FINANCIAL CONTRACTS FOR DIFFERENCES

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Overview

Contracts for differences are widely discussed as a cornerstone of Europe's future electricity market design. This is a paper on CfD contract design. We summarize the dispatch and investment distortions that conventional CfDs cause, the patches that are used to overcome these shortcomings, and the problems these fixes introduce. We then propose an alternative contract that we dub "financial" CfD. It is a hybrid between conventional CfDs and forward contracts that mitigates revenue risk to a very large degree while providing undistorted incentives and avoiding margin calls. Like traditional CfDs, these contracts are long-term and tailored to technology-specific (wind, solar, nuclear) generation patterns but, like forwards, decouple payments from actual generation. We also propose to mitigate volume risk and to accept physical assets as collateral to avoid margin calls.

Methods

This paper is not a "pro CfD" piece, it discusses instrument design: *how* should long-term contracts between generators and governments be designed to avoid distortions? It does not address the bigger question *if* governments should engage in long-term contracts in the first place, or if such contracts are better left to private firms and markets. This is a complicated question that involves fundamental trade-offs and this paper should not be understood as a recommendation of public long-term contracts. In other words, we do not discuss if governments should mitigate investor risk, but outline how, if they wish, they can do so in a way that avoids distortions. Thoughts presented here on instrument design could even be valuable for commercial contracts – a financial CfD could also be signed between a generator and an industrial consumer.

Expected Results

In this paper, we identify three problems that arise from CfDs as they are used in electricity markets. First, CfDs provide "produce-and-forget" incentives in the sense that they mute electricity price variation: generators have no benefit of producing electricity when it is needed most. Second, they distort short-term intraday and balancing markets. Finally, while they mitigate price risks, they do not reduce volume risks. To address some of these shortcomings, first-generation CfDs have been modified, e.g. by replacing the hour-by-hour spot price with a monthly average price. These tweaks have brought new problems which triggered additional modifications.

To address these problems more fundamentally, we propose a new type of contract that we dub "financial CfD". It combines properties from three different kind of contracts: CfDs, financial forward and futures contracts, and mortgages. Forwards and futures have been used for many years by conventional power generators to hedge their positions and mitigate price risk. The core innovation of our proposal is to decouple payments from the physical production of an individual asset, in line with Newbery (2023). The financial CfD comprises of two hourly payments, a fixed lump-sum from the government to the generator. In turn, the generator pays spot market revenues to the government. These are not, however, the actual revenues, but benchmark (or "yardstick" or "proxy") revenues that are independent from the actual generator's dispatch. For wind energy, the benchmark revenues could be derived from a reference turbine, weather models, or the average generation of a country's fleet of turbines. (This is why we call the contract a "financial CfD", despite the fact that any CfD is a financial contract.) To avoid margin calls, we propose to use the physical generation asset as collateral, like a mortgage.

Conclusions

In this paper, we proposal a fundamental solution to adverse incentives of CfDs by borrowing a key feature from financial forwards/futures contracts: decoupling payments from physical production. Instead, we propose to link it to an objective benchmark that is highly correlated with generation.

References

Newbery, David (2023). Efficient Renewable Electricity Support: Designing an Incentive-compatible Support Scheme. *The Energy Journal*. 44 (3). https://doi.org/10.5547/01956574.44.3.dnew