

Garrett J. van Ryzin

Cornell Tech
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Education

Ph.D., Operations Research, Massachusetts Institute of Technology, Cambridge, Mass., 1991

S.M., Electrical Engineering and Computer Science, Massachusetts Institute of Technology, Cambridge, Mass., 1987

B.S.E.E., Columbia University, New York, 1985. Academic Honors with Distinction, Tau Beta Pi, Eta Kappa Nu.

Appointments

Cornell Tech

Professor of Operations, Information and Technology Management (July 2017-present)

Uber Technologies (on leave from Columbia)

Head of Marketplace Optimization Advanced Development (July 2015-present)

Columbia University, Graduate School of Business

Chair, Decision, Risk and Operations Division (2010-2015)

Paul M. Montrone Professor of Private Enterprise (2003-2017)

Professor of Business (2000 - 2003)

Class of 1967 Associate Professor of Business (1996 - 2000)

Associate Professor (1994 - 1995)

Assistant Professor (1991 - 1994)

The University of Auckland, School of Business and Economics

Visiting Professor (2001-2002)

Univ. of Pennsylvania, The Wharton School

Visiting Associate Professor (1995 - 1996)

Professional Experience

Uber Technologies, Head of Marketplace Optimization Advanced Development - Manager of team of data scientists working on next-generation modeling and optimization for surge pricing and marketplace optimization.

innRoad - Principal and technical advisor on hotel revenue management systems development.

CCC Information Services - Member of the Technical Advisory Board

Manhattan Associates - Member of the Technical Advisory Board. Consulting on supply chain and revenue management projects.

PROS Strategic Solution - Member of the PROS Technical Advisory Council. Advisor on various revenue management and pricing projects.

Pricing Research Corp. - Co-founder and vice president. Software development and consulting firm in the area of pricing and revenue management. Codeveloper of RevMaxx™ bid price optimization engine

Cleveland Consulting Associates - Summer associate (1990). Operations management and decision science consulting.

AT&T Bell Laboratories - Member of the Technical Staff. (1985-88). Staff member for three years in communication systems performance analysis group.

IBM Glendale Laboratories - Preprofessional engineering internship (1984).

Consulting Experience

SABIC – Consultant and advisor on Polycarbonate asset optimization modeling.

CubeSmart – Consultant on revenue management for self-storage

Turner Broadcasting Corp.: Consultant on advertising revenue management

Lifebooker: Consultant and model development for revenue management system to support B2C on-line booking platform.

Bagooba Inc.: Technical advisor for social gaming start-up

Manhattan Ministorage: Consultant on revenue management practices and systems improvements.

Resorts Condominium International: Expert witness on condominium rental exchange program.

Valu-Valu: Consultant on revenue management technology for C2C online selling platform

Ameritrade: Consultant on pricing analytics for brokerage services.

Walt Disney World Resorts: Consultant on their customer-centric revenue management (CCRM) project, including modeling and analysis of customer behavior to enhance revenue management practices.

J.P Morgan: Consultant on due diligence effort for a \$50M private equity investment in a retail pricing optimization software company.

Marketedemand: Consultant on demand management practices and methods for industrial procurement software company.

Priceline.com: Consultant on pricing and revenue management for e-commerce. Business analysis, modeling and algorithm design.

Booz-Allen & Hamilton: Member of a joint Columbia Business School/Booz-Allen & Hamilton team to investigate service operations strategy issues and tools.

Transportation International Pool (TIP): Consulted on yield management opportunities for TIP's trailer leasing operations as outside expert in engagement with CSC Index Group

Northwest/American Airlines Yield Management Litigation: Expert Witness. Served as lead academic expert for Northwest council in suit with American Airlines over yield management trade secrets.

Richard Schultz Design: Consultant on manufacturing strategy and process improvement study for small, high-end outdoor furniture manufacturer.

