Long-term Contracts and Efficiency in the Liquefied Natural Gas Industry

Nahim Bin Zahur
Queen's University

Abstract

In many capital-intensive markets, sellers sign long-term contracts with buyers before committing to sank cost investments. Ex-ante contracts mitigate the risk of under-investment arising from ex-post bargaining. However, contractual rigidities reduce the ability of firms to respond flexibly to demand shocks. This paper provides an empirical analysis of this trade-off, focusing on the liquefied natural gas (LNG) industry, where long-term contracts account for over 70% of trade. I develop a model of contracting, investment, and spot trade that incorporates bargaining frictions and contractual rigidities. I structurally estimate this model using a rich dataset of the LNG industry, employing a novel estimation strategy that utilizes the timing of contracting and investment decisions to infer bargaining power. I find that without long-term contracts, sellers would significantly decrease investment, but allocative efficiency would improve. Policies aimed at eliminating contractual rigidities reduce investment by 30%, but raise welfare by 21%, with the industry becoming nimbler in responding to demand fluctuations.