward revision of futures prices and the return to backwardation) but would also have an economic, and possibly more direct, one. In fact, the rebalancing of the market would push the price level upwards (not spot prices and futures prices, which are expectations), benefiting both Saudi and American producers.

However, fracking survives fees are expected to increase (IHS Markit, 2017), beside the instable political situation of the area : Saudi Arabia, Egypt, Bahrain, E.A.U, Yemen and the Maldives decided to cut any institutional relationship with Qatar, which has spurred contract prices on the crude. And this has a direct impact on oil exportations.

5. CONCLUSIONS

- OPEC countries are attempting to reverse the decline in reserves and production in order to make gains.
- It is inconceivable to predict a price of 100 USD a barrel of oil for the coming years to come.
- Oil-producing countries, especially OPEC members, can not expect a barrel of around 80 USD if they do not keep pace with the global demand, because the market needs to be in balance.
- A great deal of the activity in the oil and gas sector is focused on both the OPEC countries and the U.S.
- Oil and gas countries will need to ensure that their strategies are able to cope with the oil and gas price volatility.
- High oil prices slow economic growth and lower demand for oil. In order to increase the demand, the oil prices must be reduced.

- Growth and diversification of supply will promote stiff competition among suppliers and make market manipulation more difficult for large producers and for their governments the use of energy sales for political purposes.

NOTE

The Henry Hub is a natural gas distribution center located in Louisiana. It was first owned by Chevron, then was bought by Enlink in 2014. Physically, it is a set of compressors distributing gas between several gas pipelines.

It is of particular importance because it serves as a point of reference for calculating the price of natural gas futures contracts for the entire national market.

REFERENCES

- [1] International Energy Agency (2017). Oil 2017. Analysis and forecasts to 2022. [online] Available at: <https://www.iea.org/Textbase/npsum/oil2017MRSsum.pdf> [Accessed 10 Nov. 2017].
- [2] BP (2017) Statistical Review of World Energy 2017. [online] Available at: <https://www.bp.com/content/dam/bp/en/corporate/pdf/energy-economics/statistical-review-2017/bp-statistical-review-of-world-energy-2017-full-report.pdf> [Accessed 15 Sept. 2017]. The Balance (2017). Oil Price Forecast 2018 - 2050. How High Oil Prices Will Rise in 2018. [online] Available at: <https://www.thebalance.com/oil-price-forecast-3306219> [Accessed 10 Nov. 2017].
- [3] Benghida, S. (2017). Factors and Challenges in Developing Countries Under the Resource Curse. *International Journal of Civil Engineering and Technology*, 8(11), pp. 901–910
- [4] Crawford, J., N. and Malik, N. S. (2017). America's shale gas selling at record prices to overseas buyers. *World Oil*. [online] Available at: <http://www.worldoil.com/news/2017/3/20/americas-shale-gas-selling-at-record-prices-to-overseas-buyers> [Accessed 17 Dec. 2017].
- [5] Blewitt, L. (2017). U.S. fuels the world as shale boom powers record oil exports. *World Oil*. [online] Available at: <http://www.worldoil.com/news/2017/12/13/us-fuels-the-world-as-shale-boom-powers-record-oil-exports> [Accessed 17 Dec. 2017].
- [6] Kemp, J., (2017). Mission accomplished? OPEC banishes contango: John Kemp. [online] Available at: <https://www.reuters.com/article/us-oil-opek-kemp/mission-accomplished-opek-banishes-contango-john-kemp-idUSKCN1BW1RY> [Accessed 17 Dec. 2017].
- [7] Benghida, D., L'Excellence dans la Revitalisation Urbaine. Une Mise en Valeur Architectonique des Marchés de plein air à Busan, *International Journal of Innovation and Applied Studies*, ISSR Journals, vol. 07, no. 01, 2014a, pp. 239-250.
- [8] Grinets, I., Kaznacheev, P. (2014). "The Role of Innovative Development in Unconventional Hydrocarbon Exploitation in the Context of the Shale Gas Revolution in the USA", *The Journal for Social, Political, and Economic Studies*, 39(4), pp. 436-466.
- [9] Karl, T.L. (2007). "Oil-Led Development: Social, Political, and Economic Consequences", *CDDRL Working Papers*, N. 80.
- [10] Bellah, R.N. (1991). *The Good Society*. New York: Knoph.
- [11] Benghida, D. (2016a). "Sun-dried Clay for Sustainable Constructions", *International Journal of Applied Engineering Research*, 11(6), pp. 4628-4633.
- [12] Benghida, D., (2016b). "CO2 reduction from cement industry", *Proceedings of the 2nd International Conference of Advanced Materials, Mechanical and Structural Engineering (AMMSE 2015), Je-ju Island, South Korea, September 18-20, 2015*, CRC Press, pp. 127-130.

