Innovation under Risk and Ambiguity A research Proposal

Yehuda Izhakian[1], Gabriela Coiculescu[2], and Abraham Ravid[3]

The purpose of the project is to investigate the effect of ambiguity on innovation. We provide a theoretical framework, and we are working on an extensive empirical analysis to test our views.

A large and growing body of literature investigates the determinants of innovation; such determinants include industry competition {Aghion etal., 2005}, institutional ownership {Aghion et al., 2013} and organizational structure {Lerner et al., 2011, Seru, 2014, Bernstein, 2015}.

Special attention has been given to uncertainty as a driver of innovative activity. Bloom (2007) and others investigate this channel. More recent work includes Bernstein et al. (2017} who suggest that economic risk (negative housing shocks) reduces employees' interest in risky and exploratory projects and Krieger and Papanikolaou (2017) who investigate the tradeoff between conservative and riskier investments in drug development.

Our paper contributes to this literature, by making the distinction between two aspects of uncertainty: risk and ambiguity (Knightian uncertainty). Risk is a condition where outcomes are a priori unknown, but the odds of all possible outcomes are perfectly known. Ambiguity is a condition where not only are outcomes a priori unknown, but also the odds of outcomes are unknown or not uniquely assigned.

Put differently, risk assumes a unique quantifiable distribution of future prospects. In reality, it may be very difficult to predict a distribution of outcomes for a new innovative product such as a new drug (Krieger and Papanikolaou 2017).

Therefore, the concept of ambiguity---the uncertainty of probabilities---seem a natural lens through which managers may view future prospects.

We follow Schwartz (2004) and consider patent and R&D decisions as real options. However, whereas in Schwartz (2004) the value of these real options is subject to risk only, we show that the value of real options should be also significantly affected by ambiguity. (following Izhakian and Yermack, 2017, Augustin and Izhakian, 2016).

Our theoretical framework thus values real options when the decision maker is ambiguity averse and either risk averse or risk neutral.

The main hypotheses derived from this model are that while risk has a positive effect on investment decisions, ambiguity has a negative effect on investment.

The intuition is that higher risk is associated with a higher value of the real option, which encourages investment. In contrast, since higher ambiguity leads decision makers to overweight the

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likelihoods of bad outcomes and underweight the likelihoods of good outcomes, it will reduce innovative activity.

Empirically, we map this framework to investments and R&D and patenting.

Data and Methodology

The primary data sources for this research project are: the National Bureau of Economic Research (NBER) patent database and the Harvard Business School (HBS) Patent Database, for historical information on patents, the intraday Trade and Quote (TAQ) data for the estimation of the firm-specific degree of ambiguity, the Chicago Center for Research in Security Prices (CRSP) database for the estimation of firm risk, and Compustat for accounting data.

To proxy for the ambiguity associated with a firm, we estimate the ambiguity of its equity. We employ the empirical method used by Izhakian and Yermack (2017) to estimate the degree of ambiguity using intraday stock trading data from the TAQ database. In this approach, we suppose the existence of a representative agent with a set of priors over the intraday return distributions. The observed intraday returns on the underlying asset are assumed to be a realization of one specific prior. That is, every day is characterized by a different distribution of returns, and the set of these distributions over a month represents the agent's set of priors. After we divide the range of daily returns into 160 intervals (bins), we calculate for each interval the variance over the month of the probability of the return being in that interval. Our empirical proxy for the monthly ambiguity of a stock is the average of these variances across all return intervals.

This research project will examine several measures of innovation, including both investment in innovation (R&D investment, scaled by either sales, assets or assets adjusted to include capitalized investment in R&D and other intangible assets) and innovation intermediate output (patents, citations-weighted patents, patent originality and generality, as well as the propensity to exploit the firm's existing knowledge versus exploring new knowledge). It will adopt a variety of modern econometric techniques, including linear panel data models to analyze R&D investment and count models that account for firm heterogeneity and excess zeroes, such as zero-inflated and hurdle models for patents and citations.

Preliminary runs seem to support our theoretical view that when significant, risk increases R&D investment and patenting activity, and ambiguity decreases both. However, it seems that small and young firms, early in their life cycle "care" more about ambiguity whereas it is the more established firms for whom risk matters most.

We have run a few robustness checks and we plan to expand the analysis.

References

Aghion P., Bloom N., Blundell R., Griffith R. and Van Reenen J. (2005) "Competition and Innovation: An Inverted-U Relationship", *Quarterly Journal of Economics* pp. 120, 701-728.

Aghion P., Van Reenen J. and Zingales L. (2013) "Innovation and Institutional Ownership", *American Economic Review*, Volume 103, Number 1, February, pp. 277-304.

Bernstein, S. (2015) \Does Going Public A_ect Innovation?" Journal of Finance, Vol. 70, No. 4, p. 13651403.

Bernstein, S., T. McQuade, and R. R. Townsend (2017) "Does Economic Insecurity Affect Employee Innovation?" Stanford University Working Paper.

Bloom, N. "Uncertainty and the Dynamics of R&D" *American Economic Review* Vol 97, #2, 250-255.

Ellsberg, D. (1961) Risk, Ambiguity, and the Savage Axioms, *Quarterly Journal of Economics*, Vol. 75, No. 4, pp. 643-669.

Knight, F. M. (1921) *Risk, Uncertainty and Profit*, Boston: Houghton Mifflin.

Izhakian, Y. (2017) Expected Utility with Uncertain Probabilities Theory, *The Journal of Mathematical Economics*, vol. 69, pp. 91-103.

Izhakian, Y. and D. Yermack (2017) Risk, Ambiguity, and the Exercise of Employee Stock Options," *The Journal of Financial Economics*, Vol. 124, pp. 65-85.

Knight, F. M. (1921) *Risk, Uncertainty and Profit*, Boston: Houghton Mifflin.

Krieger, J., D. Li, and D. Papanikolaou (2017) "Developing novel drugs," Harvard Business School Working Paper.

Lerner, J., M. Sorensen, and P. Stromberg (2011) "Private Equity and Long-Run Investment: The Case of Innovation," Journal of Finance, Vol. 66, No. 2, p. 445477.

Schwartz, E. S. (2004) "Patents and R&D as real options," *Economic Notes*, Vol. 33, No. 1, pp. 23-54.

Seru, A. (2014) "Firm boundaries matter: Evidence from conglomerates and R&D activity," Journal of Financial Economics, Vol. 111, No. 2, pp. 381–405.

Budget estimate:

The budget is to be divided among the three authors, two junior researchers and a senior researcher.

Project expenses

Research assistance $ 2000

Data purchase and analysis $5000

Travel for project related conferences and discussions with industry professionals

$4000 for each of the three researchers, $12,000.

Total $19,000.

CURRICULUM VITAE

(early 2018)

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Research Interests: Corporate Finance- in particular Capital Structure, Debt features, Bankruptcy, Mergers and Contracts under asymmetric information; Interaction of Production and Financial Decisions; Applications of Corporate Finance and Microeconomic Theory to the entertainment and media industries and to government policies. Venture Capital and Entrepreneurship, Risk Management.

Teaching Range: **MBA-** Financial Management (core course) –Rutgers, UCLA, NYU, Haifa University, Tel Aviv University. Corporate Finance - Yale, Rutgers, NYU, Haifa University, Wharton, University of Chicago. Investments and Capital Markets- Rutgers University, University of Wisconsin. Equity Markets – NYU. Debt Markets and Fixed Income Securities- NYU, Rutgers, Columbia, Cornell. Micro Economics- Rutgers, Haifa University. Options- Rutgers. Entertainment Finance: Yale, NYU, UCLA. Advanced Topics in corporate finance- Cornell, Rutgers. Evaluation of Capital Investment projects- Cornell.
Undergraduate: Financial Management-(core course)- Rutgers, YU. Corporate Finance–Rutgers. Micro Economics- Haifa University. Cost Benefit Analysis-Haifa University. Advanced Corporate Finance- YU. Fixed Income-YU.
Doctoral level – Corporate Finance – Rutgers, Cornell, Yale, Finland, Stockholm School of Economics, EIASM- Brussels.

Recent doctoral Workshops and tutorials- EFA, AIMAC.

Education: 1979 Ph.D. Graduate School of Business and Public Administration (currently Johnson School) Cornell University.

1977 M.S. Graduate School of Business and Public Administration, Cornell University.

1975 B.S. Tel Aviv University - A joint program- Statistics and Economics with mathematical emphasis. (Statistics grade qualified for graduation cum laude.)

Work Experience:

Tenured and tenure track positions:

2012-	Sy Syms Professor of Finance, Yeshiva University, Syms School of Business
1998-	Professor of Finance, Rutgers Business School, Rutgers University.
1991-	Tenured Associate Professor, Graduate School of Management, Rutgers University
Spring 1987	Associate Professor, Graduate School of Management, Rutgers University.
Fall 1985	Tenured Senior Lecturer, (equivalent of Associate Professor), Dept. of Business Administration, Haifa University.
Fall 1980	Lecturer,(equivalent of Assistant Professor), Haifa University.

Other Appointments:

Spring 2015	Visiting Research Professor, NYU, Stern School of Business.
2013-	Research Fellow, Knut Wicksell Center for Financial Studies, Lund University, Sweden.
2010	Visiting Professor, University of Chicago, Booth School of Business.
2008-2009	Visiting Professor, the Wharton School, University of Pennsylvania.
2007-2008	Visiting Professor, Johnson School of Management, Cornell University.

