

Paying the Premium? How Wind Power Policies Impact the Financing Costs of Renewables

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Overview

Our core research question is *What impact do wind power policies have on the cost of wind power deployment?*

The member states (MS) of the European Union have largely increased their shares of renewable energies like wind and solar. Looking forward, they have committed to at least 20 percent of final energy consumption to stem from renewable sources by 2020, and at least 27 percent by 2030. In order to achieve this, a number of policies like feed-in tariffs, floating and fixed market premiums and quota schemes exist, additional to which some countries have introduced tenders.

The efficiency and effectiveness of these policies has been debated extensively in the literature. However, these analyses have focused on case studies and analytical approaches (e.g. Butler and Neuhoff, 2008, and Haas *et al.*, 2011) or have focused on different outcome variables (Dong, 2012). However, so far, the impact that these policies have on the financing of renewable energy projects has not been evaluated empirically for the EU. Yet, as about 80 percent of all costs of wind power projects (with an even greater share for photovoltaics) are up-front investment costs, financing conditions are essential in defining if and how profitable renewable energy projects are (Grau and Thisdale, 2015). Naturally, with lower financing costs, investors require lower remuneration levels, rendering the envisioned transition towards renewable energies cheaper.

Methods

For the analysis, we deploy unique survey data of estimates of financing costs made by project developers and bankers from 25 MS from spring 2014. The weighted average costs of capital (WACC) reflect the costs of both equity and debt (with debt naturally having higher required returns) and the respective ratios of the two. In general, higher shares of debt lead to higher WACC estimates.

Based on these interviews, we aim to estimate the effect that different wind power support policies have on the WACC and consequently on the costs of wind power deployment. For this, we categorize the countries according to their prevailing policy scheme in spring 2014, i.e. the time the interviews were conducted. Fixed feed-in tariffs prevailed in most MS. Several countries have introduced sliding market premiums in order to better integrate renewables. Quota schemes - often considered as the most "market-based" instrument - also occur in several countries.

However, the policy categorization is not as simple. Several countries have tender systems on top of their regular support schemes. Depending on whether these only serve to set a remuneration level or are mandatory for all new projects and at what stage the tendering process happens, these might induce additional risks. Moreover, some countries have practically abandoned any support for renewable energies, for instance through explicit abolition of remuneration payments. In others, network operators simply stopped grid connection due to network stability concerns.

In the interview data, we furthermore have data on whether or not interviewees think that retrospective cuts were conducted in their countries. Through these, some governments aimed to reduce their financial obligations for existing projects. Also such cuts potentially increase the perceived policy risk and thus the financing costs of projects.

We also try to account for the role of long-term contracts. Under quota schemes and fixed market premiums, these potentially play a large role in providing long-term revenue security. However, the offtaker party might only agree to carry the price risk for a discount on power prices. Baringa (2012) reports that this was indeed the case in the UK. Hence, this transfer of risk would come at an additional cost. Consequently, WACC estimates might not be able to account for this additional remuneration requirement.

Naturally, other factors besides mere renewable energy policies influence the project environment. Countries have inherently varying country risks due to their general political and financial contexts. The type of respondent - project developer, banker or academic - might also have an influence on the results if these groups have systematically different perceptions of financing parameters. An additional important dimension is the experience a country has with respect to renewables deployment - countries that have already utilized a significant share of their total potential might well have the necessary expertise and standards to facilitate a favorable investment environment.

Many replies come in relative terms, since the interviewees are only aware of bandwidths in which the WACC lies in their country. We utilize interval regressions to make use of all the information contained in such responses. For sensitivity analyses, we also look into censored regressions.

Results

The results state that the sliding market premium does not increase financing costs as compared to fixed feed-in tariffs. Quota schemes, though, do have a positive impact on the WACC. Switching from a fixed feed-in tariff or sliding market premium to a quota scheme results in an increase in financing costs by about 26 percent. Furthermore, the country risk, retrospective changes and the experience with renewables have statistically and economically significant impacts on financing costs. Tenders, introduced both to set remuneration levels and to auction all new projects, seem not to impact financing costs. According to these results, quota schemes seem to deter investments in renewables since they increase financing costs and thus remuneration requirements.

Conclusions

Renewable energy policy plays a crucial role in the transition towards renewable energies. Wind and solar power are to increase significantly in the member states of the EU over the next decade. This development is shaped by national support policies and EU Directives which give a framework for national legislation. The latter advocates more market-based solutions like market premiums and quota schemes, rather than fixed feed-in tariffs.

On the one hand, the transition from feed-in tariffs to sliding market premiums has not generally increased financing costs. The sliding market premiums seem not to have induced additional risks for investors. This is probably the case since the actual implementations pose barely any additional revenue uncertainties to investors. As almost all implementations of the market premium are of *sliding* nature, investors still have certain revenues per kilowatt hour which they are eligible to. Wide-spread introduction of *fixed* market premiums might have different effects.

On the other hand, the quota scheme raises financing costs by about 26 percent. This can be explained by the additional uncertainties for investors with respect to their revenue streams, and the consequently higher interest requirements for both debt and equity.

References

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