

# Tips and Examples for an Empirical Research Paper in Economics Undergraduate Senior and Master Thesis

Jordi Paniagua\*

University of Valencia

14th February 2025

## 1 Introduction

This document provides some tips for conducting a research paper in an undergraduate economics program. It may be useful for students who want to carry out an empirical project in a course or as their Undergraduate Senior Thesis or Master's Thesis<sup>1</sup>. It describes both the structure and data sources.

These tips are aimed at an empirical paper. In summary, you must formulate a hypothesis and verify it empirically. The project will allow you to pursue your own interests and explore in depth some of the topics covered during your degree.

Along with the guidelines, an example paper is provided, which has been conducted using the R program. You will also find the code to replicate the analysis. One of the objectives of any research project is to become familiar with the tools that enable us to carry out empirical analysis.

## 2 Types of Research Projects and Sources of Ideas

The first step in conducting an empirical research project is to formulate a research question that you want to support or refute with data.

There are several ways to choose a research question:

1. Select a topic from a textbook you have used during your degree (e.g., Myro, 2023) and test it empirically.

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\*jordi.paniagua@uv.es

<sup>1</sup>The structure of a Master's Thesis (TFM) would be similar, although its length and complexity would be greater than that of an Undergraduate Senior Thesis (TFG).

2. Choose a problem from an econometrics book (Angrist & Pischke, 2009; Gujarati & Porter, 2009; Wooldridge, 2019) and analyze it with current data or from other countries.
3. Replicate (partially or fully) an academic article published in a peer-reviewed journal.

Since you will spend a considerable amount of time on the project, choose a topic that interests you. Think, for example, about which course you enjoyed the most during your studies.

Some general tips:

- The maximum length of the paper should not be excessive; focus on quality and aim for around 2,000 words.
- Do not commit plagiarism.
- Pay attention to deadlines and set a realistic timeline.
- Consider the presentation of the paper (if required).
- Keep a journal documenting the chronology of activities during your research.

## Milestones

There are several key milestones to keep in mind:

1. **Research question.** Think of a research question that can be studied empirically. You can propose your own original question or expand on one of the topics suggested in textbooks.
2. **Dataset and data description.** Once the question is defined, you will need to compile your dataset along with its descriptive statistics and graphs. You can collect data from public sources or build your own dataset through a survey.
3. **Data analysis.** Once you have the data, you must proceed with its description and analysis.

These milestones are designed to help you stay on track and encourage you to work throughout the semester rather than at the last minute. You will present the main results of your research in class.

## Deliverables

In addition to the written paper, you should also prepare presentation slides, the dataset, and the code used for empirical analysis (preferably in R files, although Excel is also acceptable).

Ideally, you should use LaTeX. I recommend using LyX and/or Overleaf for collaboration. On the next page, the structure of the paper is described.

# Title of the Paper

Your name <sup>1</sup>

University

## Abstract

Summary of the work. 100-200 words in which we detail the following points: • Objective • Context • Method • Results • Conclusion • Practical applications

**Key words:** keywords separated by semi-colons

## 1 Introduction

Follow Prof. Head's introduction formula:

<http://blogs.ubc.ca/khead/research/research-advice/formula>

### 1. Hook Hook

- **Y matters:** When Y rises or falls, people are hurt or helped.
- **Y is puzzling:** it defies easy explanation.
- **Y is controversial:** some argue one thing while other say another.
- **Y is big** (like the service sector) or common (like traffic jams).

Things to avoid:

- **The bait and switch:** promising an interesting topic but delivering something else, in particular, something boring.
- **"all my friends are doing it"** : presenting no other motivation for a topic than that other people have written papers on it.

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<sup>1</sup>email

2. **Question:** Tell the reader what this paper actually does. Think of this as the point in a trial where having detailed the crime, you now identify a perpetrator and promise to provide a persuasive case. The reader should have an idea of a clean research question that will have a more or less satisfactory answer by the end of the paper. Examples follow below.

The question may take two paragraphs. At the end of the first (2nd paragraph of the paper) or possibly beginning of the second (3rd paragraph overall) you should have the **“This paper addresses the question”** sentence.

3. **Antecedents:** Identify the prior work that is critical for understanding the contribution this paper will make. The key mistake to avoid here are discussing papers that are not essential parts of the intellectual narrative leading up to your own paper.

Give credit where due but establish, in a non-insulting way, that the prior work is incomplete or otherwise deficient in some important way.

4. **Value-Added:** Describe approximately 3 contributions this paper will make relative to the antecedents. This paragraph might be the most important one for convincing referees not to reject your paper. A big difference between it and the earlier **“question”** paragraph is that the contributions should make sense only in light of prior work whereas the basic research question of the paper should be understandable simply in terms of knowing the topic (from the hook paragraph). **“Antecedents”** and **“Value-added”** may be intertwined. They may also take up to 3 paragraphs.

5. **Organization of the Paper.** This section describes the structure of the paper. You can use a generic outline (but not too generic) (*“the next section develops the analysis, followed by the conclusions”*). It is advisable to

customize the description of the paper's organization based on the specific project, highlighting key points (problems, solutions, results) that will be explored throughout the study.

## **2 Background and Research Question**

Concise literature review of previous studies on the chosen subject. This section should clearly identify the underlying theory or model upon which the research is based.

### **2.1 Research hypotheses**

The background section should lead to clearly stated research hypotheses or conjectures.

## **3 Empirical methodology and data**

- Establish the most appropriate empirical model(s), techniques and specifications (i.e, linear regression, lin-lin, log-log, U-shapes etc.)
- Define the variables and their expected value according to the research hypotheses (positive - neutral - negative).
- Use at least two dependent variables and one dummy variable.

### **3.1 Data**

Find data for the variables of at least 20 observations. You can use cross-sectional, temporal or panel data. That is, for a single country in several

years and a group of countries (or individuals) in a given year or both. Common sources of statistical data:

- [www.gapminder.org](http://www.gapminder.org)
- <https://ourworldindata.org/>
- <http://datacatalog.worldbank.org/>
- [www.eurostat.org](http://www.eurostat.org)
- [www.ine.es](http://www.ine.es)
- Own surveys

It is important to cite the sources of the variables and describe them in all their dimensions:

### **3.2 Data properties**

- Descriptive statistics summary table (mean, maximum value, minimum, standard deviation)
- Correlation matrix
- Diagrams (dispersion, temporal evolution)
- Histograms...

## **4 Results and discussion**

Presentation of the results of the empirical analysis in a standard table format:

- Regression results

- Goodness of fit, p-value, intervals ...
- Significance

Discussion of the results:

- Interpretation of each of the coefficients of the regression:
  - Are the signs of the coefficients in agreement with the theoretical expectations? Use appropriate economic reasoning.
- Explain the findings:
  - Have the research hypotheses been confirmed?
  - How are the results similar or different to previous research?

Make sure to avoid the use of casual language if you are not testing a casual relationship!

## 5 Conclusions

1. What is the main lesson we learned from the research?
  - (a) What do you personally conclude after the investigation?
2. Have the theoretical expectations been met?
3. For whom is this research relevant: business, academics, policy-makers, students?
4. Why is this research relevant?
5. Practical applications: business, economic policy
6. Limitations of work and future research agenda

## References

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- Wooldridge, J. (2019). *Introductory Econometrics: A Modern Approach*. Cengage Learning.