

Ivan Paak-Liang Png

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Research interests Economics of innovation and pricing

Employment

1996- National University of Singapore
Lim Kim San Professor, 2008- , Professor, 2001- , Department of Strategy & Policy. Kwan Im Thong Hood Cho Temple Professor, 2001-2008, Professor, 1996- , Visiting Professor, 1996, Department of Information Systems. Professor, 2006- , Department of Economics.
Head, Dept of Strategy & Policy, 2009-2011; Vice Provost (Graduate and Undergraduate Education), 2001-03; Dean, 2000-01, Vice Dean, School of Computing, 1998-2000.

2005-06 Nominated Member of Parliament (10th Parliament of Singapore, 2nd session).

1984-96 University of California, Los Angeles
Professor, 1995-96, Associate Professor (with tenure), 1990-95, Assistant Professor, 1984-90, John E. Anderson Graduate School of Management

1993-96 Hong Kong University of Science & Technology
Visiting Professor, 1995-96, Visiting Reader, 1993-95, Department of Economics.

1987-88 National University of Singapore
Lecturer, School of Management

Summer 1982 Government of Singapore Investment Corporation
Special Assistant to the Managing Director

1978-80 Singapore Armed Forces
Brigade Deputy Intelligence Officer (1980), Battalion Deputy General Staff Officer (1978)

Education

1980-85 Stanford University
PhD in Business

1975-78 University of Cambridge
BA (Honours Class 1) in Economics

Journal Publications

1. "Strategic Behavior in Suit, Settlement and Trial", *Bell Journal of Economics*, Vol. 14 No. 2 (Autumn 1983), 539-550.
Reprinted in David K. Levine and Steven A. Lippman, Eds., *The Economics of Information*, Aldershot, England: Edward Elgar, 1995;
Reprinted in Eric B. Rasmusen, Ed., *Game Theory and the Law*, Cheltenham, England: Edward Elgar, 2007.

2. "Optimal Subsidies and Damages in the Presence of Judicial Error", *International Review of Law and Economics*, Vol. 6 No. 1 (June 1986), 101-105.
3. "Price Discrimination Through Offers to Match Price", *Journal of Business*, Vol. 60 No. 3 (July 1987), 365-384 [with D. Hirshleifer].
4. "Litigation, Liability, and Incentives for Care", *Journal of Public Economics*, Vol. 34 No. 1 (October 1987), 61-85.
5. "Optimal Auditing, Insurance and Redistribution", *Quarterly Journal of Economics*, Vol. 104 No. 2 (May 1989), 399-415 [with D. Mookherjee].
6. "Reservations: Customer Insurance in the Marketing of Capacity", *Marketing Science*, Vol. 8 No. 3 (Summer 1989), 248-264.
7. "Efficient Deterrence and the Tax Treatment of Monetary Sanctions", *International Review of Law and Economics*, Vol. 9 No. 2 (December 1989), 209-217 [with E. Zolt].
8. "Facilitation of Competing Bids and the Price of a Takeover Target", *Review of Financial Studies*, Vol. 2 No. 4 (1989), 587-606 [with D. Hirshleifer].
9. "The Role of Instalment Payments in Contracts for Services", *RAND Journal of Economics*, Vol. 21 No. 1 (Spring 1990), 83-99 [with T.K. Lee].
10. "Enforcement Costs and the Optimal Progressivity of Income Taxes", *Journal of Law, Economics, and Organization*, Vol. 6 No. 2 (Fall 1990), 411-431 [with D. Mookherjee].
11. "Most-Favoured Customer Protection versus Price Discrimination Over Time", *Journal of Political Economy*, Vol. 99 No. 5 (October 1991), 1010-1028.
12. "Market Segmentation, Cannibalization, and the Timing of Product Introductions", *Management Science*, Vol. 38 No. 3 (March 1992), 345-359 [with S. Moorthy].
13. "Monitoring vis-a-vis Investigation in Enforcement of Law", *American Economic Review*, Vol. 82 No. 3 (June 1992), 556-565 [with D. Mookherjee].
14. "Private Security: Deterrent or Diversion?" *International Review of Law and Economics*, Vol. 14 (March 1994), 87-101 [with H.W. Koo].
15. "Marginal Deterrence in Enforcement of Law", *Journal of Political Economy*, Vol. 102 No. 5 (October 1994), 1039-1066 [with D. Mookherjee].
16. "Service Time Competition", *RAND Journal of Economics*, Vol. 25 No. 4 (Winter 1994), 619-634 [with D. Reitman].
17. "Corruptible Law Enforcers: How Should They Be Compensated?" *Economic Journal*, Vol. 105 No. 428 (January 1995), 145-159 [with D. Mookherjee].
 Reprinted in Gianluca Fiorentini and Stefano Zamagni, Eds., *The Economics of Corruption and Illegal Markets*, Vol. II, Cheltenham, UK; Northampton, MA: Edward Elgar, 1999.
 Reprinted in Ajit Mishra, Ed., *The Economics of Corruption*, New Delhi, India: Oxford University Press, 2005.
18. "Why Are Some Products Branded And Others Not?" *Journal of Law and Economics*, Vol. 38 No. 1 (April 1995), 207-224 [with D. Reitman].
 Reprinted in Ruth Towse and Rudi W. Holzhauser, Eds., *The Economics of Intellectual Property*, Vol. III, Cheltenham, England: Edward Elgar, 2002.
19. "Returns Policies: Make Money by Making Good", *Sloan Management Review*, Vol. 37 No. 1 (Fall 1995), 65-72 [with V. Padmanabhan].

