# **Maestría en Economía Ambiental del CIDE**

# **Materia: Economía de la Energía**

# **Ciclo Primavera 2022**

## **Profesor: Pedro Ignacio Hancevic** (email:**pedro.hancevic@cide.edu**)

**Horario de clases:** miércoles de 15:30 a 18:30hs en el Aula 1.

**ZOOM:** [**https://cide-edu.zoom.us/j/6372454366**](https://cide-edu.zoom.us/j/6372454366)

# Objetivos de la materia

Este curso está diseñado para ayudar a preparar a los estudiantes a realizar investigación empírica en el área de Economía de la Energía. El curso tiene dos objetivos generales. El primero es el desarrollo de una comprensión más profunda de los métodos empíricos de investigación que se utilizan en el campo de la economía de energía. Cubriremos algunos métodos econométricos (tanto modelos estructurales como de forma reducida) y también algunos métodos experimentales.

El segundo objetivo del curso es lograr que los estudiantes se familiaricen con los principales modelos teóricos y los hallazgos empíricos que orientan el camino a seguir en la investigación de ‘frontera’ en este campo. Se busca hacer hincapié en cómo la teoría económica nos puede ayudar a responder preguntas fundamentales del tipo:

* ¿Cómo funcionan los mercados de energía? Lo cual, a su vez, conlleva un análisis positivo, pero a la vez normativo y luego nos lleva a preguntarnos:
* ¿Cuándo debería el gobierno intervenir para regular un mercado de energía?
* ¿Cuándo debería el gobierno abstenerse de participar en un mercado de energía?
* ¿Cuál es la forma apropiada de intervención del gobierno en un mercado de energía?
* ¿Qué puede decirnos la estructura de un mercado o la naturaleza de una falla de mercado acerca de cómo diseñar e implementar políticas de energía y del medioambiente que sean eficaces para lograr metas de política pública?
* ¿Cómo conciliar objetivos de eficiencia económica con equidad en la distribución del ingreso y sustentabilidad ambiental?
* Y un largo etcétera con muchas posibles preguntas relevantes.

# Modalidad del curso y actividades de aprendizaje

Las clases combinan una primera parte donde el profesor presenta modelos teóricos y empíricos que son de importancia para el estudio de determinados temas. Se desarrollan los temas de forma integral. En una segunda instancia los estudiantes son quienes presentan de forma crítica artículos académicos sobre los tópicos de interés –cada alumno presentará al menos dos artículos en el transcurso del semestre. Finalmente, los alumnos desarrollan trabajos prácticos que son aplicaciones en alguno de los softwares indicados por el profesor.

# Criterios de evaluación

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| --- | --- |
| * Examen Parcial 1
 | 25% |
| * Examen Parcial 2
 | 25% |
| * Trabajos Prácticos y/o Proyecto
 | 40% |
| * Participación en clase - Presentaciones
 | 10% |

# Temario del curso

**1. Orientación inicial.**

¿Qué entienden por economía de la Energía? ¿Qué les llama más la atención?

Breve distinción entre modelos de forma reducida y modelos estructurales. Discusión de ventajas y desventajas de cada enfoque. Reseña de experimentos de campo. Inferencia causal y cuasi-experimentos. Aplicaciones sobre temas de energía.

**2. Oferta. Poder de Mercado. Regulación y Desregulación.**

Borenstein Severin, James Bushnell, and Steven Stoft. "The Competitive Effects of Transmission Capacity in a Deregulated Electricity Industry." Rand Journal of Economics, Vol 31, No. 2, Summer 2000.

Borenstein, Severin. 2002. "The Trouble with Electricity Markets: Understanding California's Restructuring Disaster,'' Journal of Economic Perspectives, 16(Winter).

Borenstein, Severin, James Bushnell, and Frank Wolak. 2002. “Measuring Market Inefficiencies in California’s Restructured Wholesale Electricity Market,” American Economic Review, 92(5): 1376-1405.

Davis, Lucas, and Catherine Wolfram (2011). “Deregulation, Consolidation, and Efficiency: Evidence from U.S. Nuclear Power.” NBER WP 17341.

