

Factors and Limitations Influencing Natural Gas and LNG's Pricing

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From keeping the transportation infrastructure running to powering small and large-scale businesses and homes, life would not be the same without natural gas because it plays a significant role in running our lives. Over the last three decades, the consumption of natural gas has grown rapidly because it is a relatively clean fuel as compared to coal, petroleum, and [crude oil](#). The demand for reserves of natural gas and LNG at the global scale has soared faster than ever in recent decades as compared to oil and other fuels and the countries rich in this resource including Latin America, the Middle East, and Asia have also become the apple of global eyes. The [gas demand](#) is set to increase more in the years ahead because the gas industry culture has the potential to achieve environmental targets around the globe as compared to competing fuels. Global natural gas markets are changing over time based on the global requirement and depletion of LNG and the cleanest gasoline around the globe. Given that, the basis, structure, and processing channel of the pricing of gasoline and LNG are changing with the new trends in the World gas markets in different regions of the globe. This paper seeks to provide a thorough discussion of the influencing factors that change the game of pricing of gasoline and LNG and also opinionates about the limitations encountered in the course of the supply and value chain of both commodities. It also argues the effects of limitations on the pricing system, and present as well as future trading trends of gasoline and LNG in the international gas industry.

Pricing System for the Gas Industry Culture

For a period of last two years, two opposing pricing systems for natural gas and LNG have coexisted which include traditional oil-linked pricing and deregulated exchanges in the competitive markets. One pricing system is led by future exchanges in the competitive markets whereas the other is led by traditional oil-linked prices in LNG imports by countries including China, Japan, and Korea (Far East countries) and natural pipeline gas imports by Continental European countries. IEA presented the World Energy Outlook in 2009 according to which one-fifth of the wholesale natural gas is consumed or priced worldwide to crude oil products that determine wholesale prices in Continental Europe ("Medium-Term Oil and Gas Markets 2010 - Analysis," n.d.). On the other hand, one-third is indexed on the basis of competition in the gas-to-gas market in the energy sector that determines prices at wholesale rate for natural gas primarily driven from North America. While 40% of the gas consumption is subjected to direct price regulation, one-quarter of the natural gas is sold or indexed below the production rate. This composition is usually in the countries where oil or gas is produced and there exists a third natural gas pricing system where prices are basically set by the political authorities of the country of operation (Stern, 2009).

Factors Influencing the Prices of Natural Gasoline and LNG

In the past few years, prices for natural gasoline reserves and LNG have fluctuated which has become one of the biggest concerns in the energy sector because natural gas has been playing a key role in all economic activities as the most strategic commodity for the global economy. Consumers of natural gas can easily spot price fluctuations while seeing sticker shock on their utility bills or filling up tanks at any gas pump. However, these fluctuations in prices are due to several potential factors that influence the increase in gas pricing which include:

Demand

Like any other commodity in the energy sector, one factor that dictates the pricing of natural gas is demand. The companies concerned with natural gas and related products pay meticulous attention to the short-term and long-term factors that influence the demand and pricing of their natural gas production. Variations in weather, environmental conditions, economic growth, and competing fuel markets such as petroleum are all factors that influence the demand for natural gas.

The major demand-side factors that extensively affect natural gas prices and LNG include:

Variations in Weather such as Summer and Winter

When the demand for natural and liquefied gas is high and supply is disrupted, natural gas and LNG pricing may increase more than expected. Severe weather conditions such as hurricanes and extreme cold weather can drastically interrupt the production, depletion, and supply of gasoline. Amid winter weather, demand for natural gas and LNG is increased because commercial as well as residential consumers increase the demand that strongly influences the supply side which puts upward pressure on gas pricing. During unexpected cold months when the temperature hits the lowest, the supply side is often ineffectual to meet the short-term increase in demand which intensifies the pricing system. The effect of unexpected severe cold weather greatly affects the natural gas supply if the transmission through the pipeline mechanism is steered at the maximum level. However, the reserves of the cleanest gasoline in storage prior to accelerating the requirement due to extreme icy-cold weather help cushion the influence and consequences of high demand on the gas and LNG sector.

