

Scientific curriculum vitae

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Education and Scientific Titles

- Master studies in mathematics 1990-1995, Faculty of Mathematics, Information Science and Mechanics Warsaw University, ended with MSc in mathematics (with distinction) specialization – applied mathematics – 1995.
- Master studied in economics 1993-1997, Faculty of Economics Warsaw University, ended with master degree in economics, specialization – mathematical economics – 1997.
- PhD studies in mathematics 1995-1999, Faculty of Mathematics, Information Science and Mechanics Warsaw University, ended with PhD in mathematics (defended with distinction) – 1999.
PhD thesis: *Optimality and equilibria in games with nonatomic space of players*.
- **Habilitation** in Economic Sciences at Warsaw School of Economics, Collegium of Economic Analyses, 2013 "Application of Large Dynamic Games in Modelling of Markets and Resource Extraction"

Work

2021 – now Associate Professor at Faculty of Mathematics, Information Science and Mechanics Warsaw University;

2000 – 2012; 2013 – 2021 Assistant Professor at Faculty of Mathematics, Information Science and Mechanics Warsaw University;

Institute of Applied Mathematics and Mechanics

and Chair of Mathematical Methods in Finance, Economics and Insurance

ul. S. Banacha 2, 02-097 Warszawa, Poland

2012 – 2013 Senior Lecturer at Faculty of Mathematics, Information Science and Mechanics Warsaw University;

Institute of Applied Mathematics and Mechanics

and Chair of Mathematical Methods in Finance, Economics and Insurance

ul. S. Banacha 2, 02-097 Warszawa, Poland

1999 – 2000 Assistant at Faculty of Mathematics, Information Science and Mechanics Warsaw University;

Institute of Applied Mathematics and Mechanics

and Chair of Mathematical Methods in Finance, Economics and Insurance

ul. S. Banacha 2, 02-097 Warszawa, Poland

Publications

1. A. Wieczorek, A. Wiszniewska (Wiszniewska-Matyszkiewicz), 1999, *A Game-Theoretic Model of Social Adaptation in an Infinite Population*, *Applicationes Mathematicae* **25**, 417-430.
2. A. Wiszniewska-Matyszkiewicz, 2000, *Dynamic Game with Continuum of Players Modelling "the Tragedy of the Commons"*, in Petrosjan, Mazalov (eds.) *Game Theory and Applications* **5**, 162-187.
3. A. Wiszniewska-Matyszkiewicz, 2000, *Existence of Pure Equilibria in Games with Nonatomic Space of Players*, *Topological Methods in Nonlinear Analysis* **16**, 339-349.
4. A. Wiszniewska-Matyszkiewicz, 2001, *Eksploracja ekosystemów a teoria gier I: Gry deterministyczne niekooperacyjne* (Exploitation of Ecosystems and Game Theory I: Deterministic Noncooperative Games), *Matematyka Stosowana/Mathematica Applicanda* **2** (43), 11-31.
5. A. Wiszniewska-Matyszkiewicz, 2001, *"The Tragedy of the Commons" Modelled by Large Games*, *Annals of the International Society of Dynamic Games* **6** (E. Altman, O. Pourtallier eds.), 323-345.
6. A. Wiszniewska-Matyszkiewicz, 2002, *Static and Dynamic Equilibria in Games with Continuum of Players*, *Positivity* **6**, 433-453.
7. A. Wiszniewska-Matyszkiewicz, 2002, *Discrete Time Dynamic Games with Continuum of Players I: Decomposable Games*, *International Game Theory Review* **4**, 331-342.
8. A. Wiszniewska-Matyszkiewicz, 2003, *Discrete Time Dynamic Games with Continuum of Players II: Semi-Decomposable Games*. *International Game Theory Review* **5**, 27-40.
9. A. Wiszniewska-Matyszkiewicz, 2003, *Eksploracja ekosystemów a teoria gier II: kooperacja* (Exploitation of Ecosystems and Game Theory II: Cooperation), *Matematyka Stosowana/Mathematica Applicanda* **4**, 56-77.
10. A. Wiszniewska-Matyszkiewicz, 2003, *Static and Dynamic Equilibria in Stochastic Games with Continuum of Players*, *Control and Cybernetics* **32**, 103-126.
11. A. Wiszniewska-Matyszkiewicz, 2005, *A Dynamic Game with Continuum of Players and its Counterpart with Finitely Many Players*, *Annals of the International Society of Dynamic Games* **7**, (A. S. Nowak, K. Szajowski), Birkhäuser, 455-469.
12. A. Wiszniewska-Matyszkiewicz, 2005, *O nieścisłości procedury ustalania cen na Giełdzie Papierów Wartościowych w Warszawie* (On inconsistencies of the procedure of price formation of Warsaw Stock Exchange), *Rynek Terminowy* **29**, 69-75.
13. M. Malawski, A. Wieczorek, A. Wiszniewska-Matyszkiewicz, 2006, *Game Theory and Mathematical Economics*, Banach Center Publications **71**.
14. A. Wiszniewska-Matyszkiewicz, 2006, *Modelowanie giełdy papierów wartościowych za pomocą gier z continuum graczy* (Modelling Stock Exchange by Games with Continuum of Players), *Opere et Studio pro Oeconomia* **2** no. 2(4), 5-37.
15. A. Wiszniewska-Matyszkiewicz, 2008, *Common Resources, Optimality and Taxes in Dynamic Games with Increasing Number of Players*, *Journal of Mathematical Analysis and Applications* **337**, 840-841.
16. A. Wiszniewska-Matyszkiewicz, 2008, *Dynamic Oligopoly as a Mixed Large Game – Toy Market*, in S.K. Neogy, R.B. Bapat, A.K. Das, T. Parthasarathy (eds.), *Mathematical Programming and Game Theory for Decision Making*, 369-390.
17. A. Wiszniewska-Matyszkiewicz, 2008, *Stock Market as a Game with Continuum of Players*, *Control and Cybernetics*, **37** No.3, 617-647.
18. A. Wiszniewska-Matyszkiewicz, 2010, *Games with distorted information and self-verification of beliefs with application to financial markets*, *Quantitative Methods in Economics* **11**(1), 254-275.

