***Penalties in renewable auctions: Does "one Rate for all" mean less for incumbents?***

Ali Darudi, University of Basel, ali.darudi@unibas.ch

Ingmar Schlecht, University of Basel, ingmar.schlecht@unibas.ch

Hannes Weigt, University of Basel, hannes.weigt@unibas.ch

## Overview

Procurement auctions are increasingly used as the support mechanism of choice to achieve renewable targets around the world. In theory, auctions allow the regulators to steer the renewable support policy more effectively because the renewable generation mix is set ex-ante. However, that is contingent on, amongst others, timely realization of the winning bids. Moreover, non-realizations lead to higher electricity market prices for the consumers until a substitute investor is found (after the time-consuming process of setting up another auction round) and realizes investments. Additionally, non-realization and delays affect social acceptance of the auctions for renewables, may impede riding on the learning curves of renewable technologies, and could result in higher procurement costs. Therefore, optimal design of non-realization and delay penalties is crucial to the success of renewable auctions. On the other hand, incumbent firms with pre-existing conventional capacities are expected to participate more actively in renewable auctions. Therefore, in this paper, we analyze non-realization and delay penalty designs in the presence of heterogeneous firms, i.e., incumbents and newcomers.

We argue that incumbents have an extra incentive to delay or cancel the realization of their winning bids: by winning the auction and delaying investments, incumbents may, at least for a while, prevent the price decrease and adverse merit order effects of the renewable entrance on their pre-existing conventional technology. The resulting extra profit gained by those pre-existing generating units would at least partially nullify the effectiveness of the penalties for delay or non-realization. In other words, with an investor-neutral penalty design, the incumbent faces a lower effective penalty compared to other newcomer firms that have no or little capacity and market-based profits.

## Methods

As a case study, we will measure the extra profit of a German incumbent from delaying its winning bid of 900 MW in the German offshore auction, which is to be realized in 2025. To do so, we simulate and compare its profit in 2025 in the cases of realization and non-realization of investments. We simulate hourly market outcomes in the German wholesale market using an optimal dispatch (partial equilibrium) model of Germany and neighboring countries. The incumbent’s profit is calculated based on the simulated generation quantities and costs as well as market prices.

## Results

Our results will provide important insights for policymakers in auction design for renewable support policies. We propose to introduce investor-specific non-realization and delay penalties to level the playing field and lower non-realization risk from incumbents. Investor-neutral monetary penalties expose incumbents to lower effective penalties compared to newcomers. Assuming that everything else is equal for the two types of firms, lower effective penalties might allow incumbents to bid lower than newcomers in the bidding stage due to facing lower penalty risks. On the other hand, lower effective penalties increase the risk of delay or non-realization from incumbents compared to newcomers. Therefore, if regulators are keen on providing a level playing field for incumbents and newcomers, the structure of the penalties should be adjusted: the value of the penalty should become a function of the profit (or in a simplified version, size) of the pre-existing generation mix of the bidder.

The proposed investor-specific penalty may also be seen as a market power mitigation mechanism. Market power is the ability of a firm to raise the market price above competitive levels. In extreme cases, the incumbent may find it profitable to win the auction without any intention to realize only to delay the price decrease caused by the entrance of new renewable generation by other investors. This *win-to-delay* approach to exercise market power cannot be mitigated by other commonly-used market power mitigation methods aiming to reduce market power in the spot market or entry barriers. The investor-specific penalties prevent winning-to-delay events by removing the corresponding incentives for the incumbents.

Regulators should also be careful of the incentives of auction winners to go through lengthy renegotiation phases. While both newcomers and incumbents might benefit from delaying investment, hoping for lower costs or higher expected profits, incumbents have additional incentives to prolong possible renegotiations to profit from delaying the negative merit order effects. To dissuade strategic prolongation of negotiation talks, any possible negotiation talks with incumbent firms should be conditioned on additional penalties reflecting the incumbent's profits from further delay.

## Conclusions

We propose investor-specific penalties for renewable auctions. A "one rate for all" penalty decreases incumbents' investment risks and increases the delay and non-realization risks from winning incumbents compared to newcomers. For penalties to provide a level playing field for incumbents and newcomers alike, incumbents need to face a higher penalty rate that is a function of the incumbent generation mix and profit. `