

BRIEF BIOGRAPHY and CURRICULUM VITAE

David Wing Kay Yeung, PhD, Dr.h.c.

Distinguished Research Professor
Hong Kong Shue Yan University

and

Kantorovich Research Chair in Stochastic Differential Games
Co-director of Center of Game Theory
Saint Petersburg State University

Brief Biography

Prof. Dr. Dr.h.c. David W. K. Yeung is Distinguished Research Professor and Head of Department of Economics and Finance at Hong Kong Shue Yan University, and Kantorovich Research Chair in Stochastic Differential Games and Co-director of Centre of Game Theory at Saint Petersburg State University. He is also Distinguished Honorary Professor of Qingdao University - an honor he received along with Nobel laureates John Nash, Reinhard Selten, Robert Aumann and Lloyd Shapley.

Yeung also serves as Director of the SRS Consortium for Advanced Study in Dynamic Cooperative Games -- a joint research initiative under the auspices of Saint Petersburg State University, Russian Academy of Sciences and Shue Yan University. He has held Faculty positions at Queen's University, University of Hong Kong and National University of Singapore.

Yeung obtained his BSocSc in economics and statistics from University of Hong Kong and his PhD in mathematical economics from York University. He studied in the Doctor of Sciences (Doktor Nauk – Continental European higher doctorate above PhD) program in applied mathematics at Saint Petersburg State University and was awarded the University's highest degree of Dr.h.c. for his outstanding contributions in differential games. The Doktor Nauk program requires an average of 15 years to complete and the development of a new scientific field (in contrast with the PhD program which requires the development of a new topic). Saint Petersburg State University's Dr h.c. has traditionally been conferred upon highly distinguished scientists and Nobel laureates.

Yeung's main areas of research are game theory, optimization and stochastic processes. He serves as Managing Editor of International Game Theory Review, Guest Editor of Annals of Operations Research, Associate Editor of Dynamic Games & Applications, Associate Editor of Operations Research Letters, Editor of the Routledge (Taylor & Francis) Series on Economics and Optimization, and Board of Editors of Mathematical Game Theory & Applications. Yeung has published extensively in world renowned science journals, in particular, Automatica, Journal of Optimization Theory and Applications, Annals of Operations Research, European Journal of Operational Research, International Game Theory Review and Mathematical Biosciences.

Among Yeung's pioneering academic work is the origination of the notion of subgame consistency and a generalized theorem for the derivation of analytically tractable subgame consistent solutions which made possible the rigorous study of dynamic stochastic cooperation. Other pioneering academic work accredited to Yeung include – random horizon subgame consistent cooperative solution, randomly furcating differential games, Yeung's Condition on

irrational behaviour proof, stochastic differential games with overlapping generations of uncertain types of players, dynamically consistent solution for cooperative games with asynchronous players' horizons, solution theorem for feedback Nash equilibria in endogenous horizons differential games, Yeung's Lemma which demonstrates the correspondence of degenerate and non-degenerate FNE, the Yeung Number which identifies the number of embedded coalitions, discrete-time random-horizon Bellman equation and HJB equations, stochastic dynamic Slutsky equations, inter-temporal Roy's identities, the Lotka-Volterra-Yeung density function and dynamic Nash bargaining.

In management sciences, Yeung's pioneering work include subgame consistent schemes for global pollution management, dynamic games in management science with interest rate uncertainty, analysis on institutional investor speculation in stochastic differential games framework, time-consistent corporate joint ventures and subgame consistent cooperative solution mechanism for randomly furcating stochastic differential games to handle complex uncertainties in business syndicates. In economics, Yeung extended the Saint Petersburg tradition led by Leonid Kantorovich's Nobel Prize winning work in optimal resource allocation to multiple-agent subgame consistent economic optimization.

Yeung and Leon Petrosyan co-authored the world's first book on Cooperative Stochastic Differential Games. In the book's advanced praise George Leitmann (Berkeley) stated that this book will be the 'bible' of the field for years to come. Vladimir Mazalov (Russian Academy of Sciences) praised the book's advancements in dynamic stability as a continuation of the great tradition of A. Lyapunov, L. S. Pontryagin and V. Zubov.

Yeung and Petrosyan co-authored the world's first treatise on Subgame Consistent Economic Optimization. Vladimir Mazalov praised the text as a Russian classic in mathematics and economics and it expanded L.V. Kantorovich's award-winning work in economic optimization significantly in the new directions of game-theoretic interaction, dynamic evolution, stochasticity and subgame consistency.

Yeung also authored a premier treatise on dynamic consumer theory with stochastic dynamic Slutsky equations. This book is the world's first text on consumer theory in a stochastic dynamic framework. It expands the static consumer theory into stochastic dynamic consumer theory. Prominent highlights of the book include a series of stochastic dynamic Slutsky equations and inter-temporal Roy's identity. *"The stochastic dynamic Slutsky equations in this book formed a new milestone in consumer theory after the classic work of Slutsky."* (Vladimir Mazalov, Russian Academy of Sciences)

Yeung and Leon Petrosyan co-authored the world's first book on Subgame Consistent Cooperation, which is a comprehensive treatise on the concepts and solution mechanisms of their pioneering work on cooperative subgame consistency. In the book's back-cover praise Vladimir Mazalov stated, *"The 2004 Nobel Economics Prize was given to works in economic policies under the concept of time consistency with mathematical construction less general, rigorous and precise than that later developed in this book. In terms of advancement in practical applications this book is highly important theoretically and technically on top of economic interpretation."*

Yeung and Leon Petrosyan also co-authored another world's first text on Dynamic Shapley Value and Dynamic Nash Bargaining. Vladimir Turetsky stated, *"the contribution of the book is the dynamic extension of two milestone results in Cooperative Games, the*

bargaining solution of Nash and the value of Shapley. Real-life processes in economics, biology, social life, etc. are inherently dynamic,..... . Therefore, I believe that mathematical results presented in the book will have a long echo in various applications in different and unexpected fields.”

Yeung and Leon Petrosyan developed a novel game theory paradigm – “Cooperative Dynamic Games with Durable Controls”. It yields a new system of dynamic games in which the players’ strategies involve durable controls. In addition, a new dynamic optimization technique is also established.

Books and Texts Published:



CURRICULUM VITAE

David Wing Kay Yeung, PhD, Dr.h.c.

Distinguished Research Professor
Head of Department of Economics and Finance
Executive Director of SRS Consortium for Advanced Study in Cooperative Dynamic Games
Hong Kong Shue Yan University
and
Kantorovich Research Chair in Stochastic Differential Games
Co-director of Center of Game Theory
Faculty of Applied Mathematics-Control Processes
Saint Petersburg State University

PROFESSIONAL APPOINTMENTS

Distinguished Guest Professor, Qingdao University
Distinguished Honorary Professor, Qingdao University
Managing Editor of International Game Theory Review
Guest Editor – Annals of Operations Research
Guest Editor – Annals of the International Society of Dynamic Games
Associate Editor of Dynamic Games and Applications
Associate Editor of Operations Research Letters
Series Editor of Routledge Series on Economics and Optimization
Editorial Member – Mathematical Game Theory and Applications
Editorial Member – Saint Petersburg Vjěstnik of Applied Mathematics, Informatics, Control
Executive Committee – International Society of Dynamic Games
Mathematical Reviews' Reviewer – American Mathematical Society
Professorial Associate – Victoria University
Advisory Board Member – Institute of Advanced Management Development, HKMA
Honorary Director - Centre for Corporate Management, HKMA
MIEEE – Institute of Electronic and Electrical Engineering
Fellow of the Royal Statistical Society
Founding Advisor, International Society of Dynamic Games – China Chapter
Executive Director of SRS Consortium for Advanced Study in Cooperative Dynamic Games

ADDRESSES

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Hong Kong Shue Yan University
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and
Centre for Game Theory, Faculty of Applied Mathematics & Control Processes
Saint Petersburg State University
FAX/TEL: (7) 812 350 5067 E-mail: spbuoasis7@peterlink.ru

WORKING EXPERIENCE

Jan. 2010 - Distinguished Research Professor
Sep. 2020 - Head of Department of Economics and Finance

