



Oil Indexation as Remedy for Market Failure in Natural Gas

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Background

Market failure is a concept within economic theory describing when the allocation of goods and services by a free market is not efficient. That is, there exists another conceivable outcome where a market participant may be made better-off without making someone else worse-off. (The outcome is not Pareto optimal.). In essence market failure is about mismatch between supply and demand of the traded commodity, its dearth or abundance compared to the situation when private and social welfare are maximized.

Typically market failure reveals itself in suboptimal free market prices which lead to shortages of a traded commodity compared to the willingness of buyers to consume more or in oversupply of a commodity compared to willingness of a producer to deliver it. Although the concept of 'market failure' looks purely theoretical, in fact it has important practical implications for the global gas industry.

I am not aware of any dedicated research on market failure in natural gas industry and therefore this study is a first endeavour. There are several types of market failure. I will focus on only those of them that have strong impact on gas industry and primarily on its wholesale markets. For these considerations as example I left 'asymmetry of information' market failures out of scope of this analysis because it manifest themselves on the retail prices while the subject of my study are wholesale prices.



Aim

The common wisdom these days is that major global producers are stubbornly and irrationally standing in the way of progress in gas markets by resisting hub-based pricing in its long-term contracts. Oil-indexed pricing for natural gas is now portrayed as an “anti-market” policy. My view is that natural gas is a special kind of commodity whose market price is best maintained through linking it to oil prices in order to prevent market failures. The position I took in this essay is that at least in Europe and Asia the replacement value principle brings us closer to a resource allocation optimum than that which would be achieved through real world under-reformed “free” markets. Just as I consider natural gas to be a practical bridge fuel to a carbonless future economy, I believe that oil-indexation is the best type of cost-based market signal in our current imperfect current markets on the way to something better.

Methods

Economic analysis

Results

Our analysis has shown that the ‘no rational’ argument against oil indexation is based on an exaggerated and flawed understanding of the market as a whole. I have shown that in Europe competition between natural gas and oil is still strong in industry, commercial and residential sectors. Looking towards Asia, oil products remain a viable substitute to natural gas in power generation. Under these circumstances, oil-indexed natural gas prices are far from outmoded and retain the rational core purpose for which the Dutch formulated them originally.

In general, events that are the sources of market failure are different and stem out of 1) the nature of the good being traded, 2) the nature of the market, and 3) the exchange itself. ‘Free’ hub prices on the European exchanges are an example of market failure representing the last case. Dependence on oil-indexed prices of the long-term contracts is a more powerful force than supply and demand interplay in setting baseline trend for hub prices behavior. Prior to 2009 contract oil-indexed prices were setting the central tendency price for the European hubs. Hub prices were drifting above and below the oil-indexed price based on seasonal trends and underlying fundamentals. After 2009 with the emergence of liquid hubs oil-indexed prices formed a hard ceiling for European gas balances.

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Despite differences of behaviour patterns in the hybrid system of price formation they have one common feature: solid and enduring link to oil prices is embedded in hub prices. As a result of the oil link we have an equilibrium market price on the hubs which are not an indication of the total supply and demand for the whole market. In addition to that on the liquid hubs we see dysfunctional mechanisms of adjusting supply to demand as a result of financialization or monetization of the firm delivery obligations of the suppliers under long-term contract arrangements. Midstreamers have found ways to go around take-or-pay obligations in these long-term contracts by selling their firm obligations on a forward curve and buying back as much gas on the hubs as needed by the end-user clients. Volumetric risks are vested on another party, brokers and financial institutions holders of the forward contracts.

Due to the overcontraction resulting from the overblown expectations for demand growth in Europe there is a permanent disconnect between the volume of paper gas sold and bought back that leads to a situation of enduring oversupply on the hubs. That oversupply modifies term and spot price interaction but does not rule out the dominance of oil peg in their relationship.

