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## Kaustav Das

The University of Exeter Business School

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### Personal:

Citizenship: Indian, **Indefinite Leave to Remain** in the **United Kingdom**

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### Current Academic Appointment:

*Lecturer* in Economics, **University of Exeter**, United Kingdom, September 2013-

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### Other Academic Associations:

*External Associate*, **Centre for Crime, Justice and Policing, University of Birmingham**, July 2018

*Associate Fellow*, **Center for Research in Economic Theory and Applications (CRETA), University of Warwick**, October 2018

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### Education:

**Ph.D. in Economics** (2008 – 2013), **The Pennsylvania State University**, University Park, PA, USA.

**Dissertation Title:** *Essays in Strategic Experimentation and Bargaining.*

**Committee:** Professor. *Kalyan Chatterjee (chair)*, Professor *Vijay Krishna*, Professor *Edward Green*.

**Primary Fields:** Microeconomic Theory, Industrial Organisation;

**Secondary Fields:** Macroeconomics and International Trade.

**M.S. in Quantitative Economics** (2006–2008), **Indian Statistical Institute**, Kolkata, India. Graduated *First class with Distinction*; Rank: *First* (awarded Gold medal)

**Bachelor of Science with Honors in Economics** (2003–2006), **Presidency College**, (University of Calcutta), Kolkata, India. Graduated *First class*.

### Research Interests:

Microeconomic Theory with applications in Industrial Organisation, Multiplayer Bargaining with and without Asymmetric Information, Dynamic Experimentation and Learning (Theory and Experiments) and Asset Pricing.

### Publications:

***Bilateral trading with incomplete information and price convergence in a small market: The continuous support case*** [with Kalyan Chatterjee] **Economics Letters**, Vol 163 (2018), Pg: 118-120.

***Bilateral trading and incomplete information: Price convergence in a small market*** [with Kalyan Chatterjee] **Games and Economic Behavior**, Vol 106 (2017), Pg: 89-113.

***Decentralised bilateral trading, competition for bargaining partners and the “law of one price”*** [with Kalyan Chatterjee] **International Journal of Game Theory**, Vol 44 (2015), Issue 4, Pg: 949-991.

### Papers currently under revision:

***Strategic Experimentation with Asymmetric Players*** [with Nicolas Klein and Katharina Schmid] *2<sup>nd</sup> round revisions (minor expository)* requested from **Economic Theory**

**Abstract:** We examine a two-player game with two-armed exponential bandits a la Keller, Rady and Cripps (2005) where players operate different technologies for exploring the risky option. We characterise the set of Markov perfect equilibria, and show that there always exists an equilibrium in which the player with the inferior technology uses a cutoff strategy. All Markov perfect equilibria imply the same *amount* of experimentation but differ with respect to the expected speed of the resolution of uncertainty. If and only if the degree of asymmetry between the players is high enough, there exists a Markov perfect equilibrium in which both players use cutoff strategies. Whenever this equilibrium exists, it welfare dominates all other equilibria. This contrasts with the case of symmetric players, where there never exists a Markov perfect equilibrium in cutoff strategies. We also show that the equilibrium where only the player with the inferior technology uses a cutoff strategy is not welfare dominated.

### Working papers:

***Too Much or Too Little? The Effect of Private Learning in a Model of Strategic Experimentation with Competition*** (submitted)

**Abstract:** This paper analyses a two-player game with two-armed exponential bandits. A player experiences publicly observable arrivals by pulling the safe arm. On the other hand, a player operating a good risky arm experiences publicly observable arrivals at an intensity greater than that in the safe arm. In addition, a player pulling the risky arm can also privately learn about its quality. With direct payoff externalities and private learning, we construct a symmetric Markov equilibrium where, depending on the initial optimism about the quality of the risky arm, we can have either *too much* or *too little* experimentation.