Fall 2005, 1/2003-6/2004	Visiting Professor and Research fellow, Yale School of Management.
2001-2002	Visiting and part-time Professor of Finance, Stern School of Business, NYU.
Winter 2000	Visiting Professor of Finance, Anderson School of Management, UCLA.
1994- 1998	Visiting and part time Professor of Finance, NYU Stern School of Business
1993	Visiting Scholar, Stockholm School of Economics.
1991-2	Visiting Professor of Finance Graduate School of Business, Columbia University.
Spring 1989	Visiting Associate Professor of Finance, Graduate School of Management, University of California, Los Angeles.
Fall 1985, Summer 1986	Visiting Associate Professor of Finance, School of Management, University of California Los Angeles
1982-1983	Visiting Associate Professor of Finance, Graduate School of Business, New York University.
1982, 1985	Visiting Associate Professor of Finance and Economics, Graduate School of Management, Rutgers University.
1980	Visiting Assistant Professor of Finance, University of Wisconsin; Visiting Scientist Brookhaven National Laboratory (Energy Division); Working under contract for the U.S. Department of Energy; Research Associate Technion, Israel Institute of Technology, working on the energy project in the Ne'eman Institute for Advanced Research in Science and Technology. Also taught at the Graduate School of Business at Tel Aviv University.
1979	Visiting Assistant Professor of Finance, SUNY at Binghamton, N.Y. Consulting: Study of the Economic Impacts of the Importation of LNG to the U.S. - for the office of Technology Assessment, U.S. Congress.
1975-1978	Teaching and research assistant, Cornell University.

Summer 1977	Energy research project for Brookhaven National Laboratory.
1974-1975	Israel Broadcasting Authority - News Reporter and editor with tenure. Freelance writer and desk work for three of the four largest dailies in Israel. Had been doing freelance work for radio and newspapers in Israel until the late 1990's.
1970-1974	Israel Defense Forces - belonged to the artillery units, later graduated from officers' course. Worked for the army radio network and news magazine. Was a war correspondent in the 1973 War. (Reserves Rank-Captain).
1968-1969	Part-time-creating educational documentary movies.

Awards and Honors:

Third Prize Marcon conference, Indian Institute of Management, December 2012 (with Milt Harris and Suman Basuroy).

Pommerehne Prize for the Best Published Paper in the Journal of Cultural Economics for 2006-2007 (out of 55 published papers) announced 2010 (Joint with S. Basuroy and J. Wald).

Finalist for best paper, FMA 2009.

Best Paper in Fixed Income Research- Financial Management Association meetings, October 2005 (joint with N. Reisel and K. John).

Rutgers Senior faculty research award, 2004.

Bruce and Carol Mallen Prize for Published Research in the Economics and Business of the Motion Pictures Industry, 2004.

Best Paper award, Eastern Finance Association Meetings, 1991, (with M. Long and Ilene Malitz)

Google Citations: 4516
https://scholar.google.com/scholar?hl=en&q=abraham+ravid&btnG=&as_sdt=1%2C31&as_sdtp=

Selected Other professional activities

Numerous Doctoral courses and seminars, in Brussels, Stockholm School of Economics City University, London, and in Finland- most recently in Brussels, October 2006, May 2006, and in

Helsinki May 2004.

1999-2006 - Panels on the economics and finance of the Entertainment Industry.

Selected Consulting and expertise – Current- A study of the economic status of women in the film industry for the New York City Mayor's office of Media and Entertainment.
Preminger vs. CBS (expert), 2007;
Palmstar Entertainment (profitability and an offering for film financing) 2005;
The economic cost of credit cards;
An international comparison of bankruptcy codes (for the World Bank).
Telecommunications auctions in Finland.

Recent Public Service:

Leonia District Board of Education (April 2006, re-elected April 2009, November 2012, November 2014); **Board President** 1/2017- 1/2018

Board of Temple Geshser Shalom (elected 2011, re-elected, 2013 served until 2015)

Board of Temple Sons of Israel (March 2006, re-elected 2009).

Other Biographical Details:

1976-1979	Recipient of a Cornell Graduate School of Business Scholarship.
1976-1978	Chairman of the Israeli Students Organization at Cornell University.
1968	Israeli representative at the World Youth forum in New York. This international conference included coast to coast televised discussions, lectures delivered by delegates, and meetings with Administration and Congress officials as well as with U.N. Secretary General.
Languages:	Hebrew, English, French, some German Spanish and Arabic.
Hobbies:	Swimming, reading, skiing, movie making, accordion playing.
Memberships:	American Economic Association; American Finance Association; Financial Management Association; Western Finance Association; European Finance Association.

Publications:

Thesis

Issues in Optimal Decision Making of Public Utilities under Uncertainty - An Essay in Applied Welfare Economics.

Publications in Refereed Journals

l. "The Optimal Timing of Energy-Conserving Investment-Analysis and Policy Implications", Energy, the International Journal, March 1980, vol. 5 pp. 259-270.

2. "On the Optimal Size of A Life Saving Facility", The Journal of Socioeconomic Planning Sciences, Vol. 15, No. 6, 1981, pp. 353-356 (with A. Gafni).

3. "A Simple Method for Evaluating the Marginal Cost of Unsupplied Electricity", The Bell Journal of Economics, Spring 1982, vol. 13 #1 pp. 249-253 (with B. Bental).

4. "The Differential Impact of Gas Shortages and Fuel Price Increases on Demand - The Case of the Hotel Industry in N.Y. State", The Energy Journal, Vol. 4, No. 2 April 1983, pp. 165-171 (with A. Arbel).

5. "The Importance of being First -- Learning, Price and Strategy". The Quarterly Journal of Economics, May 1983, vol. 98 pp. 353-362 (with R.H. Smiley).

6. "An Energy Price Impact Model -- The Case of the Hotel Industry", Applied Economics, December 1983 Vol. 15, pp. 705-714 (with A. Arbel).

7. "A Cost Benefit Analysis of Bio-Gas Production - An Israeli Experience." "Energy Models and Studies" -- A special issue in Studies in Management Science and Systems series (Ed. B. Lev), of Management Science 1983, pp. 413-422 (with Y. Hadar).

8. "On the Interaction of Real and Financial Decisions of the Firm under Uncertainty" The Journal of Finance, Vol. 40, No. 2, June 1985, pp. 501-517 (with Amihud Dotan).

9. "On Recreation Demand -- A Time Series Approach" Applied Economics, December 1985, vol. 17, pp. 979-990 (with A. Arbel).

10. "On the Relevance of Debt Maturity Structure" The Journal of Finance, December 1985 vol. 40 pp. 1423-1437(with I. Brick).

11. "Application of Production Standards in Complex Organizations Under Uncertainty" The Journal of Economics and Business, 1986, vol. 38 pp. 307-316 (with E.F. Sudit).

12. "Safety First, Bankruptcy and the Investment and Pricing Decisions of the Firm" Economic Inquiry October 1987, vol. 25 pp. 695-706.

13. "On Marginal Cost Pricing when Consumers can also Produce" the Energy Journal, October 1987, vol.8, #4 pp. 17-22.

14. "Government Financing and Capital Market Equilibrium" Research in Finance, A. Chen, Editor, 1988 (an annual refereed volume) (with Eli Talmor), vol. 7 pp.21-52.

15. "On Interactions of Production and Financial Decisions"
-A survey, Financial Management October 1988, vol 17, pp.87-99.

16. "About Technological Options" in P. Cohendet and P. Lerena
(Eds.) Information and Flexibility (a refereed volume) Economica, Paris, 1989 pp. 227-234 (with E. Zuscovitch in French).

17. "Interest Rate Uncertainty and the Optimal Debt Maturity Structure" Journal of Financial and Quantitative Analysis, March 1991, vol. 26, #1 pp.63-81 (with Ivan Brick).

18. "Financial Signaling by Pre-committing to Cash Flows" the Journal of Financial and Quantitative Analysis, June 1991 vol. 26 #2,pp.165-180 (with O.Sarig).

19. "On Electricity and Public Utility Pricing" the Journal of Economics and Business, May 1992, vol. 44 #2 pp.151-160.

20. "On Trade Credit, Quality Guarantees and Product Marketability". Financial Management, Winter 1993, vol. 22 pp.117-127 (with I. Malitz and M. Long)

21. "Dividend Policy and Power in Organizations" the Journal of Economic Behavior and Organization October 1994, Vol. 25 pp. 241-255 (with E.F. Sudit).

22. "Residual Securities and Personal Taxes" Economics Letters, October 1994, 46, pp. 55-59.

23. "Privatizing in Stages and the Dynamics of Ownership Structure", Pacific Basin Finance Journal, July 1996, vol. 4 pp. 277-296 (with Z. Fluck and K. John).

24. "On Debt Maturity and Other Contractual Provisions" - October 1996, Financial Markets Institutions and Instruments (an entire monograph issue).

25. "Optimal Financial Contracts for a Startup with Unlimited Operating Discretion" Journal

of Financial and Quantitative Analysis, September 1997, pp. 269-286. (with M.Spiegel).

26. "The Bankruptcy code and bankruptcy cost - a comparison of the U.S. and Finnish bankruptcy codes" (with S. Sundgren) Financial Management, Winter, 1998, Vol. 27 #4 pp. 28-40.

27. "On Toeholds and Bidding Contests" (with M. Spiegel) Journal of Banking and Finance, July 1999, Vol. 23 # 8 pp. 1219-1242.

28. "Information Blockbusters and Stars - a study of the motion pictures industry" Journal of Business, October, 1999, pp.463-392.

29. "Asymmetric Information, Corporate Myopia and Implications for Capital Gains Tax Rates" (with T. Chemmanur) - Journal of Financial Intermediation, 1999, vol. 8 pp. 205-231.

