

State investment bank financing for renewables in the OECD

Themenbereich (1), Energie-/Klimapolitik, Versorgungssicherheit

Paul WAIDELICH¹⁽¹⁾, Bjarne STEFFEN⁽¹⁾
⁽¹⁾ETH Zürich

Motivation and research question

As the energy transition comes with substantial investment needs [1], state investment banks (SIBs) are increasingly used to mobilize financing for RE projects [2]. Theoretical works suggest that SIBs can mobilize private financiers and target high-risk RE technologies early on [3]. Yet, the existing quantitative evidence on this policy instrument is limited [4] and it remains unclear if the actual activities of SIBs in RE financing live up to their theoretical rationales. This paper, therefore, assesses how the financing behavior of SIBs regarding RE technologies differs from commercial banks, and if that is compatible with their intended role.

Methodology

To answer this question, we derive hypotheses regarding the optimal behavior of SIBs from the literature, namely that SIBs should target i) higher-risk technologies, particularly at an early stage of low deployment, ii) larger projects, as well as iii) a higher number of private-sector lenders involved. We then test these hypotheses by assessing the predictors of SIB financing for RE new-build projects in OECD countries. To do so, we compile a dataset of $N = 5,007$ transactions between 2004-2021 covering a wide range of RE technologies by combining different Bloomberg databases. We then identify all deals in our sample that involve an SIB as a lender and regress a binary variable indicating SIB involvement on various country-, technology- and transaction-level characteristics in a logit model with country, technology, and year fixed effects. For robustness checks, we deploy additional controls, more granular fixed effects (country-year and technology-year), as well as a bias-corrected fixed-effects estimator to address potential incidental parameter problems [5].

Results and implications

Our results indicate that the involvement of SIBs is significantly more likely for higher-risk technologies like offshore or biomass vis-a-vis established technologies like onshore wind or PV. In addition, we find that SIB financing for PV is more likely if the domestic market for the technology has not matured yet, illustrating that SIBs in general provide financing at earlier stages than commercial banks. However, we find no evidence that SIBs systematically feature on the *first* transactions providing debt to a novel technology – a role that is rather taken by the private sector or, in Latin American countries, by multilateral development banks. While SIBs indeed target larger RE projects, the evidence on whether they mobilize private-sector lenders or crowd them out favors the former but remains equivocal.

Overall, SIBs leverage their risk-taking abilities to foster riskier RE technologies in immature markets but do not seem to live up to the first-mover role suggested by the literature. Policymakers that consider supporting RE deployment through SIBs should, therefore, place a particular emphasis on moving earlier into novel technologies. Furthermore, our results illustrate that empirical relationships are strongly moderated by technology differences, highlighting the importance of a high technological resolution for empirical assessments of RE financing.

¹ Jungautor. Climate Finance and Policy Group, ETH Zürich, Clausiusstrasse 37, CH-8092 Zürich. Tel: +49 176 98794773, E-Mail: paul.waidelich@gess.ethz.ch

References

[1] IEA, International Energy Agency. (2021). World energy outlook 2021. <https://www.iea.org/reports/world-energy-outlook-2021>

[2] Mazzucato, M., & Semieniuk, G. (2018). Financing renewable energy: Who is financing what and why it matters. *Technological Forecasting and Social Change*, 127, 8–22. <https://doi.org/10.1016/j.techfore.2017.05.021>

[3] Geddes, A., Schmidt, T. S., & Steffen, B. (2018). The multiple roles of state investment banks in low-carbon energy finance: An analysis of Australia, the UK and Germany. *Energy Policy*, 115, 158–170. <https://doi.org/10.1016/j.enpol.2018.01.009>

[4] Polzin, F., Egli, F., Steffen, B., & Schmidt, T. S. (2019). How do policies mobilize private finance for renewable energy?—a systematic review with an investor perspective. *Applied Energy*, 236, 1249–1268. <https://doi.org/10.1016/j.apenergy.2018.11.098>

[5] Fernandez-Val, I., & Weidner, M. (2016). Individual and time effects in nonlinear panel models with large n, t. *Journal of Econometrics*, 192 (1), 291–312. <https://doi.org/10.1016/j.jeconom.2015.12.014>