Teaching

Business Analytics - Co-developed and taught a redeveloped core MBA/EMBA course introducing students to modern business analytics. Course covers topics in predictive and prescriptive analysis, including basic machine learning (logistic regression, kNN, classification, cross validation), optimization, simulation and case study applications.

The Business of Sustainability - Designed and implemented a project-based MBA class on sustainability and business, taught in conjunction with Klaus Lackner of the Earth and Environmental Engineer department. Students work as consultants with real company clients on various sustainable business problems. Part of Columbia Business School's Master Class initiative.

Operations Consulting - Designed and implemented a project-based MBA class on operations consulting with real company clients and guest lectures from major consulting firms. Part of Columbia Business School's Master Class initiative.

Service Operations Management - Case-based, elective M.B.A. course in operations management in the service sector: service concept and competitive strategy, productivity measurement, service system architecture and design, capacity management, yield management and service quality.

Operations Management - Case-based M.B.A. core course in operations management: process flow analysis, capacity planning, supply chain management, JIT, quality management, technology management and operations strategy.

Decision Models - M.B.A. and E.M.B.A introduction to operations research: linear programming, integer programming, queueing theory, decision analysis and simulation.

Seminar in Revenue Management - Ph.D. level introduction to the research literature on dynamic pricing and revenue management.

Seminars in Operations Management - Various seminars on research topics in operations management: classic papers in operations planning, scheduling and inventory theory and a review of current research themes.

Foundations of Optimization - Ph.D. level introduction to the classical theory of optimization: optimality conditions, duality, the theory of Lagrange multipliers, convex programming, the calculus of variations and optimal control.

Published Papers

1. van Ryzin, G. J. and G. Vulcano (2017), "An Expectation-Maximization Algorithm to Estimate a General Class of Non-Parametric Choice Models," *Operations Research*, **65**, 2, pp. 396-407.
2. Phillips, R., A. S. Simsek, and G.J. van Ryzin (2015). "The Effectiveness of Field Price Discretion: Empirical Evidence from Auto Lending," *Management Science*, **61**, 8, pp. 1741-1759.
3. van Ryzin, G. J. and G. Vulcano (2015), "A Market Discovery Algorithm to Estimate a General Class of Nonparametric Choice Models," *Management Science*, **61**, 2, pp. 281–300.
4. Talebien, M. and G.J. van Ryzin (2014), "Case Article—Markdown Management at Sports Unlimited," *INFORMS Transactions on Education*, **14**, 2, pp. 96–99
5. Altug, M. S., and G. J. van Ryzin (2014). "Is Revenue Sharing Right for Your Supply Chain?" *California Management Review*, **56**, 4 (2014): 53-81.
6. Dahlgren, E., C. Gocmen, K. Lackner, and G. J. van Ryzin (2013), "Small Modular Infrastructure," *The Engineering Economist*, **58**, 4, 231-264.
7. Altug, M. S. and G. J. van Ryzin (2013), "Product Quality Selection: Contractual Agreements and Supplier Competition in an Assemble-to-Order Environment," *International J. of Production Economics*, **141**, 2, 626-638.
8. Vulcano G., G. J. van Ryzin and R. Ratliff (2012), "Estimating primary demand for substitutable products from sales transaction data," *Operations Research*, **60**, 2, 313-334.
9. Liu, Q. and G. J. van Ryzin (2011), "Strategic Capacity Rationing when Customers Learn," *M&SOM*, **13**, 1, 89-107.
10. Judd, K. and G. J. van Ryzin (2010), "Preface to the Special Issue on Computational Economics," *Operations Research*, **58**, 4, pp. 1035-36.
11. Vulcano, G., van Ryzin, G. J. and Chaar, W. (2010), "Choice-Based Revenue Management: An Empirical Study of Estimation and Optimization," *M&SOM*, **12**, 3 (Summer 2010), pp. 371-392.
12. Liu, Q. and G. J. van Ryzin (2008), "On the Choice-Based LP Model for Network Revenue Management," *M&SOM*, **10**, 2 (Spring 2008), pp. 288-310
13. van Ryzin, G.J. and Vulcano, G., (2008), "Computing Virtual Nesting Controls for Network Revenue Management Under Customer Choice Behavior," *M&SOM*, **10**, 3 (Summer 2008), pp. 448–467
14. Liu, Q. and G. J. van Ryzin (2008), "Strategic Capacity Rationing to Induce Early Purchases," *Management Science*. **54** , 6 (June 2008) pp. 1115-1131.
15. van Ryzin, G.J. (2005), "Models of Demand," *Journal of Revenue and Pricing Management*, **4**, 2, 204-210.

