

Stanford



Paul Milgrom

Shirley R. and Leonard W. Ely, Jr. Professor in the School of Humanities and Sciences, Professor of Economics, Senior Fellow at SIEPR and Professor, by courtesy, of Economics at the GSB and of Management Science and Engineering

Bio

BIO

Paul Milgrom is the Shirley and Leonard Ely professor of Humanities and Sciences in the Department of Economics at Stanford University and professor, by courtesy, in the Stanford Graduate School of Business and in the Department of Management Sciences and Engineering. Born in Detroit, Michigan on April 20, 1948, he is a member of both the National Academy of Sciences and the American Academy of Arts and Sciences and a winner of the 2008 Nemmers Prize in Economics, the 2012 BBVA Frontiers of Knowledge award, the 2017 CME-MSRI prize for Innovative Quantitative Applications, and the 2018 Carty Award for the Advancement of Science.

Milgrom is known for his work on innovative resource allocation methods, particularly in radio spectrum. He is coinventor of the simultaneous multiple round auction and the combinatorial clock auction. He also led the design team for the FCC's 2017 incentive auction, which reallocated spectrum from television broadcast to mobile broadband.

According to his BBVA Award citation: "Paul Milgrom has made seminal contributions to an unusually wide range of fields of economics including auctions, market design, contracts and incentives, industrial economics, economics of organizations, finance, and game theory." As counted by Google Scholar, Milgrom's books and articles have received more than 80,000 citations.

Finally, Milgrom has been a successful adviser of graduate students, winning the 2017 H&S Dean's award for Excellence in Graduate Education.

ACADEMIC APPOINTMENTS

- Professor, Economics
- Senior Fellow, Stanford Institute for Economic Policy Research (SIEPR)
- Professor (By courtesy), Economics
- Professor (By courtesy), Management Science and Engineering

ADMINISTRATIVE APPOINTMENTS

- Professor (by courtesy), Management Sciences and Engineering, Stanford University, (2018- present)
- Shirley R. and Leonard W. Ely, Jr. Professor of Humanities and Sciences, Stanford University, (1993- present)
- Professor of Economics, Stanford University, (1987- present)
- Professor (by courtesy), Graduate School of Business, Stanford University, (1987- present)
- Senior Fellow, SIEPR, Stanford University, (2007- present)

- Director, Stanford Institute for Theoretical Economics, Stanford University, (1989-1991)
- Williams Brothers Professor of Management Studies and Professor of Economics, Yale University, (1985-1987)
- Professor of Economics and Management, Yale University, (1983-1985)
- Visiting Professor, Yale University, (1982-1983)
- Kellogg Graduate School of Management Department of Managerial Economics and Decision Sciences, Northwestern University, (1979-1983)
- Professor, Northwestern University, (1982-1983)
- Associate Professor, Northwestern University, (1981-1982)
- Assistant Professor, Northwestern University, (1979-1981)
- Honorary doctorate, Stockholm School of Economics, (2001- present)
- Taussig Visiting Research Professor, Harvard University, (2000-2000)
- Fellow (2nd time), Center for Advanced Study in the Behavioral Sciences, (1998-1998)
- Senior Research Fellow, Institute for Policy Reform, (1993-1993)
- Fellow, American Academy of Arts and Sciences, (1992-1992)
- International Guest Scholar, Kyoto University, (1992-1992)
- Fellow, Center for Advanced Study in the Behavioral Sciences, (1991-1991)
- Ford Visiting Professor of Economics, University of California-Berkeley, (1986-1986)
- Fellow, Institute for Advanced Studies, Hebrew University of Jerusalem, (1985- present)
- Fellow, Econometric Society, (1984-1984)
- Fellow, Morse College (of Yale University), (1984-1984)
- Visiting Research Associate, Stanford University, (1981-1981)
- Fellow, Society of Actuaries, (1974-1974)
- Williams Brothers Chair in Management Studies, Yale University, (1986-1986)
- Fellowship to study "Economic Theories of Organization", John Simon Guggenheim Fellowship, (1986-1986)

