Wei Guo

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Research Interests

International Trade, Industrial Organization, Macroeconomics, Semiconductor Industry

Education

Purdue University, West Lafayette, IN
Ph.D. in Economics 2022 – 2027(expected)

Boston University, Boston, MA
Shandong University, Jinan, China

Dissertation Committee

Mario J. Crucini (Chair)	Purdue University
Ralph Siebert	Purdue University
Chong Xiang	Purdue University
Anson Soderbery	Purdue University

Research

Job Market Paper

The Asymmetric Incidence of Intermediate Input Controls: Evidence from Semiconductor Export

This paper studies how U.S. export controls on advanced semiconductors to China affect welfare and technological capacity across the global semiconductor supply chain, especially when other chip producers—Japan, Korea, and Taiwan (OC)—choose how to comply with the US. I first use triple-difference regressions to estimate how advanced-chip exports to China changed after the October 2022 controls for both U.S. and OC suppliers. These estimates provide empirical evidence for the policy wedge used in the quantitative model. I then develop a four-region dynamic general equilibrium model in which advanced chips are used both as intermediate inputs in high-technology production and as investment goods that build compute capital. OC suppliers choose whether to comply with U.S. export controls, trading off current sales to China against the risk of losing future access to U.S. technology, which raises their cost of producing advanced chips. I use the model to study an unexpected permanent export control. In the long run, its compute stock falls by 33 percent and high-technology output falls by 16.4 percent relative to the policy-off economy, while its consumption-equivalent welfare loss is only about

0.4 percent. The more striking result is that the largest welfare burden does not fall on China. OC loses about 0.51 percent of consumption-equivalent welfare, more than the target economy, while its long-run compute stock and high-technology output fall by 25 percent and 8.6 percent, respectively. This outcome reflects a third-country compliance dilemma: tighter alignment with U.S. controls restricts OC's access to Chinese demand, while weaker alignment reduces its access to U.S. technology and raises future production costs. Export controls therefore generate asymmetric incidence across the semiconductor supply chain, with technologically dependent third-country suppliers bearing substantial costs even though they are not the direct policy target.

Publications

"Green Innovation and Maturity Mismatch: Evidence from China.", with Zhang, Liqin, Xiao Sun, and Ruiqi Sun. *Finance Research Letters*, 2025, 85(C): 108124.

This paper examines how corporate green innovation affects firms' debt maturity structures using panel data on Chinese listed firms from 2007–2023. I show that green innovation significantly exacerbates debt maturity mismatch, driven by long investment horizons, elevated financial risk, and short-term performance constraints. The results are robust to instrumental variable approaches, propensity score matching, entropy balancing, and policy shocks from carbon trading pilots. The findings reveal unintended financial risks associated with green innovation and inform green finance policy design.

Working Papers

"Social Credit Level and Corporate Leverage Manipulation: Evidence from China", with Ruiqi Sun, Tianyu Zhang

Using China's Social Credit System pilot as a quasi-natural experiment, this paper studies the impact of social credit on corporate leverage manipulation. Employing a difference-in-differences design on Chinese listed firms from 2007–2022, I find that higher social credit significantly reduces leverage manipulation. Mechanism analyses show that the effect operates through improved information transparency, expanded credit access, and reduced overleveraging. The effects are strongest among highly financialized, capital-intensive firms and firms facing lower financing costs.

Work in Progress

The Transition from Gas Cars to EVs, with Federico Rossi, Ting Zhu

This project studies how electric-vehicle adoption reshapes the retail gasoline market through consumer demand, station pricing, and exit decisions. We combine daily prices for roughly 1,700 Chicago-area gas stations with a geolocation panel of about 150,000 consumers, whose individual station visits we construct from raw GPS records, and estimate a random-coefficients demand model in which consumers trade off price against the detour a station requires from their daily travel. We use the model to simulate pricing and exit as EV penetration increases: heterogeneous adoption produces station closures and fuel deserts in some areas and higher prices through reduced spatial competition in others. The project evaluates counterfactual policies, such as charging-infrastructure expansion, and their distributional welfare implications.

Multinational Semiconductor Firms and the Geography of Innovation, with Yuting Wei, Ralph Siebert

Accepted for presentation at the 2027 American Economic Association Annual Meeting

This project studies the geographic allocation of R&D by multinational firms in the semiconductor memory industry. Using firm-level production, capacity, plant, and patent data for the DRAM industry from 1974–2004, we document that innovation is concentrated among multinational firms, that firms replicate internal technology structures across countries, and that R&D entry increases local knowledge spillovers. We develop a multi-country endogenous growth model in which heterogeneous firms choose both the scale and location of R&D. The model is used to assess whether firms under-expand geographically relative to the efficient allocation and how policies such as the U.S. CHIPS and Science Act affect industry growth, productivity, and the global stock of knowledge.

The Dynamic Propagation of Critical-Input Wedges in Production Networks: Short-Run Bottlenecks, Long-Run Catch-Up, and the Conditions for Backfire

This project studies how restrictions on critical upstream inputs propagate through production networks and induce endogenous domestic capability responses. I develop a dynamic multi-sector model in which an input wedge generates short-run welfare losses through production bottlenecks but also induces domestic production and learning-by-doing in the targeted input sector. The model characterizes when long-run capability gains can outweigh short-run bottleneck losses and how this trade-off depends on input substitutability, network exposure, and the strength of learning. The framework is motivated by recent semiconductor export controls and other episodes of technology restrictions.

Teaching Experience

Instructor: ECON 251 Microeconomics	Sep 2025 – Dec 2025
Distinguished Teaching Winner	Purdue University
Instructor: ECON 251 Microeconomics	Summer 2025
Distinguished Teaching Winner	Purdue University
Teaching Assistant for Game Theory(ECON 510)	Jan 2026 - May 2026
TA to Prof.Ralph Siebert	Purdue University
Teaching Assistant for Real Estate Fundamentals(MGMT 370)	Sep 2023 - May 2024
TA to Prof.Lindsay Relihan	Purdue University
Teaching Assistant for Macroeconomics(ECON 352)	Sep 2022 - May 2023
TA to Prof.Cathy Zhang	Purdue University

Conference Presentations

AEA 2027 Annual Meeting, Washington, DC,	Spring 2027 (scheduled)
SEA 96th Annual Meeting, Houston, TX	Fall 2026 (scheduled)
JIE Summerschool and JIE Editors conference, Milan, Italy,	Summer 2026
HEC Economics Ph.D Conference, Paris, France	Summer 2026
MEA's 90th Annual Meetings, Chicago, IL	March 2026
SEA 95th Annual Meeting, Tampa, FL	Fall 2025
14th Annual Research Design for Causal Inference, Northwestern University, IL	Summer 2025
Estimation of Structural Models with Conditional Choice Probabilities, University of Notre Dame, IN	Summer 2025

Programming and Data Skills

MATLAB, Stata, Python, R, SQL, SAS, SPSS, Excel (VBA), LaTeX
Large-scale administrative data, geolocation data, structural estimation, simulation-based methods

Honors and Awards

Economics Research Micro-Grant Fund ($700), Purdue University 2025
Distinguished Teaching Winner Summer of 2025
Distinguished Teaching Winner Fall of 2025

Professional Service

Referee for peer-reviewed academic journals (Elsevier).

Additional Experience

Research Assistant, Purdue University 2022 – Present

Business Doctoral Student Association Treasurer Fall & Spring 2023
Industry experience in financial analysis and investment research (details available upon request)