PhD Research in Empirical Industrial Organization (with me)

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Outline

3 Goals today:

1. An overview of doing research empirical IO
   - (Either with me or Michelle Sovinsky)

2. How to do empirical IO
   - “The Seven Skills of the Empirical IO Economist”

3. Specific research topics I’m interested in
   - That I hope to interest you in
(Empirical) Industrial Organization (IO) is one of the sub-fields of (Applied) Microeconomics.

IO focuses on the organization of markets
  - (Other than labor and education markets...
  - ...as well as goods provided by the government)

There are as many sub-specialties within IO as there are markets to study
  - Technology markets, energy markets, auction markets, etc., etc.
Aside: Zurich Applied Micro

Also working in Applied Micro at Zurich:

- Michelle Sovinsky (empirical IO)
- David Dorn (empirical Labor/Trade)
- Carmit Segal (empirical Labor/Experiments)
- Rainer Winkelmann (applied econometrics)
- Armin Schmutzler (IO theory)
- Nick Netzer (IO theory)
Empirical IO Overview II

- Research in IO can largely be broken down into one of four areas:
  1. (Consumer) Demand
  2. (Firms’) Costs
  3. Competition
  4. Regulation

- The typical paper in empirical IO seeks to...
  - ...measure aspects of one of these objects
    - (or the effects of changes in the economic environment on them)
  - ...for the purpose of better understanding optimal firm and/or “government” (i.e. a social planner’s) strategies/policies.
As in many applied micro fields, there are two dominant styles of empirical research in EIO:

1. Quasi-experimental research
2. Structural research

Quasi-experimental research seeks to take the principles of experimental research designs...

- (Treatment and control, etc.)
- ...and apply them to non-experimental settings, i.e. to ask
- “Are there situations where the world has cooperated and presented us with a ‘natural experiment’?”

Structural research uses observational data and models of behavior for the economic agents in a market of interest to estimate “structural parameters”...

- ...and then uses those estimates to predict counterfactual business or policy outcomes
While QE research is more common in Applied Micro generally...
  ▶ And even in IO generally...
  ▶ Structural empirical research maintains a larger market share (2/3-3/4?) of the IO research published in top journals.

I try hard not to be dogmatic about such things
  ▶ Both types of research are good (appropriate) depending on the question and data at hand
  ▶ (That being said, most of my own research is structural)
Empirical IO Overview V

- What about experiments?
  - An excellent question!
- I am quite bullish about the potential for experimental research in empirical IO
  - (But not lab experiments!)
  - (At least for firm behavior...)
  - (As I don’t think students in a lab can accurately replicate firms’ decision-making)
- I think there is tremendous research potential for field experiments with firms
  - The challenge: getting firms to buy in!
  - Any experimental topic must be both
    - Of research interest to academics and
    - Of business interest to the firm(s)
  - (A high hurdle)
Doing a PhD in structural empirical IO has both pros and cons.

Pros:

1. Structural methods allow researchers to ask and (ideally) answer research questions that are not feasible using QE methods,
   - Making such research very attractive to top journals (publications) and top departments (placements)

2. There are relatively few structural empirical IO PhDs produced each year,
   - Largely because there are relatively few faculty to supervise and produce such students
   - So students with a good job market paper can expect to do very well on the rookie market and beyond.
   - Plus it’s fun! There is so much variety in demand, cost, competition, and regulation across industries, that one is always being confronted with new research questions.
   - And there is often (and increasingly so) data that can be obtained to address these questions.
Doing a PhD in structural empirical IO has both pros and cons.

Cons:

1. The downside is that structural research is costly and risky.
   - A typical one of my bigger papers takes 3-5 years to produce,
   - (For reasons I will make clear in the coming slides)
   - A typical PhD student will have one completed paper to take to the market and the quality of that paper (along with letters regarding the predicted quality of the individual) plays a key role in whether or not they get a good job.