20. "Manufacturers Returns Policies and Retail Price Competition", *Marketing Science*, Vol. 16 No. 1 (1997), 81-94 [with V. Padmanabhan].
21. "Damage Measures for Inadvertant Breach of Contract", *International Review of Law and Economics*, Vol. 19 No. 3 (1999), 319-331 [with L.A. Bebchuk].
22. "National Culture and Corporate Adoption of Information Technology", *IEEE Transactions on Engineering Management*, Vol. 48 No. 1 (February 2001), 36-45 [with Bernard Tan and K.L. Wee].
23. "Information Goods Pricing and Copyright Enforcement: Welfare Analysis", *Information Systems Research*, Vol. 14 No. 1 (March 2003), 107-123 [with Yeh-ning Chen].
24. "Monitoring Costs and the Mode of International Investment", *Journal of Economic Geography*, Vol. 3 No. 3 (July 2003), 261-274 [with Chu-Chia S. Lin].
25. "Piracy and the Legitimate Demand for Recorded Music", *BE Press Contributions to Economic Analysis & Policy*, Vol. 2 No. 1 (2003), Article 11 [with Kai-Lung Hui].
26. "Buyer Shopping Costs and Retail Pricing: An Indirect Empirical Test", *Review of Marketing Science*, Vol. 2 (2004), Article 6 [with Sang-Yong T. Lee].
27. "Reply: Do Returns Policies Intensify Retail Competition?" *Marketing Science*, Vol. 23 No. 4 (Fall 2004), pp. 614–618 [with V. Padmanabhan].
28. "Who Gets Spammed?" *Communications of the ACM*, Vol. 49, No. 10 (October 2006), 83-87, [with Il-Horn Hann, Kai-Lung Hui, Yee-Lin Lai, and S.Y.T. Lee].
29. "Overcoming Online Information Privacy Concerns: An Information Processing Theory Approach", *Journal of Management Information Systems*, Vol. 24 No. 2 (Fall 2007), 13-42 [with Il-Horn Hann, Kai-Lung Hui, and S.Y.T. Lee].
30. "Consumer Privacy and Marketing Avoidance: A Static Model", *Management Science*, Vol. 54 No. 6 (June 2008), 1094-1103 [with Il-Horn Hann, Kai-Lung Hui, and S.Y.T. Lee].
31. "The Deterrent and Displacement Effects of Information Security Enforcement: International Evidence", *Journal of Management Information Systems*, Vol. 25 No. 2 (Fall 2008), 125-144 [with Chen-yu Wang and Qiu-hong Wang].
32. "Information Security: Facilitating User Precautions vis-à-vis Enforcement Against Attackers", *Journal of Management Information Systems*, Vol. 26 No. 2 (Fall 2009), 97-122 [with Qiu-hong Wang].
33. "Buyer Uncertainty and Two-Part Pricing: Theory and Applications", *Management Science*, Vol. 56, No. 2 (February 2010), 334-342 [with Hao Wang].
34. "On the Reliability of Software Piracy Statistics", *Electronic Commerce Research and Applications*, Vol. 9 No. 5 (September 2010), 365-373.
 Republished in 10th Anniversary Virtual Special Issue, *Electronic Commerce Research and Applications*, 2012.
35. "Newspaper Reports and Consumer Choice: Evidence from the Do Not Call Registry", *Management Science*, Vol. 57 No. 9 (September 2011), 1640-1654 [with Khim-Yong Goh and Kai-lung Hui].
36. "Do institutions not matter in China? Evidence from manufacturing enterprises", February 2010, *Journal of Comparative Economics*, Vol. 41 No. 1 (February 2013), 74-90 [with Yi Lu and Zhigang Tao].
37. "Patent Rights and Economic Growth: Evidence from Cross-Country Panels of Manufacturing Industries", *Oxford Economic Papers*, first published online March 29, 2013