Jan. 2010-Aug. 2020	Head of Department of Business Administration
Jan. 2010-	Executive Director of SRS Consortium for Advanced Study in Cooperative Dynamic Games
	Associate Director- Enterprise & Social Development Research Center
	Hong Kong Shue Yan University
June 2004 -	Kantorovich Research Chair in Stochastic Differential Games
	Faculty of Applied Mathematics and Control Processes
	Saint Petersburg State University
Feb. 2000 -	Co-Director, Centre for Game Theory
	Faculty of Applied Mathematics and Control Processes
	Saint Petersburg State University
Aug. 2019 -	Adjunct Distinguished Professor, Asia University
Sept. 2018-	Professorial Associate, Victoria University
July 2006 – Jan. 2010	Chair Professor in Game Theory
	Department of Finance and Decision Sciences
	Hong Kong Baptist University
Jan. 1999 –June 2006	Professor, Department of Finance and Decision Sciences
	Hong Kong Baptist University
Feb. 2000 – Jan. 2010	Director, Centre of Game Theory
	Hong Kong Baptist University
May - Jun 2000; May-Jul 2001; Mar, Apr 2002	Acting Head, Department of Finance and Decision Sciences
	Hong Kong Baptist University
July 1999 –Dec. 2000	Court Member – Hong Kong Baptist University
Dec. 2001 -	Distinguished Guest Professor, Qingdao University
Aug. 2002 -	Distinguished Honorary Professor, Qingdao University
April 2006-	Honorary Research Fellow – Center of Urban Planning & Environmental Management, the University of Hong Kong
April 2006-	Research Associate – Center of Strategic Economic Study, Victoria University, Australia
Feb. 2008-	Honorary Fellow – Center for Suicide Research and Prevention, The University of Hong Kong
Jan. 2002 –Dec 2005	Honorary Professor, Faculty of Social Sciences, The University of Hong Kong
Sept. 1997 – Aug. 1999	Associate Professor, School of Economics and Finance
	The University of Hong Kong
Jan. 1996 – Aug. 1997	Senior Lecturer, Department of Economics and Statistics
	The National University of Singapore
Sept. 1989 – Dec. 1995	Lecturer, School of Economics and Finance
	Fellow, Centre of Urban Planning & Environment Management
	The University of Hong Kong
July 1987 – Sept. 1989	Associate Professor, Department of Economics
	University of Windsor
July 1986 – June 1987	Lecturer, Department of Economics
	York University, Department of Economics
July 1984 - June 1986	Visiting Assistant Professor, Department of Economics
	Queen's University

EDUCATION AND DEGREES

B.Soc.Sc. (Economics & Statistics) University of Hong Kong

M.A. (Economics) York University

Ph.D. (Economics) York University

Supervisors: Charles Plourde, John Buttrick, Stanley Warner

Studied in the Doktor Nauk Program (Applied Mathematics - higher doctorate above PhD) at Saint Petersburg State University and was awarded the highest degree Dr.h.c.

Supervisor: Leon Petrosyan

SCHOLARSHIPS

1983-1984 Doctoral Fellowship
 Social Sciences and Humanities Research Council of Canada

1982-1983 Doctoral Fellowship
 Social Sciences and Humanities Research Council of Canada

1981-1982 York Graduate Scholarship

1973 Grantham Scholarship

Scholarships awarded but declined due to the holding of other fellowship concurrently

1982 Doctoral Scholarship
 Canada Mortgage and Housing Corporation

1982 Ontario Graduate Scholarship

1981 Queen's Scholarship

HONORS AND AWARDS

Saint Petersburg State University's highest degree, Dr.h.c., for outstanding contributions in differential game theory (while studying D.Sc. (Doktor Nauk) in Applied Mathematics)

Distinguished Honorary Professor, Qingdao University – appointed along with Nobel Laureates John Nash, Reinhard Selten, Robert Aumann and Lloyd Shapley.

Plenary Speaker at the International Congress of Mathematicians ICM 2002 historic first Satellite Conference on Game Theory and Applications – other plenary speakers included Nobel Laureates John Nash, Reinhard Selten, Robert Aumann and Lloyd Shapley.

Kantorovich Research Chair in Stochastic Differential Games, Saint Petersburg State University – for signal research contributions in stochastic differential games.

Invited Nominator for the Nobel Memorial Prize in Economic Sciences.

FIELDS OF SPECIALIZATION AND RESEARCH INTERESTS:

Game Theory, Operations Research, Stochastic Processes, Stochastic Control, Probability Theory, Financial Engineering and Modelling, Mathematical Economics, Microeconomics, Resource Economics, Environmental Economics, Economics of E-Commerce.

PROFESSIONAL QUALIFICATION

FAIBA – Fellow of Accredited Institute of Business Administrants

PROFESSIONAL AND ACADEMIC ACTIVITIES

Editorial Duties

Managing Editor -	International Game Theory Review
Guest Editor -	Annals of Operations Research
Guest Editor -	Annals of the International Society of Dynamic Games
Associate Editor -	Dynamic Games and Applications
Associate Editor-	Operations Research Letters
Series Editor-	Routledge Series on Economics and Optimization
Editorial Board Member -	Mathematical Game Theory and Applications
Commissioned Reviewer -	Mathematical Reviews (American Mathematical Society)

Editorial Board Member - Vestnik of Saint Petersburg University: Applied Mathematics,
Computer Science, Control Processes

Books and Edited Volumes Referee – Birkhauser, Prentice Hall, John-Wiley, Springer-
Verlag, Kluwer Science Publishers, World Scientific Publishers

Journals Referee - American Economic Review
Automatica
American Journal of Agricultural Economics
Annals of Operations Research
Annals of the International Society on Dynamic Games
Canadian Journal of Economics
Corporate Governance
Discrete Dynamics in Nature and Society
European Journal of Operational Research
Hong Kong Economic Papers
IEEE Transactions on Automatic Control
International Game Theory Review
Journal of Economic Dynamics and Control
Journal of Environmental Economics and Management
Journal of Mathematical Analysis and Applications
Journal of Mathematical Economics
Journal of Optimization Theory and Applications
Journal of the Royal Society Interface
Marketing Science
Natural Resource Modeling
Omega
Operations Research Letters
Optimal Control, Method and Applications
Optimization Letters
Physica A
Quarterly Journal of Economics
Singapore Economic Review

Other Professional and Academic Activities

Founding Advisor - International Society of Dynamic Games –China Chapter

Executive Committee- International Society of Dynamic Games

Honorary Adviser - The Institute of Business Administrants (IBA)

Editorial Board Member Mathematical Game Theory and Applications

Guest Editor Annals of Operations Research

Editorial Advisory Council - Pacific Economic Review

Associate Editor - Hong Kong Economic Papers

Department Representative - Canadian Operational Research Society

Staff Member - Great Lakes Institute, Ontario, Canada

Reviewer - Mathematical Reviews (American Mathematical Society)

Executive Committee - Hong Kong Economic Association

Advisor - Victoria Jaycees, The Hong Kong Junior Chamber of
Commerce & Jaycees International

Member - China-Hongkong Securities Markets Research Team, HKSE

Reviewer- National Sciences and Engineering Research Council of
Canada (NSERC)

Program Committee- 1999 Far Eastern Meeting of the Econometric Society

External Examiner- Graduate (Economics) Programme, Chinese University

	of Hong Kong
Program Committee-	The Far Eastern Meeting of the Econometrics Society 1999, Singapore, July 1999.
International Program Committee-	Ninth International Symposium on Dynamic Games and Applications, Adelaide, Dec 2000.
International Program Committee-	International Federation of Automatic Control – 11 th Workshop on Control Application of Optimization, St Petersburg, July 2000.
Program Committee-	JSAI 2001 International Workshop on Agent-based Approaches in Economics and Social Complex System, Matsue City, Japan, May 2001.
Program Committee-	International Conference on Logic, Game Theory and Social Choice, St Petersburg, June 2001.
International Program Committee -	4 th International Conference on Computational Intelligence and Multimedia Applications, Yokosuka, Japan 2001.
International Program Committee-	Tenth International Symposium on Dynamic Games and Applications, St Petersburg, July, 2002.
Program Committee-	Second International Workshop on Agent-based Approaches in Economics and Social Complex System, Tokyo, Japan, 2002.
Vice Chairperson	
Academic Program Committee	International Congress of Mathematicians 2002
Program Committee-	Satellite Conference on Game Theory and Applications
Program Committee-	International Conference on Logic, Game Theory and Social Choice 3, Siena, September 2003.
Program Committee-	Third International Workshop on Agent-based Approaches in Economics and Social Complex System, Kyoto, Japan, May 2004.
International Program Committee-	Eleventh International Symposium on Dynamic Games and Applications, Tucson, December, 2004.
Technical Program Committee-	The 7 th Australian Joint Conference on Complex System, Cairns, Australia, December 2004.
Program Co-chairperson-	First Workshop of the Chinese Chapter of the International Society of Dynamic Games, Qingdao, China, August 2004.
Program Committee	International Conference on Stability and Control Processes -- dedicated to V. I. Zubov, St Petersburg, Russia, Jun/Jul 2005.
Scientific Committee	6 th Meeting on Game Theory and Practice, Zaragoza, Spain, 10-12 July 2006.
International Program Committee-	Twelve International Symposium on Dynamic Games and Applications, Sophia Antipolis, France, July, 2006.
Program Committee	The First World Congress on Social Simulation, Kyoto, Japan, August 2006.
International Program Committee-	Twelve International Symposium on Dynamic Games and