19. A. Wiszniewska-Matyszekiel, 2011, *On the terminal condition for the Bellman equation for dynamic optimization with an infinite horizon*, Applied Mathematics Letters **24**, 943-949.
20. A. Wiszniewska-Matyszekiel, 2013, *On new concepts of equilibria in games with incomplete information*, Proceedings of 2013 International Conference on Computational and Mathematical Methods in Science and Engineering, J.P. Hamilton, J. Vigo-Aguiar (ed.), CMMSE, ISBN 978-84-616-2723-3.
21. A. Wiszniewska-Matyszekiel, 2014, *Open and closed loop Nash equilibria in games with continuum of players*, Journal of Optimization Theory and Applications **160**, 280-301.
22. A. Wiszniewska-Matyszekiel, 2014 *When beliefs about future create future – exploitation of a common ecosystem from a new perspective*, Strategic Behaviour and Environment **4**, 237-261.
23. A. Wiszniewska-Matyszekiel, M. Bodnar, F. Mirota, 2015, *Dynamic oligopoly with sticky prices: off-steady state analysis*, Dynamic Games and Applications **5**, 568–598, DOI 10.1007/s13235-014-0125-z.
24. A. Wiszniewska-Matyszekiel, 2016, *Belief distorted Nash equilibria: introduction of a new kind of equilibrium in dynamic games with distorted information*, Annals of Operations Research, **243**, 147–177, DOI 10.1007/s10479-015-1920-7.
25. A. Wiszniewska-Matyszekiel, 2017, *Redefinition of Belief Distorted Nash Equilibria for the Environment of Dynamic Games with Probabilistic Beliefs*, JOTA **172**, 984-1007, DOI 10.1007/s10957-016-1034-7.
26. O. Górniewicz and A. Wiszniewska-Matyszekiel, 2018, *Verification and refinement of a two species fish wars model*, Fisheries Research, **203**, 22–34, DOI 10.1016/j.fishres.2017.10.021.
27. R. Singh and A. Wiszniewska-Matyszekiel, 2018, *Linear quadratic game of exploitation of common renewable resources with inherent constraints*, Topological Methods in Nonlinear Analysis **51**, 23–54, DOI 10.12775/TMNA.2017.057.
28. R. Singh and A. Wiszniewska-Matyszekiel, 2019, *Discontinuous Nash Equilibria in a Two Stage Linear-Quadratic Dynamic Game with Linear Constraints*, IEEE Transactions on Automatic Control, **62**, 3074–3079, DOI 10.1109/TAC.2018.2882160.
29. A. Wiszniewska-Matyszekiel, P. Kaniewski, R. Matyszekiel, M. Kustra, 2019, *Application of Dynamic Games with Incomplete Information to Optimization of Performance of Military Radio Networks (Jamming Avoidance)*, SPIE Proceedings **11055**, DOI 10.1117/12.2524466.
30. R. Singh, A. D. Dwivedi, G. Srivastava, A. Wiszniewska-Matyszekiel, X. Cheng, 2020, *A game theoretic analysis of resource mining in blockchain*, Cluster Computing **23**, 2035–2046, DOI 10.1007/s10586-020-03046-w.
31. R. Singh and A. Wiszniewska-Matyszekiel, 2020, *A class of linear quadratic dynamic optimization problems with state dependent constraints*, Mathematical Methods of Operations Research, **91**, 325–355, DOI 10.1007/s00186-019-00688-4.
32. A. Wiszniewska-Matyszekiel, R. Singh, 2020, *When Inaccuracies in Value Functions Do Not Propagate on Optima and Equilibria*, Mathematics **8**, 1109, DOI 10.3390/math8071109.
33. A. Wiszniewska-Matyszekiel, R. Singh, 2021, *Necessity of the terminal condition in the infinite horizon dynamic optimization problems with unbounded payoff*, Automatica **123**, 109332, DOI /10.1016/j.automatica.2020.109332.
34. K. Kańska, A. Wiszniewska-Matyszekiel, 2022, *Dynamic Stackelberg duopoly with sticky prices and a myopic follower*, Operational Research **22**, 4221–4252, DOI 10.1007/s12351-021-00665-y.
35. D. Machowska, A. Nowakowski, A. Wiszniewska-Matyszekiel, 2022, *Closed-loop Nash equilibrium for a partial differential game with application to competitive personalized advertising*, Automatica **140**, 110220, DOI 10.1016/j.automatica.2022.110220.
36. G. Fruchter, A. Wiszniewska-Matyszekiel, 2023, *How Responsive should a Firm be to Customers' Expectations?*, European Journal of Operational Research, forthcoming.

