

Alexander Zerrahn

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Research interests

Energy system modeling, energy & environmental economics, electricity markets;
Applied operations research, numerical methods, applied microeconometrics

Current positions

Since 2012 Research associate, DIW Berlin, department energy, transportation, environment
Since 2016 Member, BERA postdoc program
Associate editor, DIW Wochenbericht/DIW Weekly Report
Lecturer for Renewable Electricity Economics, HTW Berlin

Education

2016 PhD in economics (Dr. rer. oec.), Technical University Berlin
Essays in Electricity Economics – Empirical, Numerical and Theoretical Perspectives on Renewable Energy and Cross-Border Integration
2011-2016 PhD student, DIW Berlin Graduate Center, Technical University Berlin
2011 Economist (Diplom-Volkswirt), University of Tübingen
2005-2011 Studies in International Economics, Universities of Tübingen and Copenhagen
2004 High school graduation (Abitur), Herten

Publications: peer-reviewed journals and book chapters

2019 Schill, W.-P., **A. Zerrahn**, and F. Kunz. Solar prosumage: an economic discussion of challenges and opportunities. In: Lowitzsch, J. (ed.). *Energy Transition - Financing Consumer Co-Ownership in Renewables*. Palgrave Macmillan.
2018 **Zerrahn, A.**, W.-P. Schill, and C. Kemfert. On the economics of electrical storage for variable renewable energy sources. *European Economic Review* 108, 259–279.
Bloess, A., W.-P. Schill, and **A. Zerrahn**. Power-to-heat for renewable energy integration: A review of technologies, modeling approaches, and flexibility potentials. *Applied Energy* 212, 1611–1626.
Schill, W.-P. and **A. Zerrahn**. Long-run power storage requirements for high shares of renewables: results and sensitivities. *Renewable and Sustainable Energy Reviews* 83, 156–171.

- 2017 **Zerrahn, A.** Wind power and externalities. *Ecological Economics* 141, 245–260.
- Krekel, C. and **A. Zerrahn**. Does the presence of wind turbines have negative externalities for people in their surroundings? Evidence from well-being data. *Journal of Environmental Economics and Management* 82, 221-238.
- Zerrahn, A.** and W.-P. Schill. Long-run power storage requirements for high shares of renewables: review and a new model. *Renewable and Sustainable Energy Reviews* 79, 1518–1534.
- Zerrahn, A.** and D. Huppmann. Network expansion to mitigate market power. *Networks and Spatial Economics* 17(2), 611–644.
- Schill, W.-P., **A. Zerrahn**, and F. Kunz. Prosumage of solar electricity: pros, cons, and the system perspective. *Economics of Energy & Environmental Policy* 6(1), 7-31.
- 2016 Kunz, F. and **A. Zerrahn**. Coordinating cross-country congestion management: evidence from central Europe. *The Energy Journal* 37(SI3), 81-100.
- 2015 Kunz, F. and **A. Zerrahn**. Benefits of coordinating congestion management in electricity transmission networks: Theory and application to Germany. *Utilities Policy* 37, 34-45.
- Zerrahn, A.** and W.-P. Schill. On the representation of demand-side management in power system models. *Energy* 84, 840-845.

Discussion papers

- Flexible electricity use for heating in markets with renewable energy (with W.-P. Schill). *DIW Discussion Paper 1769* (under review).
- Prosumage of solar electricity: tariff design, capacity investments, and power system effects (with C. Günther and W.-P. Schill). *Preprint* (submitted).

Work in progress

- Flexible sector coupling in high-RES scenarios: impacts on electrical storage (with M. Kendzioriski and W.-P. Schill).
- Optimal hydrogen supply chains: co-benefits for integrating renewable energy sources (with F. Stoeckl and W.-P. Schill).
- Generating driving and charging profiles of electric vehicles from transportation statistics (with C. Gaete, H. Kramer, and W.-P. Schill).
- Energy demand vs flexibility supply - disentangling effects of electric vehicles in a renewable energy system (with C. Gaete, H. Kramer, and W.-P. Schill).
- Externalities of biomass plants (with C. Krekel, J. Rechlitz, and J. Rode).
- Prices in power system models (with W.-P. Schill).

Publications: policy and projects

- 2018 Schill, W.-P., **A. Zerrahn**, N. May, and K. Neuhoff. Flexible Nutzung von Nachtspeicherheizungen kann ein kleiner Baustein für die Energiewende sein. *DIW Wochenbericht 46/2018*. In German (Flexible use of electric heaters can be a small building block for the energy transition).