HONORS AND AWARDS

- John J Carty Award for the Advancement of Science, National Academy of Sciences (2018)
- CME-MSRI Innovative Quantitative Methods in Economics & Finance, Chicago Mercantile Exchange & Mathematical Sciences Research Institute (2017)
- Dean's Award for Excellence in Graduate Education, Stanford College of Humanities & Sciences (2017)
- Foundations of Knowledge Award, BBVA Foundation (2012)
- Phase IB Award for "Incorporating Bidder Budget Constraints in Multi-item Auctions", National Science Foundation - Small Business Innovation Research (2010)
- Phase I Award for "Incorporating Bidder Budget Constraints in Multi-Item", National Science Foundation - Small Business Innovation Research (2010)
- Erwin Plein Nemmers Prize, Northwestern University (2008)
- Landau economics teaching prize, Stanford University (2003)
- Prize for Best Paper of the Year, Transactions of the Society of Actuaries (1987)
- Research Award, Yale University (1983)
- Honorary Master of Arts degree, Yale University (1983)
- Thesis Award, Leonard J. Savage Memorial (1980)
- Society of Actuaries Triennial Paper Prize, Best paper by an actuary within five of membership, for the period 1973-1975 (1976)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Chairman of Economics Section, National Academy of Sciences (2019 - present)
- President, Western Economic Association International (WEAI) (2007 - 2007)
- Elected member, National Academy of Sciences (2006 - 2006)
- Elected member, Executive Committee of the Econometric Society (2005 - 2005)
- Elected Vice President, Western Economic Association (2005 - 2005)
- Council Member, Econometric Society (2004 - 2004)
- Elected member, Game Theory Society (2003 - 2003)
- IBM Research Chair, Northwestern University (1981 - 1981)
- Member, Editorial Board of European Journal of Pure and Applied Mathematics (2012)
- Member, Editorial Board of AEJ-Microeconomics (2009)
- President, Western Economic Association International (WEAI) (2007 - 2008)
- Member, National Academy of Sciences (2006 - 2007)
- President-Elect, Western Economic Association International (WEAI) (2006 - 2007)
- Vice President, Western Economic Association International (WEAI) (2005 - 2006)
- Member, Executive Committee of the Econometric Society (2005 - 2008)
- Member, Council, Econometric Society (2004)
- Member, Council, Game Theory Society (2003)
- Chief economist, Perfect Commerce (2000 - 2002)
- Editorial Consultant, MIT Press (1997 - 2002)
- Member, Editorial Board, Journal of Comparative Economics (1997 - 1999)
- Founder, Market Design Inc. (1996)
- Director, Market Design Inc. (1996)
- Chairman, Market Design Inc. (1996 - 2002)
- Member, Nemmers Prize Selection Committee, Northwestern University (1996 - 1996)
- Member, Advisory Board, Microeconomics Abstracts (1996)
- Member, Advisory Board, Economics Research Network (1995)
- Member, Program Committee, 1995 World Congress of the Econometric Society (1994 - 1995)
- Senior Research Fellow, Institute for Policy Reform (1993 - 1995)
- Associate Editor, American Economic Review (1993 - 2000)
- Fellow, American Academy of Arts and Sciences (1992)
- Co-Editor, American Economic Review (1990 - 1993)
- Associate Editor, Games and Economic Behavior (1990)
- Associate Editor, Journal of Financial Intermediation (1989 - 1992)
- Associate Editor, Econometrica (1987 - 1990)
- Associate Editor, Rand Journal of Economics (1985 - 1989)
- Associate Editor, Journal of Economic Theory (1983 - 1987)
- Chair, Program Committee, Econometric Society Winter Meetings (1984 - 1984)
- Fellow, Econometric Society (1984)

