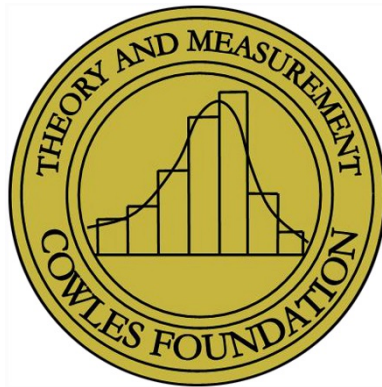


COWLES FOUNDATION
FOR RESEARCH IN ECONOMICS
AT YALE UNIVERSITY



Four Year Report, July 1, 1992 – June 30, 1996

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1. INTRODUCTION

The Cowles Commission for Research in Economics was founded in 1932 by Alfred Cowles in collaboration with a group of economists, mathematicians, and statisticians, all of whom were concerned with applying quantitative techniques to economics and related social sciences. As the original Articles of Incorporation explained, “said corporation is formed ... to educate and benefit its members and mankind, and to advance the scientific study and development ... of economic theory in its relation to mathematics and statistics.” The Cowles Commission was formally chartered as a not-for-profit corporation in Colorado on September 9, 1932. In 1939 it relocated to the University of Chicago and then, in 1955, moved to Yale University where it was renamed The Cowles Foundation for Research in Economics at Yale University.

The Cowles Foundation today continues to pursue its basic mission of fostering the development of logical, mathematical, and statistical methods of analysis for application in economics and related social sciences. The field of economics has developed and changed dramatically over the last 60-plus years, since the Cowles Commission was founded. The changes, particularly as to the methods of analysis deployed, reflect in part the success of the Commission and similar research organizations in developing and disseminating new quantitative techniques. As economics has changed, so has the scope of inquiry at Cowles and the breadth of research interests of the research staff.

The Cowles Foundation’s purpose remains to conduct and encourage the highest quality research in quantitative economics and related subjects. The Foundation’s contributions to high quality research in quantitative economics and cognate areas emerges from the sum of the efforts of individual staff members, sometimes working in groups and sometimes working with individual graduate students. There are definite clusters of strength among the research

staff — econometrics, mathematical economics, macroeconomics, and macroeconomic theory — and the research product reflects these strengths.

In pursuing its scholarly objective, the Cowles Foundation supports a research staff, maintains a research library, sponsors a series of workshops and seminars, and disseminates the results of research in a set of publications. The Foundation's governing body is its Executive Committee, whose members are Yale faculty appointed by the Provost (not all from the membership of the research staff and not all from Economics). The Director serves as Chair of the Executive Committee. The administrative offices and library of the Cowles Foundation are housed at 30 Hillhouse Avenue.

2. RESEARCH PERSONNEL

The members of the Cowles Foundation Research Staff are all members of the faculty at Yale University. Currently, almost all staff members hold appointments in the Department of Economics. Several people on the staff are also members of the faculty of other departments (for example, Statistics) and schools (for example, the Law School and the School of Management). Table 1 lists all faculty who were members of the research staff for some period during the preceding four academic years 1992–93, 1993–94, 1994–95, and 1995–96.

TABLE 1: Cowles Foundation Research Staff Members

Donald W.K. Andrews	Bengt Holmstrom	Peter C.B. Phillips
Truman F. Bewley	Alvin K. Klevorick	Benjamin Polak
William C. Brainard	Oliver B. Linton	Herbert E. Scarf
Moshe Buchinsky	László Lovász	Robert J. Shiller
Willem Buiter	Barry Nalebuff	Martin Shubik
Ray Fair	William D. Nordhaus	Christopher Sims
John Geanakoplos	David G. Pearce	James Tobin
Vassilis Hajivassiliou		Lin Zhou

In addition to the members of the research staff, the Cowles Foundation also invites scholars from other universities, both in the U.S. and abroad, to visit for various periods of time. Visitors usually come for a semester or a year, and most often they will do some teaching, usually in the Economics Department, but recently at least once in Statistics. Sometimes, however, an individual whose research is of particular interest to a group of staff members cannot come for a semester or longer, and we may have that person come for a shorter stay. Our office capacity to accommodate visitors is limited so that in selecting visitors we give strong weight to the externalities the researcher offers to ongoing projects. Table 2 contains a list of scholars who have visited Cowles for a semester or more during the last four academic years.