Program Committee	Applications, Sophia-Antipolis, France, July, 2006. Fifth International Workshop on Agent-based Approaches in Economics and Social Complex System, Tokyo, August, 2007.
International Program Committee-	First International Conference on Game Theory and Management, St Petersburg, Russia, June 2007.
International Program Committee-	Second International Conference on Game Theory and Management, St Petersburg, Russia, June 2008.
International Program Committee-	Thirteenth International Symposium on Dynamic Games and Applications, Wroclaw, Poland, June-July 2008.
Program Committee	World Congress on Social Simulation 2008, Fairfax, USA, July, 2008
International Program Committee-	Third International Conference on Game Theory and Management, St Petersburg, Russia, June 2009.
Honorary Program Chair	International Society of Dynamic Games (ISDG)-China Chapter Conference on Dynamic Games and Game Theoretic Analysis, NingBo, China, 3-5 August 2017.
International Program Committee-	Twelfth International Conference on Game Theory and Management, St Petersburg, Russia, June 2018.

GRANTS

RGC Competitive Earmarked Research Grant (CERG) 1999-2004

Project Title - Investor Behavior in Equity Markets: A Stochastic Differential Game Analysis.
HK\$ 477,000, (Sole investigator).

FRG Grants (HKBU) 2000-2001

Project Title - Stock Markets and the World's Major Financial Centers,
HK\$ 57,500 (Principal investigator).

FRG Grants (HKBU) 2003-2004

Project Title - Stochastic Dynamic Investment Games: Towards a New Paradigm in Financial Analysis,
HK\$66,840 (Sole investigator).

FRG Grants (HKBU) 2004-2005

Project Title - Stable Corporate Joint Ventures: The Dynamic Shapley Approach,
HK\$146,600 (Sole investigator).

RGC Competitive Earmarked Research Grant (CERG) 2004-2007

Project Title – Consistent Economic Cooperation in Stochastic Dynamic Environment,
HK\$339,150 (Principal investigator).

FRG Grants (HKBU) 2005-2007

Project Title – Subgame-consistent Cooperative Nonrenewable Resource Management Under Asynchronous Planning Horizon,
HK\$73,800 (Principal investigator).

FRG Grants (HKBU) 2007-2008

Project Title – Irrational-Behaviour-Proof Solutions in Dynamics Cooperative Schemes
HK\$93,160 (Principal investigator).

Strategic Development Fund (HKBU) 2007-2009

Project Title – Consortium for Advanced Study in Dynamic Cooperative Game,
HK\$255,253 (Sole investigator).

European Union Research Grant 2007-2009

Project Title – Technology-Oriented Cooperation and Strategies in India and China:
Reinforcing the EU dialogue with Developing Countries on Climate Change Mitigation.
With Partners: University of Cambridge, Ecole Polytechnique, Tsinghua University, India
Institute of Management, FEEM, KANLO and ORDECSYS,
Euros 1,069,000 (HK\$11,308,579)

RGC Competitive Earmarked Research Grant (CERG) 2007-2010

Project Title: Subgame-consistent Solutions for Asynchronous-horizon Cooperative
Stochastic Differential Games,
HK\$445,000 (Principal investigator).

Shue Yan University Research Grant 2011-2012

Project Title -- Time Consistent Management Schemes for Collaborative Business
Development

Project Investigators: David Wing-kay YEUNG, Wing-Fu SZETO, Che-fai LAM
HK\$24,000

Shue Yan University Publication Grant 2011-2012

Book Title: Subgame Consistent Economic Optimization: An Advanced Cooperative
Dynamic Game Analysis.

Sole Investigators

HK\$10,000

RGC Institutional Development Scheme 2017-2020

Project Title: Further Enhancement of Interdisciplinary Research at Hong Kong Shue Yan
University through the Establishment of the Centre of Interdisciplinary Research in
Evidence-Based Practice

Team Leader

HK\$6,221,500

SCHOLARLY WORK

PUBLICATIONS

Refereed Articles and Refereed Books

1. D.W.K. Yeung, L.A. Petrosyan and Y.X. Zhang: Trade with Technology Spillover: A
Dynamic Network Game Analysis, forthcoming in *International Game Theory Review*,
2021.
2. L.A. Petrosyan and D.W.K. Yeung: Cooperative Dynamic Games with Durable
Controls: Theory and Application, *Dynamic Games and Applications*, 2020.

Doi:10.1007/s13235-019-00336-w.

3. L.A. Petrosyan and D.W.K. Yeung: Shapley Value for Differential Network Games: Theory and Application, *Journal of Dynamics and Games*, 2020. Doi: 10.3934/jdg.2020021.
4. D.W.K. Yeung, S. Luckraz and C.K. Leong (Eds): *Frontiers in Games and Dynamic Games - Theory, Applications, and Numerical Methods*, Birkhauser, 238pp., 2020, ISBN 978-3-030-39788-3.
5. D.W.K. Yeung: Dynamically stable cooperative provision of public goods under non-transferable utility, in D.W.K. Yeung, S. Luckraz and C.K. Leong (Eds): *Frontiers in Games and Dynamic Games - Theory, Applications, and Numerical Methods*, Birkhauser, 2020, pp.3-22.
6. D.W.K. Yeung, Y.X. Zhang, H.T. Bai, S. Islam: Collaborative Environmental Management for Transboundary Air Pollution Problems: A Differential Levies Game, *Journal of Industrial and Management Optimization*, 2020. Doi:10.3934/jimo.2019121.
7. L.A. Petrosyan and D.W.K. Yeung: Construction of Dynamically Stable Solutions in Differential Network Games in A. Tarasyev, V. Maksimov and T. Filippova (Eds), *Stability, Control and Differential Games (SCGD2019)*, Lecture Notes in Control and Information Sciences, Springer, 2020, pp. 51-61.
8. L.A. Petrosyan and D.W.K. Yeung: Dynamically Consistent Bi-level Cooperation of a Dynamic Game with Coalitional Blocs, in L.A. Petrosyan, V.V. Mazalov and N. A. Zenkevich (eds) *Frontiers of Dynamic Games*, Birkhauser, Switzerland, 2019, pp. 209-230.
9. L.A. Petrosyan and D.W.K. Yeung (Eds.): *Game Theoretic Analysis*, World Scientific, 603pp., ISBN: 978-981-12-0200-1, 2019.
10. D.W.K. Yeung and A.W.C. Lui : China's Belt-Road Initiative: The Political Economy of Coordinated Coalition Cooperation, in *Handbook on Contemporary Issues in International Political Economy* (eds. Tony Yu and Dianna Kwan), Palgrave, 2019, pp. 197-226.
11. D.W.K. Yeung and L.A. Petrosyan : Cooperative Dynamic Games with Control Lags, *Dynamic Games and Applications*, 9(2), 2019, pp.550-567, <https://doi.org/10.1007/s13235-018-0266-6>.
12. D.W.K. Yeung, L.A. Petrosyan: Dynamic Shapley Value and Dynamic Nash Bargaining, Nova Science, New York, 2018, 225pp., ISBN: 978-1-53614-549-6.
13. D.W.K. Yeung and L.A. Petrosyan: Nontransferable Utility Cooperative Dynamic Games, in T. Basar and G. Zaccour (eds.) *Handbook of Dynamic Game Theory*, Volume 1, Springer, 2018, pp. 633-670.
14. L. Petrosyan and D.W.K. Yeung: The Two Level Cooperation in a Class of n-person Differential Games, *IFAC Papers-Online*, Vol. 51, Issue 32, 2018, pp. 585-587.
15. D.W.K. Yeung, L.A. Petrosyan, Y.X. Zhang and F. Cheung: BEST SCORES Solution to the Catastrophe Bound Environment, Nova Science, New York, 2017, 184pp., ISBN 978-1-53610-924-5.
16. D.W.K. Yeung, O. Petrosian: Infinite Horizon Dynamic Games: A New Approach via Information Updating. *International Game Theory Review*, Vol.19, No. 4, December 2017, DOI 10.1142/S0219198917500268.
17. D.W.K. Yeung: An Equilibrium Cooperative Optimization Solution for Two-person Non-transferrable Utility Games, *Applied Mathematical Sciences*, Vol 11, No. 2, 2017, pp.1413-1422.
18. D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Cooperation – A Comprehensive Treatise, *Springer*, 2016, 520pp, ISBN 987-981-10-1544-1.
19. D.W.K. Yeung and L.A. Petrosyan: A Cooperative Dynamic Environmental Game of

