

# Financing Power: Impacts of Energy Policies in Changing Regulatory Environments

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Power systems with increasing shares of wind and solar power generation have higher capital and lower operational costs than power systems based on fossil fuels. This increases the importance of the cost of financing for total system cost.

We quantify how renewable energy support policies can influence the financing costs by addressing regulatory risk and facilitating hedging. In a first assessment, we use interview data on wind power financing costs from across the EU. Large differences between countries are due to the general national circumstances for project developments like national political and financial contexts. We control for a number of potentially relevant factors, for instance whether countries have in the past retrospectively changed their support policies or whether they have implicitly, if not explicitly, abandoned all policy support.

Regression analysis reveals that feed-in tariffs and sliding premium systems lead to similar financing costs. This is somewhat surprising, given that renewable energy operators are exposed to more risks under sliding premium systems. However, due to careful policy designs, they seem to be perceived as negligible. In contrast, green certificate systems are associated with significantly higher financing costs by 1.2 percentage points, or an average increase in risk premium by about a quarter. In line with part of the literature, this seems to be due to higher revenue risks under such policies. Interestingly, the implicit abolishing of all support policies is the most detrimental to low-cost investments and increases financing costs by around 2.2 percentage points.

Further, we model analytically how long-term contracts signed between project developers and energy suppliers impact financing costs in the context of green certificate schemes. The power price risk is shifted to the off-takers of long-term contracts. Rating agencies value the value of the contracts as long-term obligations without long-term hedge and impute them as debt, such that debt-equity ratios increase and credit ratings deteriorate, increasing off-takers' own re-financing costs. We parameterize the model with exemplary values for the average of large EU utilities and find that the additional costs of the long-term contracts are equal to about 21 percent of the long-term renewable energy contract.

Overall, the regression analysis and the analytical model reveal that between the support policies, the costs of renewable energy deployment differ by around 30 percent, but can lie significantly lower or higher, depending on the financial situation of energy suppliers.

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