

PUBLICATIONS OF

**Zaifu Yang**

**2018**

Professor, a Chair in Economics  
Department of Economics and Related Studies  
The University of York  
Heslington, York YO10 5DD, UK  
phone: +44-1904-433762 (o)  
E-mail: zaifu.yang@york.ac.uk

I have been working in the fields of economics and applied mathematics, in particular, such as economic theory, mechanism/market design, game theory, fixed point theory and optimisation theory. I published in a number of peer-reviewed academic journals such as *Econometrica*, *Games and Economic Behaviour*, *International Journal of Game Theory*, *Journal of Economic Theory*, *Journal of Political Economy*; *Journal of Combinatorial Theory*, *Journal of Fixed Point Theory and Applications*, *Mathematical Programming*, *Mathematics of Operations Research*, *SIAM Journal on Control and Optimisation*, *SIAM Journal on Optimisation*, etc. My current research projects include dynamic auction design with multiple items, matching theory, random decentralised market processes, mechanism/market design, addiction, growth theory, and financial networks. Below is a list of my publications.

**Journal Articles**

1. “On a spontaneous decentralized market process,” **Journal of Mechanism and Institution Design**, Vol. 2 (2018), 1-37, joint with Satoru Fujishige.
2. “Random decentralized market processes for stable job matchings with competitive salaries,” **Journal of Economic Theory**, Vol. 165 (2016), 25-36, joint with Bo Chen and Satoru Fujishige.
3. “Time bounds for iterative auctions: a unified approach by discrete convex analysis,” **Discrete Optimization**, Vol. 19 (2016), 36-62, joint with Kazuo Murota and Akiyoshi Shioura.
4. “Equilibrium, auction, and generalized gross substitutes and complements,” **Journal of the Operations Research Society of Japan**, Vol. 58, No. 4, (2015), 410-435, joint with Akiyoshi Shioura.
5. “An efficient multi-item dynamic auction with budget constrained bidders,” **International Journal of Game Theory**, Vol. 44, No. 3, (2015), 769-784, joint with Dolf Talman.
6. “How to efficiently allocate houses under price controls?” **Economics Letters**, Vol. 130, (2015), 97-99, joint with Tommy Andersson and Dongmo Zhang.

7. "An efficient and incentive compatible dynamic auction for multiple complements," **Journal of Political Economy**, Vol. 122, No. 2, (2014), 422-488, joint with Ning Sun.
8. "A competitive partnership formation process," **Games and Economic Behavior**, Vol. 86, (2014), 165-177, joint with Tommy Andersson, Jens Gudmundsson, and Dolf Talman.
9. "On revealed preference and indivisibilities," **Modern Economy**, Vol.3, No. 6, (2012), 752-758, joint with Satoru Fujishige.
10. "On a parameterized system of nonlinear equations with economic applications," **Journal of Optimization Theory and Applications**, Vol. 154, (2012), 644-671, joint with Dolf Talman.
11. "The model of partnership formation," **Journal of Mathematical Economics**, Vol. 47, (2011), 206-212, joint with Dolf Talman.
12. "Solving Discrete Systems of Nonlinear Equations," **European Journal of Operational Research**, Vol. 214, No. 3, (2011), 493-500, joint with Gerard van der Laan and Dolf Talman.
13. "Constrainedly fair job assignments under minimum wages," **Games and Economic Behaviors**, Vol. 68, No. 2, (2010), 428-442, joint with Tommy Andersson, and Lars-gunnar Svensson.
14. "The average tree solution for cooperative games with communication structure," **Games and Economic Behaviors**, Vol. 68, No. 2, (2010), 626-633, joint with Jean-Jacques Herings, Gerard van der Laan, and Dolf Talman.
15. "Combinatorial integer labeling theorems on finite sets with applications," **Journal of Optimization Theory and Applications**, Vol. 144, (2010), 391-407, joint with Gerard van der Laan, and Dolf Talman.
16. "Discrete fixed point analysis and its applications," **Journal of Fixed Point Theory and Applications** (a special issue in honour of Professor Steve Smale), Vol. 6, (2009), 351-371.
17. "A study on the demand and response correspondences in the presence of indivisibilities," **Journal of Fixed Point Theory and Applications** (a special issue in honour of Professor Steve Smale), Vol. 6, (2009), 333-349, joint with Takuya Iimura.
18. "A double-track adjustment process for discrete markets with substitutes and complements," **Econometrica**, Vol. 77, No. 3, (2009), 933-952, joint with Ning Sun.
19. "A strategy proof and privacy preserving fair allocation mechanism," **Japanese Economic Review**, Vol.60, No.2, (2009), 143-151, joint with Ning Sun.
20. "A constructive proof of Ky Fan's coincidence theorem," **Mathematical Programming**, Vol. 118, No. 2, (2009), 317-325, joint with Dolf Talman.
21. "A discrete multivariate mean value theorem with applications," **European Journal of Operational Research**, Vol. 192, No. 2, (2009), 374-381, joint with Dolf Talman.