- [13] HIS Markit (2017). 'Game-Changing' New Research on Prolific Permian Basin Estimates 60 Billion to 70 Billion Barrels Remain. [online] Available at: <http://news.ihsmarket.com/press-release/energy/game-changing-new-research-prolific-permian-basin-estimates-60-billion-70-billi> [Accessed 20 March. 2017].
- [14] Boiteux, M., et al (2010). *Energie: Economie et politiques. De Boeck*, Bruxelles.
- [15] Erdős, P. and Ormos, M., (2012). Natural Gas Prices on Three Continents, *Energies*, 5, 4040-4056.
- [16] Benghida, D. (2014a). "The urban identity recovery in Seoul: The case of the outdoor markets", *Proceedings of the 13th Docomomo International Conference Seoul: Expansion and Conflict*, Seoul 2014, pp. 227-231.
- [17] Benghida, D. (2014b). "L'Excellence dans la Revitalisation Urbaine. Une Mise en Valeur Architectonique des Marchés de plein air à Busan", *International Journal of Innovation and Applied Studies*, ISSR Journals, 7 (1), pp. 239-250.
- [18] Benghida, D. (2016). "Sun-dried Clay for Sustainable Constructions", *International Journal of Applied Engineering Research*, 11 (6), pp. 4628-4633.
- [19] Benghida, D. (2017a). "Concrete as a Sustainable Construction Material", *Key Engineering Materials*, Trans Tech Publications, 744, pp. 196-200.
- [20] Benghida, D. (2016a). "Indoor radon mitigation in South Korea", *International Journal of Applied Engineering Research*, 11 (15), pp. 8521-8523
- [21] Benghida, D., (2016b). "Earth architecture: An eco-compatible solution for future green buildings", *Advances in Civil, Architectural, Structural and Constructional Engineering: Proceedings of the International Conference on Civil, Architectural, Structural and Constructional Engineering*, Dong-A University, Busan, South Korea, August 21-23, 2015, pp. 77-80.
- [22] Benghida, D., Benghida, S., (2017). "La créativité dans la réhabilitation urbaine: Le Viaduc des Arts à Paris", *Association Culturelle Franco-Coréenne*, 35 (1), pp. 215-243
- [23] Benghida, D., (2015). "Adobe Bricks: The Best Eco-Friendly Building Material", *Advanced Materials Research*, 1105, pp. 386-390.
- [24] EPMAG, (2017). *Sonatrach Unveils 2030 Strategy, But Can It Be Implemented?*, [online] Available at: <https://www.epmag.com/sonatrach-unveils-2030-strategy-can-it-be-implemented-1659801> [Accessed 27 September. 2017].
- [25] ENIE, (2017). *Goliat is supplied with electrical power from land*. [online] Available at: <http://www.eninorge.com/en/field-development/goliat/development-solution/electrification/>
- [26] ENIE, (2017). *The development concept*. [online] Available at: <http://www.eninorge.com/en/Field-development/Goliat/Development-solution/> [Accessed 10 Feb. 2017].
- [27] *The Oil and Gas Journal*, 2011, varied sources, available online: <http://www.ogj.com/articles/2011.html> [Accessed 20 March. 2017].
- [28] Lee, S.-H., Benghida, D. (2017). "Cast-in-place architectonic concrete in South Korea: Methods and specifications", *International Journal of Civil Engineering and Technology*, IAEME Publication, 8 (1), pp. 820-829.
- [29] Benghida, D. (2017b). "Prospects and challenges in the Korean construction industry: An economic overview", *International Journal of Civil Engineering and Technology*, IAEME Publication, 8 (4), pp. 1338-1346.
- [30] Benghida, S. (2017). "Norwegian oil management structure", *International Journal of Civil Engineering and Technology*, IAEME Publication, 8(4), 2017, pp. 535 - 542.