

# How to Write a Research Paper in Economics

## Econ 191: Skills Lecture 1

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# Outline

- 1 Motivation
- 2 What Is An Economics Research Paper?
- 3 How Does One Write An Economics Research Paper?

# Why Research?

- There are many questions for which we do not have answers.
  - E.g. Why does my father wear the same purple paisley necktie every day?
- Performing research is a formal way to ask questions and search for answers.
  - E.g. After interviewing my father, and searching his room, I have concluded that he wears a circus-clown necktie each day because it is the only one he owns.

# Why Research Papers?

- After we have asked a question, and (hopefully) found a convincing answer, we want to tell others what we have found, often for both self-interested and altruistic reasons.
  - E.g. I want to tell my father's boss why he appears to have poor judgment, so that my father doesn't get fired, and so that my father can afford to buy me video games for Christmas.
  - E.g.2. If I have found that my neighbors have fallen down the stairs of our apartment complex because wood is slippery in the rain, I can reduce everyone's likelihood of accidents by installing abrasive safety strips.

# Why Research Papers?

- To convince others that the answer we have found is convincing, we can't just tell them our results; we need to describe the process that lead us to those results, so that they can judge whether or not we've come to a valid conclusion.
  - E.g.  
"After interviewing all relevant individuals and visually examining all relevant physical evidence, I have concluded that my father wears a circus clown-tie because it is the only one he owns."

**vs.**

"My father wears a necktie fashionable during the second Industrial Revolution because it is the only one he owns."

# What Is an “Economic” Question?

Economic questions ask:

- 1 How would an individual/group solve a particular problem, or respond to a particular incentive?
  - E.g. If the interest rate on a savings account increases by 5%, how much more would an individual save per month?

OR

- 2 How would a particular variable respond to an exogenous shock?
  - E.g. How would the price of peanut butter increase in response to an increase in the price of jelly?

# Types of Research Papers in Economics

- 1 Theoretical
- 2 Empirical
- 3 Theoretical + empirical

The key difference between these paper types is how they try to answer the research question.

# Theoretical Research Papers

Theoretical papers are usually written when data is unreliable or impossible to obtain.

As a result, theoretical papers make reasonable assumptions about the relevant environment and actors involved, and then predict what should “theoretically” happen if the event described by the research question came true.

- Note:
  - Even if data is available, using theory to predict what “should” happen helps economists make generalizations about how people or variables act under particular circumstances.
  - Being able to generalize about these actions not only furthers our understanding of economics more generally, but also allows us to make predictions regarding the future.



# Theoretical Research Papers

## Example 1:

- Question:
  - How would the price of anti-aircraft *bullets* on the black market increase in response to an increase in the price of anti-aircraft *guns* on the black market?
- Reasonable assumptions:
  - Anti-aircraft guns and bullets are complementary goods; an increase in the price of one will result in a decrease in demand for the other.

# Theoretical Research Papers

## Example 1:

- Intermediate implications:
  - When the price of AA guns goes up, the demand curve for AA bullets will shift leftward.
  - When the demand curve for AA bullets shifts leftward, the price and quantity demanded of AA bullets decreases.
- Conclusion:
  - When the price of anti-aircraft guns on the black market increases, the price of anti-aircraft bullets decreases.

# Theoretical Research Papers

Example 2 (Baliga and Ely 2010):

- Question:
  - How long “should” an interrogator torture a prisoner to get the most information out of him (or her), and when/if should a guilty prisoner confess his guilt?

# Theoretical Research Papers

Example 2 (Baliga and Ely 2010):

- Reasonable assumptions:
  - The interrogator only has a finite period of time to interrogate and/or torture the prisoner.
  - The longer a prisoner goes without confessing, the more likely he is to be innocent.
  - A guilty prisoner who confesses after a small amount of torture is likely to respond to additional torture by providing additional information (if he has any).

# Theoretical Research Papers

## Example 2 (Baliga and Ely 2010):

- Intermediate implications:
  - The interrogator cannot commit to continue torturing a prisoner he believes to be innocent.
  - The interrogator cannot commit to *not* torture a prisoner who confesses his guilt.
  - The prisoner has very large incentives not to speak, and these incentives increase over time.
- Conclusion:
  - Only guilty prisoners with low pain tolerances will confess, causing the expected value of torture to be low. As a result, the interrogator's optimal level of torture is also low.

# Empirical Research Papers

Empirical papers are a natural choice when data related to your question is available.

Empirical papers use data collected by observation, or by experiment, to answer a research question.

- Note:
  - Data means verifiable facts, such as historical events, economic indicators, demographic characteristics, etc. **Opinions are not data.**
  - An empirical paper may posit a possible explanation for the joint occurrence of many events. This examination and attempted explanation of data is called *data analysis*. **Data analysis is a theory based on facts. Opinions are baseless statements and do not belong in any research paper.**

# Empirical Research Papers

Example (Olken 2009):

- Question:
  - Is there less corruption in transportation projects when the projects are managed by local or by central authorities?
- Data:
  - Created by an experiment randomizing whether roads built in a particular year were supervised by local or central authorities.
- Conclusion:
  - Roads built under the supervision of national authorities were built closer to specification, and with lower labor costs, than roads built under the supervision of local authorities.