Price dysfunction indeed is in place on the liberalized American market. In principle price anomaly in the USA has the same nature as on the liquid hubs in Europe – permanent oversupply of natural gas. The mechanism of oversupply though is different – in the USA gas natural became a by-product of production of shale oil and gas liquids. Oversupply here is of physical nature. As it was mentioned above oversupply on the European liquid hubs is an outcome of a different reason – overcontraction. Overcontraction leads to mismatch between the volumes of ‘paper’ gas sold on hubs by the holders of long-term supply contracts and the volumes bought back by them to meet physical demand of their customers.

Low prices have already brought dry gas production in the USA into a state of coma. Drilling for dry gas has nearly halted. From the economically non-performing dry wells drilling relocated to the wet wells and, as result of this transformation, shale gas turned out to be a by-product of shale oil and gas liquids production. Indeed it is NGL-weighted production that tilts economics Mercellus play, which is known as a major producer of gas too.

Mechanism of adjusting supply to price in gas got completely broken, because from the point of view of a shale oil/NGL producer methane it is not a self-sufficient commodity anymore but rather an ‘added bonus’ to the price of core products. In worst case when there are no pipelines around, dry gas becomes an unwanted waist product of shale oil extraction that has to be disposed of anyway. It is destined to flaring or pumping back into the well. Dysfunctional market in natural gas is a clear indication of a market failure.

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Although there are many parties that benefit from the depressed prices on the USA gas market, oil and gas producers are the losers because they have to sell two valuable products at a price on one.

Under a present state of the American market reaction of supply to depressed pricing is delayed or even absent at all because gas became a spin-off of shale oil and liquids production. Although producers of shale oil and NGLs do their best to adjust supply of these commodities to the demand in order to be profitable, they do not care about a balance on the natural gas market. To them revenues from natural gas sales is an added bonus to that of selling the core products. Supply of natural gas is therefore a function of production of other associated commodities rather than demand for methane itself. In that respect a sharp decline in the oil price which made shale oil production unprofitable in many locations may have a more profound influence on the supply of natural gas cut downs than any changes in the fundamentals of the gas market over the last several years.

Prices set by supply and demand are formally de-linked from oil and should be driven by the fundamentals of their own market. Irony of the situation on the most advanced and liberalized market dry gas production became here a function of another commodity output, shale oil. My study brings me to a conclusion that prices for dry shale gas in the USA are distorted and could not be considered as indication of a true value of this commodity.

Are there ways to fix the problem of a market failure?

Government intervention in a failure market is a customary way of resolving the problem. But it is also a common knowledge that government intervention although indispensable in many instances creates the problems of its own named a 'government failure'.

Global natural gas industry has developed its own unique and purely market response to the market failure based on a replacement value principle. This response of natural gas industry is unique because there is no other commodity that has relied on replacement value pricing on any significant scale. Under this principle, price of a given commodity is not determined by the fundamentals of its own market but by a price of a basket of its substitutes. These substitutes are competing commodities that originate from the markets that are a way more efficient (although perfect markets exist only in the textbooks) than market for a commodity that is subject to a replacement value pricing.



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Chart 1. Advantages of oil Indexation compared to government intervention in market failure fix

Type of Market Failure	Negative Outcome	Treatment	Remedy Efficiency
Lack of mechanisms of adjusting supply to price signals leads to a wrong level of output	Gas as byproduct of oil is not a self sufficient commodity	O-I	For decades O-I and long-term contracts served as efficient instrument of matching supply and demand
Instability of prices undermines long-term investments	Inability to plan revenues makes projects difficult to finance	O-I and gov. guarantees	O-I makes projects financeable while gov. guarantees raise risk of antitrust actions
Price manipulation by dominant suppliers	High prices for buyers	O-I and gov. intervention	O-L is a hedge against price manipulation. Poor track record of competition enhancement in gas market by governments
Externalities in gas	Free markets do not address security of supply	O-I and 'Too big to fail' policies'	Competition promotion leads to 'free riding' while O-I provides security of supply