- Member, American Economic Association (1980)
- Member, Economic Association (2005 - 2005)

PROFESSIONAL EDUCATION

- Ph.D, Stanford University , Business (1978)
- M.S., Stanford University , Statistics (1978)
- A.B., University of Michigan , Mathematics (1970)

LINKS

- Milgrom Website: <http://www.milgrom.net/>

Teaching

COURSES

2023-24

- Market Design: ECON 136 (Spr)
- Microeconomic Theory Seminar: ECON 391 (Aut, Win, Spr)
- Microeconomics II: ECON 203 (Win)

2022-23

- Market Design: ECON 136 (Spr)
- Microeconomic Theory Seminar: ECON 391 (Aut, Win, Spr)
- Microeconomics II: ECON 203 (Win)

2021-22

- Market Design: ECON 136 (Win)
- Microeconomic Theory Seminar: ECON 391 (Aut, Win, Spr)
- Microeconomics II: ECON 203 (Win)
- Simplicity and Complexity in Economic Theory: CS 360, ECON 284 (Spr)

2020-21

- Market Design: ECON 136 (Win, Spr)
- Microeconomic Theory Seminar: ECON 391 (Aut, Win, Spr)
- Microeconomics I: ECON 202 (Aut)
- Microeconomics II: ECON 203 (Win)
- Simplicity and Complexity in Economic Theory: CS 360, ECON 284 (Spr)

STANFORD ADVISEES

Doctoral Dissertation Advisor (AC)

Lea Nagel, Mitchell Watt

Doctoral Dissertation Co-Advisor (AC)

Billy Ferguson

Publications

PUBLICATIONS

- **Taming the Communication and Computation Complexity of Combinatorial Auctions: The FUEL Bid Language** *MANAGEMENT SCIENCE*
Bichler, M., Milgrom, P., Schwarz, G.
2022
- **When Should Control Be Shared?** *MANAGEMENT SCIENCE*
Milgrom, E., Milgrom, P., Singh, R.
2022
- **Extended proper equilibrium** *JOURNAL OF ECONOMIC THEORY*
Milgrom, P., Mollner, J.
2021; 194
- **Auction Research Evolving: Theorems and Market Designs** *AMERICAN ECONOMIC REVIEW*
Milgrom, P.
2021; 111 (5): 1383-1405
- **Clock Auctions and Radio Spectrum Reallocation** *JOURNAL OF POLITICAL ECONOMY*
Milgrom, P., Segal, I.
2020; 128 (1): 1–31
- **Auction Market Design: Recent Innovations** *ANNUAL REVIEW OF ECONOMICS, VOL 11, 2019*
Milgrom, P., Aghion, P., Rey, H.
2019; 11: 383–405
- **Equilibrium Selection in Auctions and High Stakes Games** *ECONOMETRICA*
Milgrom, P., Mollner, J.
2018; 86 (1): 219–61
- **Economics and computer science of a radio spectrum reallocation.** *Proceedings of the National Academy of Sciences of the United States of America*
Leyton-Brown, K., Milgrom, P., Segal, I.
2017; 114 (28): 7202-7209
- **Adverse Selection and Auction Design for Internet Display Advertising** *AMERICAN ECONOMIC REVIEW*
Arnosti, N., Beck, M., Milgrom, P.
2016; 106 (10): 2852-2866
- **Ascending prices and package bidding: Further experimental analysis** *GAMES AND ECONOMIC BEHAVIOR*
Kagel, J. H., Lien, Y., Milgrom, P.
2014; 85: 210-231
- **Designing Random Allocation Mechanisms: Theory and Applications** *AMERICAN ECONOMIC REVIEW*
Budish, E., Che, Y., Kojima, F., Milgrom, P.
2013; 103 (2): 585-623
- **CRITICAL ISSUES IN THE PRACTICE OF MARKET DESIGN** *ECONOMIC INQUIRY*
Milgrom, P.
2011; 49 (2): 311-320
- **Simplified mechanisms with an application to sponsored-search auctions** *GAMES AND ECONOMIC BEHAVIOR*
Milgrom, P.
2010; 70 (1): 62-70
- **Ascending Prices and Package Bidding: A Theoretical and Experimental Analysis** *AMERICAN ECONOMIC JOURNAL-MICROECONOMICS*
Kagel, J. H., Lien, Y., Milgrom, P.
2010; 2 (3): 160-185