Contrary to extreme cold weather conditions, the scorching heat can expand and escalate the demand for the electric power sector for renewable gasoline and related products. Scorching temperatures tend to escalate the claim for air conditioning which sees the surge in the demand for natural gasoline consumption which also generally increases the prices in the market. In addition, the price range also varies when the demand from the power sector increases sharply that limiting the gas supply sources. Due to this, gas supply sources become constrained and relatively low because of

the high demand from the electric and power sectors during the summer which leads to unoccupied storage volumes in extreme weather conditions (Hulshof et al., 2016). Thus, hot summer weather can have direct and indirect impacts on increasing the demand that directly affects natural gas pricing in the market.

Availability and Pricing of Other Fuels or Crude Oil

The availability, pricing, and competition of other fuels in the market majorly affect the pricing system of the cleanest natural gasoline fuel and LNG in the market. Many large-volume consumers of natural gas and LNG switch between petroleum, coal, LNG, and natural gas depending on the increase and decrease of the cost of different fuels for their mills and power plants. When the price of competing fuels falls, the demand for natural gas and LNG decreases because consumers switch to the cheap and cost-effective fuel option that resultantly lowers the gas pricing. Petroleum is the alternative that has a direct influence on the cost of gasoline as when its price drops, the demand directly relocates from natural gas and LNG. However, when the cost of the other competing fuel rises in comparison with the cost of natural gas and LNG, consumers ultimately switch to gasoline reserves which may soar the prices of natural gas based on the demand in the local or regional market (Harsem et al., 2011).

Level of Economic Growth

Economic-related increases influence the markets of natural gasoline fuel because the price of natural gas increases with the growth of the economy. The surge in demand from the industrial and commercial sectors for the increase in goods may increase the consumption rate as more economic sectors demand the cleanest gasoline fuel. This can be particularly effective in various sectors including commercial and industrial as during periods of economic growth these sectors vastly use natural gas for making fertilizers and pharmaceutical products (Honoré, 2011). For instance, the metal industry uses natural gas for manufacturing heating and cooling systems that utilize infrared heating units which are efficient means to heat and cool material according to the weather requirements in different regions.

Supply

Anything that interrupts the mechanism of production, import, export, or storage of natural gas directly affects the supply. The increase in natural gas supply around the world tends to lower the prices of natural gas which in turn increases the demand. Whereas, contrary to that, the decrease in natural gas supply generally results in leading the energy sector to set up higher natural gas prices which in turn tends to encourage production while reducing or moderating the demand.

The major factors on the supply side that affect the production and prices of natural gas include:

Storage Level of Natural Gas Reserves

The supplies and the level of natural gas in underground storage fields play a key role in encountering the demand for the power sector. The storage level has a significant impact on the overall supply of gasoline fuel. The production and imports at the domestic level sometimes cannot deal with the peak demand because of the sudden seasonal increase in natural gas demand. This is where the level of supplies in storage come into play. Storage of gas supplies helps in services such as trading hubs to the regions where natural gas and LNG are needed and also for pipeline operations. The reserves of natural gas in storage are typically lower in the months from April through October and this is the time when storage of the natural gas absorbs excess domestic supply which is then used from November through March as the natural gas and LNG demand during these cold months is generally high for heating purpose.

Amount of Production of Natural Gas and LNG

The amount of production of natural gas and LNG at the domestic level in their countries of operation greatly influence the prices of both fuels. When the gas prices generally decrease, the demand for natural gas increases which sometimes restricts access and supply will fall. To cope, liquid natural gas is produced and used as an alternative source of natural gas because it can be transported in large-volume containers. The cost of natural gas production and maintenance of the storage of natural gas and LNG influence the end price for consumers from different industries. As the manufacturing costs of natural gas soars higher, companies also push production to refine more usable natural gas and LNG storage which increase the costs for machinery upkeep, associated resource, fuels, and working wages of the workers (Hulshof et al., 2016).

Volumes of Natural Gas Exports and Imports

Imports and exports are also significant factors due to regional variations that influence the pricing of natural gas. Unlike crude oil, petroleum, and other fuels, natural gas is more difficult to transport which pushes gas suppliers to rely on fixed infrastructure as compared to crude oil prices that tend to converge around the globe. Therefore, when the natural gas and LNG prices rise, the consumers are encouraged to switch to other alternatives in the oil sector rather than exporting or importing natural gas supplies. A large amount of power plants can switch from coal or petroleum to importing reserves of natural gas for the generation of electricity only if the cost is competitive (Harsem et al., 2011). However, in many parts of the world, LNG exports are now sufficient to meet the demand-supply balance because it is considered a clean, reliable, and affordable alternative to a natural gas resource that will let the global economy powers the nations for generations to come.

