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Education

2018 – Present	University of Pennsylvania, Ph.D. in Economics
2015 – 2017	New Economic School, M.A. in Economics (<i>cum laude</i>)
2011 – 2015	NRU Higher School of Economics, B.Sc. in Mathematics

Research Fields

Applied Microeconomics, Industrial Organization, Computational Economics

Job Market Paper

Illegal Drug Use and Government Policy: Evidence from a Darknet Marketplace *with Priyanka Goonetilleke, Anastasia Karpova, and Peter Meylakh*

This paper develops a structural model of demand for illegal drug varieties and studies how consumers substitute between different types of drugs in response to government policies. We use a unique longitudinal dataset on prices, quantities, and individual decisions that we obtained by scraping a darknet marketplace that covered the majority of the retail illegal drug trade in Russia. Our estimation procedure exploits a novel set of micro-level moment conditions to identify correlations in preferences for specific drug types and the degree of attachment to them. We find that the median own-price elasticity of demand for illegal drugs is -3.6, and there is high substitution within two classes of drugs: medium-risk stimulants and cannabis. We validate our estimates using exogenous variation in the price of hashish caused by increased policing. The estimated model is used to evaluate counterfactual drug policies. We find that the legalization of cannabis has the benefit of decreasing the use of riskier drugs while increasing cannabis use. For every 4 additional doses of cannabis consumed, 1 less dose of another drug is consumed. Our estimates show that the recent introduction of a new family of synthetic drugs has increased total drug demand in the country by 40%, suggesting that governments should allocate resources to prevent the introduction of new drug products. Finally, our model helps identify the optimal drugs to target for interdiction, specifically those without close substitutes, such as α -PVP.

Working Papers

An Economy of Neural Networks: Learning from Heterogeneous Experiences

PIER Working Paper No. 21-027

This paper proposes a new way to model behavioral agents in dynamic macro-financial environments. Agents are described as neural networks and learn policies from idiosyncratic past experiences. I investigate the feedback between irrationality and past outcomes in an economy with heterogeneous shocks similar to Aiyagari (1994). In the model, the rational expectations assumption is seriously violated because learning of a decision rule for savings is unstable. Agents who fall into learning traps save either excessively or save nothing, which provides a candidate explanation for several empirical puzzles about wealth distribution. Neural network agents have a higher average MPC and exhibit excess sensitivity of consumption. Learning can negatively affect intergenerational mobility.

Publications

“Hydra: Lessons from the World’s Largest Darknet Market.” With Priyanka Goonetilleke and Alex Knorre. *Criminology & Public Policy*, 22, 735–777, November 2023.

References

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Presentations

- | | |
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| 2023 | New Economic School, WashU Economics Graduate Student Conference, Annual Meeting of the Southern Economic Association |
| 2022 | International Conference on Computing in Economics and Finance, Young Economist Symposium |

Teaching

Instructor

<i>Summer 2021</i>	ECON 897, “Math Institute”, summer math camp for Economics and Wharton Ph.D. students, UPenn
<i>Summer 2020</i>	ECON 104, “Econometrics”, UPenn

Teaching Assistant

<i>Spring 2024</i>	ECON 2300, “Statistics for Economists”, UPenn
<i>Fall '19 & Fall '23</i>	ECON 4480, “Economics of Education”, UPenn
<i>Summer 2021</i>	“Continuous-Time Methods in Macroeconomics”, summer school, Oxford University
<i>Spring 2021</i>	ECON 246, “Money and Banking”, UPenn
<i>Fall 2020</i>	ECON 236, “Health Economics”, UPenn
<i>Spring 2020</i>	ECON 274, “History of Economic Thought”, UPenn
<i>Fall '16 & Spring '17</i>	“Macroeconomics”, M.A. sequence, NES
<i>Spring 2015</i>	“Higher Algebra”, HSE
<i>Fall 2014</i>	“Topology”, HSE

Employment

<i>2021 – 2023</i>	Research Assistant to Prof. Jesus Fernandez-Villaverde, UPenn
<i>Summer 2022</i>	Applied Scientist PhD Intern, Uber
<i>2019 – 2020</i>	Research Assistant to Prof. Santosh Anagol, The Wharton School
<i>2017 – 2018</i>	Data Scientist, Yandex

Awards and Honors

GAPSA Individual Grant Award (\$750), 2023
Dean’s Travel Subvention (\$600), 2023
SASGov Large Research Grant (\$2000), 2023
Dean’s Travel Subvention (\$500), 2022
University Fellowship, University of Pennsylvania, 2018-2023
Petr Aven Scholarship (awarded to 3 second-year M.A. students with highest GPA), NES, 2016-2017
Econometric Game, international team competition in econometrics, Amsterdam, 2017 (final round)

Service

Organizer: Empirical Micro Lunch, UPenn, 2020 – 2021

Refereeing: Young Economist Symposium

Master's Thesis Examiner: New Economic School

Skills

Programming: Python (PyTorch, Numba, PyBLP), SQL, R, Stata, MATLAB, Git

Languages: English (fluent), Russian (native)