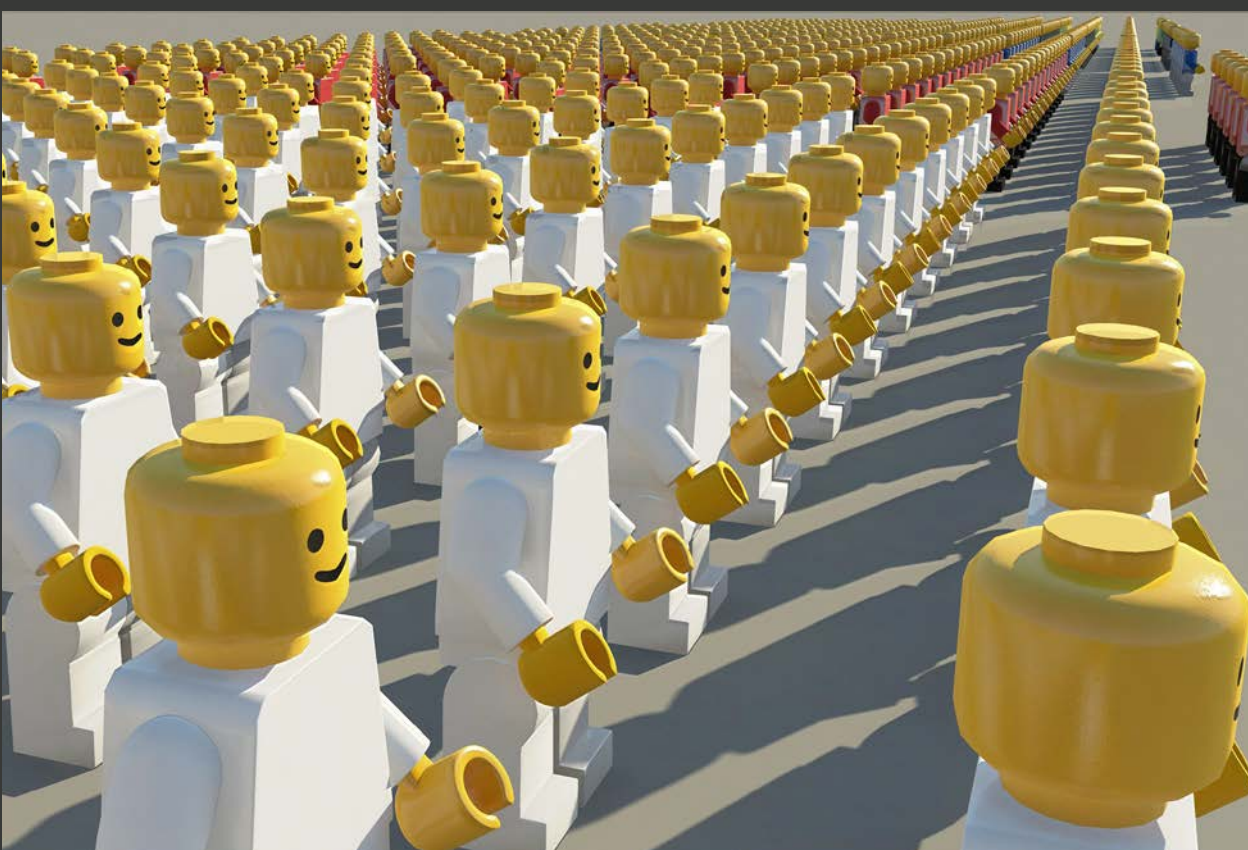


Domenico Viganola

ESSAYS ON POLITICAL ECONOMY, PREDICTIONS, AND REPLICATIONS



ESSAYS ON POLITICAL ECONOMY, PREDICTIONS, AND REPLICATIONS

This doctoral thesis in Economics consists of five self-contained chapters:

“Strategic Abstention in Referendum with Quorum” studies voting behavior in elections with participation threshold, with empirical evidence from Italy and from an Online Experiment.

“Crowdsourcing Hypothesis Tests” is an attempt to make transparent how design choices shape research results in experimental psychology.

“Is Research in Social Psychology Politically Biased?” empirically examines the role of political ideologies in academic research.

“Predicting Replication Outcomes in the Many Labs 2 Study” investigates whether researchers in the social sciences can anticipate whether 24 published studies will successfully replicate.

“Analysis of Survey and Prediction Market Data from Large-scale Replication Projects” provides a systematic comparison between two methods to elicit forecasts: surveys and prediction markets.