TABLE 2: Cowles Foundation Visitors

1992–93	1993–94	1994–95	1995–96
Jonathan Lee	Luca Anderlini	Simon Grant	Sam Ouliaris
Sam Ouliaris	Imre Bárány	William Sudderth	Joon Park
	Pedro Gozalo		
	Paolo Siconolfi	Rekha Thomas	

3. THE LIBRARY

The Cowles Foundation Library is a great asset. It contains more than 7,000 volumes, to which we add about 50–75 books a year. We maintain subscriptions to more than 160 journals. (In addition, there are partial sets of about 40 now-discontinued journal titles.) Although hardcopy working paper series may go the way of the dinosaurs, as they are replaced by on-line access, we currently receive about 175 different series of discussion papers. The library also serves as the repository for Cowles discussion papers, reprints, and monographs, as well as for Cowles archival material. The library, which is staffed by a full-time librarian with bursary student assistance, is available for use by the Yale University community. Its principal clientele, however, is the set of faculty members and graduate students in the Department of Economics. The books in the library circulate, except for a few that are essentially kept on closed reserve because they are frequently used in courses. Journals do not circulate but can be taken for one hour to enable photocopying of an article.

4. MEETINGS

We generally hold Cowles Foundation Seminars once a month. A scholar from another institution is invited to present a paper. Because the audience represents a wide range of interests, we make a particular effort to attract people who are good expositors as well as high-quality researchers. These seminars are well attended not only by members of the research staff and other faculty but by graduate students as well. Table 3 provides a list of the Cowles Foundation Seminars that were presented during the past four academic years.

TABLE 3: Cowles Foundation Seminars

Sep. 25, 1992	Drew Fudenberg, MIT, “Rules of Thumb for Social Learning”
Oct. 16, 1992	Jim Poterba, MIT, “State Responses to Fiscal Crises: Natural Experiments for Studying Budgetary Institutions”
Nov. 6, 1992	Jean-François Richard, University of Pittsburgh, “Bayesian and Classical: Complements or Substitutes”
Feb. 26, 1993	Richard Thaler, Cornell University, “Myopic Loss Aversion and the Equity Premium Puzzle”
Sep. 17, 1993	John Y. Campbell, Princeton University, “Understanding Risk and Return”
Oct. 22, 1993	Andrew R. Solow, Woods Hole Oceanographic Institution, “Model-Based Inference about Global Warming”
Nov. 5, 1993	Lars Hansen, University of Chicago, “Pessimism, Neurosis, and Feelings about Risk in General Equilibrium”
Feb. 25, 1994	Andreu Mas-Colell, Harvard University, “Generically, the Equilibrium Payoffs of a Bi-Matrix Game Are Finite”
Mar. 25, 1994	Darrell Duffie, Stanford University, “A Liquidity-Based Model of Asset-Backed Security Design”
Apr. 15, 1994	Adam Brandenburger, Harvard Business School, “Biform Games”
May 6, 1994	Donald J. Brown, Stanford University, “Walrasian Comparative Statics”
Sep. 23, 1994	Nancy L. Ross, MIT, “Firm Diversification and CEO Compensation: Managerial Ability or Executive Entrenchment”

- Oct. 21, 1994 Edward E. Leamer, University of California, Los Angeles, "The Empirics of Economic Growth in Previously Centrally Planned Economies"
- Nov. 11, 1994 Dilip Abreu, Princeton University, "Bargaining and Reputation"
- Feb. 24, 1995 Avinash K. Dixit, Princeton University, "Stochastic Dynamic Investment and Employment Decisions"
- Mar. 24, 1995 Paul M. Romer, University of California, Berkeley, "The Politics of Entitlement"
- Apr. 21, 1995 John McMillan, University of California, San Diego, "Selling the Spectrum"
- Oct. 13, 1995 Benjamin M. Friedman, Harvard University, "Moral Consequences of Economic Growth"
- Nov. 3, 1995 Jonathan H. Gruber, MIT, "Does Public Insurance Crowd Out Private Insurance?"
- Dec. 8, 1995 Jerry Green, Harvard University, "Compensatory Transfers in Group Decision Problems"
- Mar. 29, 1996 James D. Hamilton, University of California, San Diego, "Measuring the Liquidity Effect"
- Apr. 19, 1996 Nancy L. Stokey, University of Chicago, "Are There Limits to Growth?"
-

The Cowles Foundation also provides financial support for several specialized workshops and seminars of the Department of Economics — namely, the Econometrics Research Seminar, the Macroeconomics Workshop, and the Microeconomic Theory Workshop. The Foundation also provides support, through its Program on Discrete Mathematics and Its Applications, for a seminar series in Computer Science that attracts numerous people working in this area of research and that Herb Scarf and László Lovász regularly attend.

