

# ABHISHEK GAURAV

## PRINCETON UNIVERSITY

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## EDUCATION

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**Princeton University**, PhD. Economics | M.Phil Economics 2016-22

· *J. Wallace Ely Fellowship 2017, University fellowship in the humanities and social sciences*

**Indian Statistical Institute, Delhi**, M.Sc. Quantitative Economics 2014-16

· 92%, Rank 1, Gold Medalist

**Indian Institute of Technology, Kanpur**, B.Tech in Computer Science & Engineering 2004-08

· GPA 9.8/10

## RESEARCH FIELDS

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Econometrics - causality and forecasting, Finance, Applied microeconomics

## REFERENCES

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Michal Kolesár	Professor of Economics	Princeton University	<a href="mailto:mkolesar@princeton.edu">mkolesar@princeton.edu</a>
Ulrich K. Müller	Professor of Economics	Princeton University	<a href="mailto:umueller@princeton.edu">umueller@princeton.edu</a>
Bo Honoré	Professor of Economics	Princeton University	<a href="mailto:honore@princeton.edu">honore@princeton.edu</a>
Taranbir Singh	Partner & Portfolio Manager	Tower Research Capital	<a href="mailto:tsingh@tower-research.com">tsingh@tower-research.com</a>
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## PROFESSIONAL EXPERIENCE

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**CAFRAL, Reserve Bank of India, Doctoral Intern** 2018 (Summer)

· Presented proposal for priority sector lending project to deputy governor of RBI and got approval for the same

**Tower Research Capital LLC, New York, Algorithmic Trader** 2010-14

· **Team Leader** of 3 algorithmic traders for high frequency trading in FOREX markets. We generated on an average twenty thousand dollars profit everyday for three consecutive years with very high sharpe ratio (15 annually).

· **Team Leader** of 4 quantitative researchers for finding alpha. Designed and implemented 10,000+ lines codebase in Python to find patterns in market data. The program was able to handle 500,000 rows of data with 1000 variables and apply machine learning methods like stepwise regression, decision tree techniques, principal component analysis, and genetic algorithm.

· Member of the core technical team which designed, implemented, and maintained the trading program. The codebase was of 50,000+ lines written in C++.

**Tower Research Capital India Pvt Ltd, Quantitative Analyst** 2008-10

· Profitably traded spot currencies like Canadian dollar and Australian dollar on Reuters exchange.

## PUBLICATIONS

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1. Abhishek Gaurav, Jérémy Picot, and Arunava Sen. "The Decomposition of Strategy-Proof Random Social Choice Functions on Dichotomous Domains". Mathematical Social Sciences 90 (Nov. 2017), pp. 28-34.

2. Abhishek Gaurav, Ankit Sharma, Vikas Gelara, and Rajat Moona. "Using Personal Electronic Device for Authentication-based Service Access", IEEE International Conference on Communications (ICC2008), Beijing (May 2008), pp. 19-23.
3. Holger Flier, Abhishek Gaurav, Marc Nunkesser. "Combinational Aspects of Move Up Crews", Operations Research Proceedings (2008), pp. 569-574.

## WORKING PAPERS

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1. *"Bias aware confidence interval for density estimation"* Job Market Paper (2020-21)  
The square root of histogram is asymptotically homoskedastic. Leveraging this property, I propose a novel non-parametric estimator for density and its confidence interval. Due to homoskedasticity, the estimator has attractive uniform properties. In simulations, I show various examples of probability density functions where earlier estimates either under-cover by huge margin - they target 95% coverage (5% size) but end up having only 50% coverage; or have longer confidence interval - by a factor of 25%. As an empirical application, using roll calls in the US House from 1953-2021, I estimate amount of co-ordination among House members for passing bills. When a bill is floated in the House, the probability that it will narrowly pass is 32% higher than it will narrowly fail. This co-ordination is significant with p-value 0.01. The current state of the art tests fail to capture this. The proposed estimator is useful for detecting manipulation in regression discontinuity design and for estimating bunching.
2. *"Markups as a Hedge for Input Price Uncertainty: Evidence from Sweden"* 2019-21  
with Sneha Agrawal and Melinda Suveg  
In this paper, we study a new channel to explain firms' price setting behavior. We propose that uncertainty about factor prices has a positive effect on markups. We show theoretically that firms with higher shares of inputs with volatile prices set higher markups. We use the Bartik shift-share approach to empirically test whether firms which use more oil relative to other inputs set higher markups when oil prices are more volatile. Our estimates imply that a one standard deviation increase in oil price volatility leads to a 0.38 percent increase in the markup of firms with average oil exposure.

## SEMINAR PRESENTATIONS

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The Gregory C. Chow Econometric Research Program, Princeton University	2021
Econometrics Student Seminar, Princeton University (Organizer and Presenter)	2019-21
Tower Research Capital LLC, New York	2018
Summer School of Econometric Society, Kyoto	2016

## TEACHING EXPERIENCE

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### Preceptor, Princeton University

Economics of the Internet, for Prof. Swati Bhatt	Fall 2021
Economics of Food and Agriculture, for Prof. Silvia Weyerbrock	Spring 2021
Econometrics: A Mathematical Approach, for Prof. Mikkel Plagborg-Moller	Fall 2020
Financial Accounting, for Prof. Donal Byard	Spring 2020
Organization and Design of Markets, for Prof. Jakub Kastl	Fall 2019
Statistics and Data Analysis for Economics, for Prof. Ulrich Mueller	Spring 2019
The Economics of Uncertainty, for Prof. Sofia Moroni	Fall 2018

## ACADEMIC ACHIEVEMENTS

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Princeton University fellowship in the humanities and social sciences	2016-21
J. Wallace Ely Fellowship	2017

Gold medalist, master of Science in Quantitative Economics, ISI Delhi	2014-16
Selected for the prestigious Indo-French Centre for Applied Mathematics summer camp, IISc Bangalore	2015
Rank 1, Delhi School of Economics Entrance Examination	2014
Academic excellence awards, IIT Kanpur	2005 and 2006
All India Rank 1, IIT-Joint Entrance Examination Screening (out of over 200,000 students)	2004

## TECHNICAL SKILLS

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<b>Programming Languages</b>	C, C++, Java, Javascript, Perl, Python, R, bash, and awk
<b>Softwares</b>	Stata, Matlab, Latex, MySql, CVS, and Git

## PERSONAL INFORMATION

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<b>Citizenship</b>	India
<b>Languages</b>	English(native), Hindi (native), Spanish (beginner)