Limitations and their Impacts on Pricing of Natural Gas and Liquefied Natural Gas (LNG)

Oil-indexed contracts in the past few decades have directly caused the reduction of gas prices due to a sustained time period of lower oil prices and indirectly reduced the financial incentive for the consumers. This has compelled the consumers of oil-based fuels to change their consumption preference from oil to natural gas. Moreover, the emergence of LNG exports from North America has pushed the market to reach Asia's liquefied natural gas importing markets where importers can negotiate for low-cost US gas to enter into a persistent oversupply market where the severity is added due to the pandemic. During the outbreak and spread of Covid-19 from 2019 to 2022, suspension of industrial activity and worldwide lockdowns diminished the natural gas and LNG demand which has resulted in the largest demand shock that is resultantly leading to gas prices falling sharply by 4 to 8 percent since the beginning of 2020 (Norouzi, 2021). However, the trend that contributes to the limitations and challenges for the LNG sector in end-use markets creates a potential opportune landscape where the economics of gas use and investments in pipelines or terminals have accelerated the demand growth around the world, Asia and the United States in particular.

The increased consumption of liquefied natural gas in the global oil and gas industry might negate the positive effect of the diversity of energy security because the gas supply is heavily concentrated among a small number of countries mainly Asia and the Middle East. This raises affordability concerns as LNG projects are technically complicated and most expensive compared to other fuels. So, the countries that export or import LNG might face high energy prices if they make greater utilization of liquefied natural gas shipments. The substantial obstacles or limitations to international trade in the natural gas sector involve certain factors including restrictive contracts, non-competitive pricing, government trade restraints, and potential risks to thin natural gas and LNG markets (Stern, 2014). Both commodities are constrained by many limitations as transportation of LNG or natural gas in containers or through pipelines requires port facilities as well as the construction of specialized terminals that cost billions of dollars to the global gas industry.

Future Growth and Trading Trends for Natural Gas and LNG

In today's world, the natural gas and LNG industry experience oversupply and lower prices because the Covid-19 pandemic has accelerated the market trends for the improvement of the LNG sector that were already underway to adapt to seize new and potential opportunities for growth. Since the Covid-19 pandemic has stricken the World, the gas industry has witnessed reduced demand that has added to the excess supply of liquefied natural gas around the World. This has created market volatility as LNG has a long-term brighter outlook because it is a safe, clean, reliable, and affordable alternative to natural gas than that of other fossil fuels.

With the emerging trends in the energy and power sectors, LNG players should move beyond the reliability of supply, meeting the market demand for gas, and control of reserves and supply of natural gas. Instead, the LNG industry should focus on supply-chain optimization, decarbonization, capital efficiency, advanced analytics, and downstream market development to find and explore opportunities for faster growth of the LNG industry (“LNG Market Trends and Their Implications – Analysis,” n.d.).

The market structure, trading trends, and pricing mechanism for both these commodities have advanced gradually and dramatically since the fuel LNG emerged for the first time in the late 1960s. The fast-growing liquefied natural gas importers including North America and China have led to coincide with more diversification in the energy sector on the supply side of the gas resulting in substantial LNG market growth. The trade and overall consumption of natural gas and LNG are experiencing the trend towards diversification and expanding the transition of imports and export flow from local to regional markets (Secretariat, 2009). Countries that deal with the supply side are preparing to enlarge their capacity of exports to maintain their leadership in the global gas industry.

In conclusion, natural gas and LNG are the major energy sources that unlock future market growth implying greater domestic competition triggered by the countries or regions that consume most of the natural gas or LNG storage. Furthermore, the development of gas hubs in the countries producing “natural gas” and “LNG” can ensure more competition in the domestic market through the introduction of successive regime changes in natural gas pricing. The market reform, in this regard, through strong domestic production and diversified sources of supply is paving the way for more competition in the energy sector along with the entire value chain of natural gas and LNG for both producers and importers to enhance market liquidity.

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