# Types of Empirical Research Papers

- 1 Observational
- 2 Experimental



# Observational Empirical Research Papers

Observational empirical research papers observe what is happening, or what has happened in the past, and try to draw conclusions based on these observations. No intervention by the researcher occurs here.

- E.g. Chattopadhyay and Duflo (2004): A natural experiment
  - Uses the system of political reservations for women in India—whereby 1/3 of village council heads are (supposedly) randomly reserved for women—to study whether female council heads provide more public goods to their own gender.
  - Punchline: Leaders invest more in infrastructure that is directly relevant to the needs of their own genders.

## Experimental Empirical Research Papers

Experimental empirical research papers manipulates a variable of interest, and tries to determine how that manipulation influences other variables. The researcher actively intervenes in data production here.

- E.g. Muralidharan and Sundararaman (2010):
  - 300 schools in Andhra Pradesh, India are divided into 3 groups: 100 schools provide teacher bonus pay based on classroom performance (i.e. individual incentives); 100 schools provide teacher bonus pay based on school performance (i.e. group incentives); and 100 schools comprise the control group (no teacher bonus pay).
  - Punchline: In the long run, student performance was significantly better in schools that gave teachers individual incentives, rather than group or no incentives.

# Theoretical + Empirical Research Papers

Recall:

- Theoretical papers make reasonable assumptions about the relevant environment and actors involved, and then predict what should “theoretically” happen if the event described by the research question came true.
- Empirical papers use data collected by observation, or by experiment, to answer a research question.

=> Theoretical + empirical papers predict what the answer to the research question “should” be, and then use data to test whether the theoretical prediction holds true in reality.

# How to Write an Economics Research Paper

To write an economics research paper:

- 1 **Go step by step.** As with all large projects, a research paper is much more manageable when broken down into smaller tasks.
- 2 **The first step:** Identify an interesting, specific, economic question. [Jan. 24 lecture]
- 3 **Remaining steps:** Writing each section of the research paper in order. (Exception: Save the introduction for the end.)

## Sections of a Theoretical Research Paper

- **Introduction:** Give the reader a preview of your main (theoretical) results. Briefly mention how these results affect the existing understanding of your question or a broader subject your questions fits into. Give the reader a roadmap for rest of the paper.
- **Lit Review:** Find out what academic literature has already been written on the subject, and how your research will contribute to existing knowledge. [Feb. 7 lecture]

## Sections of a Theoretical Research Paper

- **Model:** Lay out the environmental and actor characteristics assumed by your research question; figure out what is implied by combining these assumptions; iterate the previous step until you are able to arrive at a conclusion. [Feb. 21 lecture]
- **Conclusion:** Repeat the results you found in the Model section. Talk about how these results affect the existing understanding of your question or related questions. Possibly discuss policy implications of your results.

# Sections of an Empirical Research Paper

- Introduction
- Lit Review
- **Empirical strategy:** Describe in detail how you will go about answering your question, and why the methods and data you are using helps you answer that particular question. [March 6 lecture.]
  - This is the area where you decide whether looking at historical data, or contemporary data, or designing your own experiment, will be the most helpful in answering your question.
  - This is also where you decide whether you will use econometrics (statistics), simpler quantitative or graphical analysis, or more qualitative data analysis.

## Sections of an Empirical Research Paper

- **Data:** Describe the data you are using: where you found it, what variables it includes, and any other characteristics of interest. [March 13 lecture.]
- **Estimation:** For those who want to use econometrics in their paper, this section describes the type and composition of explanatory regressions. [March 20 lecture.]
- **Results:** Describe the conclusion your data has lead you to. [March 20 lecture.]
- **Conclusion**



# Sections of an Empirical Research Paper

Other sections you may encounter:

- 1 **Robustness checks:** In many papers, authors try to disprove alternative explanations for their results.

# Summary

- Research gives us a way to formally answer the questions we are interested in.
- Economic research asks:
  - 1 How would an individual/group solve a particular problem, or respond to a particular incentive?  
OR
  - 2 How would a particular variable respond to an exogenous shock?
- Most research papers in economics are theoretical, empirical, or both. The type of paper you write will depend on the question you are interested in, and whether data has been, or could be, collected on your topic.

# Reminders for Next Week

- Next week's topics:
  - 1 Skills Lecture 2: How to frame a hypothesis/question
  - 2 Background Lecture 1: Barry Eichengreen, "The Chinese Economy: Growth and Slowdown"

=> Get started on these papers!

## Reminders for Next Week

- Sign up for Twitter feed!
- Keep an eye out for Twitter updates about office hours signup (to talk about paper topics).