30. "On leverage and bidding strategies - a theoretical and empirical study" (with M. Clayton) Review of Financial Studies, Summer 2002, pp. 723-750.

31. "Managers, Block-holders and Takeovers" (with M. Spiegel) Research in Banking and Finance, Volume 2, 2002.

32. How Critical are Critical Reviews? The Box Office Effects of Critics, Stars and Budgets (with S. Basuroy and S. Chatterjee) Journal of Marketing, vol. 67, October 2003, pp. 103-117.

33. "Executive Objective Function, the R-Rated puzzle and the Production of Violent Films" the Journal of Business, (with S. Basuroy) April 2004. vol. 77, no. 2, pp. S155-92.

34. Distributors and Critics- does it take two to tango? (with J.Wald and S. Basuroy) Journal of Cultural Economics, Volume 30 (3), December 2006, pp.201-218.

35. "Privatization under Political Constraints- Auctions vs. Private Negotiations" (with K. John and Z. Fluck). Journal of Banking and Finance. September 2007, Volume 31, Issue 9, pp. 2730-2750.

36. "Preferred stocks and Taxes- a theoretical and empirical investigation" (with R.Ofer, V. Pons, I. Venezia and S. Zuta) Journal of Financial Stability, October 2007, pp. 198-237, (**SSRN Top 10).**

37**.** **"**Founders versus non-founders in large companies: financial incentives and the call for regulation" (with D. Palia and C.J. Wang), Journal of Regulatory Economics, February 2008, pp. 55-86.

38. "Choosing to co-finance- An analysis of Project Specific Alliances in the film industry" (with D. Palia and N. Reisel) Review of Financial Studies, April 2008, pp.483-511 (**lead article**).

39. "Stock market response to changes in movies' opening dates" (with Liran Einav) Journal of Cultural Economics, Volume 33, Issue 4, November 2009, P. 311.

40. "The Notching Rule for Subordinated Debt and the Information Content of Debt Ratings" **.**(with K. John and N. Reisel) Financial Management, volume 39, # 2, Summer 2010, pp. 489-514.

41. "When do Vertical Mergers create value?" (with S. Kedia and V. Pons) Financial Management, Volume 40, # 4 Winter 2011, pp. 845-878.

42. "The pricing of Soft and Hard information- Economic Lessons from Screenplay Sales (with W. Goetzmann and R. Sverdlove**, (SSRN Top 10, NBER working paper**) – Journal of Cultural Economics. Volume 37, Issue 2, 2013, pp. 271-307

43. "Conflicts in bankruptcy and the sequence of Debt Issues" (with A. Bris, Gabriela Coiculescu and R. Sverdlove)- Journal of Financial and Quantitative Analysis, December 2015, Vol. 50 # 6 pp. 1353-1388. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2713513

44. "Location Specific Styles and U.S. Venture Capital Contracting" (with O.Bengtsson) **(SSRN Top 10)** Quarterly Journal of Finance, Vol 5 # 3, 2015.

45. "Performance and Managerial Turnover: Evidence from the Career -Paths of Film Directors" (with K. John and J. Sunder) (**SSRN Top 10**) Journal of Corporate Finance, 44, 2017 pp. 425–439,

46. Hedging Policies, Incentives and Market Power (with David De-Angelis): Journal of Economics and Management Strategy, Spring 2017, 26-1, pp. 123-151. http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1711254

47. The Impact of Advertising Content on Movie Revenues (with V. Rao, S. Basuroy, R. Gretz and J. Chen) Marketing Letters, 28, 2017, pp. 341-355

48. Intellectual Property Contracts- Theory and Evidence from Screenplay Sales (with Milton Harris, R. Sverdlove, and S. Basuroy) (SSRN Top 10). http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2811482 Journal of Law, Finance, and Accounting: Vol. 2: No. 2, 2017, pp 275-323.

Submissions, completed working papers and revisions:

1. How Relevant Are Experts In The Internet Age? Evidence from the Motion Pictures Industry. (with S. Basuroy)- a revision is being prepared.

2. Star Turnover and Human Capital – a pseudo natural experiment with data from Broadway shows (with Shu Han) – a revision is being prepared.

Book Chapters:

1. Are they all crazy or Just Risk Averse? Some Movie Puzzles and Possible Solutions. In the Economics of Cultural Industries, edited by Victor Ginsburgh (Elsevier, 2004).

2. Film Production in the Digital Age in a Concise Handbook of Movie Industry Economics, C. Moul, editor)(Cambridge University Press, 2005) (reviewed- Journal of Cultural Economics, Volume 30 (3) December 2006, pp. 239-241).

3. What makes movies tick- Ivory Tower Insights, Studio Views and Research Directions- in Economics of Creativity (Routledge) Editor: Thierry Burgher Helmchen. January 2013.

4. The Dark Corners of ERM- in The Routledge Companion for Strategic Risk Management, Editor: Torben Andersen, 2015.

Forthcoming:

"Film Financing" in Murschetz, P., Karmasin, M., & Teichmann, R. (Eds.), *Public Funding for Film. Challenges – Purposes – International Cases*. Berlin-Germany: Springer Verlag (forthcoming 2017)

Articles in Refereed Conference Proceedings

1. "Bad Projects, Good Projects and IPO's" in Pacific Basin Research in Finance, volume 3, 1991 (with M. Spiegel).

Work in Progress and working papers:

1. A Theory of firms' birth and death (with Kose John)

2. Firm policies and individual portfolio composition (with Naciye Sekerci).

2. On Pricing Policies and Capital Structure Choice.

3. The Effect of Ambiguity on Patenting and R&D policies (with Yud Izakhian and Gabriela Coiculescu).

4. The content of merger announcements and the success of acquisitions (with R. Calipha)

5. The Economics of gender in the movie industry, evidence from directors' careers (with Shu Han)

SSRN: 7135 Downloads

Other Professional and invited Publications:

1. The Optimal Timing of Energy Conserving Investment, A Brookhaven Report, July 1978. BNL-51173.

2. Energy Futures -- LNG Importation to the U.S. A Report prepared for U.S. Congress, Office of Technology Assessment. March 1980(co-author)

3. Energy in Israel. A Report on the Ne'eman Institute for Advanced Research, Technion, Israel Institute of Technology 1982.

4. On Resources and Development. A book report in Economic Development and Cultural Change (with M. Shechter), Vol 32 No. 4, July 1984.

5. Comments on the EVA system of Financial Analysis, Journal of Applied Corporate Finance, Spring 1994.

6. A case Study of the Finnish Bankruptcy Code- Occasional Paper #31 Private Sector Development, World Bank, April 1997.

7. Linear Securities as Optimal Contracts - an abstract Journal of Finance, July 1997, pp.1252-1253.

8. Book Review on Hollywood Economics, by Art DeVany, Journal of Economic Psychology, December 2004, volume 25, # 6, pp. 895-898.

9. Book Review on the Big Picture by E.J. Epstein, Journal of Cultural Economics, Volume 29, (3), August 2005, pp.239-242

10. Economics of Motion Pictures- the state of the art (with D. Chisholm, V. Fernandez Blanco and D. Walls) Journal of Cultural Economics, 2015, 39, pp 1-13.

Papers Presented in Conferences:

1. The Econometric Society, Denver, September 1980.

2. ORSA-TIMS, Toronto, May 1981.

3. Mathematical Modeling Conference, Los Angeles.

4. The 5th International Time Series Conference, Houston, August,1981.

5. The International Association of Energy Economists Conference, Cambridge, England, June 1982.

6. The European Financial Association Meeting, Fontainbleau, France, September 1982: "On the Optimal Debt Maturity Structure". (Appeared in Published Proceedings).

7. The AFA-AEA Annual Meeting, San Francisco, December 1983:

8. Atlantic Economic Association, Nassau, April 1983 "On Recreation Demand - The Time Series Approach". (Appeared in Published Proceedings).

9. The Western Finance Association, Vancouver, June 1983.

10. American Accounting Association Meeting, Toronto, August 1983 "On the Determination of Profit Maximizing Quantitative Standards"(appeared in published proceedings).

11. The European Financial Association Meeting, Manchester, September 1984 "Production Decisions, Financial Decisions and their Interactions under Uncertain Demand". (Appeared in Published Proceedings).

12. The Fifth World Congress of the Econometric Society, Boston, August 1985.

13. Recent Developments in Corporate Finance, Oxford, September 1985.

14. ORSA-TIMS conference, Los Angeles April 1986.

15. The Western Finance Association meeting, Colorado June 1986.

16. The Eastern Finance Association meeting, Baltimore, April 1987.

17. Research Workshop on Agency Theory, Brussels June 1987

18. Western Economic Association Meetings, Vancouver, July 1987.

19. European Finance Association, Madrid, September 1987.

20. Western Economic Association Meetings, Los Angeles, July 1988.

21. European Finance Association, Istanbul, September 1988.

22. European Finance Association, Stockholm, September 1989,

23. French Finance Association, Paris, June 1990.

24. Conference on Financial Economics and Accounting, October 1990.

25. Financial Management Association meetings, Orlando October 1990.

26. The Utah Winter Finance Conference, February 1991.

27. Research Award: Eastern Finance Meetings, Virginia, April 1991, On Trade Credit, Theory and Empirical Evidence.(with M. Long and Ilene Malitz)

28. Western Finance Association meetings, Jackson Lake, June, 1991.

29. Pacific Basin Finance Association meetings, Seoul, June 1991.

30. European Finance Association meetings, Rotterdam, August 1991.

31. Financial Management Association meetings, Chicago October 1991.

32. Pacific Basin Finance Association meetings, Hong Kong July 1992.

33. European Finance Association meetings, Lisbon, Portugal, August, 1992.

34. Financial Management meetings, San Francisco, October 1992

35. Western Finance Association meetings, Whistler, June 1993.

36. European Finance Association meetings, Copenhagen, August 1993.

37. Financial Management meetings, Toronto, Canada, October 1993.

38. ASSA meetings, Boston, January 1994.

39. Financial Management meetings, St. Louis, October 1994.

40. Pacific Basin Finance Association meetings, Manila, July 1995.

41. European Finance Association meetings, Milan, August 1995,

42. Financial Management meetings, NYC October 1995.

43. American Economic Association meetings, San Francisco January 1996 "Privatization with Political Constraints."(presented by a co-author).