2. That said, there are many outside options for those doing empirical IO, notably in sector and/or competition regulators and/or economic consulting firms.
I haven’t supervised that many PhD students in my career
  ➤ as until recently the cost-benefit tradeoff favored doing my own research over advising students.
That being said, I’ve placed or helped place students at
  ➤ Washington University (St. Louis),
  ➤ CREST (Paris)
  ➤ Yale, Mannheim, and Zurich post-docs
I hope to do more PhD advising in the coming years.
  ➤ (As I believe does Michelle (Sovinsky))
I will present later the topics I wish to focus my own research on in the coming years.

In short, I have no shortage of research questions on which I could use the help of smart and motivated PhD students. (And no shortage of data with which to share with such students for their own theses.)

My goal for advising:
- To write one paper with each student that serves as a basis for subsequent independent work by that student (i.e. for their job market paper).
- I’ve used this model for each of my last 3 collaborations with (I think) very good success.
- I also try to make working in empirical IO both interesting and fun.
The optimal portfolio of native abilities for someone interested in (esp. structural) research in empirical IO:

1. Smarts (of course),
2. Ability and interest in econometric and computational methods,
3. Attention to detail,
4. Interest in strategic settings,
5. Resourcefulness (esp. for getting data), and
6. Pragmatism and common sense

★ (As IO papers often must make compromises in many dimensions in order to meet computational and/or data constraints)
How to do Empirical Industrial Organization?

The Seven Skills of the Empirical (IO) Economist
1: Institutional Detail

- One very important thing the empirical IO literature has learned over time is that *details matter*:
  - Markets are different...
  - In order to understand the effects of competition in a market...
  - And thus to evaluate policies in that market...
  - One *must* understand these differences.

- A result: one becomes an expert about certain markets, e.g.
  - I have worked for many years on issues in the U.S. cable television market
  - One consequence: more than I care to admit, I *am*...
More than I care to admit, I *am*...

(The serious point: *Know Your Industry!* )
2. Data Detection

- To answer any empirical question requires data
  - Finding it is often the job of the researcher
  - (Particularly for all of you!)
- In practice, this is often the highest hurdle to addressing relevant and pressing policy questions.
  - (And/or completing a thesis!)
3. Economic Theory

- How do the economic agents being analyzed behave?
  - What drives consumer demand? What role do product characteristics/advertising/dynamics play?
  - What drives firms’ costs?
  - What is the appropriate model of competition?
- Can you specify a tractable yet realistic model of the market being studied?
4. Institution-Data-Theory-Econometric Match

- (I - obviously - struggle a little to know what to call this skill!)
- It is a subtle but very important one...
- Given the institution, the available data, and the economic theory of the agents in the market...
  - What is the appropriate econometric model???
  - Are all the salient features captured?
  - Is it capable of measuring the effects of interest?
- This is more art than science
  - (and where you may have some trouble)
5. Econometric Theory

- Given the data and econometric model...
- What are the sources of error underlying observed behavior?
  - Unobserved variables? Measurement error? Optimization error?
- What are the appropriate estimation techniques?
  - (Hint: Rarely will OLS be the answer!)
  - (At minimum, we typically use Instrumental Variables)
- What is the variation in the data that *identifies* the key effects of interest?
  - (i.e. You need to understand how - intuitively - your effects of interest are identified in your data)
6. Computational Skills

Computational Skills

- This is probably only relevant for the PhD students in the room...
  - But for them, it is very important!
- Can you manage the data? Can you manage the estimation? Can you manage the policy simulations?
- Can you code in Matlab/Gauss? Fortran/C?
- Can you figure out why your estimation won’t converge? Why your standard errors don’t make sense?
  - (Can you do it in weeks instead of months???)
- In academic circles, there are definitely “tastes for methods” at the best journals
  - As a result, more than any other, this skill separates top journal publications from others
7. Presentation and Writing

Presentation and Writing

▷ Last but definitely not least: can you present your work? Can you describe it?
▷ Perhaps it isn’t surprising, but many of those who are good at (3)-(6)...
  ★ Often have trouble at making their insights understandable to others
Seven Skills Summary (PhD Version)