Source: Gazprom Export



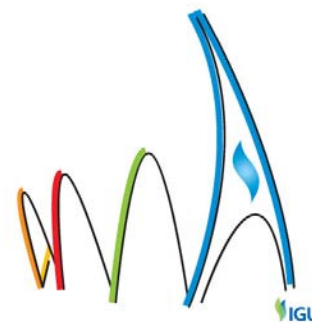
Global natural gas industry 50 year history of success is largely due to taking advantage of the replacement value of oil and/or oil products in price setting. In that sense dependence on oil/products prices is a problem and its solution at the same time. Oil indexation is definitely a surrogate or an ersatz of market pricing based on supply and demand. But it turned out to be an efficient tool to overcome several types of market failure that are characteristic of the free market price setting in natural gas.

In addition to addressing the 'small brother of oil syndrome' described above, oil-indexation in natural gas pricing turned out to be a remedy to the monopoly power abuse by the dominant suppliers. Almost all gas markets outside of North America lack the level of competition to create market mechanisms to fairly price gas as an independent commodity. Global gas markets are dominated by the large national companies that can potentially exercise their market power to distort prices in their own favour by limiting supply. With oil indexation in place this does not happen.

Price manipulation by the dominant or even monopolistic supplier becomes impossible because none of these suppliers is capable of affecting one way or another prices of the replacement value basket made of oil and/or the oil products. And even more to it, daily nominations in the long-term oil indexed contracts comes from the buyers making it impossible for a seller to restrain supply. There is a lot that importing nations can do with enhancing competition on their own domestic markets but they are not capable to overhaul a "god blessed" situation with the gas reserves concentrated in the hands of a few supplier nations.

Another market failure in natural gas is traditionally associated with the long investment cycle and a necessity for the financial institutions to bear risks related to the lengthy, from 20 to 50 year, reservoir and gas infrastructure development projects. Liberalized gas markets with their unstable, unpredictable, or even negative hub prices do not provide for a steady cashflows over the life span of such lengthy projects. Long-term hedging instruments, if available, could somewhat mitigate these risks but to a limited extend only. Oil indexation in the dry gas development projects offers a solution as the oil price long-term predictability is a grade higher and fully meets the project bankability criteria.

For decades oil indexation was providing support to the investment cycle in the global gas industry but the joint attack on the oil peg by the British liberal academics and the IEA officials has modified somewhat the mindset of the Asian buyers as they start showing reluctance to sign for the long-term oil indexed projects. In 2013 there were only 7 final investment decisions (FIDs) in the gas industry on the back of growing long-term demand for gas in Asia. That is not enough to meet the growing global demand for LNG.



It is not a surprise that all the seven FIDs were gas liquefaction projects in the USA. Isn't it a signal that the banks start to except free market price risks in gas? Do not be misled. Banks do not take the Henry hub price risks, these risks are fully transferred to the buyers.

Market failure in gas has its externalities too. Pricing of gas based on supply and demand reflects short-term gas value and is not fully reflective of the security of supply aspects. LNG supply contracts linked to the hub-based pricing are usually not firm, as they include a redirection clause. When prices do not meet the supplier expectations gas could be without any fines redirected to the premium markets. By enforcing directly or indirectly pricing based on supply and demand instead of oil-indexation European politicians and regulators put at risk the existing long-term supply contracts that are a cornerstone of the supply security in the Continent.

Conclusions

I want to emphasize that the replacement value principle can perform an efficient market fixer role because it has a market origin. It is much more efficient than any form of government intervention or the action of the 'invisible hand.' This pricing mechanism means that pricing of a commodity in a malfunctioning market is conducted via another substitutive commodity that has a relatively better performing market. The principle conclusion of this essay is that natural gas markets in Europe and Asia operate in malfunctioning markets with potential for severe market failures of various kinds and therefore, these market failures can be avoided by determining natural gas prices linked to prices for oil/oil products.

References

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