44. PACAP Finance conference, Taipei, Taiwan, July 1996,

45. Financial Management Association meetings, New Orleans October 1996.

46. American Finance Association meetings, New Orleans, January 1997.

47. Asia Pacific Finance Association, Kuala Lumpur, July 1997.

48. European Finance Association, Vienna, August 1997.

49. ASSA Chicago, January 1998.

50. Asia Pacific Finance Association, Tokyo, July 1998.

51. EFA meetings, Fontainebleau, August 1998.

52. Financial Management meetings, Chicago, October 1998.

53. American Finance Association meetings, New York, January 1999.

54. Western Finance Association meetings, Los Angeles, June, 1999.

55. European Financial Management, Paris, June 2001.

56. Financial Management Meetings, Toronto, October 2001.

57. Yale conference on entrepreneurship and governance, April 2002.

58. Financial Management Association Meetings, San Antonio, October 2002.

59. American Finance Association, Washington DC January 2003.

60. The Utah Winter Finance Conference, February 2003.

61, 62. European Finance Association, Glasgow, August 2003 (two papers).

63. Financial Management meetings, Denver, October 2003.

64. International Conference on I/O, Chicago, April 2004.

65. European Finance Association, Maastricht, August 2004.

66. Financial Management, New Orleans, October 2004: "On Preferred stock".

67. American Economic Association, Philadelphia, January 2005.

68, 69. Financial Management meetings, Chicago, October 2005 (two papers).

70, 71. ASSA (Econometric Society) meetings, Boston, January 2006 (two papers).

72. International Conference of I/O, Boston, April 2006.

73. European Finance Association meeting, Zurich, August 2006.

74. Financial Management Association, Salt Lake City, October 2006.

Recent Presentations by Paper:

The Effect of APR Violations on the Seniority and Timing of Debt Issuance:

75. Mid-Atlantic Research Conference, Villanova University, 2007 (presented by a co-author)

76. FMA Annual Meeting, Orlando, October 2007 (presented by a co-author).

77. American Law and Economics Association Annual Meeting, Columbia University, New

York, 2008 (presented by a co-author)

78. **American Finance Association**, San Francisco, January 2009.

79. Paris Spring Corporate Finance Conference, May 2009.
80. European Finance Association, Bergen, Norway, August, 2009.

The Role of Soft and Hard Information in Asset Pricing and Contract Design- Evidence from Screenplays sales(with W. Goetzmann and R. Sverdlove)-

81. European Finance Association, Athens, 2008.

The Interaction of Pricing Policies and Capital Structure Choice-

82. FMA Annual Meeting, Orlando, October 2007 (presented by a co-author).

Geography and Venture Capital Contracts.

83. Second Annual Economics and Law of the Entrepreneur, Northwestern University, June 2009.
84. Three Crowns Conference, Fordham University, NY, May 2009.

85. FMA Annual meeting 2009, Reno, Nevada.
86. **NBER**, December 2009.
87. Conference on empirical legal studies Yale University 2010.
88. ALEA, 2011,
89. European Finance Association 2011 (Stockholm).
90. Cambridge University –Darden conference, June 2014.

On vertical Mergers.

91. ASSA, 2010.
92. FMA, 2010

Input and output Hedging

93. FMA 2011

Hedging Policies, Incentives and Market Power

94. European Finance Association, Frankfurt, 2010.
95. European Winter Finance meeting, Austria, 2011.
96. Risk conference, University of Oklahoma, 2011,
97. FMA 2015
98. MFA 2016.

A Theory of Intellectual Property Contracts and Evidence from Screenplay Sales

99. European Finance Association, 2011, (Stockholm).
100. **NBER** summer institute, 2012
101. Fifth Annual Conference on Entrepreneurship and Innovation, Northwestern Law School, June 2012**.**
102**.** Washington University Finance Conference, November 2012,
103. Tel Aviv Finance conference, December 2012.

104. The Economics of Intellectual Property, Software and the Internet (Toulouse, France, June, 2013- by a co-author)
105. Financial Management Association Meetings (October 2013, Chicago).
106. **NBER Corporate Finance** program, April 2014.
107**. ALEA,** May 2015**.**
108. **Western Finance Association**, June 2015.

How Relevant Are Experts In The Internet Age? Evidence from the Motion Pictures Industry.

109. Northwestern University Fourth Annual Conference on Internet Search and Innovation, June 2013.
110. Second Bi-Annual Tel Aviv Behavioral Finance Conference.

Turnover stars and the value of human capital
A pseudo-natural experiment with evidence from Broadway Shows

111. AIMAC 2015, France June 2015
112. FIRCG Conference, Melbourne Australia, January 2017.
113. Creative Industries conference, NYC, August 2017**,**
Forthcoming: FMA October 2017**, ASSA January 2018.**

Comment: I did not list most of the invited conferences. Here is a partial list of some **invited conference presentations:**

European Institute of Management, Brussels - a conference on IPO's and Mergers, Brussels, March 1993.

Rutgers conference on Security Design, Newark, April 1993.

Global workshop on Entrepreneurship, Jonkoping, Sweden, June 1996
(Keynote presenter in finance).

Society for Financial Studies conference on Corporate Finance, Texas, April 1998.

Asia Pacific Finance Association, Tokyo, July 1998.

The [Third] Annual Business and Economics Scholars Workshop in Motion Picture Industry Studies, Florida, November 2001.

Conference on the Economics of Culture and the Media, Rotterdam, June 2002.

A Workshop on the Economics of the Media, Washington University, St. Louis, April 2003.

The fourth, fifth sixth, seventh and eighth Annual Business and Economics Scholars Workshop in Motion Picture Industry Studies, Florida, November 2002- November 2006.

The ninth Annual Business and Economics Scholars Workshop in Motion Picture Industry Studies, Los Angeles, November 2007.

The tenth,11th 12th and 13th and 14th and 15th, 16th and 17th Annual Business and Economics Scholars Workshop in Motion Picture Industry Studies, UCLA, Los Angeles, November 2008, November 2009, November 2010 and November 2011. Los Angeles, November 2012, Yale, November 2013, Yale, November 2014, NYC 2015, NYC, 2016. Forthcoming: November 2017..

Invited attendee- various NBER Corporate Finance, Behavioral Finance, Entrepreneurship, Risk and Institutions, Innovation, Intellectual Property, Digitalization, Crisis and Corporate Governance conferences, 2004-2017.

University of Sydney conference on the motion pictures industry, **Keynote paper**, July 2010.

Service to the profession since 1992: Served as:
Chairman and discussant for the EFA in Lisbon,1992;
Discussant for the Western Finance meetings in San Francisco, June 1992.
Discussant for FMA in San Francisco, October 1992.
European meetings in Copenhagen, 1993.
Discussant and chairman for WFA in June 1994.
Discussant and chairman for FMA in October 1994.
Discussant for AFA in January 1995.
Discussant in the FMA October 1995.
Discussant in the EFA Oslo, Norway August 1996.
Discussant for FMA New Orleans, October 1996.
Discussant in the Western Finance meetings, San Diego, June 1997.
Discussant and chairman for the Asia Pacific meetings in Kuala Lumpur July 1997. and a Discussant for the European meetings in Vienna, August 1997.
Discussant for the WFA June 1998.
Discussant and chairman Asia Pacific meetings, July 1998.
Discussant in Financial Management meetings, Chicago, October 1998.

Discussant in the EFA, Helsinki, August, 1999.
Discussant in the ASSA meetings, Boston, January 2000.
Discussant in the WFA June, 2000.
Discussant in ASSA, 2001,
Discussant European Financial Management,2001.
Session organizer, discussant and chairman Financial Management meetings, Toronto, October 2001.
Discussant: Asia Pacific conference, September 2001.
Discussant WFA, June 2002,
Discussant FMA October 2002,
Discussant WFA June 2003.
Discussant ASSA January 2004.
Discussant International conference of IO, Chicago, April 2004.
Discussant WFA, June 2004 (Vancouver).
Discussant and Chairman: EFA August 2004 (Maastricht).
Discussant, ASSA Philadelphia, January 2005.
Discussant, WFA 2005.
Discussant, IIOC, Boston, 2006.
Discussant, WFA, 2006.
Discussant, IDC Finance conference, Israel, May 2006,
Discussant AFA January 2007,
Discussant, IDC Finance conference, Israel, May 2007.
Discussant, WFA, 2007,
Discussant, ASSA 2008,
Session organizer, Discussant, WFA, 2008.
Session organizer, discussant, EFA, 2008.
Session organizer, discussant**,** WFA, 2009.
Discussant, WFA, 2010,
Chairman, Discussant, Doctoral Tutorial faculty, EFA 2010,
Discussant, Tel Aviv Finance conference December 2010,
Discussant, ASSA 2011.
Discussant, WFA 2011,
Doctoral Tutorial Faculty EFA 2011
Discussant, Tel Aviv Finance Conference, 2011,
Discussant: ASSA 2012, European
Discussant: Winter Finance conference, March 2012
Chairman: IDC conference, Israel, May 2012
Discussant**:** WFA, 2012,
Discussant: Fifth Annual Conference on Entrepreneurship and Innovation,2012,
Discussant and Doctoral Tutorial faculty- EFA 2012 Copenhagen
Discussant AFA 2013
Discussant: Winter Finance conference, Austria 2013.
Discussant: WFA, 2013.
Session organizer and chairman, WFA 2014**,**

Discussant, **NBER** summer institute, 2014,
Discussant, AFA, 2015
Session Chair, UBC conference 2015. Session Chair, IDC conference, 2015
Discussant WFA, 2015
Discussant FMA 2015,
Discussant, AEA 2016
Discussant, Winter Finance Conference, Davos, 2016.
Session organizer, Discussant, PhD tutorial faculty, EFA 2016,
Discussant, ASSA Chicago, 2017.
Session organizer, discussant, EFA 2017, Mannheim.
Discussant ASSA, 2018.
Program Chair, MFA 2018
Forthcoming: Session organizer, discussant WFA 2018.