22. "A dynamic auction for differentiated items under price rigidities," **Economics Letters**, Vol. 99, No. 2, (2008), 278-281, joint with Dolf Talman.
23. "On the solutions of discrete nonlinear complementarity and related problems," **Mathematics of Operations Research**, Vol. 33, No. 4, (2008), 976-990.
24. "Competitive outcomes and endogenous coalition formation in an n-person game," **Journal of Mathematical Economics**, Vol. 44, No. 7, (2008), 853-860, joint with Ning Sun, and Walter Trockel.
25. "A fixed point theorem for discontinuous functions," **Operations Research Letters**, Vol. 36, (2008), 89-93, joint with Jean-Jacques Herings, Gerard van der Laan, and Dolf Talman.
26. "On a class of discrete convolution concave functions and their applications," **Yokohama Business Review**, Vol. 29, No. 3, (2008), 113-120, joint with Ning Sun.
27. "Computing integral solutions of complementarity problems," **Discrete Optimization**, Vol. 4, (2007), 315-321, joint with Gerard van der Laan and Dolf Talman.
28. "A vector labeling method for solving discrete zero point and complementarity problems," **SIAM Journal on Optimization**, Vol. 18, (2007), 290-308, joint with Gerard van der Laan and Dolf Talman.
29. "Equilibria and indivisibilities: gross substitutes and complements," **Econometrica**, Vol. 74, No. 5, September (2006), 1385-1402, joint with Ning Sun.
30. "Solving discrete zero point problems," **Mathematical Programming**, Vol. 108, No. 1, (2006), 127-134, joint with Gerard van der Laan, and Dolf Talman.
31. "Efficient strategy proof fair allocation algorithms," **Journal of the Operations Research Society of Japan**, Vol. 49, No. 2, (2006), 144-150, joint with Akiyoshi Shioura and Ning Sun.
32. "Refinements of stationary points with applications to noncooperative games and economics," **SIAM Journal on Optimization**, Vol. 16, No. 3, (2006), 854-870, joint with Gerard van der Laan, and Dolf Talman.
33. "Existence and uniqueness of fixed point for direction preserving mappings and their extensions," *Yokohama Business Review*, Vol. 26, No. 2, (2005), 329-339.
34. "A combinatorial topological theorem and its application in welfare economics," **Yokohama Business Review**, Vol. 25, No. 4, (2005), 329-339.
35. "A general existence theorem of zero points," **Journal of Optimization Theory and Applications**, Vol. 120, No. 2, (2004), 375-394, joint with Jean-Jacques Herings, Gleb Koshevoy, and Dolf Talman.
36. "A general strategy proof fair allocation mechanism," **Economics Letters**, Vol. 81, No.1, (2003), 73-79, joint with Ning Sun.