Conference Proceedings

1. "Software Pricing and Copyright Enforcement: Private Profit vis-a-vis Social Welfare", *Proceedings of the 20th International Conference on Information Systems*, Charlotte, North Carolina, December 13-15, 1999 [with Yeh-ning Chen].
2. "On the Supply of Creative Work: Evidence from the Movies", *American Economic Review*, Papers and Proceedings of the American Economic Association, Vol. 92 No. 2, May 2002, 217-220 [with Kai Lung Hui].
3. "Online Information Privacy: Measuring the Cost-Benefit Trade-off", *Proceedings of the 23rd International Conference on Information Systems*, 2002 [with Il-Horn Hann, Kai Lung Hui, and Tom S. Lee].
4. "Analyzing Online Information Privacy Concerns: An Information Processing Theory Approach", *Proceedings, 40th Hawaii International Conference on System Sciences*, 2007 [with Il-Horn Hann, Kai Lung Hui, and S.Y.T. Lee].
5. "The Deterrent and Displacement Effects of Information Security Enforcement: International Evidence", *Proceedings, 41st Hawaii International Conference on System Sciences*, 2008 [with Chen-yu Wang and Qiu-hong Wang].
6. "Information Security: User Precautions, Attacker Efforts, and Enforcement", *Proceedings, 42nd Hawaii International Conference on System Sciences*, 2009 [with Qiu-hong Wang].
7. "On the Reliability of Software Piracy Statistics", *Proceedings, 43rd Hawaii International Conference on System Sciences*, 2010.

Working Papers

1. "Privacy Externalities and "Opt Out": Evidence from Do Not Call", [with Khim Yong Goh and Kai-lung Hui].
2. "Law and Innovation: Evidence from State Trade Secrets Laws", Revised, July 2012.
3. "Digital Divide? Evidence from a Federal Natural Experiment", Under revision (1st round), *Information Systems Research* [with Kai-lung Hui].
4. "Trade Secrets Law and Engineer/Scientist Mobility: Evidence from the "Inevitable Disclosure" Doctrine", Revised, February 2013 [with Sampsa Samila].
5. "Sunk Cost Fallacy and Driving the World's Costliest Cars", March 2013 [with Teck-hua Ho and Sadat Reza].