***Competition, Learning and Duplicative Search in a Patent Race*** [with Nicolas Klein] (To be submitted to Games and Economic Behavior)

**Abstract:** We analyse a model of two firms locked in a winner-takes-all competition. Firms have to choose in continuous time between a traditional and an innovative method of pursuing the decisive breakthrough. They share a common belief about the likelihood of the innovative method being good. We show that there is a unique Markov perfect equilibrium, which is efficient if and only if firms are symmetric in their ability of leveraging a good innovative method. This inefficiency is mitigated if early completion of the project is promoted.

***Bandits Under Competition with Negatively Correlated Arms***

**Abstract:** This paper analyses a two-player game with two-armed exponential bandits, in which there are two risky arms and *only one* of them is good. Players operate different technologies in exploring each risky option, and they share a common prior about the quality of the risky options. Only the first breakthrough along any of the risky arms yields a positive payoff. Thus, the setup is similar to that of a buried treasure problem. There are two sites and one and only one can have the treasure. Two firms are competing to discover the treasure and they have common prior about the correct site. Each of the firms have site specific superior technological know-how. The first inventor appropriates all the positive gains. There is a *multiplicity* of equilibria and in any equilibrium, there is inefficient duplicative search.

**Work in Process:**

***Bandits with Asymmetric Players in the Lab*** [with Nicolas Klein, University of Montreal and Johannes Hoelzemann, University of Toronto]

***R&D Innovation and Cannibalisation*** [with Arina Nikandrova, Birkbeck College, University of London]

***Strategic Investigation of Crime and Re-election to Office*** [with Siddhartha Bandyopadhyay, University of Birmingham and Kalyan Chatterjee, Penn State University]

***Intermediate stages in R&D and private learning*** [with Kalyan Chatterjee, Penn State University]

***Bargaining with endogenous recall of offers*** [with Kalyan Chatterjee, Penn State University and C.C. Lee, Chinese University of Hong Kong]

***Social Learning and Endogenous timing of trade in a model of financial trading*** [with Hamid Sabourian, University of Cambridge]

**Research Funding and Impact Activities:**

**E.S.R.C Impact Acceleration Grant (£2800): *Building up partnership with the West Midlands Police and Skills for Justice through the Centre for Crime, Justice and Policing, University of Birmingham.*** The aim of this project is to use mathematical models in decision making of the police, in particular, to consider using an algorithmic approach in their decision making.

**Contact Management System Overhaul for Devon-Cornwall Police:** Engaged in discussions with the academic team at the University of Exeter who are working with the Devon-Cornwall Police to improve their contact management strategy.

**Funding from the Firms, Markets and Value research cluster, University of Exeter** (£1800), 2016 to invite co-author to visit Exeter.

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**Teaching Interests:**

Microeconomic Theory, Industrial Organisation, Game Theory, Macroeconomics, International Trade.

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**Teaching Experience:**

Industrial Organisation, final year undergraduate module (5 terms, average score of 4.5/5).

Advanced Microeconomics for Ph.D. (MRes) students (2 terms, score: 4.5/5 and 4.9/5).

Microeconomics 1, compulsory module for all first-year economics undergraduate students (3 terms, average score of 4/5).

Master's degree dissertation supervision: On an average, I supervise 4-5 dissertations yearly, most of which are empirical macroeconomics projects.

**Teaching Qualification:**

Post Graduate Certificate in Academic Practice. Currently a *Fellow* of the Higher Education Academy.

**Refereeing Experience:**

Econometrica; Journal of Economic Behavior and Organisation; Scandinavian Journal of Economics; International Journal of Game Theory.

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**Editorial Board:**

Associate Editor of *Studies in Microeconomics*: Sage Publishers 2018

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**Doctoral Supervision:**

Bing Chao (2017), *co-supervised with Prof. David Kelsey*.

Lorenz Hartmann (ongoing), *co-supervised with Prof. David Kelsey.*

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**Current Administrative Role:**

Economics Undergraduate Programme Director, University of Exeter, 2016-

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**Language and Skills:**

English, Bengali (native).