Recent University Service:

YU- (2012-2015, 2016) Finance area chair, EMBA Curriculum Committee chair,
Recruiting chair, Curriculum Committee, Executive Committee and Strategic Planning Committee member; Initiated and ran the school research seminar; University Faculty Council (Senate) and executive committee member; Vice Chair elect of the council (2015), Co President- Fall 2017.. Presidential Search Committee advisory faculty (2016), Dean search committee, 2017.

Rutgers- Department PhD Coordinator 2010-2011
Coordinator inter-disciplinary seminar, Rutgers Business School, Fall, 2009
Coordinator, Finance and Economics workshop - responsible for weekly seminars, including outside speakers from Cornell, Wharton, Harvard, Yale, Chicago, NYU Northwestern, Columbia and other universities including a Nobel laureate;(Fall 1993,1994, 1996,1997, 1999, 2000, 2001, spring 2002, Spring 2004, Fall 2004. 2006-2007).

School of Business Appointments and Promotion Committee, Fall 2004-Spring 2005.

Chairman of recruiting - Finance and Economics department ;(Fall 1993, Fall 1999, Fall 2000, Fall 2001).Recruiting committee (1996, 2005).
Coordinator Ph.D. field exam committee ;(1994, 1996, 2000, 2001,2011)
Ph.D. Coordinator (1994-96; 2000-2002).
Member of ad-hoc committees;
Member tenure and reading committees; Member of FASIP (merit raises) committee, Fall 2004, Fall 2005.
Member: Dean's Leadership Council;
Member of the Department Executive committee (2002)

Ph.D. committees: Gabriela Coiculescu (NYU, 2014); Andreas Christopoulos, (Rutgers, 2014), Alexander Ross (London);Tae Nyun Kim (Rutgers 2010),Ron Sverdlove (Rutgers-chair, 2008), Natalia Reisel (Rutgers-chair, 2005); Vicente Pons (Yale-2004);Chia Jane Wang (Rutgers,

2004);Jose Brito (NYU-1999); Krista Karli Ivanto (Helsinki School of Economics, Finland-1999);Shlomith Zuta (NYU-1998); Naman Agrawal (Rutgers,1997), Stefan Sundgren (Swedish School of Economics, Helsinki, Finland-chair-1995),
External Reader: Ch'ng Kean Siang, University of Malaya, Kuala Lumpur, Malaysia (2008), Zvika Afik, Tel Aviv University, Israel, (2009), Miriam Schwartz-Ziv, Hebrew University (2012).

Honors Thesis: Yves Blecher (Yale), 2004.

Other Professional Activities:

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Associate Editor: PACAP Finance Journal 1991-1996.
Associate Editor: Managerial and Decision Economics 2003
Associate Editor: Journal of Banking and Finance 2002- 2011
Editorial Board Member: Critical Finance Review 2011-
Editorial Board Member: Journal of Cultural Economics 2011-
Special Issue co-editor, Journal of Cultural Economics, 2014.
Vice President Midwest Finance Association 2015-
Editorial Board Member, Lecture Notes in Finance 2017-

Referee:

FINANCE: Review of Financial Studies, Journal of Finance, Journal of Financial and Quantitative Analysis, Journal of Financial Intermediation, Financial Management, Journal of Banking and Finance, Journal of Financial Research, Financial Review, Review of Quantitative Finance and Accounting, Journal of Corporate Finance, European Financial Management, Journal of International Business Studies, Innovar.

ECONOMICS : American Economic Review, Review of Economics and Statistics, AEA- Applied Economics, International Economic Review, Economics Letters, International Journal of Business and Economics, Journal of Economic Behavior and Organization, Journal of Cultural Economics, Journal of Economics and Management Strategy, Economic Inquiry, Journal of Economics and Business, Journal of Regulatory Economics, Real Estate Economics, Scandinavian Journal of Economics, Journal of Media Economics, Southern Economic Journal, Empirical Economics.

MARKETING: Marketing Science, Journal of Marketing Research, Journal of Marketing, Marketing Letters, International Journal of Research in Marketing.

MANAGEMENT AND DECISION SCIENCES: Management Science, Journal of Business, Managerial and Decision Economics, International Journal of Arts Management, Journal of Business Ethics.

PSYCHOLOGY: Psychology of Aesthetics, Creativity, and the Arts.

Numerous reference letters for tenure and promotion.

Asked to nominate candidates for the Nobel Prize in Economics every year.

Asked to nominate candidates for the Deutsche Bank bi-annual prize.
Member of the Ola Bengtsson memorial prize for PhD students, a three person committee headed by the chairman of the Nobel Economics Committee.

Participation in media and entertainment panels:

Mergers in the Entertainment Industry, Stern Media Association, October 1999. The coming media revolution, Stern school, November 1999.
Adam Smith Goes Hollywood, the Entertainment Industry Institute, Los Angeles, October 1999.
The future of the film industry, UCLA, March 2000.
Lectures on the Entertainment industry to students at USC and Wharton in October 1999.
The Entertainment Industry Institute, Los Angeles, October 2000, October 2001.
A lecture at Wharton, on the Profitability of Movies, November 2000, November 2001;
Panel on the digital future, Washington University, April 2003;
A talk to Swedish Film Professionals- December 2005;
A panel on the digital future- Federal Library and Information Committee, Washington, March 2006.

Invited presentations:

1988-1995: Columbia University, London Business School, INSEAD, UCLA , University of Washington, Tel Aviv University, University of Utah, Rutgers University, Hebrew University, Haifa University, University of California-Irvine,
New York University, SEC- Washington, University of Michigan, Stockholm School of Economics, Swedish School of Economics- Helsinki, University of Rhode Island, York University, University of Maryland, University of Graz, University of Uppsala, City University (London), Baruch College (CUNY).

1995-11: *(in several schools I gave a few talks over the years*): Wharton, Cornell University, Yale University, NYU, Dartmouth, Columbia, INSEAD, Tel Aviv University, Haifa University, University of Cyprus, City University (London), University of California, Berkeley, ESSEC (France). Hebrew University, Jerusalem, Ben Gurion University, Boston College, New York Federal Reserve, Rutgers, University of Amsterdam, Swedish School of Economics, Helsinki, UCLA, USC, SUNY Binghamton, Stockholm School of Economics, Vanderbilt, University of Connecticut, SMU, Emory, Swedish Institute for Financial Research, U. of Massachusetts, McMaster, Canada, IDC, Israel, Binghamton University, University of Venice, Ecole Polytechnique, Paris, Fordham, SEC, Illinois, Penn State, Brandeis, Hebrew University,

Since Fall 2011: *(in several schools I gave a few talks over these years- they are in bold letters*):

NYU, American University, **University of Alberta, Yeshiva University, Ben Gurion University, Israel**, University of Alabama, University of Minnesota, University of Massachusetts. Aaalto University, Finland, **Lund University, Sweden**, Fordham University, Bar Ilan University, **Haifa University**, HEC Paris, Temple University, FAU, Baruch College, Babson College, Humboldt University (Berlin), Hong Kong Poly, University of North Carolina (UNCC) **Lund University**, **NYU**, ANU, Australia. **Forthcoming**: University of Nebraska, Lund University.