DOMENICO VIGANOLA holds a B.Sc. and a M.Sc. in Economics and Social Sciences from Bocconi University. His research focuses on forecasting accuracy and robustness of scientific claims.

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A Enzo e Rosina. A Doni e Paul. E anche a Serenita, survvia... ;-)

Foreword

This volume is the result of a research project carried out at the Department of Economics at the Stockholm School of Economics (SSE).

This volume is submitted as a doctoral thesis at SSE. In keeping with the policies of SSE, the author has been entirely free to conduct and present his research in the manner of his choosing as an expression of his own ideas.

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As is the case for almost every doctoral student, my Ph.D. journey has been a convoluted odyssey studded with long sleepless nights followed by unexpected moments of excitement. Weekends spent in the shadow of a computer screen were followed by Mondays with the typical zest of a mid-summer Friday night. By the end of the fourth year, it did not even make sense for me trying to separate working days from holidays, or sunrise from sunset. Month after month, my efforts began to take the shape of a book, and eventually, it concretized into this dissertation.

I owe my gratitude to many people who made this dissertation possible. First and foremost, to my supervisors Anna Dreber Almenberg and Magnus Johannesson. I could not wish for a better match. The two of you taught me much more than rigorous analysis, critical thinking, and intellectual honesty. Every single time I knocked on your door, I knew that I would leave your offices re-fueled with a better spirit, new energies, and a contagious smile. Over the years, I had the sensation that the supervision evolved into a collaboration, and for this I am grateful. I was catapulted to the frontier of research, and because of your outstanding empathic capacity, I was always more and more comfortable to speak up and to contribute with new proposals. I felt like part of a group, but it was a special kind of group, where the free-rider problem was replaced by a virtuous cycle, in which everyone tried his or her best to achieve a common goal. And striving to increase the robustness of scientific claims in social science is more than a short-term, publication-oriented target: it is one of the more arduous challenges that research communities have to cope with.

I was blessed to have exceptional researchers as co-authors. Besides Anna and Magnus, Eric and Thomas deserve a special mention. My sincere thanks go

to every member of the Department of Economics at SSE and at SITE: (another) special mention of Erik, Karl, Abhijeet, Andreea, and Pamela. I am particularly grateful for the assistance given by Malin, Rasa, and Lyudmila: oftentimes, you made my life easier and my lunches more enjoyable!

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OK, things are getting emotional now... Andrea and Albin: our friendship was a cure-all elixir during the past couple of years. I wish we had more time to talk, to get a real espresso, to have dinner at one of your (Albin) favorite traditional restaurants serving *peculiar* dishes, or at the same old pizzeria (Andrea). I did not fully manage to understand the secrets behind your perpetual positive attitude, which is why you guys will not get rid of me in the future!

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Stockholm, April 18, 2019

Domenico Viganola

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Introduction

This Doctoral thesis is composed of five self-contained chapters. The common theme of my research is to study individual and aggregated forecasting accuracy in different contexts. In particular, my investigations focus on settings where the boundaries between economics, political science and psychology fade and almost disappear. First, I provide an empirical analysis of voters' participation behavior in referendums with quorum, i.e., in elections where correctly forecasting the behavior of the rest of the electorate becomes a crucial skill to vote optimally. This study is motivated by the evidence that, over the past decade, the political panorama has been characterized by several unanticipated and sometimes stunning events: Brexit and the election of the 45th president of the United States of America are probably the most striking examples. In my view, these events, jointly with the raising of populism, the increased threat of fake news, and the exploitation of personal digital data for political purposes, stress the importance to investigate which are the main determinants that drive individual choices to vote. In the first chapter of my thesis, I study this topic in a specific country (Italy) and for a specific subset of elections (referendum with participation threshold). Then, in a series of co-authored papers, first I investigate to which extent researchers in the social sciences are able to provide accurate forecasts about the research output resulting from a set of conceptual replications. These replications are carried out by different research groups working independently to set up experimental research designs aimed at testing the same original hypotheses (chapter two). Then, I study if researchers can provide accurate forecasts of the incidence of exploratory and evaluative political ideological bias in social psychology (chapter three). Finally, I study whether prediction markets can be proficiently used to aggregate forecasts about the replicability of scientific claims (chapter four) and whether they outperform surveys as a tool to elicit accurate forecast (chapter five).