Joskow, Paul L. 1973. “Pricing Decisions of Regulated Firms: A Behavioral Approach.” Bell Journal of Economics 4(1): 118-140.

Joskow, Paul L. 1997. “Restructuring, Competition and Regulatory Reform in the U.S. Electricity Sector.” Journal of Economic Perspectives 11: 119-138.

Joskow, Paul L. and Nancy L. Rose. 1989. “The Effects of Economic Regulation.” In Handbook of Industrial Organization, North Holland.

Rose, Nancy L. 1987. “Labor Rent-Sharing & Regulation: Evidence from the Trucking Industry, Journal of Political Economy, 95 (December): 1146-1178.

Sweeny, J. L. (2002). The California electricity crisis. Hoover Institution Press.

Wolfram, Catherine. 1999. “Measuring Duopoly Power in the British Electricity Spot Market.” American Economic Review, 89(4): 805-826.

Bohn, R.E., Caramanis, M.C., and Schweppe, F.C., (1984) “Optimal Price Electrical Networks Over Space and Time,” Rand Journal of Economics, volume 15, pp. 360-376.

Bushnell, James, Erin Mansur and Celeste Saravia. 2008. “Vertical Arrangements, Market Structure, and Competition: An Analysis of Restructured U.S. Electricity Markets,” American Economic Review, 98(1): 237-266.

Cicala, Steve. “When Does Regulation Distort Costs? Lessons From Fuel Procurement in U.S. Electricity Generation.” American Economic Review, 105(1): 411-44.

Davis, Lucas W. and Catherine D. Wolfram. 2012. “Deregulation, Consolidation and Efficiency: Evidence from U.S. Nuclear Power,” American Economic Journal: Applied Economics, 2012, 4(4), 194-225

Fabrizio, Kira R., Nancy L. Rose, and Catherine D. Wolfram. 2007. “Do Markets Reduce Costs? Assessing the Impact of Regulatory Restructuring on U.S. Electric Generation Efficiency.” American Economic Review, 97(4), 1250-1277.

Hancevic, P. 2017. “Environmental regulation and productivity: The case of electricity generation under the CAAA-1990.” Energy Economics 60, 131-143

Hortacsu, A. and Puller, S. L. (2008). “Understanding Strategic Bidding in Multi-Unit Auctions: A Case Study of the Texas Electricity Spot Market.” The RAND Journal of Economics, 39(1):86-114.

Hortaçsu, Ali and Fernando Luco and Steven L. Puller and Dongni Zhu (2017). Does Strategic Ability Affect Efficiency? Evidence from Electricity Markets. Available at https://sites.google.com/site/stevepuller/research.

Ito, Koichiro and Mar Reguant. Sequential Markets, Market Power, and Arbitrage. American Economic Review, 106(7):1921–1957, July 2016.

Mansur, Erin T. 2008. “Measuring Welfare in Restructured Electricity Markets.” The Review of Economics and Statistics, 90(2): 369–386.7

McRae, Shaun and Frank A. Wolak, "How Do Firms Exercise Unilateral Market Power? Evidence from a Bid-Based Wholesale Electricity Market," EUI Working Papers 2009/36, (2009).

Reguant, Mar. “Complementary bidding mechanisms and startup costs in electricity markets,” Review of Economic Studies, vol. 81, pp. 1708–1742, June 2014. Wolak, F. A. (2000). An Empirical Analysis of the Impact of Hedge Contracts on Bidding Behavior in a Competitive Electricity Market. International Economic Journal, 14(2):1-39.

Wolak, F. A. (2003). Identification and Estimation of Cost Functions Using Observed Bid Data: An Application to Competitive Electricity Markets, chapter 4, pages 133-169. Cambridge University Press.

Wolak, F. A. (2007). Quantifying the Supply-Side Benefits from Forward Contracting in Wholesale Electricity Markets. Journal of Applied Econometrics, 22:1179-1209.

*Funciones de producción (costos) y fronteras estocásticas*

Productividad no observada y endogeneidad. Dificultad para encontrar variables instrumentales válidas. Métodos estructurales y el uso de funciones auxiliares. Diversas formas funcionales, sustitución entre factores, (des)economías de escala y otras propiedades. Medición de eficiencia económica mediante estimación de modelos de fronteras estocásticas.