- **Online Advertising: Heterogeneity and Conflation in Market Design** *122nd Annual Meeting of the American-Economics-Association*
Levin, J., Milgrom, P.
AMER ECONOMIC ASSOC.2010: 603–7
- **Assignment Messages and Exchanges** *AMERICAN ECONOMIC JOURNAL-MICROECONOMICS*
Milgrom, P.
2009; 1 (2): 95-113
- **Substitute goods, auctions, and equilibrium** *JOURNAL OF ECONOMIC THEORY*
Milgrom, P., Strulovici, B.
2009; 144 (1): 212-247
- **The Limited Influence of Unemployment on the Wage Bargain** *AMERICAN ECONOMIC REVIEW*
Hall, R. E., Milgrom, P. R.
2008; 98 (4): 1653-1674
- **Economics - The promise of prediction markets** *SCIENCE*
Arrow, K. J., Forsythe, R., Gorham, M., Hahn, R., Hanson, R., Ledyard, J. O., Levmore, S., Litan, R., Milgrom, P., Nelson, F. D., Neumann, G. R., Ottaviani, M., Schelling, et al
2008; 320 (5878): 877-878
- **What the seller won't tell you: Persuasion and disclosure in markets** *JOURNAL OF ECONOMIC PERSPECTIVES*
Milgrom, P.
2008; 22 (2): 115-131
- **Core-selecting package auctions** *INTERNATIONAL JOURNAL OF GAME THEORY*
Day, R., Milgrom, P.
2008; 36 (3-4): 393-407
- **Package auctions and exchanges** *ECONOMETRICA*
Milgrom, P.
2007; 75 (4): 935-965
- **Matching with contracts** *AMERICAN ECONOMIC REVIEW*
Hatfield, J. W., Milgrom, P. R.
2005; 95 (4): 913-935
- **Envelope theorems for arbitrary choice sets** *ECONOMETRICA*
Milgrom, P., Segal, I.
2002; 70 (2): 583-601
- **Advances in routing technologies and Internet peering agreements** *113th Annual Meeting of the American-Economics-Association*
Besen, S., Milgrom, P., Mitchell, B., SRINAGESH, P.
AMER ECONOMIC ASSOC.2001: 292–96
- **Putting auction theory to work: The simultaneous ascending auction** *JOURNAL OF POLITICAL ECONOMY*
Milgrom, P.
2000; 108 (2): 245-272
- **Combination bidding in spectrum auctions** *26th Annual Telecommunications Policy Research Conference (TPRC)*
Milgrom, P.
LAWRENCE ERLBAUM ASSOC PUBL.1999: 19–26
- **Game theory and the spectrum auctions** *12th Annual Congress of the European-Economic-Association*
Milgrom, P.
ELSEVIER SCIENCE BV.1998: 771–78
- **Coalition-proofness and correlation with arbitrary communication possibilities** *GAMES AND ECONOMIC BEHAVIOR*
Milgrom, P., Roberts, J.
1996; 17 (1): 113-128