Review and organizing committees: PACAP conference 1991-96.
Financial Management Association meeting organizing committee, 1994,1997.
Asia Pacific Finance Association conference 1997,1998.
European Finance Association meetings, Helsinki, 1999
Financial Management meetings, Europe 1999.
European Finance Association meetings, London, 2000.
Financial Management Association meetings, Seattle, 2000.
European Finance Association meetings, Barcelona, 2001.
European Financial Management Association meetings, Paris, 2001.
European Finance Association meetings, Berlin, 2002.
Financial Management Association meeting, 2002.
European Finance Association meetings, Scotland, 2003.
European Financial Management Association meetings, Helsinki, 2003.
European Finance Association meetings, Maastricht, 2004 .
Western Finance Association, 2005.
European Finance Association meetings, Moscow, 2005 .
Western Finance Association, 2006.
Also Track Chair, European Finance Association meetings, Zurich, 2006.
Research Prize committee, FMA 2006.
Western Finance Association, 2007.
European Finance Association meetings, Slovenia, 2007.
Western Finance Association, review, session organizer, 2008.
Review for the conference and doctoral seminar, European Finance Association meetings, Athens, 2008.
Financial Management Association meetings, 2008.
Western Finance Association, review, session organizer, 2009.
Review for the conference and doctoral seminar, European Finance Association meetings, Bergen, 2009.
Western Finance Association, review, 2010.
Review for the conference and doctoral seminar, European Finance Association meetings, Frankfurt, 2010.
Doctoral Tutorial, EFA Stockholm, 2011
Track Chair, FMA, 2011
Recent Program committee membership: WFA, 2011, Tel Aviv Finance Conference 2011, WFA 2012, EFA, Copenhagen 2012, Tel Aviv Finance Conference 2012, WFA 2013. EFA Cambridge,2013, conference and doctoral tutorial, Utah doctoral tutorial, 2014;Program committee and session organizer, WFA, 2014; Program committee and doctoral tutorial, EFA, 2014, program

committee, Tel Aviv Finance conference, 2013, 2014, Jerusalem conference, 2014, WFA 2015, EFA, 2015, Tel Aviv conference 2015, Midwest Finance Association 2016, 2017 WFA 2016,: EFA 2016, also, session organizer, doctoral tutorial faculty, WFA, 2017, Tel Aviv Behavioral Finance conference, 2017, EFA 2017. **Forthcoming**: WFA2018, EFA2018

Co-organizer: The 14th Annual Business and Economics Scholars Workshop in Motion Picture Industry Studies, Yale University, 2014, Yeshiva University (co-organized with Yale) 2015 and 2016.
Co-Organizer: A conference in the memory of Ola Bengtsson, Lund, 2015.
Forthcoming: program chair, Midwest Finance conference, 2018.

MEDIA:
Numerous appearances in radio programs addressing economic issues
on **IDF national radio network** in Israel(most recently in June 1993);other matters (most recently October 1993) also on **Worldnet Television (US).** Was interviewed in June 1992 on **CNBC** and **CBS** concerning a credit card study. The same study was quoted in national newspapers such as the **USA Today, Wall Street Journal, Daily News, Chicago Tribune, Philadelphia Inquirer** and many others.
Quoted in the **Bergen Record** (May 14, 1995) Was interviewed in 1996 by **Globes,** Israel's leading business newspaper. Interviewed in November 1996 by **Israel National Radio** concerning the presidential elections.

Contributions to the **New York Times** include articles and letters in January 1995 November 1996, June 1997, February 1998, February 1999 July 1999, December 2000, July 2002, December 2002, June 2005 and August 2005,August 2011, **February 6, 2016**
http://www.nytimes.com/2016/02/06/opinion/the-critics-still-win.html?_r=0

Letters to the **Wall Street Journal** October 1999, December 2005, July 2008, July 2011, April 12, 2013, June 7, 2013, December 9, 2014, **March 28,2016** http://on.wsj.com/1oi6QRh.

Also, wrote articles and comments to for Hadashot, Maariv and the Bergen Record (August 1995, January 2002, February 2002, June 2002), **Businessweek** (December 1, 2003).

PRESS COVERAGE OF RESEARCH: A study of the film industry (in the Journal of Business) was featured in the **Hollywood Reporter** (a two column article, June 10, 1998); in a TV interview on the **E! Entertainment network** (first item in the news, June 1998), and in the **Wall Street Journal** (front page, August 13,1998). An interview regarding this research was published also in the **New York Times** (a two-column article, March 5, 1999) and in **Variety** (Weekly, March 22, 1999). An article appeared in the **Sydney Sun Herald** (March 14, 1999). A One page spread with a photograph appeared in Israel's largest daily (**Yedioth Aharonoth**, March 21, 1999). An interview was broadcast in Israel's **IDF national radio network** (March 22,1999); **CFO magazine** (March 1999)-on movie accounting; An article with a photograph appeared in the **National Post** (Canada) on May 5, 1999; Another interview was taped for Good Morning America (ABC), and an interview was broadcast on **CNBC Business Center** (July 23, 1999). A spread with a photograph appeared in

the **Star Ledger** (NJ) August 10,1999 and an interview and additional articles are in the **Stern Magazine** and **Rutgers magazine; Variety** (weekly edition, August 23, 1999)included a citation on tax laws for the movie industry; **The Los Angeles Daily News** dedicated its front page major story to the 1999 study (October 24, 1999) with the headline: Are Stars Overpaid? **Variety** editor in chief Peter Bart discussed the work (November 1-7, 1999). Additional interviews: on **Fox** Coast to Coast news (Friday, November 5, 1999). **Helsingin Sanomat** (largest daily in Finland-four columns + photo on November 11, 1999).There was an interview on **BBC1** (November 1999**),** a half hour program taped for the **IDF national radio network** in Israel (December 1999), and an interview for **the Independent** of London (a feature for the Independent on Sunday, November 1999). **The Star Ledger** NJ,(November 24,1999) quoted my work on the economics of network TV. **The Australian** covered the work in depth on December 24, 1999. Also, **MBABUlletPoint** March 28, 2000. **KFWB radio**, Los Angeles, broadcast an interview on violence in the movies (October 20, 2000); **Israel National Radio** Network broadcast an interview on the economics of the presidential elections (November 7, 2000); Citations were published in the **Star Ledger** in NJ (December 15, 2000),**Denver Rocky Mountain News** (January 21, 2001), and the **Philadelphia Inquirer** (February 13, 2001). The **New Yorker**, May 28, 2001, The **Observer**, London, June 24, 2001, cited my studies. **The Bulletin** (with Newsweek) Australia published an entire page story with illustrations, June 26, 2001, also, **The Toronto Globe and Mail** (Canada) June 30, 2001(an entire page story);**Associated Press,** August 6, 2001. **La Presse** (Canada)February 2, 2002, **Sequences, (**Canada)January –February 2002 both a included a feature story. **Bergen Record,** (April 13,2002) **Israel National Radio** (September 2002), **Bergen Record** (January 2003). **St. Louis Post Dispatch**, April 4, 2003. **WNYC October 2, 2003** featured a 40 minute interview in the Leonard Lopate show, **Bloomberg News**, October 8, 2003 (on media mergers),**Money magazine,** November 2003. **Wall Street Journal**, December 5, 2003- an editorial in the Weekend Section, **Star Ledger**, March 31, 2004, on online music; **Razor Magazine**, June 2004, on star salaries. **Fortune Magazine**, January 10, 2005, a story on research on family films, **The-Garret.com**, January 2005,on children's movies. **Detroit Free Press**, June 9,2005 a column on the value of family films, **Forbes.com,** November 8, 2005 on conference presentations**. Library of congress Information Bulletin,** April 2006**;CNN-Money**- August 9, 2006; **Financial Times**, October 9, 2006. **New York Times** (front page, business section) August 28, 2006. **International Herald Tribune** (front page, business section)August 28, 2006. **International Herald Tribune**(business section) August 29, 2006. **Toronto Globe and Mail**, August 29, 2006; **Estado de Sao Paulo** (Brazil) August 29, 2006; **ItaliaOggi** (Italy) August 29, 2006; **Nouvel Observateur**(major general circulation French magazine) August 31, 2006. **National Public Radio** (an interview on **Talk of the Nation**) August 31, 2006. **Libertas** (online) September 25, 2006. **CNN Money**, December 13, 2006. **Herald News** December 5, 2006; **HeraldNews** December 9 , 2006. **CNN Money**, February 21, 2007. **Associated Press,** Newswire story February 23, 2007. **Money Matters Today** (CN8Comcast network) lead interview, February 26, 2007. **New York Times**,(front Sunday business page) August 5, 2007. **Hollywood Reporter**, November 3, 2007. **RBC Daily, Russia**, November 19, 2007. **Herald News**, NJ June 6, 2008. **Superinteressante** (a major magazine for culture and news) Brazil, a feature article, June, 2008. **EBRU TV network** an hour long discussion on the economy, September 1, 2008. **Forbes.com,** December 9, 2008. **Reelz.com** December 10,2008, **New York Times, the Media Decoder,** July 14,2009. **NZ Biz,** August 10, 2009, **New York Times**, front page article, August 21, 2009.

Houston Chronicle, August 22, 2009, **OGlobo, Brasil**, August 30, 2009. "Die Superstars schrumpften zu Stars" **Mittelland Zeitung, Switzerland**, (circulation 212 000) September 15, 2009. **Yediot America** – a two page in depth interview with photos in the American edition of the largest daily in Israel, October 2, 2009. **Los Angeles Business Journal**, front page article, November 2-8, 2009. **New York Times**, front page of the business section, December 25, 2009, **International Herald Tribune**, January 1,2010; **Rutgers Focus**, March, 2010, **New Jersey News Room**, March 6,2010, **Media Morning USA Today** on line, March 8, 2010 ;**Canadian Business** (largest business publication in Canada) April 26, 2010. **IDF national network**, Israel (Galei Zahal) a 20 minute interview on May 23rd, 2010. **IDF national network**, Israel (Galei Zahal) a 20 minute interview on September 19, 2010. **Journal de Textile (France)**, May 10, 2011**. IDF national network**, Israel (Galei Zahal) a 20 minute interview on August 28 ; 2011, August 12, 2012; **Deadline.com** December 12, 2012; **Huffington Post Live** – a panel discussion May 21st,2013; **Huffington Post Live** – a panel discussion May 28th ,2013, **TVwriter.com**, August 7th, 2013, **Forbes.com** July 8, 2013**, Channel 7 Israel**, July 18th, 2013. **Israel Hayom** (a national newspaper in Israel- regarding the Yom Kippur war) September 13, 2013. **IDF National Network** (Galei Zahal) A 20 minute interview January 26, 2014.

