

Advice for new researchers - A collaborative EA doc

Instructions

1. This is a Google Document for crowdsourced research tips from EAGxVirtual 2020 participants. The tips can be general or specific to a type of research. Anything you wish you knew before conducting research yourself, (the doc is notably absent of project management tips).
2. Add a Heading 1 for each Research area you'd like to give advice on or a Heading 2 for subdomains.
3. Prefer to make notes using another app such as Roam Research, drop a link below.
4. If somehow, the tips exceed 10 pages, we can split this into multiple docs.

Disclaimer: This quick guide currently only lists some of the most important advice I believe I can give new researchers. This advice is incomplete and tailored towards people interested in economics research.

General

Some other advice: <http://users.cecs.anu.edu.au/~xlx/advice.html>

Tips for Feedback

Publish on the EA Forum to expose your work to feedback and gain reputation. Alternatively, you can circulate ideas to trusted advisors if you are worried about public perception.

Continue to get involved in talking to people (conferences, workshops, meetups).

Some things that would have helped me: structure and nature of academic journals, the importance and reasoning behind publishing, working process tips (do modeling first then write draft - otherwise you'll get caught in a loop of rewriting and rephrasing, which wastes time), how to effectively use Google Scholar and Web of Science among other databases, using Mendeley, Zotero, and other applications properly, taking good pictures of work to exhibit later

I'll add that one of the things that has helped me tremendously is to keep a journal of what I am working on. So - almost a lab book, but just for me, where I basically write down what I am doing, which directory I am working in, new code if I was unfamiliar with it before and then also why I made certain decisions, so that after any kind of break, when I forget what I

did or what I was working on, I can read through and remember and pick up immediately where I left off.

Great resources to help you do research

You need a bibliography manager to automatically create and organize your references as you browse the internet. I use [Zotero](#) and its browser extension so that I can save all the papers I come across into different folders.

[Overleaf](#) is my preferred tool for formatting research papers in Latex. It has plenty of templates and tutorials for writing research papers and typesetting equations.

Choosing Impactful Questions:

- Theory of Change as above.
- To gauge scale, perhaps compare with similar questions on [effective thesis](#).
- Neglectedness?
- How confident are you that you can deliver what you say you can? (getting in the habit of recording probabilities over time can help you become better at predicting the [likelihood of future success](#).)
- Do you have an opportunity to do a project with other people?
- Do you have an opportunity to receive funding from EA orgs?
- Super valuable to have EA calls with others and attend workshops
- Survey your audience on what questions they need answering (also value in more personally motivated exploration)

Literature Review Heuristics

Frame your arguments with reference to multiple sources

Use ResearchGate to explore citations and to learn new search terms. One neat feature is that ResearchGate often displays the relevant extract where the paper was cited.

Economics

[Researching and writing for Economics students](#) (Reinstein's guide; web book, not EA focused, relevant to areas adjacent to Economics)

Advice for Theorists: Theoretical Work - Ask yourself what the inputs (model, solution concept) and outputs (results) to your theorems are.

Ask yourself what parts of creating this theorem can go wrong.

Post-Mortem Analysis - You haven't completed your theorem. Why do you think this would happen?

Do you need an application of your Theorem? If so, repeat the above questions, what are the inputs (specific model, hypothesis) and outputs (result obtained using your theorem) for your application.

Merge search terms for (economic) models together with topic area

The following examples merge Game Theory concepts with topics from the Philosophy of Science. You can apply the same principle to any domain of economic modelling and any topics.

(Tullock) Contests

Auctions

Mechanism Design

Dynamic Games

Equilibrium

Agent Based Models

Contest Model - Reproducibility crisis

Scientific Research - Mechanism Design

Innovative Activity - Agent based model

Dynamic Contests -(Social) Value of Innovation

Heuristics for Building Reliable and Useful Models:

- Identify your baseline/counterfactual scenario in your model
- What is the purpose of the model - identify key mechanisms
- What are the costs and benefits to society in your model (and if relevant who are the winners and losers)?
- Solvable? (e.g. Dynamic contests or dynamic optimization problems can be incredibly difficult to solve analytically or numerically - learning computational economics might help, see below for some resources)
- Are your model features grounded in literature (see literature review heuristics)
- Use Theory of Change to map out the anticipated benefits of your research. For a detailed introduction, see [Useful Theory of Change Models](#)
- You might also find this [slideshow useful for using Theory of Change](#) when building models (although it was originally targeted at AI Gov researchers).

Great resources for learning computational economics (including advice on coding)

[Jesus Fernandez](#) provides great slides, articles, and code on computational methods for economists in Python, Julia, and Matlab. He also provides great coding tips for scientific computing in general (lectures 1-8 on their website).

Kenneth Judd is also in the process of filling out his [Github](#) with teaching materials as he completes the second edition of his computational economics textbook. The first version from 1998 is still one of the most comprehensive and well-known textbooks on the subject. Judd is still very active in their research so I trust the second addition will have some of the best advice around.

Great resources for learning behavioral game theory.

And here's some reading on behavioral game theory if you're interested. The first link is [open access](#). The other links to a [comprehensive textbook](#) which you can find online for free if you know how to do that. The textbook has recently been split up into smaller volumes which should be even more up to date. Volumes 4-6 cover behavioral game theory.