16. van Ryzin, G.J. and Vulcano, G. (2004), "Optimal Dynamic Auctions for Production and Inventory Systems," *Operations Research*, **52**, 3, 346-367.
17. Karaesman, I. and van Ryzin, G.J. (2004), "Overbooking with Substitutable Inventory Classes," *Operations Research*, **52**, 1, 83-104.
18. Talluri, K.T and van Ryzin, G.J. (2004), "Revenue Management Under a General Discrete Choice Model of Demand," *Management Science*, **50**, 15-33.
19. Vulcano, G., G.J. van Ryzin and C. Maglaris (2002), "Optimal Dynamic Auctions for Revenue Management", *Management Science*, **48**, 1388-1407.
20. Heching, A., G. Gallego and G.J. van Ryzin (2002), "Markdown Pricing: An Empirical Analysis of Policies and Revenue Potential at One Apparel Retailer *J. of Pricing and Revenue Mgmt.*, **1**, 139-160.
21. Mahajan, S. and van Ryzin, G.J. (2001), "Inventory Competition Under Dynamic Consumer Substitution," *Operations Research*, **49**, 646-657.
22. Mahajan, S. and van Ryzin, G.J. (2001), "Stocking Retail Assortments Under Dynamic Consumer Substitution," *Operations Research*, **49**, 334-351.
23. van Ryzin, G.J. and J. McGill (2000), "Yield Management Without Forecasting or Optimization: An Adaptive Algorithm for Protection Level Optimization," *Management Science*, **46**, 568-73.
24. van Ryzin, G.J. and S. Mahajan (1999), "On the Relationship Between Inventory Cost and Variety Benefits in Retail Assortments," *Management Science*, **45**, 1496-1509.
25. Gans, N. and G.J. van Ryzin (1999), "Discrete Dynamic Dispatching: Optimal Heavy Traffic Performance and Practical Insights," *Operations Research*, **47**, 675-692.
26. McGill, J. and G.J. van Ryzin (1999), "Revenue Management: Research Overview and Prospects," *Transportation Science*, **33**, 233-256.
27. Talluri, K. and G.J. van Ryzin (1999), "A Randomized Linear Programming Method for Computing Network Bid Prices," *Transportation Science*, **33**, 207-216.
28. Gans, N. and G.J. van Ryzin (1998), "Optimal Control of a Parallel Processing Queueing System," *Adv. in Applied Prob.*, **30**, 1130-1156.
29. Kolesar, P.K., G.J. van Ryzin and W. Cutler (1998), "The New Service Factory: Creating Customer Value Through Industrialized Intimacy," *Strategy & Business*, **12** (3Q 1998), 33-43.
30. Talluri, K. and G.J. van Ryzin (1998), "An Analysis of Bid-Price Controls for Network Revenue Management," *Management Science*, **44**, 1577-1593.
31. Gans, N. and G.J. van Ryzin (1997), "Optimal Control of Multi-Class, Flexible Service Systems," *Operations Research*, **45**, 677-693.
32. Federgruen, A. and G.J. van Ryzin (1997), "Probabilistic Analysis of a Generalized Bin Packing Problem and Applications," *Operations Research*, **45**, 596-609.

