

THE GAME THAT DRIVES THE LNG TRAINS

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Overview

As the LNG market is rapidly expanding on a global level playing a more and more important role in energy market, it is important to understand the game of the LNG world. There are two major types of players. Countries like Qatar, which owns the natural resources of oil and gas are LNG suppliers. The ownership of the natural resource gives them the dominant decision maker position in the market. The commercial development of LNG is a style called value chain, which means LNG suppliers first confirm the downstream buyers and then sign 20–25 year contracts with strict terms and structures for gas pricing. Only when the customers were confirmed and the development of a Greenfield project is deemed economically feasible can the sponsors of an LNG project invest in their development and operation. These energy companies usually are responsible for the marketing of LNG in different continents. They are the second type of players in the LNG game. The interest of this paper puts a game-theory lens on the decision making process for firms and explores the strategic elements of the competition. The focus here is the siting game among firms where they plan to build regas terminals along the coastline of US.

Methods

In order to describe the siting game for LNG regas terminal, a competitive location and quantity “a la Cournot” game has been described in this paper to study the oligopolistic competition between $n > 2$ heterogeneous firms. Firms have to decide where to locate a facility and then decide on how much to supply to all or some of $m > 2$ spatially separated markets from these facilities. Furthermore, the model is also extended into $t = 2$ periods, where firms decide to enter in the first or second period, which allows forward looking vision impact firm’s marginal behavior. Then, numerical illustrations of the model are used to gain insights on impacts of parameters on equilibrium locations and results.

Results

Through scenarios, the impact of different fundamental drivers on equilibrium locations for regas terminals are examined.

Conclusions

Numerical illustrations helps to exploit the dynamics observed in the LNG market, by providing a simplified virtual space where the researcher is able to gain a better understanding for works of each variable. Market fundamental drivers, like market price responsiveness and long term market outlook, and firm’s own cost structures and operation model can have material influence on the strategic decision of locating regas terminals.

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