Dongchen He

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Research Interests

Energy Economics & Policy
Empirical Industrial Organization
Asset Pricing

References

Prof. Bert Willems
Department of Economics
Université catholique de Louvain
Email: bert.willems@uclouvain.be

Prof. Ronald Huisman
Department of Business
Erusmus University Rotterdam
Email: rhuisman@ese.eur.nl

Education

Tilburg University, Tilburg, Netherlands Expected 2025
Ph.D. in Economics

Tilburg University, Tilburg, Netherlands 2021
Master in Economics, summa cum laude

Renmin University of China, Beijing, China 2019
Master in Finance

Central University of Finance and Economics, Beijing, China 2016
Bachelor in Economics

Job Market Paper

Distributional Effects of Residential Solar Support Policies

Abstract: This paper investigates the impact of the net metering policy on residential solar photovoltaic adoption and its distributional effects across different wealth groups. Using Dutch administrative data, the findings show that net metering accounts for 79.21% of residential solar capacity from 2012 to 2022, along with a regressive effect where households in the lowest 20% wealth group contribute a net 11.15% of the total subsidy, while the highest 20% wealth group receives a net 10.38% of subsidy. Replacing the net metering policy with feed-in premiums or the upfront subsidy only improves the redistribution by less than 1%. Moreover, compared to the net metering policy, feed-in premiums encourage larger PV installations, and upfront subsidy promotes smaller capacities. Consequently, feed-in premiums export 13.37% more electricity to the grid, and the average installation cost is 11.93% higher when an upfront subsidy applies. This implies that a simple policy replacement may not address issues such as inequality and rising grid costs with net metering.

Working Papers

Flexibility in Power System: Market Design Matters (*with Bert Willems*)

Abstract: The growing share of renewable energy requires sufficient investment in power system flexibility. In this paper, we frame a three-stage peak-load pricing model consisting of investment, commitment, and production, considering that electricity generation is costly to adjust on short notice. The results demonstrate the importance of increasing time granularity in electricity markets with efficient state-contingent prices. Adapting the idea of real options theory, which states that waiting is valuable, flexible firms avoid producing in the low-demand state and earn a premium to recoup investment costs. On top of that, this paper discusses the efficiency of alternative market designs in the investment of flexible assets. Without an efficient real-time market, day-ahead forward price results in under-investment in flexible technologies and over-investment in inflexible ones. This distortion, in theory, can be corrected by a time-varying options market with technology-specific payment while any centralized auction fails to achieve optimum. Finally, this work briefly illustrates the effect of demand flexibility, showing that an increase in demand response does not necessarily reduce the reliance on production flexibility if rationing is done randomly.

Electricity Forward Premium: Renewable Integration and Skewness Preference (*with Ronald Huisman & Bert Willems*)

Abstract: This paper presents new components that explain the risk premium priced in electricity forward and futures contracts. These components relate to the inclusion of renewable power sources in electricity markets. We build upon the equilibrium pricing model presented by Bessembinder and Lemmon (2002), which comes from a time wherein intermittent renewable power supply was negligible. We extend their framework by including intermittent supply from zero marginal costs renewable power sources such as wind and solar and by assuming that agents consider mean-variance-skewness preferences instead of mean-variance only. Beyond variance and skewness of wholesale spot prices as components found before, we show that components that relate to the covariance and coskewness between renewable supply and spot prices explain the power forward risk premium as well. We find empirical evidence that these new components are statistically significant and improve the explanatory power of empirical regressions. Our results suggest the importance of considering the asymmetry of renewable supply shocks in explaining electricity forward premiums.

Research Visits

Toulouse School of Economics, *Toulouse* March-April 2025

Conferences & Seminars

ASSA 2026, *Philadelphia* Jan 2026
EEA 2025, *Bordeaux* Aug 2025
IAEE International 2025, *Paris* June 2025
FMA European 2025, *Limassol* June 2025
Canadian Economics Association 58th Annual Meetings, *Online* May 2024
Conference on Climate and Energy Finance, *Hannover* Nov 2023
Energy Workshop, *Toulouse* Oct 2023
EEA-ESEM 2023, *Barcelona* Aug 2023
CEEM Ph.D. Conference, *Paris* Apr 2023
Young Energy Economists and Engineers Seminar, *Cobbenhagen* Sep 2022
6th AIEE Energy Symposium: Current and Future Challenges to Energy Security, *Online* Dec 2021

Teaching Experience

Tilburg University, Teaching Assistant
Contract Theory, Graduate level 2024-2025
Information Economics, Bachelor level 2023-2024

Game Theory, Graduate level 2020-2023
Intermediate Economics, Bachelor level 2022
Microeconomics 1, Bachelor level 2021

Renmin University of China, Teaching Assistant
Advanced Microeconomics, Graduate level 2017

Awards & Grants

Funded PhD program, €150000, *Tilburg University* 2021-2025
Jenny Ligthart Prize (best research master), €1500, *Tilburg University* 2022
Koopmans Scholarship, €48000, *Tilburg University* 2019-2021
Academic Scholarship, RMB51600, *Renmin University of China* 2016-2018
College Academic Scholarship, *Central University of Finance and China* 2014-2015
Outstanding Volunteer, *Star Volunteer Association* 2014
Second Prize, *Students' Platform for Innovation and Entrepreneurship Training Program* 2014

Software Skills

- Matlab, LaTeX, Stata, Python

Languages

- Southwestern Mandarin (Native), Mandarin, English, Dutch (beginner)