Work in Progress

1. "Trade Secrets Laws and Production Efficiency: Empirical Evidence from Lean Manufacturing" [with Jie Gong].
2. "Mobility of Engineers and Scientists: LinkedIn vis-à-vis Patents" [with Chunmian Ge and Ke-wei Huang].
3. "Climate Change in China: Communism is Cooler" [with Junhong Chu and Yehning Chen].

Books

Managerial Economics, Malden, MA: Blackwell, 571 pp., 1998; Second edition, 569 pp., 2002; Third edition, Dale Lehman, co-author, 477 pp., 2007; Fourth edition, Routledge, 364 pp. 2012.

Korean edition: Koh Dong Hee, translator, Seoul, Korea: Kyung Mun Sa Publishing, 460 pp., 1999; Third edition, 680 pp., 2008.
 Traditional Chinese edition: Lin Chu-Chia, co-author, Taipei, Taiwan: Bestwise Publishing, 699 pp., 1999; Second edition, 739 pp., 2003; Third edition, 594 pp., 2007.
 Asia Pacific edition, Singapore: Pearson Education Asia, 589 pp., 2005.
 Simplified Chinese edition: Second edition, Zhang Chu-yu, translator, Beijing, China: Renmin University Press, 535 pp., 2005; Third edition, Wu Changqi and Meng Zhaoli, co-authors, Beijing, China: Peking University Press, 477 pp., 2008.
 Polish edition, Borys Walczyna, translator, Warsaw, Poland: Wolters Kluwer Polska, 2011.

Financial Crisis 2008, (editor), Institute of Southeast Asian Studies (hard cover, ISBN 978-981-08-2096-1) and NUS Business School (paper cover), 83 pp., 2009.

Other scholarly publications – book chapters, invited papers

1. "Gender, Ethnicity, and Grades: Empirical Evidence of Discrimination in Law-Firm Interviews", *Law and Inequality Journal*, Vol. 7 No. 2 (March 1989), 189-214 [with D. Eaves and J.M. Ramseyer].
2. "Opportunity Cost", Chapter 4.5 in Richard C. Dorf, Ed., *The Technology Management Handbook*, Boca Raton, FL: CRC Press and IEEE Press, 1998, 4/17-4/20.
3. "Economics of Privacy", in Terry Hendershott, Ed., *Handbook of Economics and Information Systems*, Elsevier, 2006.
4. "Copyright: A Plea for Empirical Research", *Review of Economic Research on Copyright Issues*, Vol. 3 No. 2, 2006, 3-13.
 Reprinted in Ruth Towse and Richard Watt, Eds., *Recent Trends in the Economics of Copyright*, Cheltenham, England: Edward Elgar, 2008.
5. "Parallel Imports and Music CD Prices", *Korean Journal of Law and Economics*, Vol. 5 No. 1, June 2008, 197-205 [with Yeh-ning Chen].
6. "Copyright Law and the Supply of Creative Work: Evidence from the Movies", in Antonio Nicita, Giovanni Ramello, and Michael Scherer, eds, *Intellectual Property, Innovation and Competition*, Routledge, forthcoming [with Qihong Wang].

Cases

1. "BHP: Negotiating Iron Ore Prices With China", Asia Case Research Centre, University of Hong Kong, 06/315C, December 2006, 21 pp. [with Zhigang Tao and Carola Ramon-Berjano].
2. "Rio Tinto: Takeover Fears and Price Negotiations with China", Asia Case Research Centre, University of Hong Kong, 09/413C, April 2009, 15 pp. [with Zhigang Tao and Carola Ramon-Berjano].

Research Grants

1. Center for Economic Policy Research, Stanford (1983)
2. University of California, Pacific Rim Program, "Causes and Consequences of International Economic Integration: the Case of Taiwan and Mainland China", 1993-94, US\$35,000.
3. Hong Kong Research Grants Council, "Manufacturers Returns Policies and Retail Competition", HKUST 549/95H, 1995-97, HK\$150,000.
4. National University of Singapore, "Software Pricing and Enforcement", RP 960624, 1996-98, S\$26,202.
5. Telecommunication Authority of Singapore and National University of Singapore, "Telecommunications Competitiveness Index", RP 970659, 1997-2000, S\$389,450.