- Subgame Consistent Clean Technology Development, *International Game Theory Review*, Vol 18, No 2, 2016, pp.164008.01-164008.23.
20. D.W.K. Yeung, Y.X. Zhang and P.M. Yeung: A Recursive Sequence of Sums of Consecutive Embedded Coalitions, *International Journal of Mathematical Analysis*, Vol. 10, 2016, pp. 9-14.
 21. D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Cooperative Solution for NTU Dynamic Games via Variable Weights, *Automatica*, Vol. 50, 2015, pp. 84-89.
 22. D.W.K. Yeung: Dynamic Consumer Theory – A Premier Treatise with Stochastic Dynamic Slutsky Equations, Nova Science Publishers, New York, ISBN 978-1-63321-796-6, 392pp, 2015.
 23. D.W.K. Yeung and P.M. Yeung: A Mathematical Model of Dynamic Interaction Between Virus and Deleterious Immunity Response. *Journal of Applied Mathematics & Bioinformatics*, Vol.5, no.1, 2015, 25-44.
 24. D.W.K. Yeung and L.A. Petrosyan: On Subgame Consistent Solution on NTU Stochastic Dynamic Games, *Contributions to Game Theory and Management*, 2015, Vol. 8, pp.347-360.
 25. D.W.K. Yeung: Dynamically Consistent Collaborative Environmental Management with Production Technique Choices, *Annals of Operations Research*, 2014, Vol.220, Issue 1, pp 181-204. DOI: 10.1007/s10479-011-0844-0.
 26. A. Haurie, D.W.K. Yeung, and G. Zaccour (Guest Editors): Special Issue on Collaborative Environmental Management and Modelling, *Annals of Operations Research*, 2014, Vol.220, Issue 1.
 27. D.W.K. Yeung: Optimal Consumption under Uncertainties: Random Horizon Stochastic Dynamic Roy's Identity and Slutsky Equation, *Applied Mathematics*, Vol.5, January 2014, pp.263-284.
 28. D.W.K. Yeung: Random Horizon Stochastic dynamic Slutsky Equation under Preference Uncertainty, *Applied Mathematical Sciences*, Vol. 8, 2014, pp.7311-7340.
 29. D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Cooperative Solutions For Randomly Furcating Stochastic Dynamic Games With Uncertain Horizon. *International Game Theory Review*, Vol. 16, Issue 2, 2014, pp.1440012.01-1440012.29.
 30. L. A. Petrosyan and D.W.K. Yeung (Guest Eds): Special Issue on Dynamic Games and Control Theory Dedicated to the Memory of Nikolay Nikolayevich Krasovskii. *International Game Theory Review*, Vol. 16, Issue 2, 2014.
 31. L. A. Petrosyan and D.W.K. Yeung: A Time-Consistent Solution Formula For Bargaining Problem In Differential Games. *International Game Theory Review*, Vol. 16, Issue 4, 2014, pp. 1450016.01- 1450016.11.
 32. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Cooperative Provision of Public Goods Under Accumulation and Payoff Uncertainties. In J. Haunschmied, V.M. Veliov and S. Wrzaczek (eds), *Dynamic Games in Economics*, 2014, pp. 289-315. Springer-Verlag Berlin Heidelberg.
 33. L.A. Petrosyan, J.V. Romanovsky and D.W.K. Yeung (eds): *Advances in Economics and Optimization: Collected Scientific Studies Dedicated to the Memory of L.V. Kantorovich*, New Nova Science Publishers, ISBN 978-1-63117-073-7, 252pp., 2014.
 34. D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Solution for a Dynamic Game of Pollution Management. In L.A. Petrosyan, J.V. Romanovsky and D.W.K. Yeung (eds): *Advances in Economics and Optimization: Collected Scientific Studies Dedicated to the Memory of L.V. Kantorovich*, New Nova Science Publishers, 2014, pp. 95-112.
 35. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Cooperative Solution of Stochastic Dynamic Game of Public Goods Provision, *Contributions to Game Theory and Management*, Volume 7, 2014, pp. 404-414.

36. D.W.K. Yeung and L. A. Petrosyan: Subgame-consistent Cooperative Solutions in Randomly Furcating Stochastic Dynamic Games. *Mathematical and Computer Modelling*, Vol 57, Issues 3-4, 2013, pp.976–991.
37. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Cooperative Provision of Public Goods. *Dynamic Games and Applications*, September 2013, Volume 3, Issue 3, pp. 419-442. DOI: 10.1007/s13235-012-0062-7.
38. D.W.K. Yeung: Nontransferable Individual Payoffs in Cooperative Stochastic Dynamic Games, *International Journal of Algebra*, Vol. 7, No. 13, 2013, pp. 597-606.
39. D.W.K. Yeung: Optimal Consumption under an Uncertain Inter-temporal Budget: Stochastic Dynamic Slutsky Equations, *Vestnik St Petersburg University: Mathematics* (Springer), Vol. 10, No.3, 2013, pp.121-141.
40. D.W.K. Yeung, L.A. Petrosyan, R. Szeto and L. Lam: A Cooperative Stochastic Differential Game of Knowledge Technology Development, *International Journal of Computer and Information Technology*, Vol. 2 (5), 2013, pp. 934-941.
41. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Economic Optimization: An Advanced Cooperative Dynamic Game Analysis, Boston: Birkhäuser. ISBN 978-0-8176-8261-3, 395pp, 2012.
42. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Solution for Cooperative Stochastic Dynamic Games with Random Horizon, *International Game Theory Review*, Vol. 14, Issue 2, 2012, DOI: 10.1142/S0219198912500120.
43. D.W.K. Yeung and L. A. Petrosyan: A Notational Note on Agreeable Solutions in Cooperative Differential Games, *Game Theory and Applications*, Vol. 15, 2012, pp.203-206.
44. D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Solution for a Cooperative Differential Game of Climate Change Control, *Contributions to Game Theory and Management*, Vol. 5, 2012, p 356-386.
45. D.W.K. Yeung: Subgame Consistent Cooperative Solutions in Stochastic Differential Games with Asynchronous Horizons and Uncertain Types of Players, *Contributions to Game Theory and Management*, Vol. 5, 2012, pp. 334-355.
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RESEARCH IN PROGRESS

Research papers in Progress:

Dynamic Cooperation in Pollution Reduction
 Dynamic Stability of Solutions in Cooperative Differential Games: A Critical Survey
 The Cooperative Game of Public Healthcare Provision
 Subgame Consistent Cooperation in Stochastic Dynamic Resource use
 A Dynamic Interactive Model of Viruses and Deleterious Immunity Response
 A Subgame-consistent Approach to Asian Pacific Economic Cooperation
 On the Crux of Successful Economic Cooperation in the Pan Pearl-River Delta
 Game-theoretic Analysis of CEPA

Books and Monographs in Progress:

Subgame Consistency (with L. Petrosyan)
 Elephants in the Pond: Institutional Investors and Financial Games
 Advanced Dynamic Decision Sciences: Selected Scientific Work of David W. K. Yeung
 The Development of Economic Thoughts from a Mathematician's Perspective
 Cooperative Environmental Economics
 Dynamic Game-theoretic Economic Optimization: A Treatise (with L. Petrosyan)

