

# Impact Case Study

## Economics Engineering – a behavioural and experimental approach

### Introduction



The field of experimental economics has been growing since Vernon Smith won the 2002 Nobel Prize for Economics for developing a methodology to allow researchers to test economic theory in lab conditions. His methodology used controlled, scientific experiments to test the choices that people make under specific sets of circumstances. Participants can role-play as, for example, buyers and sellers, with rules of exchange and incentives.

This hands-on exploration of the ways human behaviour can respond to economic policy also makes use of behavioural economics, which studies how not-always-predictable humans make decisions based on psychological, emotional, cultural, social and cognitive factors.

The combination of the experimental methodology and behavioural approach to economics has opened new ways of exploring solutions to economics-related problems as varied as which auction models create the highest revenues and whether emissions trading really allows effective pollution control, to voting models that best encourage participation and how to alleviate global poverty.

### Background



Before joining RMIT as the Economics head of department in the School of Economics, Finance and Marketing, Professor Jingjing Zhang built an international reputation as an 'economics engineer'. Her work focusses on how to re-think the various systems and elements that contribute to particular economic and social problems.

"The unifying theme of my research is to apply experimental methods to design better institutions for auctions, markets, voting and committee decisions, rent-seeking contests, resource allocations, and collective decision-making," says Professor Zhang.

Her novel concept of a 'bidding' approach to more effective and meaningful voting has drawn considerable attention, with its focus on allowing voters who feel more strongly on a topic to purchase extra votes, with an inbuilt cash rebate mechanism that distributes from those that gain from the outcome to those that lose, to balance the results. The approach has been tested in 'experimental economics' laboratory conditions.

The research project was featured in Freakonomics blog on "an alternative to democracy?", and the recent episode on 2ser 107.3 about "voting systems and the tyranny of the minority". It has attracted significant interest from an international audience, including an invitation from the Oxford Research Encyclopedia of Economics and Finance to write a peer-reviewed article on improving voting systems.

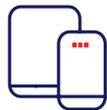
- "One Man, One Bid", published at the leading international economics journal *Games and Economic Behaviour*, by Jingjing Zhang and Jacob K. Goeree:
  - <https://www.sciencedirect.com/science/article/abs/pii/S089982561630118X>
- "Can we make our voting system better", UTS,
  - <https://www.uts.edu.au/about/uts-business-school/news/can-we-make-our-voting-system-better>
- "Improving on Simple Majority Voting by Alternative Voting Mechanisms", *Oxford Research Encyclopedia of Economics and Finance*, published with Jingjing's international collaborator
  - <https://oxfordre.com/economics/display/10.1093/acrefore/9780190625979.001.0001/acrefore-9780190625979-e-473>

"You need to think like an economic engineer – outside the box, inside the box, or around the box – to be able to design institutions that work well in practice, not just on paper," Professor Zhang



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## The Research



### Wicked Defaults

Professor Zhang secured a 3-year Australian Research Council (ARC) Discovery Project grant to fund research into “Wicked Defaults: How to Overcome the Dark Side of Choice Architecture” – an exploration of the impact and ethics of non-binding ‘nudge’ offers on decision-making. Defaults are used to nudge individuals into socially beneficial actions, such as increasing their retirement savings and joining organ donor lists. However, in the hands of firms, defaults can also be used – together with product complexity – to exploit consumers by encouraging choices that help the firm but disadvantage consumers. Reducing the impact of such ‘wicked defaults’ will increase social welfare dramatically and to the tune of potentially billions of dollars.

In a series of lab experiments with human subjects, the project investigates how defaults and the degree of complexity might be used to exploit consumers in environments like private insurance, where consumers are prone to making systematic errors. Building on these experiments, Professor Zhang will study experimentally whether exploitation can be reduced via competition and reputation-building systems based on consumer feedback.

### Spectrum Auction Design

Professor Zhang has also used lab experiments to offer policy advice to the Australian Communication and Media Authority (ACMA) on spectrum auction design. Her latest work on the competing merits of sealed-bid versus ascending spectrum auctions, explored through the recent auction of the 900 MHz spectrum in Australia, is due to be published in the No. 1 international journal in the field of experimental economics in 2023. This research is also funded by an ARC Discovery Project grant.

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## Project Outcomes



“Defaults and Cognitive Effort”, was published by The Journal of Economic Behaviour and Organization 212 (2023), a paper co-authored by Professor Zhang, Andreas Ortmann, Dmitry Ryvkin, and Tom Wilkening.

Further publications are under review.

“Sealed-bid Versus Ascending Spectrum Auctions” was published in Experimental Economics in 2023

- <https://link.springer.com/article/10.1007/s10683-023-09805-x>

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## Overview of the Impact



RMIT’s growing proficiency in behavioural and experimental economics has resulted in the multi-disciplinary Behavioural Business Lab (BBL), which brings together researchers from the College of Business and Law with expertise in market design, consumer behaviour and design, behavioural finance, social preferences and risk, uncertainty and information.

In recent years, the BBL group has had several successful industry engagements and consultancies solving industry problems related to various aspects of behaviour in economics/business contexts.

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## Funding Support and/or Institutional Support

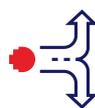


*Wicked Defaults: How to Overcome the Dark Side of Choice Architecture* is being supported through a grant from the Australian Research Council.

*One Man, One Bid* was supported by the Swiss National Science Foundation, the European Research Council and the Australian Research Council.

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## Next Steps



Professor Zhang’s next project is a focus on contest design. The results will have applications in designing the most efficient policies and incentives for emissions trading that will result in reduced pollution.

RMIT hosted the 16<sup>th</sup> Annual Australia New Zealand Workshop on Experimental Economics (ANZWEE) in September 2023 during the RMIT Behavioural Business and Policy Week. The workshop has 70+ researchers from all over the world interested in experimental and behavioural economics to present their latest research and receive constructive feedback, as well as network with other researchers.

- <https://www.rmit.edu.au/events/2023/september/behavioural-business-policy-week>

Following the ANZWEE, Professor Zhang has also organised a workshop on “behavioural market design” funded by her ARC grant on wicked defaults, and a mini-course on using experiments in research taught by Professor Zhang and the Director of the Behavioural Business Lab Professor Dmitry Ryvkin.