6. IP Academy of Singapore, “An Empirical Study on the Extension of Copyright Duration”, 2005-06, S\$18,345.
7. U.S. Air Force, Asian Office of Aerospace R&D, “Information Security: Quantitative Modeling and Empirical Studies”, FA4869-07-1-4046, 2007-09, US\$40,000.
8. National University of Singapore, “Information Security: Quantitative Modeling and Empirical Studies”, 313-000-076-112, 2007-08, S\$29,000.
9. National University of Singapore, “Research Program in Innovation Strategy and Entrepreneurship (RISE)”, 313-000-089-112, 2009-11, S\$62,000.

Students and Scholars (Appointment upon completion)

1. Alyssa Lutz, PhD, UCLA, 1992 (Associate, Analysis Group, Los Angeles).
2. Dong-hee Koh, PhD, UCLA, 1992 (Research Fellow, Korea Information Society Development Institute, Korea).
3. Yeh-ning Chen, PhD, UCLA, 1994 (Lecturer, Department of Finance, National Taiwan University, Taipei, Taiwan).
4. Zhao-li Meng, PhD, NUS, 2006 (Assistant Professor, School of Information, Renmin University, Beijing, China).
5. Chen-yu Wang, MSc, NUS, 2007 (Forex trader, BNP Paribas).
6. Qiu-hong Wang, Post-doctoral fellow, NUS, 2007-09 (Lecturer, Huazhong University of Science and Technology, Wuhan, China).

Honours and Awards

Faculty Career Development Award, UCLA (1987, 1990).
 Outstanding Teaching Award, MBA Program for Fully Employed Students, Class of 1991, UCLA.
 Finalist, 1992 John D.C. Little Best Paper Award, College on Marketing, The Institute of Management Sciences, 1994.
 Teaching Excellence Award, National University of Singapore, 1998.
 Runner-Up, Best Research Paper, 23rd International Conference on Information Systems 2002.
 Teaching Excellence Award, School of Computing, 2007/2008.
 Teaching Excellence Award, NUS-UCLA Executive MBA Program, 2008.
 Teaching Excellence Award, NUS-UCLA Executive MBA Program, 2011.

Recent speaking invitations (part/full expenses paid):

Hong Kong University of Science and Technology, January 2009; Society for Economic Research in Copyright Issues, Berkeley, July 2009; Pacific Rim Innovation Conference, Melbourne, January 2010; University of California, Davis, September 2010; Carnegie-Mellon University, November 2010; University of Bern, November 2010; World Intellectual Property Organization, November 2010; Ludwig-Maximilians University, December 2010; Searle Center Conference on Entrepreneurship and Innovation, Northwestern University School of Law, June 2011; West Coast Research Symposium, University of Washington, September 2011; University of Maryland, October 2011; Roundtable for Engineering Entrepreneurship Research, Georgia Institute of Technology, November 2011; Conference on Entrepreneurial Finance, Tilburg University, November 2011; Harvard Law School: Law, Economics and Organizations Seminar, February 2012; Stanford Law School: Law and Economics Seminar, March 2012; Yale Law School: Center for the Study of Corporate Law Seminar, April 2012; Scheller College, Georgia Institute of Technology, November 2012; Ludwig Maximilian University, InnoTec, December 2012; Chinese University of Hong Kong, Economics Seminar, April 2013; University of Hong Kong, Information and Innovation Management Seminar, April 2013.

Other recent presentations

Asia-Pacific Innovation Conference, Singapore, May 2011; INSEAD, May 2011; Federal Communications Commission, October 2011; Vrije University, Amsterdam, November 2011; INSEAD, October 2012.