The Cowles Foundation is honored to present the Tjalling C. Koopmans Memorial Lecture Series. These lectures were made possible by a special, generous gift from Truus W. Koopmans to Cowles to honor Professor Koopmans's memory. We use these lectures to bring to Yale leading scholars who are working at the frontiers of areas in which Koopmans, who represented to many the quintessence of the Cowles Foundation, was interested. Three Koopmans Memorial Lectures were presented during the period July 1992–June 1996. They were as follows:

TABLE 4: Tjalling C. Koopmans Memorial Lectures

Apr.15, 1993	Thomas C. Schelling, University of Maryland, "Cash or Kind Revisited"
Oct. 25, 1994	Alain Monfort, Centre de Recherche en Economie et Statistique at INSEE, "A Reappraisal of Misspecified Econometric Models"
Mar. 1, 1996	Peter A. Diamond, MIT, "Privatization of Social Security"

5. PUBLICATIONS

Several publication series disseminate the results of research undertaken at the Cowles Foundation. The first is the set of Cowles Foundation Discussion Papers (CFDPs), our working paper series. These papers are manuscripts that are usually about to be submitted or have just been submitted for publication. They are distributed both within Yale and to a more global set of institutions and interested researchers. The goal is to make new results known early to the research community, as well as to generate feedback and comments for the author.

The second series is composed of the Cowles Foundation Papers (CFPs); these are reprints of published articles and contributions to books.

6. OTHER PUBLICATIONS BY RESEARCH STAFF

Donald W. K. Andrews

- “Admissibility of the Likelihood Ratio Test when the Parameter Space Is Restricted Under the Alternative,” *Econometrica* (May 1996), 64(3): 705–718.
- “Optimal Change-point Tests for Normal Linear Regressions” (with I. Lee and W. Ploberger), *Journal of Econometrics* (January 1996), 70(1): 9–38.

Dirk Bergemann

- “Learning and Strategic Pricing,” *Econometrica* (1996), 64: 1125–50.

Truman F. Bewley

- “Thoughts on Volatility Tests of the Intertemporal Asset Pricing Model.” In Robert Becker *et al.* (eds.), *General Equilibrium Growth, and Trade II, The Legacy of Lionel McKenzie*. New York: Academic Press, 1993.

Moshe Buchinsky

- “Quantile Regression, Box–Cox Transformation Model and Changes in the Returns to Schooling and Experience: U.S. 1963–1987,” *Journal of Econometrics* (1995), 65: 109–54.
- “A Monte Carlo Study of the Asymptotic Covariance Estimators for Quantile Regression Estimator,” *Journal of Econometrics* (1995), 68: 303–38.

Ray C. Fair

- *Testing Macroeconometric Models*. Harvard University Press, 1994.
- “Computational Methods for Macroeconometric Models.” In H. M. Amman, D. A. Kendrick and J. Rust (eds.), *Handbook of Computational Economics*. North-Holland, 1996.

John Geanakoplos

- “The Expressive Power of the Hierarchical Approach to Modeling Knowledge and Common Knowledge” (with R. Fagin, J. Halpern, and M. Vardi). In Y. Moses (ed.), *Theoretical Aspects of Reasoning about Knowledge, Proceedings of the Fourth Conference*. San Mateo: Morgan Kaufmann Publishers, 1992, pp. 254–315.

Vassilis A. Hajivassiliou

- “Advances in Random Utility Models” (with Joel L. Horowitz and Participants of the Random Utility Models Workshop, Duke Invitational Symposium on Choice Modelling Behavior), *Marketing Letters* (1994), 5(4): 311–22.
- “Simulation of Multivariate Normal Rectangle Probabilities and Derivatives: Theoretical and Computational Results” (with Daniel L. McFadden and Paul A. Ruud), *Journal of Econometrics* (1996), 72: 85–134.
- “Duality and Liquidity Constraints under Uncertainty” (with Yannis M. Ioannides), *Journal of Economic Dynamics and Control* (1996), 20: 1177–1192.