PLENARY LECTURES, INVITED PAPERS & CONFERENCE PRESENTATIONS

- "A Dynamic Network Game of Trade Augmentation under Technology Spillover" (with Y.X. Zhang), paper presented at the 31 Stony Brook International Conference on Game Theory - Workshop on Differential Games, Stony Brook, New York, 27-28 July 2020.
- "Construction of Dynamically Stable Solutions in Network Differential Games" (with L.A. Petrosyan) paper presented at the International Conference on "Stability, Control, Differential Games" devoted to the 95th anniversary of Academician N.N. Krasovskii (SCDG2019), Yekaterinburg, Russia, 12-15 September 2019.
- "Brexit: A Cross-disciplinary Study in Politics, Socio-Economics and Game Theory with Predicted Impacts for Evidence Verification," (with A.W.C. Lui) paper presented at The Institutional Development Scheme International Conference -- Bridging The Gap: Translating Interdisciplinary Research into Evidence-based Practice, Hong Kong, 3-4 May 2019.
- "Bi-level Cooperation in a Class of n-person Differential Games", (with L.A. Petrosyan) paper presented at the 17th IFAC Workshop on Control Applications of Optimization, Yekaterinburg, Russia, October 15-19, 2018.
- "Dynamically Consistent Cooperative Solution of a Dynamic Game with Coalitional Blocs," (with L.A. Petrosyan), paper presented at the 18th *International Symposium on Dynamic Games and Applications*, Grenoble, France, July 9-12, 2018.
- "Time-Consistency, Subgame Consistency, Subgame Perfection and Dynamic Stability of Solutions in Dynamic Games", (with L.A. Petrosyan), paper presented at the 18th

- International Symposium on Dynamic Games and Applications*, Grenoble, France, July 9-12, 2018.
- “Solutions of cooperative Dynamic Games with Control Lags”, (with L.A. Petrosyan) paper presented at the *Twelfth International Conference on Game Theory and Management (GTM2018)*, St. Petersburg, Russia, June 27-29, 2018.
- “Transnational Co-development of GreenTech and Integrated Global Response to Anthropogenic Environmental Impacts”, paper prepared for presentation at *Anthropocene Conference 2018*, Hong Kong, 29 May – 1 June 2018.
- “Dynamically Stable Provision of Public Goods: A NTU Cooperative Differential Game Approach”, Plenary Lecture presented at the *ISDG-China Chapter International Conference on Dynamic Games and Game Theoretic Analysis*, NingBo, 3-5 August 2017.
- “Cooperative Stochastic Differential Games with Information Adaptation” (with O. Petrosyan), paper presented at the *International Conference on Communication and Electronic Information Engineering*, Guangzhou, October, 2016.
- “On Subgame Consistent Solution for NTU Cooperative Stochastic Dynamic Games” (with L.A. Petrosyan), paper presented at *European Meeting on Game Theory (SING11-GTM2015)*, St Petersburg, July 8-10, 2015.
- “Strategically Supported Time-consistent Solutions in NTU Differential Games” (with L. A. Petrosyan) paper presented at the *Sixteenth International Symposium on Dynamic Games and Applications*, Amsterdam, the Netherlands, 9-12 July 2014.
- “Subgame-consistent Cooperative Solution of Stochastic Dynamic Game of Public Goods Provision”, paper presented at the *Seventh International Conference on Game Theory and Management*, St Petersburg, Russia, June 26-28, 2013.
- “Subgame-consistent Solutions for Cooperative Stochastic Dynamic Games with Randomly Furcating Payoffs”, paper presented at the Fourth World Congress of the Game Theory Society, Istanbul, Turkey, 23-26 July 2012.
- “Subgame Consistent Solution for a Cooperative Differential Game of Climate Change Control”, (with L.A. Petrosyan) paper presented at the *Sixth International Conference on Game Theory and Management*, St Petersburg, Russia, June 27-29, 2012.
- “Subgame Consistent Cooperative Solutions in Stochastic Differential Games with Asynchronous Horizons and Uncertain Types of Players”, paper presented at the *Sixth International Conference on Game Theory and Management*, St Petersburg, Russia, June 27-29, 2012.
- “Dynamically Stable Vertical Integration of Firms in a Supply Chain”, International Conference on Industrial Engineering and Operations Management, Kuala Lumpur, Malaysia, January 22 – 24, 2011.
- “Subgame Consistent Solutions for Random Horizon Cooperative Dynamic Games”, paper presented at the *Fifth International Conference on Game Theory and Management*, St Petersburg, Russia, June 26-28, 2011.
- “Dynamically Consistent Solution for a Cooperative Differential Game of Climate Change Control”, paper presented at the *Fourteenth International Symposium on Dynamic Games and Applications*, Banff, Canada, June 19 - 23, 2010.
- “The Detailization of the Irrational Behavior Proof Condition for the Emission Reduction Game,” (with L.A. Petrosyan and A.V. Iljina) paper presented at the *First Conference of Chinese Game Theory and Experimental Economics Association*, Beijing, China, August 24-26, 2010.
- “The Detailization of The Irrational Behaviour Proofness Condition,” (with L.A. Petrosyan and V.V. Jhuk) paper presented at the *Third International Conference on Game Theory and Management*, St Petersburg, Russia, June 24-26, 2009.

- “On Financial Constraint in Intertemporal Cooperative Pollution Management Games” (with Y.X. Zhang), paper presented at *TOCSIN Cambridge Meeting*, Cambridge, U.K., 10-11 December 2008.
- “Cooperative Game-theoretic Mechanism Design for Optimal Resource Use,” Plenary Lecture delivered at the *Second International Conference on Game Theory and Management*, St Petersburg, Russia, June 26-27, 2008 (Nobel Laureate John Nash was another Plenary Speaker).
- “Dynamically Consistent Cooperative Solutions in Differential Games with Asynchronous Players’ Horizons”, paper presented at *the Thirteenth International Symposium on Dynamic Games and Applications*, Wroclaw, Poland, June 30 - 3 July, 2008.
- “Environmental Problems in China: From Kyoto Protocol and Bali Roadmap to Foundations for a Cooperative Game-theoretic Solution” (with Y.X. Zhang), paper presented at *International Workshop on Modeling Technology Oriented RD&D Strategic Cooperation for Climate Change Mitigation: Methodological Issues and Alternative Policy Scenario*, Venice, Italy, 17-18 March 2008.
- “Managing Catastrophe-bound Industrial Pollution with Game Theoretic Algorithm: The St Petersburg Initiative,” Plenary Lecture presented at *First International Conference on Game Theory and Management*, St Petersburg, Russia, June 28-29, 2007 (Nobel Laureate Robert Aumann was another Plenary Speaker).
- “A Dynamic Game-theoretic Solution to Catastrophe-bound Industrial Pollution Problems” Plenary Lecture presented at *The Second China Meeting on Game Theory and Applications*, Qingdao, China, 17-19 September, 2007.
- “Cooperative Stochastic Differential Games” (with L. Petrosyan) Invited Lecture presented at the 3rd Pan Pacific Conference on Game Theory, Beijing, China, 20-22 October 2006.
- “Dynamically Stable Cooperative Solutions in Differential Games with Randomly Fluctuating Payoffs” (with L. Petrosyan) paper presented at *the Twelve International Symposium on Dynamic Games and Applications*, Sophia Antipolis, France, 3-6 July, 2006.
- “The Tenet of Transitory Compensation in Dynamically Stable Cooperation” (with L. Petrosyan) paper presented at the 13th IFAC Workshop on control and Applications of Optimization, Paris, 26-28 April 2006.
- “Exact Solution to a Class of Stochastic Resource Extraction Problems” (with T. S. Cheng) presented at *International Scientific Annual Conference on Operations Research 2005*, Bremen, Germany, 7-9 September 2005.
- “Dynamically Stable Cooperation and the Tenet of Transitory Compensation” (with L. Petrosyan) presented at *The International Conference on Stability and Control Processes – Dedicated to the 75th Birthday Anniversary of V. I. Zubov*, St Petersburg, Russia, 29 June – 1 July 2005.
- “Subgame Consistent Solutions of a Class of Cooperative Differential Games with Nontransferable Payoffs,” invited paper presented at *11th International Symposium on Dynamic Games and Applications*, Tucson, Arizona, USA, 18-21 December 2004.
- “The Crux of Dynamic Economic Cooperation: Subgame Consistency and Equilibrating Transitory Compensation,” (with L. Petrosyan) invited paper presented at *11th International Symposium on Dynamic Games and Applications*, Tucson, Arizona, USA, 18-21 December 2004.
- “Stochastic Pursuit Problems with Different Geometric Shapes of Reachable Sets,” (with W. Yu), presented at the *First Workshop of the China Chapter of the International Society of Dynamic Games*, Qingdao, 8-9 August 2004.
- “On Solutions to Cooperative Stochastic Differential Games,” Plenary Lecture presented at the *First Workshop of the China Chapter of the International Society of Dynamic Games*, Qingdao, 8-9 August 2004.

