

Identifying Risks in Auction Design: Investors' and Policy Makers Perspectives in Chile

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Overview^{WW}

A "Power Auction" is a mechanism widely used worldwide to award energy projects based on competitive bids. In Chile, since 2005, it is a legal requisite for electricity distribution companies to contract their energy requirements by means of competitive nondiscriminatory auctions (thus including renewables). A submitted bid with the lowest price is awarded a long-term contract (typically, a Power Purchase Agreement (PPA)) for the project. Due to the high levels of initial investment required by renewable technologies, access to financing is crucial to the development of projects. However, many renewable energy projects without a PPA used to face significant obstacles to obtain funding from commercial banks.

In 2014, important changes were introduced in the auction design with the goal of making it more competitive. The Chilean government, for the first time, established time blocks in which renewable energy generators could bid their energy. The contracts to be tendered contain three blocks according to the time of day, with one block covering from 11pm to 8am, a second from 8am to 6pm, and a third at the time of peak demand between 6pm and 11pm. Previous bidding processes had standards blocks of time that favored conventional generators. The change in the auction design has greatly favored renewable generators, since they could now offer during the times of day when they are producing energy and are not obligated to bid energy for 24-hour blocks.

Restructuring reforms on power auction system has been a good step forward to improve commercialization of renewables in the market and to enhance competition. Therefore, in the latest and also largest energy auction ever, the Chile National Energy Commission (CNE) targeted to add a total generation of 12,430 GWh/year, consisting of five time blocks for 20 years from 2021, covering 30% Chile's energy demand. Wind and solar photovoltaic (PV) projects were awarded around 40% of the energy of the auctioned. The competitive nature of auctions have resulted in decreased energy costs, increasing the number of renewable energy players in the bidding process.

However, the auction results show that some renewable companies offered energy well below its generation costs. From policymaker's prospective, promising the cheapest electricity is a positive outcome, but irrational or predatory bidding may have overreached companies as banks and investors balk at the risks. As of today, the fulfillment of investment pledges by some companies that have won contracts to supply electricity remains a serious challenge for the sector. **Our research question** in this study is how auctions can be designed properly to manage these risks and to help deploy renewable energy capacity in a cost effective and transparent manner to achieve policy objectives. In other words, the goal is to design an auction that guides better bidding behavior and encourage participation by serious players in Chilean market.

Methods

The methodology utilized in the paper consists of two complementary methods: a questionnaire survey -comprising quantitative and qualitative data collection- and a series of semi-structured interviews considering qualitative data collection only. Our questionnaire has two target groups: the first group is experts and policymakers, who answered a questionnaire it aimed to gather information on the objectives of holding auctions, metrics to be used for measuring success/failure of auctions, and ensuring competition. The second group is project developers, who answered a questionnaire designed to understand the perspective of project developers on energy auctions. In addition, we also asked if there are any additional costs and risks for project developers regarding auction designs. We also crosschecked our secondary research findings with inputs from interviews and our own analysis.

Preliminary Results

We identified several important risks including underbidding risk, auction design risk, completion risk, off-taker and technology risk that impact outcomes of renewable energy auctions. Considerations of these observed risks in the design features that would likely make auctions more successful.

References

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