MATLAB, Stata, C, C++, LaTeX.

**Scholarships and Awards:**

*Above and Beyond Award*, by the University of Exeter for *Excellent Teaching and Programme Leadership*, 2018.

*Above and Beyond Award*, by the University of Exeter for *Ambition in research*, 2016.

*Rosenberg Centennial Scholarship*, Department of Economics, Penn State University, Spring 2012.

*Mrs. M.R Iyer Gold Medal*, awarded by the Indian Statistical Institute for **outstanding performance** in the M.S. in Quantitative Economics programme, 2009.

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**Academic Visits:**

*Visitor*, Cambridge-INET, Faculty of Economics, University of Cambridge, UK (January 2014-February 2014)

Delhi School of Economics (April 2014)

University of Bonn, Germany (May 2014)

Presidency University, India (August, 2014)

Penn State University, (August 2015)

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**Invited Talks, Presentations and Workshop Invitation:**

**2018:**

RES Annual conference; Conference on Mechanism and Institutional Design, Durham University (Invited Presentation); York Game Theory Symposium (Invited Presentation)

**2017:**

York-RES Game Theory Conference, Society for Advancement in Economic Theory conference, Faro, Lancaster Game Theory Conference, Indian Statistical Institute annual conference, University of Calcutta (invited).

**2016:**

University of East Anglia (invited); University of Birmingham (invited); GW4 Game Theory Conference, Bristol; Birkbeck College, University of London (invited); Indian Institute of Management, Bangalore (invited); 5<sup>th</sup> World Congress of the Game Theory Society, Maastricht; Econometric Society European Meeting, Geneva; Invited to the European Summer Symposium of Economic Theory as a general attendee, held at The Study Centre, Gerzensee, Switzerland. This is a yearly workshop organised by the Center for European Policy Research and Swiss National Bank

**2015:**

Royal Economic Society Annual Conference, Manchester; Penn State University (invited); World Congress of the Econometric Society, Montreal; 11th Annual Conference on Growth and Development, Indian Statistical Institute, New Delhi.

**2014:**

University of Cambridge, UK (invited); University of Bonn, Germany (invited); Indian Statistical Institute, New Delhi (invited); North American Summer Meeting of the Econometric Society, Minneapolis; Indian Statistical Institute, Kolkata (invited); European Econometric Society Meeting, Toulouse; University of Durham (invited); Winter School, Delhi School of Economics, New Delhi; 10th Annual Conference on Growth and Development, Indian Statistical Institute, New Delhi.

**2013:**

University of Bristol (invited); University of Durham (invited); Indian School of Business, Hyderabad (invited); Winter School, Delhi School of Economics, New Delhi; 10th Annual Conference on Growth and Development, Indian Statistical Institute, New Delhi

**2012:** 4<sup>th</sup> World Congress of the Game Theory Society, Istanbul; 11<sup>th</sup> Meeting of Society for Social Choice and Welfare, New Delhi; Indian Statistical Institute, Kolkata (invited); Indian Institute of Management, Kolkata (invited) Cornell-Penn State Macro Workshop, Ithaca.

**References:**

1. Professor David Kelsey,  
Professor of Economic Theory,  
University of Exeter, UK  
Email: [d.kelsey@exeter.ac.uk](mailto:d.kelsey@exeter.ac.uk)
2. Professor Siddhartha Bandyopadhyay  
Professor of Economics,  
University of Birmingham, UK

Email: [s.bandyopadhyay@bham.ac.uk](mailto:s.bandyopadhyay@bham.ac.uk)

3. Professor Kalyan Chatterjee  
Distinguished Professor of Economics and Management Science,  
Penn State University, United States  
Email: [kchatterjee@psu.edu](mailto:kchatterjee@psu.edu)
4. Professor Sven Rady  
Professor of Economics,  
University of Bonn, Germany  
Email: [rady@hcm.uni-bonn.de](mailto:rady@hcm.uni-bonn.de)