33. Federgruen, A. and G.J. van Ryzin (1997), "Probabilistic Analysis of a Combined Partitioning and Math Programming Heuristic for a General Class of Vehicle Routing and Scheduling Problems," *Management Science*, **43**, 1060-1078.
34. Gallego, G. and G.J. van Ryzin (1997), "A Multiple Product Dynamic Pricing Problem with Applications to Network Yield Management," *Operations Research*, **45**, 24-41.
35. Gallego, G. and G.J. van Ryzin (1993), "Optimal Dynamic Pricing of Inventories with Stochastic Demand Over Finite Horizons". *Management Science*, **40**, 999-1020.
36. Bertsimas, D.J. and G.J. van Ryzin (1993), "Stochastic and Dynamic Vehicle Routing with General Interarrival and Service Time Distributions," *Advances in Applied Probability*, **25**, 947-78
37. Bertsimas, D.J. and G.J. van Ryzin (1993), "Stochastic and Dynamic Vehicle Routing in the Euclidean Plane with Multiple Capacitated Vehicles". *Operations Research*, **41**, 60-76.
38. van Ryzin, G. J., S. X. C. Lou and S. B. Gershwin, S.B. (1993), "Production Control for a Tandem Two-Machine System," *IIE Transactions*, **25**, 5-20.
39. Bertsimas, D. J. and G. J. van Ryzin (1991), "A Stochastic and Dynamic Vehicle Routing Problem in the Euclidean Plane," *Operations Research*, **39**, 601-615..
40. van Ryzin, G. J., S. X. C. Lou and S.B. Gershwin (1991), "Scheduling Job Shops with Delays," *Intl. J. Prod. Res.*, **29**, 1404-22.
41. Bertsimas, D. J. and G. J. van Ryzin (1990), "An Asymptotic Determination of the Minimum Spanning Tree and Minimum Matching Constants in Geometrical Probability," *Operations Research Letters*, **9**, 223-231.
42. Lou, S. X. C. and G. J. van Ryzin (1989), "Optimal Control Rules for Scheduling Job Shops," *Annals of Operations Research*, **17**, 233-248.

Books and Book Chapters

1. van Ryzin, G. J. (2012), "Models of Demand," in Özer, Ö. and R. Phillips, *The Oxford Handbook of Pricing Management*, Oxford University Press, 2012.
2. van Ryzin, G. J. and K. T. Talluri (2005), "An Introduction to Revenue Management," in Smith, J. C. (ed.) *Tutorials in Operations Research 2005*, INFORMS, Hanover, MD.
3. Talluri, K. T. and G. J. van Ryzin (2004,. *The Theory and Practice of Revenue Management*, Springer-Verlag/Kluwer Academic Publishers, 2004. Winner of the 2005 Lanchester Prize for best published work in operations research.
4. van Ryzin, G. J. and K. T. Talluri (2003), "Revenue Management," in Hall, R. (ed.), *The Handbook of Transportation Science*, Kluwer Academic Publishers.
5. Mahajan, S. and G. J. van Ryzin (1998), "Retail Inventories and Consumer Choice," Chapter 17 in Tayur, S. et al. (eds.), *Quantitative Methods in Supply Chain Management*, Kluwer, Amsterdam.

Published Conference Proceedings

1. van Ryzin, G. J. , (2010), "Game Theory and Revenue Management," BQGT '10 *Proceedings of the Behavioral and Quantitative Game Theory: Conference on Future Directions*, Newport Beach, CA, USA, May 14-16, 2010.
2. Talluri, K.T, G. J. van Ryzin, I. Z. Karaesmen, and G. Vulcano (2008), *Proceedings of the 2008 Winter Simulation Conference* (S. J. Mason, R. R. Hill, L. Mönch, O. Rose, T. Jefferson, J. W. Fowler eds.), 145-156.
3. Abdelmonem, A.H. and G. J. van Ryzin (1990), "A Method for Evaluating the Effect of Performance Degradations on Computer Communications Network Applications," *Proc. of Super-Com. Intl. Conf. on Communications*, Atlanta, GA, paper # 427.
4. van Ryzin, G. J., S. X. C. Lou, and S. B. Gershwin (1987), "Scheduling Job Shops with Delays," *Proc. of IEEE Conf. on Robotics and Automation*, Raleigh, NC.