Ackerberg, D. A., Caves, K., & Frazer, G. (2015). “Identification properties of recent production function estimators”. Econometrica, 83(6), 2411-2451.

Blundell, Richard and Bond, Steve (1999). “GMM estimation with persistent panel data: an application to production functions”, IFS Working Papers, No. W99/04, Institute for Fiscal Studies (IFS), London.

Boyd, G. A. (2008). Estimating plant level energy efficiency with a stochastic frontier. The Energy Journal, 29(2).

Gandhi, A., Navarro, S., and Rivers, D. 2018. “On the Identification of Gross Output Production Functions", Centre for Human Capital and Productivity. CHCP Working Papers, London, ON: Department of Economics, University of Western Ontario (2018)

Kumbhakar, S. C., and C. A. K. Lovell. 2000. Stochastic Frontier Analysis. Cambridge: Cambridge University Press

Levinsohn, James and Petrin, Amil (2003). “Estimating Production Functions Using Inputs to Control for Unobservables”, The Review of Economic Studies, 70(2): 317-341.

Marin, G., & Palma, A. (2017). Technology invention and adoption in residential energy consumption: A stochastic frontier approach. Energy Economics, 66, 85-98.

Olley, G. Steven and Pakes, Ariel (1996). “The Dynamics of Productivity in the Telecommunications Equipment Industry”, Econometrica, Vol. 64, No. 6, pp. 1263-1297.

**3. Demanda. Tarifas reguladas.**

El problema típico de endogeneidad que surge en la estimación de demandas. El espacio de productos: modelos de una ecuación y sistemas de ecuaciones. El modelo AIDS y sus variantes. El problema de dimensionalidad en el espacio de productos.

Espacio de características. Modelos de elección discreta sencillos: Multinomial Logit, Nested Logit, y Mixed Logit.

Tarifas de bloques crecientes y el otro problema de endogeneidad. Modelos de elección discreta-continua.

Allcott, Hunt (2011). “Rethinking Real‐Time Electricity Pricing.” Resource and Energy Economics, Vol. 33, No. 4 (November), pages 820‐842.

Berry, Steven T. (1994). “Estimating Discrete-Choice Models of Product Differentiation”. The RAND Journal of Economics, Vol. 25, No. 2, pp. 242-262

Berry, Steve, James Levinsohn and Ariel Pakes (1995), " Automobile Prices in Market Equilibrium", Econometrica 63 (July 1995), 841‐890.

Borenstein, S (2012) "The Redistributional Impact of Non‐Linear Electricity Pricing." American Economic Journal: Economic Policy.

Bushnell, James B. and Erin T. Mansur. 2005. “Consumption under Noisy Price Signals: A Study of Electricity Retail Rate Deregulation in San Diego." Journal of Industrial Economics 53 (4):493-513.

Deaton, A. and Muellbauer, J. (1980). “An Almost Ideal Demand System”, The American Economic Review, 70(3): 312-326.

Hancevic, P. and Lopez-Aguilar, J. (2019). "Energy efficiency programs in the context of increasing block tariffs: The case of residential electricity in Mexico", Energy Policy.

Hancevic, P., Núñez, H., and Rosellón, J. (2022). “Electricity tariff rebalancing in emerging countries: The efficiency-equity tradeoff and its impact on photovoltaic distributed generation”, *The Energy Journal*, 43(4).

Nevo, Aviv. 2000. “A Practitioner’s Guide to Estimation of Random Coefficients Logit Models of Demand,” Journal of Economics & Management Strategy, 9(4), 513‐548.

Nevo, A. (2001). “Measuring Market Power in the Ready‐to‐Eat Cereal Industry”. Econometrica, 69(2): 307-342.

Olmstead, Sheila M. & Michael Hanemann, W. & Stavins, Robert N. (2007). "Water demand under alternative price structures," Journal of Environmental Economics and Management, Elsevier, vol. 54(2), pages 181-198, September.

Zhang, Congweh, Kevin Boyle and Nicolai Kuminoff. "Partial Identification of Amenity Demand Functions."

