

LNG at the Crossroads: An Auspicious Confluence of Developments?

Overview

The presentation focuses on three factors likely to have major effects on LNG markets, and hence also markets for natural gas more generally, over the next one to two decades:

1. The development of shale gas in North America and associated US, and possibly Canadian, exports of LNG;
2. A diminished role for long-term LNG contracts, and corresponding increase in spot and short-term trading of LNG; and
3. Increased transparency in natural gas pricing in major markets around the world.

While these developments are partly linked and mutually reinforcing, a number of exogenous factors are also driving all three. We argue that these developments will be beneficial for most, but not all, countries and the pattern of winners and losers will have geopolitical consequences. The developments are, however, also uncertain to some extent, and a number of policy decisions can either accelerate or retard the market tendencies.

Methods

Shale gas and US exports of LNG

We use the Rice World Gas Trade Model to show how shale gas resources have increased the elasticity of the US supply curve for natural gas by a factor of five or so. We also show how the addition of US (or Canadian) LNG export plants will increase the number of potential suppliers for many LNG importers and this increase in market size on the extensive margin also will tend to raise supply elasticity for any one importer.

We also compare the financing of US export facilities to traditional liquefaction projects. We then argue that the entry of US projects into world LNG markets is likely to accelerate changes in pricing paradigms that we argue below are already happening for other reasons.

We then argue that a third consequence of US exports of LNG for world LNG markets is that they will provide an additional way to arbitrage LNG prices in the Atlantic and Pacific Basins. Currently, Middle East exporters play that role by actively selling in both markets on a regular basis.

Finally, depending on government policies, the new technologies that have been used to unlock resources from shale deposits in the US may spread to other countries. We discuss some of the factors that have been critical to the development of shale resources in North America and what may be needed to extend the revolution internationally.

Spot versus contract trading of LNG

In this part of the paper, we summarize some of our recent theoretical research into factors that affect the desirability of long-term contracts versus spot trading of LNG. The model we present shows how take-or-pay provisions and *supplemental* spot market trades limit the inefficiencies arising from contract limitations on trading outside of the long-term contract. These considerations imply that the benefits of a long-term contract relative to spot market trade increase substantially with increasing spot price variability. In addition, a smaller gap between

average netback spot prices available to the exporter and the average spot prices available to the importer reduces the advantages of a long-term contract between them.

A key implication of the analysis is that increased LNG market liquidity as a result of increased participation by new suppliers and customers is likely to encourage much greater volume and destination flexibility in long-term LNG contracts and even greater reliance on short-term and spot market trades. These changes could, in turn, reinforce the initial increase in market liquidity.

Pricing transparency

The third tendency we discuss is increasing pricing transparency. We discuss how the liberalization of the natural gas market in the US is spreading to other jurisdictions. We then argue that the development of such trading hubs should support the aforementioned expansion of spot and short-term trading of LNG. The trading hubs should also allow LNG to better link natural gas prices in markets around the world.

Results: Some likely market impacts of these developments

We first discuss how increased trade in LNG will lead to more effective arbitrage of natural gas prices across the globe. We discuss how regasification, shipping and liquefaction costs will influence relative prices between regions in a world where governments allow markets to develop based on commercial considerations alone. We will then also discuss how policies can distort this market equilibrium.

We also discuss the likely impacts of LNG exports from the US on foreign and US natural gas prices. We also argue that, generally speaking, the more global a market is the less volatile market clearing prices are likely to be. Using our model of the benefits and costs of long-term LNG contracts we also discuss the feedback between the value of long-term contracts and price volatility. We argue that lower spot market price variability reinforces the tendency for more LNG to be traded on spot and short-term contracts, and for long-term contracts to include increased volume and price flexibility.

We will end the discussion of implications of the developments we have identified with some remarks about strategic issues. In particular, while the developments that we have discussed are likely to be desirable for gas importers and firms exploiting unconventional resources, they could well be negative for developers of conventional resources, especially Russia. In particular, we argue that more flexible and liquid natural gas markets will place Russia at somewhat of a disadvantage in terms of increasing its supply to Western Europe.