Working Papers/Papers Under Review or Accepted

1. Göçmen, C., R. Phillips, G.J. van Ryzin (2015), "Revenue Maximizing Dynamic Tolls for Managed Lanes: A Simulation Study," Columbia Center for Pricing and Revenue Management Working Paper #2015-01.
2. Phillips, R., A. S. Simsek, and G.J. van Ryzin (2015). "Estimating Buyer Willingness-to-Pay and Seller Reserve Prices from Negotiation Data and the Implications for Pricing" under review for *Management Science*.
3. Ke, W. and G. J. van Ryzin (2011), "Coordinating Vertical Partnerships for Horizontally Differentiated Products," Columbia University Center for Pricing and Revenue Management # No. 2011-2.
4. Altug, M. S., G. J. van Ryzin (2010), "Efficient Channel Contracting for Vertically Differentiated Products," under revision for *POMS*.
5. Debo L. and G. J. van Ryzin (2010), "Inventories and Customer Search Behavior when Product Quality is Uncertain," under second revision for *Management Science*.
6. Liu, Q. and G. J. van Ryzin (2008), Revenue Management with Customer Switching Costs," under second revision for *Management Science*.
7. Karaesman, I. and G. J. van Ryzin (2004), "Combining Overbooking and Seat Allocation on a Network," Columbia Business School Working Paper # DRO-2004-05.
8. Erin, S. and G. J. van Ryzin, (2006), "Product Line Positioning without Market Information," Columbia Business School Working Paper # DRO-2006-05.
9. van Ryzin, G. J. and Mahajan, S. (2000), "Supply Chain Coordination Under Horizontal Competition," Columbia Business School Working Paper # DRO-2000-01.

Popular Press Articles

1. Federgruen, A. and G. J. van Ryzin (2003), "New Risk Put Scenario Planning in Favor," *The Financial Times*, August 2003.
2. van Ryzin, G.J. (2000), "The Brave New World of Pricing," in *The Financial Times*, "Special Survey: Mastering Management," October 16, 2000.

Case Studies

1. Pierson, M. and G. J. van Ryzin, Frogtek: Mobile Technology for Micro Retailing, Columbia Caseworks, ID#100203, April 23, 2010.
2. Ke, W., C. Maglaras and G. J. van Ryzin, *Markdown Pricing Optimization at Bloomingdale's (A) and (B)*. (Case study of benefits assessment in a revenue management implementation.)
3. Cambell, J., J. Sankaran and G. J. van Ryzin, *3M New Zealand*, April 2003. (Case study of supply chain integration using e-commerce: Manufacturer's perspective)
4. Cambell, J., J. Sankaran and G. J. van Ryzin, *Boise New Zealand*, April 2003. (Case study of supply chain integration using e-commerce: Distributor's perspective)
5. van Ryzin, G.J., *Transportation National Group*, November 1998. (Case study in applying revenue management to a new industry and evaluating potential revenue gains. Context: equipment leasing.)
6. Mahajan, S. and G.J. van Ryzin, *Modell's DEA*, October 1998. (Case study in interpreting and using output from data envelopment analysis (DEA) for identifying operational improvement opportunities. Context: sporting goods retailing.)

Research Grants and Funding

Columbia University, Academic Quality Fund Grant, "Columbia Center for Revenue Management," Funding level: \$180,000

Van Ryzin, G. J. Wald Disney World Placement Optimization: 5/07. Funding level: \$42,000.

Van Ryzin, G. J. Intel Corporation Pricing and Contracting. 2/07. Funding level: \$45,000.

van Ryzin, G.J. Delta Technologies Master Research Agreement 2/05. Initial funding level: \$15,000.

van Ryzin, G.J. Development of Case Studies on B2B Exchanges for Direct Procurement, IBM Academic Partnership Award, 5/01. Funding level: \$40,000.

van Ryzin, G.J., Supply Chain Management for Telecom Services, AT&T industry grant, 1/99. Funding Level: \$40,000.