Courses Taught

Business Environment in Asia, Information Technology Marketing, Telecommunications, Industrial Organization, International Business Economics, Managerial Economics, Price Policies, Doctoral Seminar in Business Economics.

Executive Teaching

NUS APEX-English Executive MBA (Lecturer), 2009- ; NUS-UCLA Executive MBA (Lecturer), 2004- ; NUS APEX-Chinese Executive MBA (Lecturer), 2002; Kellogg-HKUST Executive MBA Program (Lecturer) 2000; NUS Information and Technology Policy (Lecturer), 1997-1999; UCLA General Management Program, Malaysia (Faculty Director) 1992-94; UCLA Pricing for Profitability (Lecturer), 1992-93. Company programs for Texas Instruments and Hsin Chong.

Professional Service

External reviewer for promotion/appointment (last three years): Carnegie-Mellon University, University of Texas, Dallas, University of California, Irvine.

Journal of Industrial Economics, Associate Editor, 1996-2001;
Information Systems Research, Associate Editor, 2000-2004;
Management Science, Associate Editor, 2005-2008.

Microsoft Corporation, Trustworthy Computing Academic Advisory Board, 2006-2010;
World Intellectual Property Organization, Expert Meeting on Measurement of Copyright Piracy, November 2005.

Institutional Service

Chair, Task Force, NUS Submission to the Economic Strategies Committee, 2009;
Head, Department of Strategy and Policy, National University of Singapore, 2009-2011;
Chair, Promotion and Tenure Committee, School of Business, National University of Singapore, 2008;
Member, Executive Committee, Department of Economics, National University of Singapore, 2008-2011, 2012-
Member, University Committee on Distinguished Appointments, National University of Singapore, 2007-2011, 2012-
Chair, Promotion and Tenure Committee, School of Computing, National University of Singapore, 2005-06;
Chair, Re-Make NUS, National University of Singapore, 2002-03;
Chair, Task Force on Calendar, Time-table and Examinations, National University of Singapore, 1999-2000;
Chair, Task Force on Quality Assurance, National University of Singapore, 1997-98;
Deputy Head, Department of Information Systems & Computer Science, National University of Singapore, 1997-98.

Public Service

Resource Person, University Admission Committee, Ministry of Education, Singapore, 2003-04;
Member, Selection Committee, National Technology Award, Singapore, 2002-03;
Member, Entrepreneurship Focus Group and Education Workgroup, Economic Review Committee. Singapore, 2001-02.

Visiting Appointments

Marshall Visiting Research Scholar, University of Southern California, June 2003;
Visitor, Nuffield College, Oxford, Michaelmas Term, 2007;
Visiting Professor of Business Administration, Tuck School of Business, Dartmouth College,
2011-12.

Directorships

Healthway Medical Corporation Ltd, 2008-2011;
Hyflux Water Trust Management Pte Ltd, 2007-2011;
Hartford Education Corporation Ltd (formerly Hartford Holdings Ltd), 2005-2008;
Universal Gateway International Pte Ltd, 2005-2007;
GeoFoto Pte Ltd, 2000-2001;
JIT Holdings Ltd, 1997-2000.

Consultancy and Expert Testimony (last 5 years)

Unilegal LLC, Singapore: Quantification of economic loss in interference with property right;
Rodyk & Davidson, Singapore: Quantification of economic loss in breach of contract;
Cheah Teh Su, Kuala Lumpur: Quantification of economic loss in breach of contract.

Magazine and Newspaper Articles

in English: *Australian Financial Review*, *South China Morning Post*, *Business Times*
(Singapore), *Wall Street Journal*, *Los Angeles Times*, *Straits Times*, *Sunday Times*
(Singapore), *Asian Wall Street Journal*, *Far Eastern Economic Review*, *Shanghai Daily*.
in Chinese: *Central Daily News* (Taipei), *Hong Kong Economic Journal*.

Languages English, Chinese (Mandarin)