

## PhD Course: Empirical Methods in Industrial Organization and Energy Economics

The Research Institute of Industrial Economics (IFN) in Stockholm cordially invites graduate students enrolled in academic institutions in the Nordic countries to the PhD course Empirical Methods in Industrial Organization and Energy Economics. These lectures present quantitative techniques used in empirical work in Industrial Organization and Energy Economics. The course will be given as an intensive course **June 14-17, 2010**.

**Lecturer:** Professor Frank A. Wolak  
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**Course requirements:** These lectures will make extensive use of first-year microeconomic theory, game theory, and econometric theory. Students are expected to read the assigned papers before each lecture.

**Course credits:** An approved course yields **4 ECTS credits**, granted by the Stockholm Doctoral Program in Economics (SDPE).

**Course evaluation:** Examination is in the form of a take-home assignment. The submission deadline is **June 24, 2010**. The assignment is to be submitted to [par.holmberg@ifn.se](mailto:par.holmberg@ifn.se).

**Venue (NB!! New):** **Stockholm School of Economics (SSE)**  
Sveavägen 65  
113 83 Stockholm, Sweden  
[www.hhs.se](http://www.hhs.se)

**Registration:** The number of students is limited, and all who wish to participate must register to [elisabeth.gustafsson@ifn.se](mailto:elisabeth.gustafsson@ifn.se) by **April 15, 2010**.

**Costs:** The course is free of charge, but the students must secure own funding for travel and accommodation. IFN assists in booking accommodation, please contact [elisabeth.gustafsson@ifn.se](mailto:elisabeth.gustafsson@ifn.se)

For updated information go to [www.ifn.se/minicourse2010\\_wolak](http://www.ifn.se/minicourse2010_wolak) or contact [thomas.tangeras@ifn.se](mailto:thomas.tangeras@ifn.se), [par.holmberg@ifn.se](mailto:par.holmberg@ifn.se) or [elisabeth.gustafsson@ifn.se](mailto:elisabeth.gustafsson@ifn.se).

### Course outline:

Date		Room	Topic	
Monday	June 14	10.00-11.30	Room 750	Introduction to Structural Econometric Modeling (SSE)
		13.00-14.30	Room 750	
			Room 750	Structural Econometric Modeling of Producer Behavior

Tuesday	June 15	10.00-11.30	Room 750	Applications of Empirical Models of Producer Behavior in Regulated Industries (SSE)
		13.00-14.30	Room 750	Models of Imperfect Competition with and without Forward Markets (SSE)
Wednesday	June 16	10.00-11.30	Room 750	Multi-Unit Auction Markets (SSE)
		13.00-14.30	Room 750	Measuring Unilateral Market Power and Market Performance (SSE)
Thursday	June 17	10.00-11.30	Room 750	Measuring Market Performance (SSE)
		13.00-14.30	Room 750	Vertical Relations and Market Power in Gasoline and Electricity (SSE)

**Readings** (copies distributed at the start of the course):

**1. Introduction to Structural Econometric Modeling** **Lecture 1**

Reiss, Peter C. and Wolak, Frank A. (2003), "Structural Econometric Modeling: Rationales and Examples from Industrial Organization," *Handbook of Econometrics*, Volume 6A, (edited by James J. Heckman and Edward E. Leamer), 2007, 4277-4415 (draft available at <http://www.stanford.edu/~wolak>) [First Four Sections of Paper]

Porter, Robert (1983), "A Study of Cartel Stability: The Joint Executive Committee, 1880-1886," *Bell Journal of Economics*, 14(2, Autumn), 301-314.

**2. Structural Econometric Modeling of Producer Behavior** **Lecture 2**

Christensen, Laurits and Greene, William H. (1976), "Economies of Scale in U. S. Electric Power Generation," *Journal of Political Economy*, 84 (4, August), 655-676.

McElroy, Marjorie (1987), "Additive General Error Models for Production, Cost, and Derived Demand or Share Systems," *Journal of Political Economy*, 95(4), 737-757.

Evans, David and Heckman, James (1984), "A Test of Subadditivity of the Cost Function with an Application to the Bell System," *American Economic Review*, 74 (4, September), 615-623.

**3. Applications of Empirical Models of Producer Behavior in Regulated Industries** **Lecture 3**

Wolak, F. A. (2007), "Public Utility Pricing," available on web-site.

Wolak, F.A. (1994), "An Econometric Analysis of the Asymmetric Information Regulator-Utility Interaction," *Annales D'Economie et de Statistique*, 34, 12-69. (draft available on web-site).

**4. Models of Imperfect Competition with and without Forward Markets** **Lecture 4**

Vives, X., *Oligopoly Pricing*, Cambridge, MA: MIT Press, 1999 (Chapters 1, 4 and 5).

Klemperer, Paul, and Meyer, Margaret A. (1989), "Supply Function Equilibria in Oligopoly under

Uncertainty,” *Econometrica*, 57(6), 1243-1277.

Allaz, Blaise and Vila, Jean-Luc, (1993), “Cournot Competition, Forward Markets and Efficiency,” *Journal of Economic Theory*, 59, pp. 1-16.

## **5. Multi-Unit Auction Markets**

## **Lecture 5**

Wolak, F.A. “Identification and Estimation of Cost Functions Using Observed Bid Data: An Application to Electricity,” *Advances in Econometrics: Theory and Applications, Eighth World Congress, Volume II*, Mathias Detwatripont, Lars Peter Hansen, and Stephen J. Turnovsky (editors), Cambridge University Press, 2003, 133-169. (draft on web-site)

Wolak, F.A. (2007), “Quantifying the Supply-Side Benefits from Forward Contracting in Wholesale Electricity Markets, *Journal of Applied Econometrics*. (draft on web-site).

## **5. Measuring Unilateral Market Power and Market Performance**

## **Lecture 6**

Wolak, Frank A. (2003), “Measuring Unilateral Market Power in Wholesale Electricity Markets: The California Market 1998 to 2000,” *AER*, May 2003. (draft on web-site)

McRae, Shaun D. and Wolak, Frank A., “How Do Firms Exercise Unilateral Market Power: Evidence from Bid-Based Multi-Unit Auction Market,” March 2009. (draft on web-site)

Wolak, F.A., “Diagnosing the California Electricity Crisis,” *Electricity Journal*, Aug./Sept. 2003. (draft on web site)

## **7. Measuring Market Performance**

## **Lecture 7**

Borenstein, Severin, Bushnell, James, and Wolak, F.A., “Measuring Market Inefficiencies in California’s Restructured Wholesale Electricity Market,” *AER*, December 2002. (draft on web-site)

Wolak, Frank A. “Diagnosing the California Electricity Crisis,” *Electricity Journal*, Aug./Sept. 2003. (draft on web site)

## **8. Vertical Relations and Market Power in Gasoline and Electricity**

## **Lecture 8**

Borenstein, S., Cameron, C., and Gilbert, R. (1997) “Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes?” *Quarterly Journal of Economics*, volume 112.

Gans, Joshua, and Wolak, Frank A. (2009) “A Comparison of Ex Ante versus Ex Post Vertical Market Power: Evidence from the Electricity Supply Industry” draft on web-site.