Dongchen He

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Research Interests

Energy Economics & Policy
Market Design & 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

Unveiling the Winners and Losers: The Distributive Impacts of Net Metering Policies

Abstract: This paper investigates the impact of net metering policies on residential solar photovoltaic (PV) adoption and their distributional effects across different wealth groups, comparing with two alternative incentive policies: feed-in premiums and upfront subsidies. The findings highlight the importance of funding sources for renewable energy subsidies. When subsidies are financed through electricity consumption by volumetric pricing, all three policies result in low-income households cross-subsidizing high-income ones, with net metering generating slightly higher inequality. Moreover, the three policies affect PV adoption sizes: net metering aligns PV capacity with actual electricity consumption, feed-in premiums encourage larger PV installations, and upfront subsidies promote smaller capacities. While feed-in premiums are the most equitable, they increase the electricity surplus returned to the grid, requiring higher grid costs. Upfront subsidies are the most cost-effective but demand substantial subsidies. Net metering compromises cost efficiency and rooftop utilization. This paper is an important input to the debate on the net metering policy.

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.

Papers in Progress

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

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
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

Research Experience

Research Assistant, *Renmin University of China* 2017

Internship

Agriculture Industry Research Analyst, *Tian Feng Securities, Beijing* 2017
Credit Department Winter Analyst, *Industrial and Commercial Bank of China, Beijing* 2015

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

Social Work

Accommodation Administration and Counseling Center of Renmin University of China 2018-2019
Start Volunteer Association, *Volunteer to teach children from poor households* 2012-2013

Software Skills

- Matlab, LaTeX, Stata, Python

Languages

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