Stanford



Frank Wolak

Holbrook Working Professor of Price Theory and Senior Fellow at the Freeman Spogli Institute, at the Stanford Institute for Economic Policy Research and at the Precourt Institute for Energy

Economics

CONTACT INFORMATION

- **Administrative Contact**

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Bio

BIO

Frank A. Wolak is the Holbrook Working Professor of Commodity Price Studies in the Department of Economics and the Director of the Program on Energy and Sustainable Development at Stanford University. His research and teaching focuses on design, performance, and monitoring of energy and environmental markets. He served as Chair of the Market Surveillance Committee (MSC) of the California Independent System Operator and was a member of the Emissions Market Advisory Committee (EMAC) for California's Market for Greenhouse Gas Emissions allowances.

ACADEMIC APPOINTMENTS

- Professor, Economics
- Senior Fellow, Freeman Spogli Institute for International Studies
- Senior Fellow, Precourt Institute for Energy
- Senior Fellow, Stanford Institute for Economic Policy Research (SIEPR)
- Affiliate, Stanford Woods Institute for the Environment

PROGRAM AFFILIATIONS

- Center for Latin American Studies
- Public Policy

LINKS

- Wolak Website: https://web.stanford.edu/group/fwolak/cgi-bin/
- FSI Page: http://fsi.stanford.edu/people/frank_wolak/

Research & Scholarship

PROJECTS

- Field Experiment on Effectiveness of Information Provision on Household Energy Consumption in Mexico - Stanford University (6/17/2015 - present)
- Field Experiment on the Effectiveness on In-Home Displays on Household Electricity Consumption in Singapore - Stanford University (7/1/2014 - present)

Teaching

COURSES

2026-27

- Econometrics Seminar: ECON 370 (Aut, Win, Spr)
- Energy Markets and Policy: ECON 156, ECON 256, INTLPOL 276 (Aut)
- Free to Choose Revisited: ECON 10N (Win)
- Optimization Models with Applications in Power Systems and Electricity Markets: ECON 138 (Spr)
- Regulatory Economics: ECON 158 (Win)

2025-26

- Econometrics Seminar: ECON 370 (Aut, Win, Spr)
- Latin American Energy Markets and Policy: ECON 156L, ECON 256L (Win)
- Optimization Models with Applications in Power Systems and Electricity Markets: ECON 138, ECON 238 (Spr)

2024-25

- Econometrics Seminar: ECON 370 (Aut, Win, Spr)

2023-24

- Econometrics Seminar: ECON 370 (Aut, Win, Spr)
- Energy Markets and Policy: ECON 156, ECON 256, INTLPOL 276 (Win)
- The Engineering Economics of Electricity Markets: ECON 261, EE 268 (Aut)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Christoph Graf

Publications

PUBLICATIONS

- **Market Design in an Intermittent Renewable Future Cost Recovery With Zero-Marginal-Cost Resources** *IEEE POWER & ENERGY MAGAZINE*
  Wolak, F. A.
  2021; 19 (1): 29–40
- **(Machine) learning from the COVID-19 lockdown about electricity market performance with a large share of renewables** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
  Graf, C., Quaglia, F., Wolak, F. A.
  2021; 105
- **Increasing the energy cognizance of electricity consumers in Mexico: Results from a field experiment** *JOURNAL OF ENVIRONMENTAL ECONOMICS AND MANAGEMENT*
  Stojanovski, O., Leslie, G. W., Wolak, F. A., Huerta Wong, J., Thurber, M. C.
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- **Optimal offer-bid strategy of an energy storage portfolio: A linear quasi-relaxation approach** *APPLIED ENERGY*
  Tomasson, E., Hesamzadeh, M., Wolak, F. A.
  2020; 260
- **Expecting the Unexpected: Emissions Uncertainty and Environmental Market Design** *AMERICAN ECONOMIC REVIEW*
  Borenstein, S., Bushnell, J., Wolak, F. A., Zaragoza-Watkins, M.