**4. Modelos de elección discreta.**

Metodología y aplicaciones para inversión y adopción de tecnología, reemplazo de equipos, entrada y salida a mercados, cumplimiento de regulaciones ambientales.

Davis, Lucas (2008). "Durable Goods and Residential Demand for Energy and Water: Evidence from a Field Trial." RAND Journal of Economics, Vol. 39, No. 2 (Summer), pages 530‐546.

Hancevic, P. (2016). “A Dynamic Approach to Environmental Compliance Decisions in U.S. Electricity Market: The Acid Rain Program Revisited", Energy Policy, Vol. 106, pp. 129-137.

Keohane, Nathaniel (2005). "Environmental Policy and the Choice of Abatement Technique: Evidence from Coal‐Fired Electric Power Plants.

Knittel, Chris and Konstantinos Metaxoglou "Estimation of Random Coefficient Demand Models: Challenges, Difficulties and Warnings" working paper and codes available on Knittel's website.

Rapson, David. 2011. "Durable Goods and Long‐Run Electricity Demand: Evidence from Air Conditioner Purchase Behavior"

Revelt, David and Train, Kenneth, (1998), “Mixed Logit With Repeated Choices: Households' Choices Of Appliance Efficiency Level”, The Review of Economics and Statistics, 80, issue 4, p. 647‐657.

Rust, John. 1987. “Optimal Replacement of GMC Bus Engines: An Empirical Model of Harold Zurcher” Econometrica, Vol. 55, No. 5. (Sep., 1987), pp. 999‐1033.

Train, K. (2009). Discrete Choice Models with Simulation. Cambridge University Press

**5. Eficiencia energética.**

Paradoja energética. Brecha de eficiencia energética. Inversión en bienes de durables que consumen energía de forma intensiva.

Aghion, P., Dechezleprêtre, A., Hemous, D., Martin, R., & Van Reenen, J. (2016). Carbon taxes, path dependency, and directed technical change: Evidence from the auto industry. Journal of Political Economy, 124(1), 1-51.

Allcott, H., & Greenstone, M. (2012). Is there an energy efficiency gap?. Journal of Economic Perspectives, 26(1), 3-28.

Allcott, H., & Taubinsky, D. (2013). The lightbulb paradox: Evidence from two randomized experiments (No. w19713). National Bureau of Economic Research.

Allcott, Hunt, and Judd B. Kessler. "The welfare effects of nudges: A case study of energy use social comparisons." American Economic Journal: Applied Economics 11, no. 1 (2019): 236-76.

Aydin, Erdal, Nils Kok, and Dirk Brounen. "Energy efficiency and household behavior: the rebound effect in the residential sector." The RAND Journal of Economics 48, no. 3 (2017): 749-782.

Borenstein, S. (2015). A microeconomic framework for evaluating energy efficiency rebound and some implications. The Energy Journal, 36(1).

Davis, L. W., Fuchs, A., & Gertler, P. (2014). Cash for coolers: evaluating a large-scale appliance replacement program in Mexico. American Economic Journal: Economic Policy, 6(4), 207-38.

Fowlie, M., Greenstone, M., & Wolfram, C. (2018). Do energy efficiency investments deliver? Evidence from the weatherization assistance program. The Quarterly Journal of Economics, 133(3), 1597-1644.

Fowlie, M., Greenstone, M., & Wolfram, C. (2015). Are the non-monetary costs of energy efficiency investments large? Understanding low take-up of a free energy efficiency program. American Economic Review, 105(5), 201-04.

Gerarden, T. D., Newell, R. G., & Stavins, R. N. (2017). Assessing the energy-efficiency gap. Journal of Economic Literature, 55(4), 1486-1525.

Gillingham, K., Rapson, D., & Wagner, G. (2016). The rebound effect and energy efficiency policy. Review of Environmental Economics and Policy, 10(1), 68-88.

Sallee, J. M. (2014). Rational inattention and energy efficiency. The Journal of Law and Economics, 57(3), 781-820.

**6. Mercados de combustibles. Transporte.**

Precios de combustibles fósiles, economía de combustibles y demanda del consumidor. Automóviles eléctricos.