Strategic Abstention in Referendum with Quorum: Evidence from Italy and from an Online Experiment

I study strategic thinking and voting behavior in referendums with a participation threshold (i.e., quorum). I focus on situations where the current policy is challenged by a single new proposal, where the quorum is set at 50% of the electorate, and simple majority rule applies if turnout requirements are met. Participation thresholds are predicted to generate distortions in the voting decision of the electorate, inducing voters to abstain strategically rather than to sincerely express their preferences. I test to which extent strategic considerations shape individual voting behavior. Evidence from Italian historical data suggests that the majority of the electorate coordinated on abstention strategies, which de facto made recent referendums void most of the times. Evidence from a large-scale online randomized controlled experiment with 1400 voters indicates that strategic abstention is a second order magnitude effect if compared to the individual cost of voting, and that bandwagon effect arise. Taken together, these results provide little support for instrumental voting theories but rather suggest that the role of political parties and the reduction in the social stigma associated with abstention allow for better reconciliation between experimental and historical evidence.

Crowdsourcing Hypothesis Tests: Making Transparent how Design Choices Shape Research Results

To what extent are the results of research investigations influenced by subjective decisions that scientists make as they design studies? Fifteen research teams independently designed studies to answer five original research questions related to moral judgments, negotiations, and implicit cognition. Participants from two separate, large samples (total $N > 15,000$) were then randomly assigned to complete one version of each study. Effect sizes varied dramatically across different sets of materials designed to test the same hypothesis: materials from different teams rendered significant effects in opposite directions for four out of five hypotheses, with the narrowest range in estimates being $d = -0.37$ to 0.26 . Meta-analysis indicated a lack of overall support for two original hypotheses, mixed support for one hypothesis, and significant support for two hypotheses. Overall, none of the variability in effect sizes was attributable to the skill of the research team in designing materials, while some variability was attributable to the hypothesis being tested. In a forecasting survey, predictions of other scientists were strongly

correlated with study results, and average predictions were similar to observed outcomes. Crowdsourced testing of research hypotheses helps reveal the true consistency of empirical support for a scientific claim.

Is Research in Social Psychology Politically Biased? Systematic Empirical Tests and a Forecasting Survey to Address the Controversy

The present investigation provides the first systematic empirical tests for the role of politics in academic research. In a large sample of scientific abstracts from the field of social psychology, we find both evaluative differences, such that conservatives are described more negatively than liberals, and explanatory differences, such that conservatism is more likely to be the focus of explanation than liberalism. In light of the ongoing debate about politicized science, a forecasting survey permitted scientists to state a priori empirical predictions about the results, and then change their beliefs in light of the evidence. Participating scientists accurately predicted the direction of both the evaluative and explanatory differences, but at the same time significantly overestimated both effect sizes. Scientists also updated their broader beliefs about political bias in response to the empirical results, providing a model for addressing divisive scientific controversies across fields.

Predicting Replication Outcomes in the Many Labs 2 Study

Understanding and improving reproducibility is crucial for scientific progress. Prediction markets and related methods of eliciting peer beliefs are promising tools to predict replication outcomes. We invited researchers in the field of psychology to judge the replicability of 24 studies replicated in the large scale Many Labs 2 project. We elicited peer beliefs in prediction markets and surveys about two replication success metrics: the probability that the replication yields a statistically significant effect in the original direction ($p < 0.001$), and the relative effect size of the replication. The prediction markets correctly predicted 75% of the replication outcomes, and were highly correlated with the replication outcomes. Survey beliefs were also significantly correlated with replication outcomes, but had larger prediction errors. The prediction markets for relative effect sizes attracted little trading and thus did not work well. The survey beliefs about relative effect sizes performed better and were significantly correlated with observed relative effect sizes. The results suggest that replication outcomes can be pre-

dicted and that the elicitation of peer beliefs can increase our knowledge about scientific reproducibility and the dynamics of hypothesis testing.

Analysis of Survey and Prediction Market Data from Large-scale Replication Projects

The credibility of scientific findings is of fundamental importance to enhance future research. One potential approach of collecting information about this credibility is to elicit beliefs about the reproducibility of scientific claims among scientists. Four studies have recently used surveys and prediction markets to estimate beliefs about replication in systematic large scale replication projects, but the sample size in each study has been small. Here we pool data for the four studies ($n = 104$) to assess the performance of surveys and prediction markets. Both survey beliefs and prediction market beliefs are highly correlated with replication outcomes (correlations > 0.5). Prediction markets predict the realized outcomes somewhat better than surveys, with lower prediction errors and a higher rate of correct predictions (73% versus 66%). Both prediction markets and surveys suggest that peer scientists are somewhat over-optimistic, with average beliefs about 10 percentage units higher than the observed replication rate.