2019; 109 (11): 3953–77

- **The benefits of purely financial participants for wholesale and retail market performance: lessons for long-term resource adequacy mechanism design** *OXFORD REVIEW OF ECONOMIC POLICY*
  Wolak, F. A.
  2019; 35 (2): 260–90
- **The Role of Efficient Pricing in Enabling a Low-Carbon Electricity Sector** *ECONOMICS OF ENERGY & ENVIRONMENTAL POLICY*
  Wolak, F. A.
  2019; 8 (2): 49–72
- **Comparing auction designs where suppliers have uncertain costs and uncertain pivotal status** *RAND JOURNAL OF ECONOMICS*
  Holmberg, P., Wolak, F. A.
  2018; 49 (4): 995–1027
- **Rural energy access through solar home systems: Use patterns and opportunities for improvement** *ENERGY FOR SUSTAINABLE DEVELOPMENT*
  Stojanovski, O., Thurber, M., Wolak, F.
  2017; 37: 33-50
- **Freight Rail Costing and Regulation: The Uniform Rail Costing System** *REVIEW OF INDUSTRIAL ORGANIZATION*
  Wilson, W. W., Wolak, F. A.
  2016; 49 (2): 229-261
- **Measuring the competitiveness benefits of a transmission investment policy: The case of the Alberta electricity market** *ENERGY POLICY*
  Wolak, F. A.
  2015; 85: 426-444
- **Environmental economics. An economic perspective on the EPA's Clean Power Plan.** *Science*
  Fowlie, M., Goulder, L., Kotchen, M., Borenstein, S., Bushnell, J., Davis, L., Greenstone, M., Kolstad, C., Knittel, C., Stavins, R., Wara, M., Wolak, F., Wolfram, et al
  2014; 346 (6211): 815-816
- **Do Residential Customers Respond to Hourly Prices? Evidence from a Dynamic Pricing Experiment** *AMERICAN ECONOMIC REVIEW*
  Wolak, F. A.
  2011; 101 (3): 83-87
- **Measuring the Benefits of Greater Spatial Granularity in Short-Term Pricing in Wholesale Electricity Markets** *AMERICAN ECONOMIC REVIEW*
  Wolak, F. A.
  2011; 101 (3): 247-252
- **Using restructured electricity supply industries to understand oligopoly industry outcomes** *UTILITIES POLICY*
  Wolak, F. A.
  2010; 18 (4): 227-246
- **Upstream vs. downstream CO2 trading: A comparison for the electricity context** *ENERGY POLICY*
  Hobbs, B. F., Bushnell, J., Wolak, F. A.
  2010; 38 (7): 3632-3643
- **When It Comes to Demand Response, Is the Federal Energy Regulatory Commission its Own Worst Enemy?** *The Electricity Journal*
  Bushnell, J., Hobbs, B. F., Wolak , F.
  2009; 22 (8): 9-18
- **Relative prices and electronic substitution: Changes in household-level demand for postal delivery services from 1986 to 2004** *JOURNAL OF ECONOMETRICS*
  Hong, S., Wolak, F. A.
  2008; 145 (1-2): 226-242
- **Reforming the Indian Electricity Supply Industry** *Sustaining India's Growth Miracle*
  Wolak , F.

Columbia Business School.2008

- **Quantifying the supply-side benefits from forward contracting in wholesale electricity markets** *15th European Conference of the Econometrics Community*
  Wolak, F. A.
  WILEY-BLACKWELL.2007: 1179–1209

- **Benefit-cost analysis of large-scale transmission for renewable generation: Principles & California Case Study** *IEEE-Power-Engineering-Society General Meeting*
  Casey, K. E., Hobbs, B. F., Shirmohammadi, D., Wolak, F. A.
  IEEE.2007: 2929–2931

- **The California ISO transmission economic assessment methodology (TEAM): Principles and application to path 26** *2006 POWER ENGINEERING SOCIETY GENERAL MEETING, VOLS 1-9*
  Awad, M., Broad, S., Casey, K. E., Chen, J., Geevarghese, A. S., Miller, J. C., Perez, A. J., Hobbs, B. F., Wolak, F. A.
  2006: 2717-?

- **Measuring and managing unilateral market power in electricity** *IEEE-Power-Engineering-Society General Meeting*
  Wolak, F. A.
  IEEE.2005: 2028–2028

- **Measuring unilateral market power in wholesale electricity markets: The California market, 1998-2000** *115th Annual Meeting of the American-Economic-Association*
  Wolak, F. A.
  AMER ECONOMIC ASSOC.2003: 425–30

- **Measuring market inefficiencies in California's restructured wholesale electricity market** *AMERICAN ECONOMIC REVIEW*
  Borenstein, S., BUSHNELL, J. B., WOLAK, F. A.
  2002; 92 (5): 1376-1405

- **Market design and price behavior in restructured electricity markets - An international comparison** *8th National Bureau of Economic Research East Asia Seminar on Economics*
  WOLAK, F. A.
  UNIV CHICAGO PRESS.2000: 79–137

- **Changes in the household-level demand for postal delivery services from 1986 to 1994** *4th Bi-Annual Conference on Postal and Delivery Services*
  WOLAK, F. A.
  KLUWER ACADEMIC PUBLISHERS.1997: 162–191