- “Subgame Consistent Solutions in Stochastic Games and Stochastic Differential Games,” (with L. A. Petrosyan) presented at the *Second World Congress of the Game Theory Society*, Marseille, France, 5-9 July 2004.
- “Recent Advances in Cooperative Differential Games,” invited presentation at *GERAD Summer School on Differential Games*, Montreal, 14-18, June 2004.
- “Subgame Consistent Dormant-firm Cartel,” presented at *Third International Workshop on Agent-based Approaches in Economics and Social Complex Systems*, Kyoto, Japan, 27-29 May 2004.
- “Endogenous Horizon Stochastic Randomly-furcating Differential Games,” presented at *Operations Research 2003 – Annual International Conference of the German Operations Research Society*, Heidelberg, 3-5, September 2003.
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- “Randomly Furcating Stochastic Differential Games: A Paradigm for Interactive Decision-making under Structure Uncertainty,” Plenary Lecture of the (ICM) *International Congress of Mathematicians Satellite Conference on Games and Applications*, Qingdao, 14-17, August 2002. (Other Plenary Speakers included Nobel Laureates John Nash, Reinhard Selten and Robert Aumann).
- “Infinite-time Stochastic Differential Games with Uncertain Number and Types of Players,” presented at the *10th International Symposium on Dynamic Games and Applications*, St Petersburg, 8-11 July 2002.
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- “Infinite Overlapping-Generations Stochastic Differential Games with Uncertain Number and Types of Players,” presented at the *5th International Conference on Optimization: Techniques and Applications*, Hong Kong, December, 2001.
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- “Equilibrium Asset Dynamics with Holding-term Switching,” presented at the *International Workshop on Decision & Control in Management Sciences in Honor of Professor Alain Haurie*, Montreal, October, 2000. (Invited)
- “Differential Games with Uncertain Terminal Payoffs,” presented at the *Seventh Viennese Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics*, Vienna, May 2000.
- “A Multi-dimensional Stochastic Process for Generalized Asset Price Dynamics,” presented at the *Seventh Viennese Workshop on Optimal Control, Dynamic Games and Nonlinear Dynamics*, Vienna, May 2000.

- “Shapley Values for Games with Uncertain Terminal Payoffs,” (with Leon Petrosjan), presented at *The First World Congress of the game Theory Society*, Bilbao, Spain, July, 2000.
- “Differential Games with Uncertain Payoffs”, (with Leon Petrosjan), presented at the *International Federation of Automatic Control Workshop on Control Applications of Optimization*, St Petersburg, July 2000.
- “Dynamic Games with Random Duration and Uncertain Payoffs” (with Leon Petrosyan), presented at the 5th International Petrozavodsk Conference on Probabilistic Methods in Discrete Mathematics, 5-10, June, 2000.
- “Concession Bargaining for Transboundary Pollution Reduction,” (with Steffen Jorgensen), presented at the 5th *International Conference of the Decision Sciences Institute*, Athens, July 1999. (Invited)
- “Strategic Concession”, (with Steffen Jorgensen), presented at the *Far Eastern Meeting of the Econometric Society*, Singapore, July 1999.
- “A Stochastic Differential Game of Institutional Investor Speculation,” presented at the *Eighth International Symposium on Dynamic Games and Applications*, Maastricht, The Netherlands, July 1998.
- “Institutional Investor Speculation: Theoretical Underpinnings and Applications in a Stochastic Differential Game Framework,” presented at the *Fourth International Conference on Optimization: Techniques and Applications*, Perth, Australia, July 1998.
- “A Strategic Concession Game,” (with Steffen Jorgensen), presented at the *Conference on Microeconomics and Game Theory*, Copenhagen, Denmark, June 1997.
- “Inter- and Intragenerational Resource Extraction and an Intergenerational Equity Rule,” (with Steffen Jorgensen), presented at *The Sixth Viennese Workshop on Optimal Control, Dynamic Games, Nonlinear Dynamics and Adaptive Systems*, Vienna, Austria, May, 1997.
- “A Class of Differential Games Which Admits a Feedback Solution with Linear Value Functions,” presented at *The Sixth Viennese Workshop on Optimal Control, Dynamic Games, Nonlinear Dynamics and Adaptive Systems*, Vienna, Austria, May, 1997.
- “Transboundary Pollution Management: A Concession Equilibrium,” (with Steffen Jorgensen), presented at *The Optimization Days*, Montreal, Canada, May 1997. (Invited)
- “Inter- and intra-generational Resource Extraction,” (with Steffen Jorgensen), presented at the *Seventh International Symposium on Dynamic Games and Applications*, Kanagawa, Japan, December, 1996.
- “Institutional Evolution and Emerging Markets: A Model of Stock Price Dynamics in China,” (with Jessie Poon), presented at the *Symposium on The Expansion Method*, Odense, Denmark, October, 1996.
- “Price Dynamics in Emerging Stock Markets,” presented at the *20th Symposium on Operations Research*, Passau, Germany, Sept., 1995.
- “A Theory of the Price Dynamics of China's Stock Markets,” presented at the *2nd Conference on the Development of China's Securities Markets*, Shanghai, China, Dec. 1994.
- “Derivation of Feedback Solutions for a General Class of Infinite Horizon Games Circumventing the Hamilton-Jacobi-Bellman Equations,” (with L.Y. Yeung), presented at the *International Conference on Operations Research*, Berlin, Germany Aug./Sept. 1994.
- “Common-Pool Resource Extraction: Dynamic Equilibria,” presented at the *International Conference on Operations Research*, Berlin, Germany Aug./Sept. 1994.
- “Common-Pool Resource Extraction: Feedback Nash Equilibrium Solution,” presented at the *Sixth International Symposium on differential Games and Applications*, St. Jovite, Quebec, Canada, July 1994. (Invited)
- “Price Dynamics in China's Emerging Stock Markets,” presented at the *Western Economic*

- Association International Pacific Rim Conference, Hong Kong, Jan. 1994.*
- “On Degenerate and Non-degenerate Correspondences of Differential Games with a Feedback Nash Equilibrium,” presented at the *32nd IEEE Conference on Decision and Control*, San Antonio, Texas, Dec., 1993.
- “Reconstruction of Public Finance in a Stochastic Differential Game Framework,” presented at the *18th Symposium on Operations Research*, Koeln, Germany, Sept. 1993.
- “The Shenzhen Stock Market: Current State and a Forecasting Model,” (with Michael Cheung and Lai-Yee Yeung), presented at the *14th International Symposium on Asian Studies*, Hong Kong, July, 1992.
- “Capital Accumulation Subject to Pollution Control: A Differential Game with a Feedback Nash Equilibrium,” (with Michael Cheung), presented at the *Fifth International Symposium on Differential Games and Applications*, Geneva, Switzerland, July, 1992.
- “A Stochastic Model of Foreign Exchange Dynamics and An Exact Option Pricing Formula,” (with Michael Cheung), presented at the *17th Symposium on Operations Research*, Hamburg, Germany, August, 1992.
- “On the Use of Geometric Brownian Motion in Financial Analysis,” (with Michael Cheung and Alfred Lai), presented at the *17th Symposium on Operations Research*, Hamburg, Germany, August, 1992.
- “Characterizing the Solution of an Average Cost Minimization Problem with returns to scale and a Decomposition Technique,” (with Michael Cheung), presented at the *Sixteenth Symposium on Operations Research*, Trier, Germany, September 1991.
- “Industrial Pollution Management in a Differential Game Framework,” presented at the *International Conference on Operations Research*, Vienna, August, 1990.
- “A Game Theoretical Approach to Public Investment Versus Private Investment,” presented at the *Fourth International Symposium on Differential Games and Applications*, Helsinki, August, 1990. (Invited)
- “Relation Wages and Inflation Revisited (with Hafiz Akhand), Presented at the *Eighteenth Atlantic Canadian Economic Association Conference*, Saint John, 1989.
- “Monetary Rules as Optimal Incentive Strategies,” (invited) presented at the *6th International Federation of Automatic Control Symposium on Dynamic Modelling and Control of National Economics*, Edinburgh, June, 1989.
- “Nonmalleable Capital and Efficient Allocation of Nonrenewable Resource,” (with John Rowse), presented at the *Joint National Meeting of the Institute of Management Science, Canadian Operational Research Society and ORSA*, Vancouver, May, 1989.
- “Knowledge Based Product Innovation: A Closed-Loop Feedback Nash Equilibrium Approach,” presented at the *Joint International Conference of the Association of European Operational Research Societies and the Institute of Management Sciences*, Paris, July, 1988.
- “Economic Exploitation of Non-renewable Resources in Random Environments - A Stochastic Hotelling Rule,” (with Charles Plourde), presented at the *Twentieth International Atlantic Economic Conference*, Washington, D.C., August, 1985.
- “Predator-Prey Models in Fishery Economics” (with Charles Plourde) (invited) presented at *Colloque d'économie des ressources naturelles*, Laval, Quebec, June 1984.
- “A Stochastic Model of Industrial Pollution Management,” (with Charles Plourde), presented at the *Eighteenth International Atlantic Economic Conference*, Montreal, October, 1984.