Wallethub.com , February 26, 2014 http://wallethub.com/blog/economics-of-oscar-season/2124/#ravid.

NPR Marketplace, March 26, 2014 http://www.marketplace.org/topics/business/movie-theaters-move-beyond-ticket-price

New York Times, December 13th, 2014- Front page article, NY Section. http://www.nytimes.com/2014/12/13/nyregion/on-planned-mob-films-multimillion-dollar-fraud-is-alleged-before-cameras-ever-roll.html?hpw&rref=nyregion&action=click&pgtype=Homepage&module=well-region&region=bottom-well&WT.nav=bottom-well&_r=0

Fortune.com, February 20th, 2015 http://fortune.com/2015/02/20/here-are-the-stars-who-could-win-big-by-snagging-an-oscar/

CNBC.com, February 25th 2016, :http://www.cnbc.com/2016/02/25/academy-award-winners-whats-the-economic-impact-commentary.html

CNBC.com August 10, 2016 http://www.cnbc.com/2016/08/10/real-life-drama-investing-in-showbiz-can-leave-you-starstruck.html

NPR Marketplace, December 16, 2016 https://www.marketplace.org/2016/12/16/business/rogue-one-and-more-how-far-can-disney-stretch-star-wars-franchise

NPR Marketplace May 15, 2017 https://www.marketplace.org/2017/05/15/business/chapter-7-where-companies-go-die

NPR Marketplace August 25, 2017
https://www.marketplace.org/2017/08/28/business/subscription-based-movie-tickets-draw-industry-ire

The commentator (YU) October 22 2017 http://yucommentator.org/2017/10/end-movie-industry/

Communication Daily December 18, 2017

tory.

YU video interview: March 2018 https://youtu.be/r0FGU6thqCs

Research mentioned in SEC filings – Asgaard film company, August 2009.

Gabriela Alexandra Coiculescu

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ACADEMIC APPOINTMENTS

Yeshiva University, Sy Syms School of Business

2014-present Assistant Professor of Finance
2013-2014 Visiting Assistant Professor of Finance

EDUCATION

2014 **Leonard N. Stern School of Business, New York University**
Ph.D. in Finance

2007 **BI Norwegian School of Management, Oslo, Norway**
MSc in Financial Economics, *with honors*

2005 **Academy of Economic Studies, Bucharest, Romania**
Faculty of Economic Studies in Foreign Languages, French Section
BA in Business Administration

2005 **Institut Franco-Roumain de Gestion, Bucharest, Romania**
Maîtrise en Gestion d'Entreprise (BA in Business Administration)

RESEARCH INTERESTS

Corporate Finance, Innovation, Financial Intermediation, Networks in Finance

HONORS AND AWARDS

2008 NYU Stern School of Business Fellowship
2006 Bridge Ward Club Norwegian Business Scholars' Award
2001 Academy and Economic Studies scholarship
2001 First Prize in National French Olympiad, Cluj-Napoca, Romania

PUBLICATIONS

"Conflicts in Bankruptcy and the Sequence of Debt Issues," with A. Bris, A. Ravid and R. Sverdlove, Journal of Financial and Quantitative Analysis, vol. 50-6, Dec. 2015, pp. 1353-1388

WORKING PAPERS

"Innovation under Risk and Ambiguity," with Y. Izhakian and A. Ravid

"Banking Relationships and the Formation of Supply-Chain Relationships"

WORK IN PROGRESS

"Bank Industry Coverage and Vertical Integration"

OTHER PUBLICATIONS

Franceza pentru economisti (Business French Workbook), with C. Cilianu-Lascu, L. Chitu and O. Fagurel, Teora Publishing House, Bucharest, Romania

RESEARCH EXPERIENCE

2010	NYU Stern, research assistant for Prof. M. Kacperczyk
2007-2008	BI Oslo, research assistant for Prof. P. Ehling, Prof. I. Schindele and Prof. C. Ostergaard
2007-2008	Norges Bank (Norwegian Central Bank) part-time student research assistant

TEACHING EXPERIENCE

2013-present	YU Sy Syms, Instructor, Corporate Finance (Undergraduate), Principles of Finance (Undergraduate) Average class evaluation 4.28 out of 5
2011	NYU Stern, Instructor, Corporate Finance (Undergraduate) Class evaluation 5.4 out of 7
2011	NYU Stern, Teaching Assistant, Corporate Finance (Undergraduate), Prof. K. John

SERVICE

2015-2016	Co-organizer, Sy Syms School of Business Research Seminar Series

LANGUAGES

Romanian (native), English (fluent), French (fluent), Norwegian (beginner)

CITIZENSHIP

Romania. Born: 11/05/1982

REFERENCES

Prof. Kose John
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Prof. Anthony Saunders
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New York University
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Prof. S. Abraham Ravid
Sy Syms Professor
Yeshiva University
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New York, NY 10033
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May, 2018

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Yehuda (Yud) Izhakian

Academic affiliations

New York University, Stern School of Business, Department of Finance, Visiting Scholar, 2013–Present

Baruch College, Zicklin School of Business, Department of Economics and Finance, Assistant Professor, 2013–Present

Education

Post Doctorate, Economics and Finance, New York University, Stern School of Business, New York, USA, Marie Curie Postdoctoral Research Fellow, 2010–2013

Ph.D., Finance, Tel-Aviv University, Tel-Aviv, Israel, August 2010. *Thesis Title:* "Asset Pricing in an Ambiguous World," *Thesis Advisors:* Prof. Simon Benninga and Prof. Itzhak Gilboa

MBA, Finance, Ben-Gurion University of the Negev, Beer-Sheva, Israel, August 2001, GPA 95.5%, *Summa cum laude*

BA, Economics and Computer Science, Bar-Ilan University, Ramat-Gan, Israel, August 1999, GPA 91.1%, *Cum laude*

Research Interests

Ambiguity Measurement, Financial Decision Making under Uncertainty, Theoretical Asset Pricing, Option Pricing

Publications and Forthcoming Papers

[1] "An Experimental Test of the Lucas Asset Pricing Model," with Sean Crockett and John Duffy, ***The Review of Economic Studies,*** Forthcoming

[2] "Asset Prices and Ambiguity: Empirical Evidence," with Menachem Brenner, ***Journal of Financial Economics***, Forthcoming
Winner of the 2012 Investor Responsibility Research Center Institute (IRRCi) Award for *Best Academic Paper*

[3] "Risk, Ambiguity, and the Exercise of Employee Stock Options," with David Yermack, ***Journal of Financial Economics,*** 2017, vol. 124(1), pp. 65-85

[4] "Expected Utility with Uncertain Probabilities Theory," ***Journal of Mathematical Economics***, 2017, vol. 69, pp. 91-103

[5] "Decision Making in Phantom Spaces," with Zur Izhakian, ***Economic Theory***, 2015, vol. 58(1), pp. 59-98

[6] "Bailout Uncertainty in a Microfounded General Equilibrium Model of the Financial System," with Alex Cukierman, ***Journal of Banking and Finance***, 2015, vol. 52, pp. 160-179

[7] "Pricing Stock Options with Stochastic Interest Rate," with Menachem Abudy, ***The International Journal of Portfolio Analysis and Management***, 2013, vol. 1(3), pp. 250-277

[8] "The Uncertainty Premium in an Ambiguous Economy," with Simon Benninga, ***The Quarterly Journal of Finance***, 2011, vol. 1(2), pp. 323-354

Papers under Revision

[9] "Ambiguity, Volatility, and Credit Risk," with Patrick Augustin, Revised & Resubmit, ***The Review of Financial Studies***

[10] "Ambiguity, Risk, and Payout Policy," with Richard Herron, Revised & Resubmit, ***Journal of Financial Economics***

[11] "A Theoretical Foundation of Ambiguity Measurement," Revised & Resubmit, ***Journal of Economic Theory***

[12] "Initial Public Offerings under Ambiguity," with Jaime Zender, Reject & Resubmit, *The Journal of Finance*

[13] "Ambiguity and Overconfidence," with Menachem Brenner and Orly Sade, Reject & Resubmit, *The Journal of Financial Markets*

Papers under Review and Working Papers

[14] "Ambiguity and The Tradeoff Theory of Capital Structure," with David Yermack and Jaime Zener

[15] "Innovation under Risk and Ambiguity," with Gabriela Coiculescu and Avraham Ravid

[16] "Capital Asset Pricing under Ambiguity"

[17] "Does Ambiguity Diversification Pay?"