Participation in research projects

The Tragedy of the Commons in Dynamic Context – Modelling, Methodology and Prevention, NCN 2019/33/B/HS4/02953, 2020-2023, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw, principal investigator.

Non-obvious aspects of modelling common resources and markets using dynamic games, NCN 2016/21/B/HS4/00695, 2017-2020, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw, principal investigator.

Dynamic games modelling "the tragedy of the commons", NCN 2016/21/N/HS4/00258, 2017-2019, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw, advisor/researcher in charge of PhD student grant.

New concepts of equilibrium in dynamic games with incomplete information and their economic applications, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw, NCN DEC-2013/11/B/HS4/00857, 2014-2016, principal investigator.

Computations based on Perception, NCN grant 2011/01/D/ST6/06981, 2011-2016, investigator, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw;

Comparative genomics of plant transposons, MNiSW grant N N301 013436, 2009-2012, investigator, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw;

Modelling stock exchange using games with continuum of players, KBN grant 1 H02B 010 28, 2005-2007, principal investigator, Faculty of Mathematics, Information Science and Mechanics, University of Warsaw;

Models of economics and social phenomena with many participants, KBN grant 1 H02B 016 29, 2005-2008, main investigator, Institute of Computer Science PAS.

Scientific fields of interest

Games with continuum of players, large games, dynamic games, differential games, environmental economics, extraction of common renewable resources, dynamic optimization, dynamic games with continuum of players, new concepts of equilibria in games, game theoretic modelling of economic, social and ecological problems, game theoretic modelling of financial markets.

PhD students under supervision with already defended theses

Rajani Sigh, PhD in Mathematics, University of Warsaw 2019, Faculty of Mathematics, Informatics and Mechanics; Laureate of the Professor Andrzej Malawski Award for young scientists 2020 for outstanding contributions in the development of mathematical economics

Oskar Górniewicz, PhD in Mathematics, Warsaw University of Technology 2020.