HIGHLIGHTS OF SCIENTIFIC CONTRIBUTIONS

(1) Pioneering Works in cooperative stochastic dynamic games

The work of Yeung and Petrosyan [D. Yeung and L. Petrosyan: Subgame Consistent Cooperative Solution in Stochastic Differential Games, *Journal of Optimization Theory and Applications* 2004] represents a breakthrough in the field of cooperative stochastic differential games. In particular, a generalized theorem for the derivation of analytically tractable “subgame consistent” solutions is presented. This contribution has made possible the rigorous study of dynamic stochastic cooperation.

This work led to the world’s first ever book devoted to cooperative stochastic differential games. [D. Yeung and L. Petrosyan: *Cooperative Stochastic Differential Games*, Springer 2006].

Praises for the book from two eminent dynamic game theorists stated that:

“ ‘*Cooperative Stochastic Differential Games*’ by Profs. Yeung and Petrosyan, two of the world’s leading experts and pioneers in the field of dynamic games, promises to be the first substantial and basic treatment of cooperative games in a stochastic setting. This extremely difficult topic is addressed in novel and rigorous ways, developing some of the authors’ earlier ideas in a comprehensive manner which will make this book the ‘bible’ of the field for years to come.” (George Leitmann, Professor of the Graduate School, University of California at Berkeley)

“This potentially classic text is written by the world’s best cooperative dynamic game theorist and its top cooperative stochastic differential game theorist. A general theorem (of the authors’) deriving analytically tractable ‘payoff distribution procedures’ for subgame consistent solutions represents a breakthrough in the rigorous study of cooperative stochastic differential games. The book’s advancements in dynamic stability – especially in subgame consistency – mark a continuation of the great tradition of A. Lyapunov, L. S. Pontryagin and V. Zubov.” (Vladimir Mazalov, Director of the Institute of Applied Mathematical Research, Russian Academy of Sciences).

This volume adds to the analysis of cooperative games by extending it to a stochastic dynamic framework and providing a generalized theorem for obtaining dynamically stable solutions.

(2) New paradigms in game theory –

- (i) Random horizon stochastic dynamic games and**
- (ii) Randomly-furcating stochastic differential games**

(i) Random Horizon Dynamic Games

This analysis extended discrete-time dynamic cooperative games to a random horizon framework. In many game situations, the terminal time of the game is not known with certainty. Examples of this kind of problems include uncertainty in the renewal of lease, the terms of offices of elected authorities/directorships, contract renewal and continuation of agreements subjected to periodic negotiations. A dynamic programming technique for solving inter-temporal problems with random horizon is developed to serve as the foundation of solving the game problem. To characterize a noncooperative equilibrium, a set of random duration discrete-time Hamilton-Jacobi-Bellman equations is derived.

D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Cooperative Solution of Dynamic

Games with Random Horizon. *Journal of Optimization Theory and Applications*, Vol. 150, pp78-97, 2011.

(ii) Randomly Furcating Stochastic Differential Games

Through the addition of stochastic elements via branching payoffs a fruitful approach to game modeling under uncertainty is offered. In particular, novel mathematical theorems yielding time-varying controls in infinite horizon problems are obtained. This work extended the classic contributions of Bellman and Isaacs (in the 1950s) and the stochastic analysis of Fleming and Rishel (in the 1970s) to stochastic differential games with randomly branching payoffs.

D. Yeung: Infinite Horizon Stochastic Differential Games with Branching Payoffs, *Journal of Optimization Theory and Applications* 2001.

D. Yeung: Randomly Furcating Stochastic Differential Games, in L. Petrosyan and D.W.K. Yeung (eds.): *ICM Millennium Lectures on Games*, Springer-Verlag, Berlin, 2003.

(3) Subgame consistent cooperative solutions established

The establishment of subgame consistent solutions for the following games:

(i) Subgame-consistent Solution for Random-horizon Cooperative Dynamic Games

D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Cooperative Solution of Dynamic Games with Random Horizon. *Journal of Optimization Theory and Applications*, Vol. 150, pp78-97, 2011.

(ii) Subgame-consistent Solution Cooperative Stochastic Dynamic Games under Uncertainty in Payoff Structures

D.W.K. Yeung and L. A. Petrosyan: Subgame-consistent Cooperative Solutions in Randomly Furcating Stochastic Dynamic Games. *Mathematical and Computer Modelling*, Vol 57, pp.976–991, 2013.

(iii) Subgame consistent discrete-time stochastic dynamic games

D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Solutions for Cooperative Stochastic Dynamic Games. *Journal of Optimization Theory and Applications*, Vol. 145, 2010, pp. 579-596.

(iv) Subgame-consistent Solution for Random-horizon Cooperative Stochastic Dynamic Games under Uncertainty in Payoff Structures

D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Cooperative Solutions For Randomly Furcating Stochastic Dynamic Games With Uncertain Horizon. *International Game Theory Review*, Vol. 16, pp.1440012.01-1440012.29, 2014.

(v) Subgame-consistent Solution for Dynamic Cooperation under Non-transferrable Payoffs

D.W.K. Yeung and L.A. Petrosyan: Subgame Consistent Cooperative Solution for NTU Dynamic Games via Variable Weights, forthcoming in *Automatica*, 2015.

(4) Novel Contributions in Control Theory and Number Theory

(i) Random Horizon Bellman's Equation

D.W.K. Yeung and L. A. Petrosyan: *Subgame Consistent Cooperative Solution of Dynamic Games with Random Horizon. Journal of Optimization Theory and Applications, Vol. 150, pp78-97, 2011.*

(ii) Random Horizon Stochastic Bellman Equation under Uncertain Payoff Structures

D.W.K. Yeung and L.A. Petrosyan: *Subgame Consistent Cooperative Solutions For Randomly Furcating Stochastic Dynamic Games With Uncertain Horizon. International Game Theory Review, Vol. 16, 2014, pp.1440012.01-1440012.29.*

(iii) The Number of Embedded Coalitions

D.W.K. Yeung: *Recursive Sequences Identifying the Number of Embedded Coalitions, International Game Theory Review, Vol. 10(1), 2008, pp.129-136.*

(iv) The Number of Embedded Coalitions where the Position of the Player Counts

D.W.K. Yeung, E.L.H. Ku and P.M. Yeung: *A Recursive Sequence for the Number of Positioned Partitions, International Journal of Algebra, Vol. 2, 2008, pp.181-185.*