Aghion, P., Dechezleprêtre, A., Hemous, D., Martin, R., & Van Reenen, J. (2016). Carbon taxes, path dependency, and directed technical change: Evidence from the auto industry. Journal of Political Economy, 124(1), 1-51.

Allcott, H., & Wozny, N. (2014). Gasoline prices, fuel economy, and the energy paradox. Review of Economics and Statistics, 96(5), 779-795.

Alquist, R., Kilian, L., & Vigfusson, R. J. (2013). Forecasting the price of oil. In Handbook of economic forecasting (Vol. 2, pp. 427-507). Elsevier.

Anderson, S. T., Kellogg, R., & Sallee, J. M. (2013). What do consumers believe about future gasoline prices?. Journal of Environmental Economics and Management, 66(3), 383-403.

Anderson, Soren T., Ian WH Parry, James M. Sallee, and Carolyn Fischer. "Automobile fuel economy standards: Impacts, efficiency, and alternatives." Review of Environmental Economics and Policy 5, no. 1 (2011): 89-108.

Busse, Meghan R., Christopher R. Knittel, and Florian Zettelmeyer (2013). "Are Consumers Myopic? Evidence from New and Used Car Purchases." American Economic Review, 103(1): 220‐56.

Greene, D. L., Baker Jr, H. H., & Plotkin, S. E. (2010). Reducing greenhouse gas emissions from US transportation.

Holmes, M. J., Otero, J., & Panagiotidis, T. (2013). On the dynamics of gasoline market integration in the United States: Evidence from a pair-wise approach. Energy Economics, 36, 503-510.

Jacobsen, Mark R., and Arthur A. Van Benthem. "Vehicle scrappage and gasoline policy." American Economic Review 105, no. 3 (2015): 1312-38.

Li, S., Linn, J., & Muehlegger, E. (2014). Gasoline taxes and consumer behavior. American Economic Journal: Economic Policy, 6(4), 302-42.

Metcalf, G. E., & Hassett, K. A. (1999). Measuring the energy savings from home improvement investments: evidence from monthly billing data. Review of economics and statistics, 81(3), 516-528.

Nuñez, H. & J. Otero, (2017). Integration in Gasoline and Ethanol Markets in Brazil over Time and Space under the Flex-fuel Technology. The Energy Journal. 38 (2): 1-26

Sallee, J.M., West, S.E. and Fan, W., 2016. Do consumers recognize the value of fuel economy? Evidence from used car prices and gasoline price fluctuations. Journal of Public Economics, 135, pp.61-73.

**7. Energías limpias. Contaminación.**

Las agendas de decarbonización. Renovables versus No-renovables. Medioambiente y políticas medioambientales: Efectos de regulaciones del aire en la actividad industrial. Regulaciones medioambientales basadas en mecanismos de mercado. Estándares de ahorro de combustible. Regulaciones para combustibles.

Barbose, G., Wiser, R., Heeter, J., Mai, T., Bird, L., Bolinger, M., ... & Millstein, D. (2016). A retrospective analysis of benefits and impacts of US renewable portfolio standards. Energy Policy, 96, 645-660.

Fowlie (2010), “Emissions Trading, Electricity Restructuring, and Investment in Pollution Abatement.” American Economic Review, June, 837‐869.

Fowlie, Meredith and Jeffrey Perloff. 2013. “Distributing Pollution Rights in Cap‐and‐Trade Programs: Are Outcomes Independent of Allocation?” The Review of Economics and Statistics.

Fowlie, Meredith, Stephen Holland, and Erin Mansur. 2012. “What Do Emissions Markets Deliver and to Whom? Evidence from Southern California's NOx Trading Program” American Economic Review, 102(2): 965-993.

Perino, Grischa (2010) “Price Discrimination Based on Downstream Regulation: Evidence from the Market for SO2 Scrubbers”. Center for Competition Policy Working Paper No 10, 9

Whitefoot, K., Fowlie, M., & Skerlos, S. (2011). Product design response to industrial policy: Evaluating fuel economy standards using an engineering model of endogenous product design. Energy Institute at Haas Working Paper No. WP, 214.

