

YAO CHENG

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EDUCATION

PhD Economics, University of York, UK, expected January 2018
MSc Economics (with Distinction), University of York, UK, 2013
BSc Finance (with Distinction), Hefei University of Technology, China, 2011

FIELDS OF SPECIALISATION

Primary: Microeconomics, Mechanism and Market Design, Game Theory
Secondary: Market Microstructure, Health Economics, Industrial Organisation

PHD DISSERTATION

Three Essays on the Design of Kidney Exchange and Doctor-Hospital Matching Mechanisms
Thesis Advisory Panel: Pro. Zaifu Yang, Pro. Karl Claxton, Pro. Luigi Sicilian

JOB MARKET PAPER

“Efficient Kidney Exchange with Dichotomous Preferences”

This paper considers a general kidney exchange model with compatible or incompatible patient-donor pairs, single donors, and patients on the waiting list. Efficient exchange procedures are proposed with dichotomous preferences in which only one-way, two-way, three, or four-way chains or cycles of exchange are used. We demonstrate that two or three-way cycles and chains of exchange can substantially increase the number of feasible transplants, and four-way cycles and chains suffice to capture all potential gains of exchange. We derive a tight upper bound of the possible number of feasible kidney transplants in each case of exchange and provide substantial simulation results. Our results are not only theoretically interesting but also have important policy implications.

This is a joint paper with Professor Zaifu Yang.

OTHER RESEARCH PAPERS

“A General Kidney Exchange Mechanism” Yao Cheng and Zaifu Yang
“A Stable Hospital-Doctor Matching Mechanism under Distributional and Hierarchical Constraints”

TEACHING EXPERIENCE

The Excellent Certificate of Teaching Scholar for Macroeconomics I in 2015-2016
The Excellent Certificate of Teaching Scholar for Mathematics II in 2015-2016

Teaching Scholar, Economics I (undergraduate), University of York, 2016-2017
Teaching Scholar, Mathematics II (undergraduate), University of York, 2016-2017
Teaching Scholar, Macroeconomics I (undergraduate), University of York, 2015-2016
Teaching Scholar, Mathematics II (undergraduate), University of York, 2015-2016
Teaching Scholar, Macroeconomics I (undergraduate), University of York, 2014-2015

HONORS

Department Full Scholarship for PhD in Economics from 2013-2017
Top 1 Graduate Student in MSc Economics of University of York in 2012
Distinction Student in Anhui Province, China in 2011
National Scholarship of China in 2008

LANGUAGES and IT Skills

Mandarin Chinese (native), English (fluent)
Confident user of Latex, Mathematica, MatLab, Microsoft Office

REFEREES

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Professor Karl Claxton
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Professor Paul Schweinzer
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OTHER RESEARCH PAPERS

“A General Kidney Exchange Mechanism” Yao Cheng and Zaifu Yang

We propose a general model of kidney exchange. The model consists of finitely many patient-donor pairs, patients on the waiting list, and single donors who are altruistic living and cadaver donors. The kidney of each paired donor is a private property of the corresponding paired patient, while kidneys from single donors are publicly owned. We introduce an appropriate modification of the classic solution of core to this new model. An efficient mechanism is developed to find a strict core matching. The matching is Pareto efficient and shows how kidneys should be exchanged between patients and donors. Our mechanism is a significant generalization of the celebrated top trading cycle method from Shapley and Scarf (1974).

“A Stable Hospital-Doctor Matching Mechanism under Distributional and Hierarchical Constraints”

Many countries suffer from shortage of health professionals in rural areas. Distributional constraints are often applied for subsets of hospitals to restrict the number of doctors. A general model of a doctor-hospital market is built with different types of distributional constraints. Moreover, motivated by the hierarchical structure of hospitals in China, the model takes the hierarchical constraint into account. A doctor-proposing mechanism is proposed to allocate doctors efficiently under the distributional and hierarchical constraints. We demonstrate that the mechanism is efficient, stable and strategy-proof for doctors.