

Dongchen He

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Research Interests

Energy Economics & Policy
Microeconomic Theory
Asset Pricing
Section: References

References

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| Prof. Bert Willems Department of Economics Université catholique de Louvain Email: bert.willems@uclouvain.be | Prof. Ronald Huisman Department of Business Erasmus University Rotterdam Email: rhuisman@ese.eur.nl |
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Education

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| Tilburg University, Tilburg, Netherlands <i>Ph.D. in Economics</i> | Expected 2025 |
| Tilburg University, Tilburg, Netherlands <i>Master in Economics, summa cum laude</i> | 2021 |
| Renmin University of China, Beijing, China <i>Master in Finance</i> | 2019 |
| Central University of Finance and Economics, Beijing, China <i>Bachelor in Economics</i> | 2016 |

Job Market Paper

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

Abstract: This paper examines the impact of net metering policies on households across different wealth groups by disproportionately incentivizing residential solar photovoltaic (PV) adoption. The findings suggest that net metering produces positive externalities when residential solar PV adoption is limited. However, as PV adoption grows, net metering generates negative externalities, and low-income households implicitly cross-subsidize wealthy ones. Among alternatives, each policy encourages different installation behaviors. Net metering incentivizes households to install solar capacity close to their consumption level, while feed-in premiums promote larger installations, and investment subsidies encourage smaller capacities. Although feed-in premiums are the fairest, they are the most expensive policy and increase electricity surplus returned to the grid, potentially leading to higher grid upgrade costs. To mitigate the inequities of net metering, encouraging non-solar households to adopt dynamic retail contracts or having energy companies charge a return delivery fee could also be effective solutions. Overall, the results highlight the insufficiency of simply changing the incentivizing policies but integrating complementary solutions to facilitate an efficient and equitable energy transition.

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.

Conferences & Seminars

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| Canadian Economics Association 58th Annual Meetings, <i>Online</i> | May 2024 |
| Conference on Climate and Energy Finance, <i>Hannover</i> | Nov 2023 |
| Energy Workshop, <i>Toulouse</i> | Oct 2023 |
| EEA-ESEM 2023, <i>Barcelona</i> | Aug 2023 |
| CEEM Ph.D. Conference, <i>Paris</i> | Apr 2023 |
| Young Energy Economists and Engineers Seminar, <i>Cobbenhagen</i> | Sep 2022 |
| 6th AIEE Energy Symposium: Current and Future Challenges to Energy Security, <i>Online</i> | Dec 2021 |

Teaching Experience

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| 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

Jenny Ligthart Prize, *Tilburg University* 2022

Koopmans Scholarship, *Tilburg University* 2019-2021

Academic Scholarship, *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)