Participation with presentation in some conferences and seminars

1996, Erice (Italy), Workshop on Minimax Theory and Applications;

1998 Maastricht (Netherlands), VIII Symposium on Dynamic Games and Applications;

1999 Rodos (Greece), symposium of Society for the Advancement in Economic Theory: Modern Trends in Economics and Labour Market Effects;

2000 Adelaide (Australia), IX Symposium on Dynamic Games and Applications;

2001 Saint Petersburg (Russia), 2nd Conference on Logic, Game theory and Social Choice;

2002 Hilvarenbeek (Netherlands), Conference on Advances in Game theory and Related Topics joint with Game Practice III;

2002 Saint Petersburg (Russia) , X Symposium on Dynamic Games and Applications;

2004 Warsaw (Poland), Game Theory and Mathematical Economics;

2005 Maastricht (Netherlands) Spain-Italy-Netherlands Meeting on Game Theory;

2005 Warszawa (Poland) I Warsztaty z Ekonomii Matematycznej;

2006 Foggia (Italy) Spain-Italy-Netherlands Meeting on Game Theory;

2006 Sophie-Antipolis (France) Symposium of International Society of Dynamic Games;

2006 Saragossa (Spain) Game Theory and Practice;

2007 Montreal (Canada) 7th meeting on Game Theory and Practice dedicated to energy, environment and natural resources;

2007 New Delhi (India) International Symposium on Mathematical Programming for Decision Making: Theory and Applications, *invited speaker*;

2008 Warsaw (Poland) Games 2008; Annual Workshop of the ESF Networking Programme on Games for Design and Verification;

2009 Zakopane-Kościelisko (Poland) Konferencja Zastosowań Matematyki;

2009 Warsaw (Poland) Hurwicz Workshop on Mechanism Design Theory;

2010 Palermo (Italy) Spain-Italy-Netherlands Meeting on Game Theory;

2011 Sankt Petersburg (Russia) Game Theory and Management;

2011 Warsaw (Poland) Hurwicz Workshop on Mechanism Design Theory;

2011 Toruń (Poland) Letnia Szkoła Matematyki, Analiza Nieliniowa i Teoria Gier, invited lectures;

2011 Montreal (Canada) 3rd Workshop on Dynamic Games in Management Science; *invited lecture* on seminar of GERAD;

2012 Byšice, (Czech Republic), Fifteenth International Symposium on Dynamic Games and Applications;

2012 Warsaw (Poland), Current Trends in Macroeconomic and Finance Research;

2012 Warsaw (Poland), IV Hurwicz Workshop on Mechanism Design Theory;

2013 New Delhi (India), International Symposium on Applied Optimization and Game-Theoretic Models, *invited speaker*;

2013 Almeria (Spain) International Conference on computational and Mathematical Methods in Science and Engineering;

2014 Amsterdam (The Netherlands), Sixteenth International Symposium on Dynamic Games and Applications;

2014 Smolenice (Slovakia), 18th international conference on mathematical methods in economy and industry;

2014 Warsaw (Poland), Economic and Computational Aspects of Game Theory and Social Choice;

2014 Warsaw (Poland), IV Hurwicz Workshop on Mechanism Design Theory;

2014 Montreal (Canada), 5th Workshop on Dynamic Games in Management Science;

2015 Vienna (Austria), 13th Viennese Workshop on Optimal Control and Dynamic Games;

2015 Heidelberg (Germany), DEMANDYN'15, Hengstberger Symposium on (Non-)Optimal human decision making in dynamic environments;