[18] "Risk-Return Relationship under Probabilistic Contingent Risk Preferences"

[19] "Ambiguity and Disclosure in The Principal-Agent Model," with Jaime Zener

[20] "Pricing Systematic Ambiguity in Capital Markets," with Menachem Brenner

[21] "Phantom Probability," with Zur Izhakian

Media Coverage

[1] *Goldman Sachs*, "Outlook (Un)Steady as She Goes," January 2018

[2] *Bloomberg View*, "People are worried that people aren't worried enough," Matt Levine, December 2017

[3] *The Wall Street Journal*, "Volatility Is Low But Ambiguity Is Sky High," Ben Eisen, December 2017

[4] *Nikkei Asian Review*, "Volatility Index Creator Seeks to Invent New Tool to Measure 'Ambiguity'," Kenji Kawase, May 2017

[5] *The Wall Street Journal*, "Wall Street's Volatility Pioneer Searches for Latest Fear Trade," Ben Eisen, March 2017

[6] *The Australian Business Review*, "Markets Guru Menachem Brenner to Offer Ambiguity Index," Ben Eisen, March 2017

[7] *The Marker*, "The Risk Embedded in The Known and Familiar," Efrat Noyman, October, 2011, (in Hebrew)

Fellowships and Grants

IFSID, Research Grant, PI, 2017-2018, CAD 10,000

IFSID, Research Grant, PI, 2016-2017, CAD 20,000

Marie Curie International Outgoing Fellowships for Career Development (IOF), PI, 2010–2013, €240,000

The Lady Davis Fellowship Trust, Postdoctoral Fellowship, PI, 2009–2010, $40,000

AXA Research Fund, Postdoctoral Fellowship, PI, 2009, €60,000

The Harry Simmons Doctoral Scholarship, Tel-Aviv University, 2006–2008, $70,000

Honors and Awards

PSC-CUNY, Research Award, 2018, $3,500

PSC-CUNY, Research Award, 2017, $6,000

PSC-CUNY, Research Award, 2016, $3,500

PSC-CUNY, Research Award, 2015, $3,500

PSC-CUNY, Research Award, 2014, $3,500

Investors Responsibility Research Center Institute (IRRCi), Award for The Best Academic Paper, 2012, $10,000

Tel-Aviv University, Shmuel Kandel Award for Outstanding PhD Students in Finance, 2009, $2,000

Invited Seminars and Talks

2018: Ramon LLull University, Barcelona, Spain; Universitat Autonoma de Barcelona, Barcelona, Spain; Universitat Autonoma de Barcelona , Barcelona, Spain; The University of Sydney, Sydney Australia;

2017: Yeshiva University, New York, NY, USA;

2016: Bar-Ilan University, Ramat Gan, Israel; New York University, New York, NY, USA;

2015: Ohio State University, Columbus, OH, USA; Yeshiva University, New York, NY, USA; University of Minnesota, Minneapolis, MN, USA; University of Montreal, Montreal, QC, Canada; University of North Carolina, Chapel Hill, NC, USA;

2014: Baruch College, New York, NY, USA; Indiana University, Bloomington, IN, USA; Michigan State University, East Lancing, MI, USA;

2013: University of Michigan, Ann Arbor, MI, USA; University of Houston, Houston, TX, USA; New York University, New York, NY, USA;

2012: Bar-Ilan University, Ramat Gan, Israel; IDC, Herzliya, Israel; Johns Hopkins University, Baltimore, MD, USA; New York University, New York, NY, USA; Norwegian School of Business, Oslo, Norway; Tel-Aviv University, Tel Aviv, Israel; The Hebrew University of Jerusalem, Jerusalem, Israel; University of Colorado, Boulder, CO, USA;

2011: The Hebrew University of Jerusalem, Jerusalem, Israel; IDC, Herzliya, Israel; New York University, New York, NY, USA;

2009: Technion, Haifa, Israel; Tel-Aviv University, Tel Aviv, Israel; The Hebrew University of Jerusalem, Jerusalem, Israel; The Open University of Israel, Ranaana, Israel; University of Konstanz, Konstanz, Germany; Yale University, New Haven, CT, USA;

2008: Olin Business School, Saint Louis, MO, USA; Swedish Institute for Financial Research, Stockholm, Sweden;

2007: Tel-Aviv University, Tel Aviv, Israel; The Hebrew University of Jerusalem, Jerusalem, Israel;

Invited Conferences and Workshops Presentations

2018: Netspar International Pension Workshop, Leiden, Netherlands; Eastern Finance Association 2018 Annual Meetings, Philadelphia, PA, USA; International Risk Management Conference, Paris, France;

2017: The 44th European Financial Association Meeting, Mannheim, Germany; FMA European Conference, Lisbon, Portugal; The 5th Conference on Credit Analysis and Risk Management, Basel, Switzerland; The 7th International Conference of the Financial Engineering and Banking Society, Glasgow, UK; The 15th INFINITI Conference on International Finance, Valencia, Spain; The 32nd European Economic Association Meeting, Lisbon, Portugal; The 25th Annual Meeting of the Spanish Finance Association, Barcelona, Spain; Southern Finance Association Meeting, Key West, FL, USA;

2016: UNCC-IRF Conference, Charlotte, NC, USA; International Risk Management Conference, Jerusalem, Israel; Triple Crown Conference, New Jersey, NJ, USA;

2015: Decision Theory, Experiments and Applications (D-TEA), Paris, France;

2014: Foundations and Applications of Utility, Risk and Decision Theory (FUR), Rotterdam, Netherlands;

2013: Arne Ryde Workshop in Financial Economics, Lund, Sweden; Decision Theory, Experiments and Applications (D-TEA), Paris, France; Netspar International Pension Workshop, Frankfurt, Germany; Risk, Uncertainty and Decision (RUD), Paris, France; Workshop on Ambiguity and Robustness in Macroeconomics and Finance, Chicago, IL, USA;

2012: North American Meetings of the Econometric Society, Evanston, IL, USA;

2011: Sixth International Conference on Financial Regulation And Supervision, Milan, Italy; Decision Theory Workshop, New York, USA; Experimental Finance, Innsbruck, Austria;

2010: Decision Theory, Experimental Finance, Paris, France; AXA Talent Day on Decision Sciences, Paris, France; Foundations and Applications of Utility, Risk and Decision Theory (FUR), Newcastle, England;

2009: Arne Ryde Workshop in Financial Economics, Lund, Sweden;

2008: Arne Ryde Workshop in Financial Economics, Lund, Sweden;

2007: Risk: Individual And Collective Decision Making Workshop, Paris, France; The 14th Annual Conference of the Deutsche Gesellschaft für Finanzwirtschaft, Dresden, Germany; Arne Ryde Workshop in Financial Economics, Lund, Sweden;

Scientific Committees

2018: FMA Annual Meeting Program Committee;

Conference Discussions

[1] "Idiosyncratic Return Volatility, Uncertainty, and Asset Pricing Implications," Claire Liang and Zhenyang Tang, Eastern Finance Association Meeting, Philadelphia, PA, USA, April 2018

[2] "Feedback Between Credit and Liquidity Risk in the US Corporate Bond Market," Rob C. Sperna Weiland, Roger J.A. Laeven, Frank de Jong, The 5th International Conference on Credit Analysis and Risk Management, Basel, Switzerland, September 2017

[3] "The Eurozone (Expected) Inflation: An Option's Eyes View," by Ricardo Gimeno and Banco de España, The 25th Annual Meeting of the Spanish Finance Association, Barcelona, Spain, June 2017

[4] "Inherent Financial and Economic Risks of Hedge Fund Returns to Pension Fund Portfolios: An Analysis of Long/Short Hedge Fund Categories," by L. Mick Swartz, FMA European Conference, Lisbon, Portugal, June 2017

[5] "Show Me Yours And I'll Show You Mine: Sharing Borrower Information In A Competitive Credit Market," by Jaap Bos, Ralph De Haas, and Matteo Millone, The 15th INFINITI Conference on International Finance, Valencia, Spain, June 2017

[6] "Investor Attention: Patterns and Allocation," by Hongqi Liu and Lin Peng, Baruch Student Conference, New York, USA, December 2014

[7] "Option-like Incentives Drive Bubbles Evidence from Experimental Asset Markets," by Martin Holmen, Michael Kirchler, and Daniel Kleinlercher, Experimental Finance, Innsbruck, Austria, September 2011

External Service

Ad Hoc Journal Refereeing: *Econometrica* (x2)*, Journal of Political Economy, American Economic Review, The Review of Financial Studies, Management Science* (x3), *Review of Finance*, *The Journal of Economic Theory, Economic Theory, Journal of Banking and Finance* (x3)*, Journal of Financial Markets* (x2)*, Journal of Mathematical Finance*, *Quantitative Finance(x2), Quantitative Economics, Annals of Finance,* and *Journal of Economic Psychology*

Ad Hoc Grant and Fellowship Refereeing: Sapir Foundation, Israeli Science Foundation

Internal Service

Department Seminar Organizing, Baruch College, New York, USA, 2016–2017

Brownbag Seminar Organizing, Baruch College, New York, USA, 2015–2016

Advisory Committee, Baruch College, New York, USA, 2015–Present

Teaching Experience

Investment, Undergrad Level, Baruch College, New York, NY, USA, 2018–Present

Principles of Finance (Finance 3000), Undergrad Level, Baruch College, New York, NY, USA, 2014–Present

Advanced Financial Theory, MA level, The Hebrew University of Jerusalem, Jerusalem, Israel, 2010

Financial Economics Theory, PhD level, Tel-Aviv University, Tel-Aviv, Israel, 2008–2010

Introductory Finance, BA level, Management, Tel-Aviv University, Tel-Aviv, Israel, 2010

Introductory Finance, MBA Level, Tel-Aviv University, Tel-Aviv, Israel, 2007–2009

Introductory Finance, BA level, Accounting, Tel-Aviv University, Tel-Aviv, Israel, 2009

Teaching Recognition

Introductory Finance, BA level, Tel-Aviv University, Fall 2009, rating: 6 out of 7

Financial Economics Theory, PhD level, Tel-Aviv University, Fall 2008, rating: 6 out of 7

Introductory Finance, MBA level, Tel-Aviv University, Spring 2007, rating: 6 out of 7

Professional Experience

Chief Technology Officer, Exanet Inc., a storage application company, 2005–2006

R&D Manager, Software Chief Architect, LingoMotors Inc., a text mining company, 2000–2004

Senior Team Leader, Intelitext Ltd., a data mining company, 1999–2000

Software Engineer, Nice Systems Ltd., an international telecommunications company, 1997–1999