- **Electronic substitution in the household-level demand for postal delivery services** *24th Annual Telecommunications Policy Research Conference*
  WOLAK, F. A.
  LAWRENCE ERLBAUM ASSOC PUBL.1997: 155–179

- **The welfare impacts of competitive telecommunications supply: A household-level analysis** *BROOKINGS PAPERS ON ECONOMIC ACTIVITY*
  WOLAK, F. A.
  1996: 269-350

- **Why do firms simultaneously purchase in spot and contract markets? Evidence from the United States steam coal market** *Conference on Agricultural Markets - Mechanisms, Failures and Regulations*
  WOLAK, F. A.
  ELSEVIER SCIENCE PUBL B V.1996: 109–168

- **MEASURING INDUSTRY-SPECIFIC PROTECTION - ANTIDUMPING IN THE UNITED-STATES** *BROOKINGS PAPERS ON ECONOMIC ACTIVITY*
  Staiger, R. W., WOLAK, F. A.
  1994: 51-118

- **A PROCEDURE FOR ESTIMATING THE UNCONDITIONAL CUMULATIVE INCIDENCE CURVE AND ITS VARIABILITY FOR THE HUMAN-IMMUNODEFICIENCY-VIRUS** *APPLIED STATISTICS-JOURNAL OF THE ROYAL STATISTICAL SOCIETY SERIES C*
  Hay, J. W., WOLAK, F. A.

1994; 43 (4): 599-624

- **COLLUSIVE PRICING WITH CAPACITY CONSTRAINTS IN THE PRESENCE OF DEMAND UNCERTAINTY** *RAND JOURNAL OF ECONOMICS*
  Staiger, R. W., WOLAK, F. A.
  1992; 23 (2): 203-220
- **THE EFFECT OF DOMESTIC ANTIDUMPING LAW IN THE PRESENCE OF FOREIGN MONOPOLY** *JOURNAL OF INTERNATIONAL ECONOMICS*
  Staiger, R. W., WOLAK, F. A.
  1992; 32 (3-4): 265-287
- **THE LOCAL NATURE OF HYPOTHESIS TESTS INVOLVING INEQUALITY CONSTRAINTS IN NONLINEAR MODELS** *ECONOMETRICA*
  WOLAK, F. A.
  1991; 59 (4): 981-995
- **A MODEL OF HOMOGENEOUS INPUT DEMAND UNDER PRICE UNCERTAINTY** *AMERICAN ECONOMIC REVIEW*
  WOLAK, F. A., Kolstad, C. D.
  1991; 81 (3): 514-538
- **TESTING INEQUALITY CONSTRAINTS IN LINEAR ECONOMETRIC-MODELS** *JOURNAL OF ECONOMETRICS*
  WOLAK, F. A.
  1989; 41 (2): 205-235
- **LOCAL AND GLOBAL TESTING OF LINEAR AND NONLINEAR INEQUALITY CONSTRAINTS IN NONLINEAR ECONOMETRIC-MODELS** *ECONOMETRIC THEORY*
  WOLAK, F. A.
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- **MEASURING RELATIVE MARKET POWER IN THE WESTERN UNITED-STATES COAL MARKET USING SHAPLEY VALUES** *RESOURCES AND ENERGY*
  WOLAK, F. A., Kolstad, C. D.
  1988; 10 (4): 293-314
- **DUALITY IN TESTING MULTIVARIATE HYPOTHESES** *BIOMETRIKA*
  WOLAK, F. A.
  1988; 75 (3): 611-615
- **AN EXACT TEST FOR MULTIPLE INEQUALITY AND EQUALITY CONSTRAINTS IN THE LINEAR-REGRESSION MODEL** *JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION*
  WOLAK, F. A.
  1987; 82 (399): 782-793
- **CONJECTURAL VARIATION AND THE INDETERMINACY OF DUOPOLISTIC EQUILIBRIA** *CANADIAN JOURNAL OF ECONOMICS-REVUE CANADIENNE D ECONOMIQUE*
  Kolstad, C. D., WOLAK, F. A.
  1986; 19 (4): 656-677

PRESENTATIONS

- Re-structuring the Japanese Electricity Supply Industry in the Aftermath of Fukushima - One Year After Japan's 3/11 Disaster: Reforming Japan's Energy Sector, Governance, and Economy (2/27/2012)
- The Missing Link: Constructing a Dynamic Pricing Plan for a Smarter Grid - Westin Hotel Palo Alto, CA (6/9/2010)
- Balancing Energy Needs with Environmental Goals The Case of California - III Lisbon Conference on Competition Law and Economics (1/14/2010 - 1/15/2010)