- O'Dwyer, C., **A. Zerrahn** et al. Cost benefit analysis of SETS and alternative local small-scale storage options. *Project report: Realising value from electricity markets with local smart electric thermal storage technology (Horizon 2020)*.
- Schill, W.-P., **A. Zerrahn**, C. Kemfert, and C. von Hirschhausen. Die Energiewende wird nicht an Stromspeichern scheitern. *DIW aktuell 11*. In German (The energy transition will not fail due to electrical storage).
- 2017 **Zerrahn, A.** Wind power: external costs and other indirect economic effects. *DIW Roundup* 111.
- Schill, W.-P., **A. Zerrahn**, F. Kunz, and C. Kemfert. Decentralized solar prosumage with battery storage: system orientation required. *DIW Economic Bulletin* 12/13/2017.
- 2016 Schill, W.-P., M. Niemeyer, **A. Zerrahn**, and J. Diekmann. Bereitstellung von Regelleistung durch Elektrofahrzeuge in Deutschland: Modellrechnungen für das Jahr 2035. *Zeitschrift für Energiewirtschaft* 40(2), 73-87. In German (Provision of balancing reserves from electric vehicles in Germany: model calculations for 2035).
- 2015 Egerer, J., **A. Zerrahn**, and C. von Hirschhausen. Distributional Effects of System Integration and Qualitative Discussion of Implications for Stakeholders. In: *AGORA Energiewende: Increased Integration of the Nordic and German Electricity Systems*.
- Schill, W.-P., J. Diekmann, and **A. Zerrahn**. Power Storage: An Important Option for the German Energy Transition. *DIW Economic Bulletin* 10/2015.
- 2013 Gerbaulet, C., F. Kunz, C. von Hirschhausen, and **A. Zerrahn**. Netzsituation in Deutschland bleibt stabil. *DIW Wochenbericht* 20/21 2013. In German (Electricity transmission network situation remains stable).

Software

DIETER: a Dispatch and Investment Evaluation Tool with Endogenous Renewables (with W.-P. Schill). Open-source electricity system model, www.diw.de/dieter.

Teaching

- Since 2016 Lecture Renewable Electricity Economics (MSc, in German), lecturer, HTW Berlin
- 2014-2015 Seminar INFRATRAN Advanced Electricity Sector Modeling (PhD, in English), Technical University Berlin
- 2015 Seminar Advanced Methods for Operations Research (MSc, in English), Technical University Berlin
- 2006-2011 Student TA for Advanced Microeconomics (BSc, in German) and Mathematics for Economics and Business Administration (BSc, in German), University of Tübingen, teaching prize in 2010

Scientific presentations (co-author presentations in italics)

- 2019 Conferences: 30th European Conference on Operational Research (Dublin), 11. Internationale Energiewirtschaftstagung (Vienna)
- 2018 Conferences: 7th International Ruhr Energy Conference (Essen), *2018 British Institute of Energy Economics Conference (Oxford)*, 33rd Annual Congress of the EEA (Cologne), *13th International SOEP User Conference (Berlin)*, 6th World Congress of Environmental and Resource Economists (Gothenburg), 41st IAEE International

- Conference (Groningen), *2018 Essen Health Conference*, *6th IZA Workshop on Environment and Labor Markets (Bonn)*, *7th Mannheim Energy Conference*
- 2017 Seminars: National University of Singapore, UFZ Leipzig, Seminar on Energy and Environmental Economics (TU Munich and ifo)
Conferences: *16th IAEE European Conference (Vienna)*, *23rd EAERE Conference (Athens)*, *6th European Energy Forum (Paris)*
- 2016 Conferences: Workshop on macroeconomic energy system modeling and optimization (Prague), *22nd EAERE Conference (Zurich)*, *39th IAEE International Conference (Bergen)*, *11¹¹ ENERDAY (Dresden)*, *Annual Meeting of the European Public Choice Society (Freiburg)*, *Royal Economic Society Conference 2016 (Brighton)*, *8th Ruhr Graduate School Doctoral Conference in Economics (Bochum)*
- 2015 Conferences: *9th Trans-Atlantic INFRADAY (Washington DC)*, *Jahrestagung Verein für Socialpolitik (Münster)*, *30th Annual Congress of the EEA (Mannheim)*, *11th Econometric Society World Congress (Montréal)*, *17th ZEW Summer Workshop for Young Economists (Mannheim)*, *64th Annual Meeting of the French Economic Association (Rennes)*, *20th Spring Meeting of Young Economists (Ghent)*, *2015 Annual Conference of the Scottish Economic Society (Perth)*, *9th International Renewable Energy Storage Conference (Düsseldorf)*, *5th International Ruhr Energy Conference (Essen)*
- 2014 Conferences: *INFORMS Annual Meeting (San Francisco)*, *8th Trans-Atlantic INFRADAY (Washington DC)*, *14th IAEE European Conference (Rome)*, *Jahrestagung Verein für Socialpolitik (Hamburg)*, *37th IAEE International Conference (New York City)*, *16th Workshop of the GEE Student Chapter (Essen)*, *9th ENERDAY (Dresden)*, *13th Symposium Energieinnovation (Graz)*
- 2013 Conferences: *13th IAEE European Conference (Düsseldorf)*, *10th International Conference on European Energy Markets (Stockholm)*, *8th ENERDAY (Dresden)*, *14th Young Energy Economists and Engineers Seminar (Vienna)*

Services

- Refereeing 4OR, Applied Energy, Ecological Economics, Economics of Energy & Environmental Policy, Energies, Energy Economics, Energy Policy, Energy Strategy Reviews, European Economic Review, Joule, Nature Communications, Renewable and Sustainable Energy Reviews, Spring Meeting of Young Economists, The Energy Journal, Utilities Policy
- Organization Berlin Conference on Energy and Electricity Economics (BELEC), DIW master classes on advanced operations research