- **The LeChatelier principle** *AMERICAN ECONOMIC REVIEW*
Milgrom, P., Roberts, J.
1996; 86 (1): 173-179
- **COMPLEMENTARITIES AND FIT - STRATEGY, STRUCTURE, AND ORGANIZATIONAL-CHANGE IN MANUFACTURING** *JOURNAL OF ACCOUNTING & ECONOMICS*
Milgrom, P., Roberts, J.
1995; 19 (2-3): 179-208
- **Continuous adjustment and fundamental change in business strategy and organization** *International Workshop on Trends in Business Organization - Do Participation and Cooperation Increase Competitiveness*
Milgrom, P., Roberts, J.
J C B MOHR (PAUL SIEBECK).1995: 231-258
- **THE FIRM AS AN INCENTIVE SYSTEM** *AMERICAN ECONOMIC REVIEW*
Holmstrom, B., Milgrom, P.
1994; 84 (4): 972-991
- **COORDINATION, COMMITMENT, AND ENFORCEMENT - THE CASE OF THE MERCHANT GUILD** *JOURNAL OF POLITICAL ECONOMY*
Greif, A., Milgrom, P., Weingast, B. R.
1994; 102 (4): 745-776
- **COMPARING EQUILIBRIA** *AMERICAN ECONOMIC REVIEW*
Milgrom, P., Roberts, J.
1994; 84 (3): 441-459
- **COMPARING OPTIMA - DO SIMPLIFYING ASSUMPTIONS AFFECT CONCLUSIONS** *JOURNAL OF POLITICAL ECONOMY*
Milgrom, P.
1994; 102 (3): 607-615
- **MONOTONE COMPARATIVE STATICS** *ECONOMETRICA*
Milgrom, P., Shannon, C.
1994; 62 (1): 157-180
- **ORGANIZATIONAL PROSPECTS, INFLUENCE COSTS, AND OWNERSHIP CHANGES** *JOURNAL OF ECONOMICS & MANAGEMENT STRATEGY*
Meyer, M., Milgrom, P., Roberts, J.
1992; 1 (1): 9-35
- **INFORMATION AND TIMING IN REPEATED PARTNERSHIPS** *ECONOMETRICA*
Abreu, D., Milgrom, P., Pearce, D.
1991; 59 (6): 1713-1733
- **A THEORY OF HIERARCHIES BASED ON LIMITED MANAGERIAL ATTENTION** *JOURNAL OF THE JAPANESE AND INTERNATIONAL ECONOMIES*
Geanakoplos, J., Milgrom, P.
1991; 5 (3): 205-225
- **COMPLEMENTARITIES, MOMENTUM, AND THE EVOLUTION OF MODERN MANUFACTURING** *103RD ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOC*
Milgrom, P., Qian, Y. Y., Roberts, J.
AMER ECON ASSN.1991: 84-88
- **ADAPTIVE AND SOPHISTICATED LEARNING IN NORMAL-FORM GAMES** *GAMES AND ECONOMIC BEHAVIOR*
Milgrom, P., Roberts, J.
1991; 3 (1): 82-100
- **MULTITASK PRINCIPAL AGENT ANALYSES - INCENTIVE CONTRACTS, ASSET OWNERSHIP, AND JOB DESIGN** *JOURNAL OF LAW ECONOMICS & ORGANIZATION*
Holmstrom, B., Milgrom, P.
1991; 7: 24-52