Wiser, Ryan, et al. "The environmental and public health benefits of achieving high penetrations of solar energy in the United States." Energy 113 (2016): 472-486.

**8. Cambio climático y calentamiento global.**

Salud y contaminación. Las políticas remediales, de mitigación y de adaptación al cambio climático.

Burke, M., & Emerick, K. (2016). Adaptation to climate change: Evidence from US agriculture. American Economic Journal: Economic Policy, 8(3), 106-40.

Chay Kenneth and Michael Greenstone, 2003. "The Impact Of Air Pollution On Infant Mortality: Evidence From Geographic Variation In Pollution Shocks Induced By A Recession," The Quarterly Journal of Economics, MIT Press, vol. 118(3), pages 1121‐1167.

Deschenes and Greenstone (2007), "The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather," American Economic Review, 97(1), March 2007, p. 354‐385.

Fisher, A. C., W. M. Hanemann, M. J. Roberts, and W. Schlenker (2012), “The Economic Impacts of Climate Change: Evidence from Agricultural Output and Random Fluctuations in Weather: Comment,” American Economic Review, 102(7): 3749‐3760.

Schlenker, W., W. M. Hanemann, and A. C. Fisher (2005), “Will U.S. Agriculture Really Benefit from Global Warming? Accounting for Irrigation in the Hedonic Approach,” American Economic Review, 95(1), p. 395‐406.

Stern, N. (2008). The economics of climate change. American Economic Review, 98(2), 1-37.

Stern, N., & Rydge, J. (2012). The new energy-industrial revolution and international agreement on climate change. Economics of Energy & Environmental Policy, 1(1), 101-120.

Tirole, J. (2012). Some political economy of global warming. Economics of Energy and Environmental Policy, 1(1), 121-132.

Weitzman, M. L. (2009). On modeling and interpreting the economics of catastrophic climate change. The Review of Economics and Statistics, 91(1), 1-19.

Weitzman, M. L. (2011). Fat-tailed uncertainty in the economics of catastrophic climate change. Review of Environmental Economics and Policy, 5(2), 275-292.

Weitzman, M. L. (2010). What Is The" Damages Function" For Global Warming—And What Difference Might It Make? Climate Change Economics, 1(01), 57-69.

**9. Energía en los países emergentes.**

Subsidios a la energía. Acceso a la energía. Pobreza energética. Tarifas sociales y focalización de los programas. Populismo energético.

Bhattacharyya, Subhes C. "Energy access problem of the poor in India: Is rural electrification a remedy?." Energy policy 34, no. 18 (2006): 3387-3397.

Birol, Fatih. "Energy economics: a place for energy poverty in the agenda?." *The energy journal* 28, no. 3 (2007).

Cont, W., Hancevic, P., and Navajas, F. 2008. “Infraestructura y aspectos distributivos en la tarificación de los servicios públicos: Ámbito y posibilidades de la tarifa social en la Argentina. CAF-Banco de Desarrollo, Research Department working papers.

Hancevic, P. and Margulis, D. (2018). "Daylight saving time and energy consumption: the case of Argentina", El Trimestre Económico, Vol. LXXXV (3), Num. 339, Jul-Sep, pp. 515-542.

Hancevic, P., Cont. W., and Navajas, F. (2016). "Energy Populism and Household Welfare", Energy Economics, Vol. 56, pp. 464-474.

Hancevic, P., Nuñez, H. and Rosellón, J. (2017). "Distributed photovoltaic power generation: possibilities, benefits, and challenges for a widespread application in the Mexican residential sector”, Energy Policy, Vol. 110, Nov., pp. 478-489

Nussbaumer, P., Bazilian, M., & Modi, V. (2012). Measuring energy poverty: Focusing on what matters. Renewable and Sustainable Energy Reviews, 16(1), 231-243.

Pachauri, S., Mueller, A., Kemmler, A., & Spreng, D. (2004). On measuring energy poverty in Indian households. World Development, 32(12), 2083-2104.