Gallego, G. and G.J. van Ryzin, "Joint Pricing, Allocation and Estimation Models for Revenue Management in the Airline and Retail Industries," jointly funded by Federated Department Stores and the National Science Foundation, 7/94. Funding Level: \$300,000.

Gallego, G. and G.J. van Ryzin, "Dynamic Pricing and Allocation Models for Revenue Management in the Airline and Retail Industries", funded by the National Science Foundation, 8/93. Funding Level: \$95,000.

Honors and Awards

Eugene L. Grant Award for Best Paper 2013 in *The Engineering Economist* for the paper "Small Modular Infrastructure" (co-authors E. Dahlgren, C. Gocmen, K. Lackner)

IFORS Distinguished Lecture, June 2010 (ALIO-INFORMS 2010 Buenos Aires)

2009 INFORMS Society Fellow

2007 MSOM Society Fellow

2005 Lanchester Prize for best published work in operation research for the book, *The Theory and Practice of Revenue Management* (coauthored with K. T. Talluri)

2004 Revenue Management and Pricing Section prize for best published work in revenue management (joint with K. T. Talluri)

The paper Gallego, G. and G.J. van Ryzin (1993), "Optimal Dynamic Pricing of Inventories with Stochastic Demand Over Finite Horizons". *Management Science*, **40**, 999-1020 selected in 2003 as one of the 50 most influential papers published in *Management Science* in the past 50 years.

Best Technical Presentation, AGIFOR Symposium, Paris, 2003.

Supervised-student research prizes

Qian Liu, finalist in 2005 MSOM Student Paper Competition

Gustavo Vulcan, second prize winner 2001 George E. Nicholson Prize and second prize winner MSOM Student Paper Competition

Itir Karaesman, second-prize winner 1999 MSOM Student Paper Competition.

Siddharth Mahajan, second-prize winner in the 1996 MSOM Student Paper Competition

Noah Gans, first prize winner 1995 George E. Nicholson Prize

Best Technical Presentation, AGIFORS Symposium, Atlanta, Georgia, 1996

Honorable Mention, 1990 ORSA Transportation Science Section Dissertation Prize

1990-91 MIT Center for Transportation Studies UPS Doctoral Fellowship

Honorable Mention, 1990 George E. Nicholson Prize

Editorial Positions

Operations Research, Area Editor: Revenue Management, 2006-2012

Manufacturing and Service Operations Management, Editor in Chief, 2003-2005.

Operations Research, Area Editor: Manufacturing, Service and Supply Chain Operations, 1999-2002

Transportation Science, Associate Editor

Naval Research Logistics, Associate Editor

Journal of Service Research, Member of the Editorial Board

Journal of Pricing and Revenue Management, Member of the Editorial Board.

Chairman, 1999 Transportation Science Dissertation Prize Committee.

Chairman, 1998 George E. Nicholson Prize Committee.

Co-editor (with Jeff McGill), Focused Issue on Yield Management, *Transportation Science*, **33**, 1999.

Professional Society Affiliations

The Institute for Operations Research and Management Science: *Member*

The Institute of Electrical and Electronics Engineers: *Member*

INFORMS MSOM Section: *Member*

INFORMS Revenue Management Section: *Founding Member of the Board*

Outside Activities

Uber Technologies (Head of Marketplace Optimization Advanced Development, on leave from CBS)

SABIC Plastics (consulting)

CubeSmart (consulting)

Micron Electronics (consulting)

Tenon and Grove (expert witness)

CCC Information Services (member of the advisory board)

Lifebooker (consulting)

Turner Broadcasting (consulting)

Bagooba Inc. (consulting)

LTV Systems - innRoad (partner)

Edison Properties (consulting)

Disney (consulting)

Delta-Northwest Airlines (consulting)

Valu Valu (consulting)

PROS Revenue Management (member of the advisory board)

Manhattan Associates (member of the advisory board)