Alvin K. Klevorick

- “Comments on Clifford Winston and Robert W. Crandall, ‘Explaining Regulatory Policy,’” *Brookings Papers on Economic Activity, Microeconomics* (1994).
- “Reflections on the Race to the Bottom.” In Jagdish Bhagwati and Robert E. Hudec (eds.), *Harmonization and Fair Trade*. Cambridge: MIT Press, 1996.
- “Comments on Stephen Marks, ‘Utility and Community: Musings on the Tort-Crime Distinction,’” *Boston University Law Review* (February/April 1996).
- “The Fractured Unity of Antitrust Law and the Antitrust Jurisprudence of Justice Stevens,” *Rutgers Law Journal* (1996), 27(3): 637–661.
- “The Race to the Bottom in a Federal System: Lessons from the World of Trade Policy,” *Yale Law and Policy Review/ Yale Journal on Regulation* (1996), 14(2): 177–186.

Oliver B. Linton

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- “Kernel Estimation in a Nonparametric Marker Dependent Hazard Model” (with J. P. Nielsen), *The Annals of Statistics* (1995), 82(1): 93–100.
- “A Simple Bias Reduction Method for Density Estimation” (with M. C. Jones and J. P. Nielsen), *Biometrika* (1995), 82: 327–338.
- “Applied Nonparametric Methods” (with W. Härdle). In D. F. McFadden and R. F. Engle (eds.), *The Handbook of Econometrics*, Vol. IV. North-Holland, 1995, pp. 2295–2339.

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- “Second Order Approximation in a Linear Regression with Heteroskedasticity of Unknown Form,” *Econometric Reviews* (1996), 15: 1–32.
- “Nonparametric Estimation of Additive Separable Regression” (with R. Chen, W. Härdle, and E. Severance-Lossin). In *Statistical Theory and Computational Aspects of Smoothing*. Physica Verlag, 1996.

László Lovász

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- “On the Invariance of Colin de Verdière’s Graph Parameter under Clique Sums” (with A. Schrijver and H.V.D. Holst), *Linear Algebra and its Applications* (1995), 226–28: 509–518.
- “Mixing of Random Walks and Other Diffusions on a Graph” (with P. Winkler). In P. Rowlinson (ed.), *Surveys in Combinatorics*. London Math. Soc. Lecture Notes Series 218. Cambridge University Press, 1995, pp. 119–154.
- “Combinatorial Optimization” (with M. Grötschel). Chapter 28 in R. Graham, M. Grötschel, and L. Lovász (eds.), *Handbook of Combinatorics*. Elsevier Science, 1995, pp. 1541–1597.

Barry Nalebuff

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- “The Right Game: Use Game Theory to Shape Strategy” (with Adam Brandenburger), *Harvard Business Review* (1995), 73(4): 57–71.
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William D. Nordhaus

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David G. Pearce

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Robert J. Shiller

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- “Index-Based Futures and Options Trading in Real Estate” (with Karl E. Case and Allan N. Weiss), *Journal of Portfolio Management* (January 1993).
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Martin Shubik

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- “Crisis Stability Games” (with J. Bracken), *Naval Research Logistics* (1993), 40: 289–303.
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Christopher A. Sims

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James Tobin

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- “Price Flexibility and the Stability of Full Employment Equilibrium.” In H. Barkai, S. Fischer, and N. Liviatan, *Monetary Theory and Thought*. London: Macmillan, 1993, Ch. 4, pp. 55–71.
- “Monetary Policy.” In David R. Henderson (ed.), *Fortune Encyclopedia of Economics*. Time Warner, 1993, Ch. 4, pp. 272–279.
- “Professor Tobin at Little Rock,” *Economic Policy, The Journal of the Committee on Developing American Capitalism* (March 1993), pp. 9–12.
- “Thinking Straight about Fiscal Stimulus and Deficit Reduction,” *Challenge* (March/April 1993), pp. 15–18.
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- “Business Cycles and Economic Growth: Current Controversies about Theory and Policy,” *American Academy of Arts and Sciences Bulletin* (December 1993), 33–47.
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- “Health Care Reform as Seen by a General Economist,” *George Seltzer Lecture*, Industrial Relations Center, University of Minnesota, 1994.
- “Comments on ‘Improving Monetary Policy.’” In Jeffrey C. Fuhrer (ed), *Goals, Guidelines, and Constraints Facing Monetary Policymakers*. Federal Reserve Bank of Boston Series No. 38, 1994, pp. 232–236.
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