**Otras referencias útiles**

*Metodología de evaluación de impacto y Métodos experimentales.*

Abadie, Alberto, David Drukker, Jane Leber Herr & Guido W. Imbens, 2004. "Implementing matching estimators for average treatment effects in Stata," Stata Journal, StataCorp LP, vol. 4(3), pages 290‐311.

Allcott, Hunt and Sendhil Mullainathan (2011) “External Validity and Partner Selection Bias”.

Angrist, Joshua and Alan Krueger. 2001. "Instrumental Variables and the Search for Identification: From Supply and Demand to Natural Experiments", Journal of Economic Perspectives 15(4), Fall 2001

Bloom, H. S. (2006). The Core Analytics of Randomized Experiments for Social Research. MDRC Working Papers on Research Methodology.

Card, David, Stefano DellaVigna and Ulrike Malmendier. 2011. “The Role of Theory in Field Experiments. UC Berkeley working paper.

Conley, Timothy, Christian B. Hansen and Peter E. Rossi. 2012. "Plausibly Exogenous," The Review of Economics and Statistics, MIT Press, vol. 94(1), pages 260‐272

Deaton, A. 2010. “Instruments, randomization, and learning about development,” Journal of Economic Literature, pages 424‐455.

Duflo, Esther & Glennerster, Rachel & Kremer, Michael (2008). "Using Randomization in Development Economics Research: A Toolkit", Handbook of Development Economics.

Greenstone, Michael & Gayer, Ted (2009) "Quasi‐experimental and experimental approaches to environmental economics," Journal of Environmental Economics and Management, Elsevier, vol. 57(1), pages 21‐44, January.

Heckman, J.J., H. Ichimura, and P. E. Todd (1997) “Matching as an Econometric Evaluation Estimator: Evidence from Evaluating a Job Training Programme,” Review of Economic Studies, 64: 605‐654.

Heckman, James and Sergio Urza, 2009. "Comparing IV with Structural Models: What Simple IV Can and Cannot Identify".

Imbens, G., and Rubin. D. (2015). Causal inference in statistics, social, and biomedical sciences. Cambridge University Press

McConnell, Margaret, Betsy Sinclair and Donald P. Green (2010) “Detecting Social Networks: Design and Analysis of Multilevel Experiments”.

McKenzie, David (2012). "Beyond baseline and follow‐up: The case for more T in experiments," Journal of Development Economics, Elsevier, vol. 99(2), pages 210‐221.

Tamer, Eli (2010). "Partial identification in econometrics." Annu. Rev. Econ. 2.1: 167-195.

Spencer Banzhaf & Randall P. Walsh, 2008. "Do People Vote with Their Feet? An Empirical Test of Tiebout," American Economic Review, vol. 98(3), pages 843‐63, June.

*Modelos estructurales versus forma reducida.*

Imbens, Guido. 2009. "Better LATE Than Nothing: Some Comments on Deaton (2009) and Heckman and Urzua (2009)", NBER Working Paper No. 14896, April 2009

Keane, Michael (2010), “Structural vs. Atheoretical Approaches To Econometrics.” Journal of Econometrics, Vol 156.

Nevo, A. and Whinston, M. (2010). Taking the Dogma out of Econometrics: Structural Modeling and Credible Inference. The Journal of Economic Perspectives, 24(2):69‐81.

Reiss, P., and Wolak. F. (2007). "Structural econometric modeling: Rationales and examples from industrial organization." Handbook of econometrics 6 (2007): pp. 4277-4415

Timmins, Christopher and Schlenker, Wolfram (2009), “Reduced‐Form Versus Structural Modeling in Environmental and Resource Economics” . Annual Review of Resource Economics, Vol. 1, No. 1, pp. 351‐380.

*Estimación de subastas.*

Guerre, Emmanuel, Perrigne, Isabelle, and Vuong, Quang. (2000) “Optimal Nonparametric Estimation of First-Price Auctions”, Econometrica, 68(3): 525-574.

Krishna, Vijay (2010). Auction Theory, Academic Press, Second Edition.

Paarsch, Harry J. and Hong, Han (2006). An Introduction to the Structural Econometrics of Auction Data, The MIT Press.

Reguant, Mar (2013). “Complementary Bidding Mechanisms and Startup Costs in Electricity Markets.”