

## **BALANCING RENT EXTRACTION AND PROJECT EXECUTION: THE CASE OF AUCTIONS FOR OIL LEASES IN MEXICO. Igor Hernández. Center for Energy Studies. Rice University**

In countries where the State owns hydrocarbon resources, governments look for a balance between increasing revenues, but also encouraging exploration of the country and timely execution of projects. My paper analyzes how bidding strategies, extraction and investment activity change with alternative formulas to allocate oil leases on marginal fields in Mexico.

For these fields, two components of the bid were included: royalties they will pay to the government, and an additional investment commitment to that set in a minimum work program, should they win the block and move to an exploration stage. The government uses a formula that assigns a score for each bid and the company with the highest score wins the auction. Initially, in 2014, the scoring rule had a large weight on the royalty component, as to prevent inefficient capital expenditures and increase participation of small local firms, but the high royalty rates led to more than half of companies either abandoning the project or requesting an extension in their exploration period before making a final decision. Kong, Perrigne and Vuong (2019) and Ryan (2020) argue that when royalties (or contingent payments) are part of the bid, there is the possibility of adverse selection, as the companies with higher investment costs decide to bid higher on the royalty, in some cases on the expectation that they can renegotiate the contract later in the future.

My model integrates a development and extraction problem similar to Smith (2014) into a scoring auction stage, and uses data on resource endowments, fiscal structure, well activity, price forecasts and auction data to estimate separate distributions for operational and investment costs for bidders. I can then sample from these distributions and find the hypothetical bids under different scoring rules, including those used by the Mexican government for marginal onshore fields. Results confirm the presence of an adverse selection problem (the firm with the lowest investment cost only wins the auction in 32% of the cases). The original scoring rule also leads to 30% of projects not being executed. I also compare these results with a modified scoring rule the government used (with a more balanced weight of royalties and investment) and a maximum royalty rate, and in this case government revenues increase by US\$ 310 million (36% of the revenues under the original rule). These results highlight the trade-offs involved in scoring rules for energy projects, as higher fiscal take (or lower price bids for electricity, for example) may interfere with project execution.

### **References**

Kong, Y. Perrigne, I. and Vuong, Q. (2016): "Multidimensional Auctions of Option Values,". Working Paper

Ryan, N. (2020): "Contract Enforcement and Productive Efficiency: Evidence from the Bidding and Renegotiation of Power Contracts in India". *Econometrica*, 88 (2), 383-424.

Smith, J.L. (2014): "A Parsimonious Model of Tax Avoidance and Distortions in Petroleum Exploration and Development,". *Energy Economics*, 43, 140–157.