- **RATIONALIZABILITY, LEARNING, AND EQUILIBRIUM IN GAMES WITH STRATEGIC COMPLEMENTARITIES** *ECONOMETRICA*
Milgrom, P., Roberts, J.
1990; 58 (6): 1255-1277
- **SHORT-TERM CONTRACTS AND LONG-TERM AGENCY RELATIONSHIPS** *JOURNAL OF ECONOMIC THEORY*
Fudenberg, D., Holmstrom, B., Milgrom, P.
1990; 51 (1): 1-31
- **THE ECONOMICS OF MODERN MANUFACTURING - TECHNOLOGY, STRATEGY, AND ORGANIZATION** *AMERICAN ECONOMIC REVIEW*
Milgrom, P., Roberts, J.
1990; 80 (3): 511-528
- **THE EFFICIENCY OF EQUITY IN ORGANIZATIONAL DECISION-PROCESSES** *102 ANNUAL MEETING OF THE AMERICAN ECONOMIC ASSOC*
Milgrom, P., Roberts, J.
AMER ECONOMIC ASSOC.1990: 154-59
- **REGULATING TRADE AMONG AGENTS** *SYMP ON THE NEW INSTITUTIONAL ECONOMICS : DIFFERENT APPROACHES TO THE ECONOMICS OF INSTITUTIONS*
Holmstrom, B., Milgrom, P.
J C B MOHR.1990: 85-105
- **AUCTIONS AND BIDDING - A PRIMER** *JOURNAL OF ECONOMIC PERSPECTIVES*
Milgrom, P.
1989; 3 (3): 3-22
- **ECONOMIC-THEORIES OF THE FIRM - PAST, PRESENT, AND FUTURE** *CANADIAN JOURNAL OF ECONOMICS-REVUE CANADIENNE D ECONOMIQUE*
Milgrom, P., Roberts, J.
1988; 21 (3): 444-458
- **EMPLOYMENT CONTRACTS, INFLUENCE ACTIVITIES, AND EFFICIENT ORGANIZATION DESIGN** *JOURNAL OF POLITICAL ECONOMY*
MILGROM, P. R.
1988; 96 (1): 42-60
- **AN ECONOMIC-APPROACH TO INFLUENCE ACTIVITIES IN ORGANIZATIONS** *AMERICAN JOURNAL OF SOCIOLOGY*
Milgrom, P., Roberts, J.
1988; 94: S154-S179
- **COMMUNICATION AND INVENTORY AS SUBSTITUTES IN ORGANIZING PRODUCTION** *SCANDINAVIAN JOURNAL OF ECONOMICS*
Milgrom, P., Roberts, J.
1988; 90 (3): 275-289
- **JOB DISCRIMINATION, MARKET FORCES, AND THE INVISIBILITY HYPOTHESIS** *QUARTERLY JOURNAL OF ECONOMICS*
Milgrom, P., Oster, S.
1987; 102 (3): 453-476
- **INFORMATIONAL ASYMMETRIES, STRATEGIC BEHAVIOR, AND INDUSTRIAL-ORGANIZATION** *AMERICAN ECONOMIC REVIEW*
Milgrom, P., Roberts, J.
1987; 77 (2): 184-193
- **AGGREGATION AND LINEARITY IN THE PROVISION OF INTERTEMPORAL INCENTIVES** *ECONOMETRICA*
Holmstrom, B., Milgrom, P.
1987; 55 (2): 303-328
- **PRICE AND ADVERTISING SIGNALS OF PRODUCT QUALITY** *JOURNAL OF POLITICAL ECONOMY*
Milgrom, P., Roberts, J.
1986; 94 (4): 796-821
- **RELYING ON THE INFORMATION OF INTERESTED PARTIES** *RAND JOURNAL OF ECONOMICS*
Milgrom, P., Roberts, J.

1986; 17 (1): 18-32

● **LIMIT PRICING AND ENTRY UNDER INCOMPLETE INFORMATION - AN EQUILIBRIUM-ANALYSIS** *ECONOMETRICA*

Milgrom, P., Roberts, J.

1982; 50 (2): 443-459

● **RATIONAL COOPERATION IN THE FINITELY REPEATED PRISONERS-DILEMMA** *JOURNAL OF ECONOMIC THEORY*

KREPS, D. M., Milgrom, P., Roberts, J., Wilson, R.

1982; 27 (2): 245-252

● **PREDATION, REPUTATION, AND ENTRY DETERRENCE** *JOURNAL OF ECONOMIC THEORY*

Milgrom, P., Roberts, J.

1982; 27 (2): 280-312

● **CONVERGENCE THEOREM FOR COMPETITIVE BIDDING WITH DIFFERENTIAL INFORMATION** *ECONOMETRICA*

MILGROM, P. R.

1979; 47 (3): 679-688