- There is room for different types of researchers within the spectrum of empirical IO
  - (We study IO - we know we can differentiate!)
- This differentiation broadly weights differently the different skills:
  - Skills (1, Institution), (2, Data), and (7, Writing) are common to all good projects
  - The relative weight given to (3, Theory), (4, Match), (5, Metrics), and (6, Computation), however, depend on the tastes of the researcher:

  See Figure in Class

- Which do you want to be?
Seven Skills Summary

- I hope I’ve conveyed the range of skills necessary to do good work in empirical IO

- The key question:
  - Are you *energized*... or *depressed*?

- I’ve always been energized (i.e., the good news:)
  - There is tremendous variety in doing research/analysis in empirical industrial organization
    - It is *never* boring!

- Although there can be downsides (i.e., the bad news:)
  - It can be hard/frustrating
  - It may mean difficult compromises (if the data don’t cooperate)
  - It can take a while

- In my view, it’s worth it:
  - It is like solving a puzzle, one industry at a time.
Topics I

- I am focusing my research in the coming years in three broad research areas:
  1. Various research questions in communications and (esp.) media markets
     - i.e. TV, Film, Internet, Newspapers, Radio, Advertising
  2. Economics of incomplete and/or imperfect information
     - i.e. Uncertainty and learning and/or search, moral hazard, adverse selection
  3. Field experiments with firms
     - Testing topics of interest not only in IO, but also possibly behavioral economics

- In the next few slides, I will briefly present a few of the specific questions I’m interested in.
Topics II: Media

I have both ongoing and new projects I am working on in media industries:

1. Pay television markets (working off of CY and CLWY)
   - Horizontal concentration and bargaining power
   - Retail bundling and quality choice
   - Vertical integration and foreclosure in cable markets
     - RForm: impact of VI on prices, carriage, channel positions (CLVWY)
     - Structural: RSNs and downstream foreclosure (CLWY)
     - Structural: Upstream foreclosure (TBD)
   - Quality investment and the dynamics of (quality) competition in content (LY)
   - Application of US-centric research methods to comparable questions in Europe
     - Needs European data
   - Impact of US Telco entry on prices/quality (RForm)
Topics III: Media

I have both ongoing and new projects I am working on in media industries:

- Television markets generally
  - Public Service Broadcasters
    - Economic rationale for PSBs in a digital age
    - Economic, political, and social effects of PSBs
    - Measuring PSB (Media) bias and its effects
  - Market power and encouraging competition
    - In content (channels) and distribution
    - Further up the supply chain (licensing of content to channels)
  - “Must-have” content: bargaining with complements
  - Media ownership: effects?
I have both ongoing and new projects I am working on in media industries:

3 Internet
   - Empirical economics of net neutrality
   - Foreclosure of online video
   - (Key challenge: data availability)

4 Advertising
   - The basic empirical economics of advertising
     - What is the advertising response function?
   - Social and/or cultural effects of advertising
   - Impact of the Internet on ad markets
   - Advertising content: measurability and effects
   - The dynamics of advertising competition
   - Regulation of advertising minutes and effects on broadcasters
I have both ongoing and new projects I am working on in the economics of information:

1. **Empirical measurement of uncertainty, learning, and/or search**
2. **Retail grocery demand with choice set heterogeneity**
   - (w/ Griffith & Iaria)
3. **Measuring asymmetric information in credit markets**
   - (w/ Pavanini & Schivardi)
4. **Bundling and search**
   - (w/ Deer)
Since coming to Zurich, I have made connection with several firms and are thinking about projects with them:

1. A major Swiss grocery retailer
   - Field experiments testing reference-dependent preferences (?)
   - Other topics?

2. A major Swiss communications company
   - Any project in the public interest that might use on (location-based?) communication data

3. A major Swiss broadcaster
   - Just making connections

4. Combining structural and experimental methods?
Conclusion

Thanks for listening!

- If you have any questions, now or in the future, feel free to come talk to me
  - (Or Nicola or Lachlan)