37. "A note on Kelso and Crawford's gross substitutes condition," **Mathematics of Operations Research**, Vol. 28, No. 3, (2003), 463-469, joint with Satoru Fujishige.
38. "Existence of equilibrium and zero-beta valuation formula in the capital asset pricing model with heterogeneous beliefs," **Annals of Economics and Finance**, Vol.4, (2003), 215-235, joint with Ning Sun.
39. "A competitive market model for indivisible commodities," **Economics Letters**, Vol.78, (2003), 41-47.
40. "An exposition on fair division and elicitation of honest preferences in job assignment," **Yokohama Business Review**, Vol. 25, No. 1, (2003), 329-339, joint with Ning Sun.
41. "Existence and welfare properties of equilibrium in an exchange economy with multiple divisible, indivisible commodities and linear production technologies," **Journal of Economic Theory**, Vol. 103, No. 2, (2002), 411-428, joint with Gerard van der Laan, and Dolf Talman.
42. "The quadratic assignment market," **Yokohama Business Review**, Vol. 26, No. 2, (2002), 329-339, joint with Ning Sun.
43. "Existence of an equilibrium in a general competitive exchange economy with indivisible goods and money," **Annals of Economics and Finance**, Vol.3, (2002), 135-147, joint with Satoru Fujishige.
44. "Existence of balanced simplices on polytopes," **Journal of Combinatorial Theory (Series A)**, Vol. 96, No.2, (2001), 288-302, joint with Gerard van der Laan and Dolf Talman.
45. "An intersection theorem on an unbounded set and its application to the fair allocation problem," **Journal of Optimization Theory and Applications**, Vol. 110, No.2, (2001), 429-443.
46. "Variational inequality problems with a continuum of solutions: existence and computation," **SIAM Journal on Control and Optimization**, Vol. 39, No.6, (2001). 1852-1873, joint with Jean-Jacques Herings, and Dolf Talman.
47. "Equilibrium in an exchange economy with multiple indivisible commodities and money," **Journal of Mathematical Economics**, Vol.33, (2000), 353-365.
48. "A multi-permutation-based intersection theorem and its applications," **Journal of Optimization Theory and Applications**, Vol.104, No.2, (2000), 477-487.
49. "Intersection theorems on polytopes," **Mathematical Programming**, 84, (1999), 25-38, joint with Gerard van der Laan, and Dolf Talman.
50. "An introduction to equilibrium analysis in portfolio theory," **Yokohama Business Review**, Vol. XX, No. 3, (1999), 99-116.
51. "Cooperative games in permutational structure," **Economic Theory**, 11, (1998), 427 - 442, joint with Gerard van der Laan, and Dolf Talman.

52. "Existence and approximation of robust solutions of variational inequality problems over polytopes," **SIAM Journal on Control and Optimization**, Vol. 37, No.2, (1998), 333-352, joint with Gerard van der Laan, and Dolf Talman.
53. "A lexicographic algebraic theorem and its applications," **Linear Algebra and its Applications**, 279, (1998), 75 - 91, joint with Satoru Fujishige.
54. "Computing sensible Nash equilibria," **Yokohama Business Review**, Vol. XIX, No. 3, (1998), 1-15, joint with Dolf Talman.
55. "Existence of an equilibrium in a competitive economy with indivisibilities and money," **Journal of Mathematical Economics**, 28, (1997), 101-109, joint with Gerard van der Laan, and Dolf Talman.
56. "A simplicial algorithm for computing robust stationary points of a continuous function on the unit simplex," **SIAM Journal on Control and Optimization**, Vol. 34, No. 2, (1996), 491 - 506.
57. "The computation of a continuum of constrained Equilibria," **Mathematics of Operations Research**, Vol. 21, No. 3, (1996), 675-696, joint with Jean-Jacques Herings, and Dolf Talman.
58. "A new variable dimension simplicial algorithm for computing economic equilibria on  $S^n \times R_+^m$ ," **Journal of Optimization Theory and Applications**, Vol. 87, No. 3, (1995), 679-701, joint with Dolf Talman, and Yoshitsugu Yamamoto.
59. "A simplicial homotopy algorithm for computing zero points on polytopes," **Acta Mathematicae Applicatae Sinica**, Vol. 10C No. 2, (1994), 86-193, joint with Kai-zhou Chen and Zhen-li Liang.
60. "The  $(n + 1)2^m$ -ray algorithm: a new simplicial algorithm for the variational inequality problem on  $R_+^m \times S^n$ ," **Annals of Operations Research**, 44, (1993), 93-113, joint with Yoshitsugu Yamamoto.

## Books

1. *Herbert Scarf's Contributions to Economics, Game Theory and Operations Research*  
 Vol.1, Economics and Game Theory (ISBN 9781137024343);  
 Vol.2, Operations research and management (ISBN 9781137024374);  
 Vol.3, Production in Indivisibilities (ISBN 9781137024404);  
 Vol.4, Applied Equilibrium Analysis (ISBN 9781137024435);  
 2013, ed, Palgrave Macmillan, London.
2. *Computing Equilibria and Fixed Points*, 1999, Kluwer Academic Publishers, Boston, 341pp, ISBN 0 7923 8395 8.
3. *Simplicial Fixed Point Algorithms and Applications*, 1996, Thesis Publishers, Amsterdam, 249pp, ISBN 90 5668 008 0.

4. *Introduction to Fixed Point Theory and Methods* (in Chinese), 1990, Xidian University Press, Xian, 401pp, ISBN 7 5606 0149 9, joint with Kaizhou Chen, and Chuangyin Dang.