(5) Dynamic Consumer Theory

Inter-temporal Roy's Identities and Stochastic Dynamic Slutsky Equations

The development of the classic Slutsky's analysis on consumer theory to a stochastic dynamic framework provides novel results and a new venue of research with much higher realism and relevance for analysis in consumer theory. It extends the conventional static optimal consumption theories to a dynamic framework with the possibility of accommodating various combinations of three major types of uncertainty in consumption behavior – stochastic income, random life-span and uncertain preferences. These extensions inject some crucial, realistic and intrinsic characteristics of the consumer decision into the analysis of consumer theory. A series of inter-temporal Roy's identities and stochastic dynamic Slutsky equations are formulated. These include --- *Inter-temporal Roy's Identity, Inter-temporal Roy's Identity under Stochastic Income, Inter-temporal Roy's Identity under Stochastic Life-span, Inter-temporal Roy's Identity under Stochastic Income and Life-span, Inter-temporal Roy's Identity under Stochastic Preferences, Inter-temporal Roy's Identity under Stochastic Life-span and Preferences, Inter-temporal Roy's Identity under Stochastic Income and Preferences, Inter-temporal Roy's Identity under Stochastic Income, Life-span and Preferences, Dynamic Slutsky Equation, Dynamic Slutsky Equation under Stochastic Income, Dynamic Slutsky Equation under Stochastic Life-span, Dynamic Slutsky Equation under Stochastic Income and Life-span, Dynamic Slutsky Equation under Stochastic Preferences, Dynamic Slutsky Equation under Stochastic Life-span and Preferences, Dynamic Slutsky Equation under Stochastic Income and Preferences, and Dynamic Slutsky Equation under Stochastic Income, Life-span and Preferences.*

This work lead to the world's first ever book devoted on Dynamic Consumer Theory. [D.W.K. Yeung: *Dynamic Consumer Theory – A Premier Treatise with Stochastic Dynamic Slutsky Equations*, Nova Science Publishers, New York, 2015]. Acclaim for the book from two eminent applied mathematicians stated that:

“This book is an innovative addition to the study of consumer theory. It expands the conventional static consumer theory into a stochastic dynamic analysis – a move that makes the study of optimal consumption decision much more realistic.” (Leon Petrosyan, St Petersburg State University, Dean of Faculty of Applied Mathematics)

“The stochastic dynamic Slutsky equations in this book formed a new milestone in consumer theory after the classic work of Slutsky. it is highly apt to call the latter ‘Slutsky-Yeung equations’”. (Vladimir Mazalov, Director of Karelian Institute of Applied mathematical Research, Russian Academy of Sciences)

D.W.K. Yeung: Dynamic Consumer Theory – A Premier Treatise with Stochastic Dynamic Slutsky Equations, Nova Science Publishers, New York, 2015.

D.W.K. Yeung: Optimal Consumption under an Uncertain Inter-temporal Budget: Stochastic Dynamic Slutsky Equations, Vestnik St Petersburg University: Mathematics (Springer), Vol. 10, 2013, pp.121-141.

D.W.K. Yeung: Optimal Consumption under Uncertainties: Random Horizon Stochastic Dynamic Roy’s Identity and Slutsky Equation, Applied Mathematics, Vol.5, 2014, pp.263-284.

D.W.K. Yeung: Random Horizon Stochastic dynamic Slutsky Equation under Preference Uncertainty, Applied Mathematical Sciences, Vol. 8, 2014, pp.7311-7340.

(6) A Novel Game Theory Paradigm -- Cooperative Dynamic Games with Durable Controls

The “Petrosyan-Yeung Cooperative Dynamic Games with Durable Controls” presents a novel game theory framework in which durable controls of different lag durations affecting both the players’ payoffs and the state dynamics exist. The definitive contributions of this new game theory paradigm include:

(1) Theoretically, cooperative dynamic games with durable controls provided a novel and realistic game paradigm. Subgame consistent cooperative solutions are given to ensure that no participants will choose to opt out the scheme.

(2) Mathematically, a novel dynamic optimization theorem involving durable controls is developed. The derived dynamic optimization technique predominates the classic dynamic programming by providing a more comprehensive solution mechanism.

(3) Application-wise, given that durable controls would be involved in most real-life situations, the game paradigm yields a wide scope of applications. These applications include many practical scenarios, such as: public goods provision under technology diffusion, long-lasting pollution-generating effects in global environmental management, advertising race with lagged effects, oligopoly competition with investments requiring several stages to be converted into productive physical capital, dynamic games involving payment by instalments.

L.A. Petrosyan and D.W.K. Yeung: Cooperative Dynamic Games with Durable Controls: Theory and Application, forthcoming in Dynamic Games and Applications, 2020. Doi:10.1007/s13235-019-00336-w.

(7) World’s First Texts

(i) The world’s first text on cooperative stochastic differential games:

D. Yeung and L. Petrosyan: Cooperative Stochastic Differential Games, Springer 2006.

(ii) The world’s first text on subgame consistent economic optimization:

D.W.K. Yeung and L. A. Petrosyan: Subgame Consistent Economic Optimization: An Advanced Cooperative Dynamic Game Analysis, Boston: Birkhäuser 2012.

(iii) The world's first text on dynamic consumer theory:

D.W.K. Yeung: Dynamic Consumer Theory – A Premier Treatise with Stochastic Dynamic Slutsky Equations, Nova Science Publishers, New York, 2015.

LIST OF MATHEMATICAL FORMULAE DEVELOPED

Part A: Control Theory

Theorem A1: Random-horizon Bellman Equation

Theorem A2: Random-horizon Stochastic Bellman Equation under Uncertain Future Payoff Structures

Theorem A3: Dynamic Programming with Control Lags

Part B: Game Theory

Theorem B1: Random-horizon (Hamilton-Jacobi-Bellman) HJB Equations

Theorem B2: Random-horizon Stochastic HJB Equations under Uncertain Future Payoff Structures

Theorem B3: Nontransferable Individual Payoff in Stochastic Dynamic Cooperation

Theorem B4: Nontransferable Individual Payoff in Continuous-time Stochastic Dynamic Cooperation

Theorem B5: Subgame-consistent Payoff Distribution Procedure (PDP) for Discrete-time Stochastic Dynamic Cooperation

Theorem B6: Subgame-consistent PDP for Continuous-time Stochastic Dynamic Cooperation

Theorem B7: Subgame-consistent PDP for Random-horizon Dynamic Cooperation

Theorem B8: Subgame-consistent PDP for Discrete-time Stochastic Dynamic Cooperation under Uncertainty in Payoff Structures

Theorem B9: Subgame-consistent PDP for Continuous-time Stochastic Dynamic Cooperation under Uncertainty in Payoff Structures

Theorem B10: Subgame-consistent PDP for Random-horizon Stochastic Dynamic Cooperation under Uncertainty in Payoff Structures

Theorem B11: Subgame-consistent Solution Mechanism for Dynamic Cooperation under Non-transferrable (NTU) Payoffs

Theorem B12: Subgame-consistent Solution Mechanism for Stochastic Dynamic Cooperation under Non-transferrable (NTU) Payoffs

Theorem B13: Hamilton-Jacobi-Bellman Equations for Dynamic Games with Durable Controls

Theorem B14: Subgame-consistent PDP for Cooperative Dynamic Games with Durable Controls

Part C: Identities and Equations in Economics

C1. Inter-temporal Roy's Identity

C2. Inter-temporal Roy's Identity under Stochastic Income

C3. Inter-temporal Roy's Identity under Stochastic Life-span

C4. Inter-temporal Roy's Identity under Stochastic Income and Life-span

C5. Inter-temporal Roy's Identity under Stochastic Preferences

C6. Inter-temporal Roy's Identity under Stochastic Life-span and Preferences

C7. Inter-temporal Roy's Identity under Stochastic Income and Preferences

C8. Inter-temporal Roy's Identity under Stochastic Income, Life-span and Preferences

C9. Dynamic Slutsky Equation

- C10. Dynamic Slutsky Equation under Stochastic Income
- C11. Dynamic Slutsky Equation under Stochastic Life-span
- C12. Dynamic Slutsky Equation under Stochastic Income and Life-span
- C13. Dynamic Slutsky Equation under Stochastic Preferences
- C14. Dynamic Slutsky Equation under Stochastic Life-span and Preferences
- C15. Dynamic Slutsky Equation under Stochastic Income and Preferences
- C16. Dynamic Slutsky Equation under Stochastic Income, Life-span and Preferences

Part D. Biological Population Density Function

- D1. Stationary Density Function of Generalized Stochastic Food-chain of the Lotka-Volterra-Yeung Type

Part E. Number Theory

- E1. The Number of Embedded Coalitions
- E2. The Number of Embedded Coalitions where the position of the individual player counts

DETAILS OF THE MATHEMATICAL FORMULAE CAN BE FOUND IN THE
ATTACHED ADDENDUM in the Web Address

[https://ba.hksyu.edu/ba/pdf used/addendum_david_yeung.pdf](https://ba.hksyu.edu/ba/pdf_used/addendum_david_yeung.pdf)