2015 Będlewo (Poland), Między teorią a zastosowaniami. Matematyka w działaniu, *invited speaker* and session organizer;

2015 Tokio (Japan), East Asian Game Theory Conference 2015;

2015 Tokio (Japan), Waseda Workshop on Game Theory and Related Topics;

2015 Warsaw (Poland), 6 Forum Matematyków Polskich;

2016 Warsaw (Poland), WHAT'S THE GAME?;

2016 Poznań (Poland), EURO 2016;

2016 Urbino (Italy), Seventeenth International Symposium on Dynamic Games and Applications;

2016 Maastricht (The Netherlands), Congress of the Game Theory Society;

2016 Zakopane-Kościelisko (Poland), Konferencja Zastosowań Matematyki;

2017 New Delhi (India), 2017 Symposium on Mathematical Programming and Game Theory, *invited speaker*;

2017 Montreal (Canada), Ninth Workshop on Dynamic Games in Management Science;

2017 St. Peterburg (Russia), The Eleventh International Conference on Game Theory and Management;

2017 Singapore (Singapore), East Asian Conference on Game Theory;

2017 Erice (Italy), 6th Workshop on Stochastic Methods in Game Theory;

2017 Warsaw (Poland), 11th ISDG (International Society of Dynamic Games) Workshop;

2017 Warsaw (Poland), Dynamic games and information in games;

2018 Vienna (Austria), Games, Dynamics and Optimization GDO2018;

2018 Paris (France), Paris Symposium on Games 2018, *invited speaker*;

2018 Tel Aviv (Israel), Beliefs and Economic Behaviour;

2018 Vienna (Austria), 14th Viennese Conference on Optimal Control and Dynamic Games, *invited speaker*;

2018 Grenoble (France), 18th International Symposium on Dynamic Games and Applications;

2018 Cracov (Poland), GAMENET Conference, *invited speaker*;

2018 Cracov (Poland), Konferencja Nauki społeczne - matematyczne czy matematyzowalne?

2018 Rabat (Marocco), Tenth Workshop on Dynamic Games in Management Science;
 2018 Warsaw (Poland), VII Hurwicz Workshop on Mechanism Design Theory;
 2019 Beijing (China), International Conference on Mathematical Optimization, *sponsored participant*;
 2019 Shangrao (China), The 12th International Conference on Numerical Optimization and Numerical
 Linear Algebra, *sponsored participant*;
 2019 Montreal (Canada), World Conference on Natural Resource Modelling (WCNRM2019);
 2019 St. Petersburg (Russia), International Meeting on Game Theory (ISDG12-GTM2019);
 2019 Jadwisin (Poland), Konferencja Zastosowań Matematyki w Biologii i Medycynie;
 2020 Valparaiso (Chile), World Conference on Natural Resource Modelling (WCNRM2020);
 2020 Santiago (Chile), Modelling, Optimization and Viability for Epidemic Control (MOVECO)
 (satellite conference of WCNRM2020);
 2020 Coyhaique (Chile), 1st Congress of Applied Mathematics in Aysen Region: Challenges in Pollution,
 Environment and Education (satellite conference of WCNRM2020);
 2020 Tel Aviv (Israel), Workshop Dynamics and Information;
 2021 New Delhi (India), Online International Symposium on Computational Operations Research,
invited speaker;
 2022 Porto (Portugal), 19th International Symposium on Dynamic Games and Applications;
 2022 Vienna (Austria), 15th Viennese Conference on Optimal Control and Dynamic Games;
 2022 Warszawa (Poland), European Workshop on Economic Theory;
 2022 Helsinki (Finland), EURO 2022;
 2022 Tel Aviv (Israel), Workshop Bounded Rationality: Theory and Experiments;
 2023 New Delhi (India), International Symposium on Computational Operations Research and Algo-
 rithmic Game Theory, *invited speaker*;
 2023 Lisbon (Portugal), Lisbon Game Theory Meetings;
 2023 Naples (Italy), ISDG Workshop;
 2023 Catania (Italy), European Meeting on Game Theory, SING 18;
 2023 Paris (France), SAET 2023 22nd annual SAET conference;
 2023 Łódź (Poland), Spanish-Polish Mathematical Meeting;
 2023 Zakopane-Kościelisko (Poland), Konferencja Zastosowań Matematyki;

Organization of conferences

Chair of the Organizing Committee and member of the Programme Committee – 2017 Warsaw (Poland),
 11th ISDG (International Society of Dynamic Games) Workshop;
 Member of the Programme Committee – St. Petersburg (Russia), 2021, 15th International Conference
 on Game Theory and Management (GTM2021);
 Member of the Programme Committee – St. Petersburg (Russia), 2020, 14th International Conference
 on Game Theory and Management (GTM2020);
 Member of the Programme Committee – St. Petersburg (Russia), 2019, International Meeting on
 Game Theory (ISDG12-GTM2019);
 Member of the Programme Committee – Cracov (Poland), 2018, Konferencja Nauki społeczne -
 matematyczne czy matematyzowalne?
 Member of the Organizing Committee – Warsaw (Poland), 2004, Game Theory and Mathematical
 Economics;
 The Organizer – Warsaw (Poland), 2017, Dynamic games and information in games;

Organizational work in international scientific projects

COST Action GAMENET - Managing Committee:
 substitute country representative 2017-2020;
 MC Member and country representative 2020-now.
 ISDG International Society of Dynamic Games - Managing Committee

Prizes

MSc in mathematics with distinction.

PhD in mathematics with distinction.

Prize of the Rector of Warsaw University for in 2000.

Scholarship of Rector of Warsaw University for scientific achievements in 2000-2001.

Reward of the Rector of University of Warsaw in 2020.

Hobbies

Painting, drawing, historical fencing, authoring fiction, poetry and songs.