
Teaching and Research Statement

Previous Research Experience

As an undergrad I was attracted to econometrics, specifically impact evaluations. I loved the idea of teasing out the true causal relationship between a program and its outcomes. I particularly admired the work done by labor economist researchers like David Card, where causal inference was used to test long-established (but untested) economic theories. After my masters at Universidad de Chile, I went to work on the evaluation of the largest anti-poverty program ever implemented in Chile. I had the opportunity to be part of the whole evaluation process. It was a non-experimental intervention, where we used propensity score matching and Diff-in-Diff, and we put a large effort into making it as rigorous as possible: looking for exogenous variations, documenting the expected vs. true way in which the treatment was assigned, using survey and administrative data and working in the field with program managers from government to understand all the nuances of implementation. Over two years we managed to bring a substantive amount of rigor to an evaluation that (in Chile) had been largely overlooked.

After that experience I participated in two other impact evaluations: doing field work on the effects of prenatal care on child outcomes in Bolivia, and as co-PI assessing the effects of financial aid for higher education in Chile (using a Regression Discontinuity Design on administrative data). Increasingly I became more interested on how the evidence generated by impact evaluations is used by policy makers. Then I worked in a junior advisory role in the Ministry of Finance in Chile and experience first-hand how policy makers actually use evidence to make decisions. That experience left me with two strong impressions. First, I was amazed by the amount of effort that analysts put into producing rigorous policy analysis regardless of their political inclinations. And second, how many basic unknowns had to be investigated in an incredibly time constrained environment. Very important decisions were made based on on-the-fly analyses and a large amount of “guesstimation” took place. Ever since, I have struggled with the abysmal gap between the work done by analysts in government (policy analysts) and researchers in academia. The former trying to come up with the best possible answer to a multifactorial policy issue under a stringent deadline, and the latter trying to find the best identification strategy for a very specific type of intervention.

I came to RAND looking for ways to make more rigorous and objective policy analysis. The opportunity to work on impact evaluations, my original expertise, was limited so I shifted to issues of measurement and reliability. As an econometrician by training, my knowledge of these issues was very limited. Also, used to work only with economists, for the first time I had the eye-opening experience to be supervised only by statisticians. Particularly with Susan Paddock I gained a much broader appreciation for what does it mean to do rigorous quantitative assessments in social sciences. I learned to think about issues of multiple comparisons, reliability and misclassification. From this experience I broadened my understanding of causal inference, hierarchical modeling, simulation methods, and, very importantly, R programming. These new tools would prove helpful to the development my research agenda.

As I progressed in my PhD, I became familiar with the literature related to the so-called

reproducibility crisis. I found that the proposed solutions could be used to bridge the gap between the analysis made by researchers in academia and the work of policy analysts made in public policy. The core of the solution to the reproducibility crisis is to completely open up the scientific process, emphasizing norms, incentives and tools to do so. For my dissertation I am translating these ideas into policy analysis, and demonstrating them in a case study. This provides a systematic approach to identifying the most important unknowns in a policy analysis, a way to increase its credibility, and a living document from which the next analysis can be built upon.

Research Goals

I want to use an Open Science approach to connect academia and public policy. It is my view, that there is a large disconnect between the process of generating evidence and its use for decision making. Policy makers do use evidence in the form of policy reports, but as little is known about the creation of such reports, different policy makers can afford to cherry-pick their information. Using state of the art protocols for transparency and reproducibility (like the TOP guidelines) and tools (like git and literate programming) in policy analysis would increase its rigor and reduce cherry-picking of the evidence. I believe that addressing this issue could be part of the solution to the increase in the “*post-truth*” approach to public policy.

This agenda can be expanded both across and within policy issues.

The range of policy analyses that would benefit from this approach is large. In addition policies similar to the minimum wage studied in my dissertation, there are other domains where organizations are connecting evidence and policy, and adding an additional layer of transparency and reproducibility would prove beneficial. A few examples of areas where this approach fits with ongoing efforts are: Development Economics (cost benefit analyses of JPAL and GiveWell), continuous and rigorous economics assessment of regulations (as proposed by Michael Greenstone and Cass Sunstein), and guidelines recommending appropriateness of care in medicine (USPSTF & AHRQ in the US or NICE in the UK). These are only examples and good starting points to promote an agenda of open policy analysis.

Within any given policy analysis the agenda of transparency and reproducibility can be continuously expanded. For example, my dissertation work on the minimum wage made a fully transparent and reproducible version of the best current policy analysis, but it can be extended from a micro-simulation with no behavioral responses to a dynamic discrete choice model, where agents optimize across different dimensions. Another area for extension has to do with the user experience of the reproduced report. Up to this point it requires programming knowledge to modify/test the model, but building an interactive tool with R Shiny is a good example of a next step towards increasing the usability of the report. This would provide an interactive tool for general user to assess how the results of the analysis depends in all the inputs used to production of it.

Finally, I want to emphasize that this agenda is meant to fit within a research group. The skills required to move it forward are a combination of economics, data science (computer science + statistics) and policy specific knowledge, all in an environment that embraces and supports open science. To such group I can bring to the table extensive knowledge in economics and impact evaluations, intermediate knowledge on Bayesian inference and R programming, and an insiders’ perspective of how public policy works within government agencies. My training and experience have prepared me to contribute and learn from a diverse groups. I look forward to join others in the endeavor of connecting research and policy.

Teaching Statement

I taught undergraduate econometrics for three semesters (Fall 2007, Fall 2008, Spring 2010.). I have also done multiple teaching assistantships, and worked as a tutor for undergraduate and graduate courses in economics and statistics. There are two aspects that I really enjoy about teaching: it forces me to thoroughly learn and relearn the material, and it allows me to have a direct impact on the way other people think and learn. From my previous experience I have found both aspects to be extremely time-consuming and gratifying when perform well. I look forward to teaching again.

As I learn and adopt practices to conduct open and reproducible research, I would like my lectures to follow a similar format. I learned and taught econometric in Stata, but I believe that nowadays it is more appropriate for students to be trained in R. It is open source, it has a growing and vibrant community and it's increasingly embraced across disciplines. If possible, I would like the course material to be publicly accessible, and to use Github to interact with my students. Finally I would like to teach courses that already have great lecturers available online, as I find the challenge of improving upon their work and/or guiding my students through their material highly stimulating.

In addition to my previous course, where I used the Stock and Watson Introductory textbook, I am well prepared to teach the following courses (course title/textbook/online benchmark):

- Introduction to Probability/ Blitztein & Hwang 2015/Stat 110 (Harvard)
- Bayesian Statistics/ Statistical Rethinking 2015/ ANT 291 (UC Davis)
- Introduction to Econometrics/ Mastering Metrics 2015
- Econometrics/ Mostly Harmless Econometrics 2008
- Research Transparency Methods in the Social Sciences/papers/Econ 270D (UC Berkeley)
- Essential Books for Policy Analysis/ Manski (2013), Kahneman (2011), Gawande (2009), Tetlock (2015), Sunstein (2013), Mullainathan (2013).

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