

# Notes on Empirical Methods in Business

## Preview: Introduction

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## 1 Introduction

During the first year of my PhD, I have taken a course on Empirical Methods in Business: Modeling and Estimation. This course is designed to provide students with a comprehensive understanding of the most commonly used empirical methods in business research. The main topics of the course can be seen in the following part. I mainly used handwritten notes when I was taking the lectures, which is hard to formalize. As a PhD researcher specializing in empirical studies, it is necessary to have a clear understanding of common empirical methods. Therefore, I review the course content and summarize it in a more formal way to help others who are interested in empirical methods in business research.

Worth to mention that, all the faults in the notes are mine, and I will try my best to make it accurate and clear. If you find any mistakes or have any suggestions, please feel free to contact me.

## 2 Main Methods Covered

- Issues in Regression
  - Multicollinearity
  - Heteroskedasticity
  - Causality
- Causal Inference and Treatment Effect Models
  - Instrument Variables
  - Panel Data with Fixed Effects
  - Treatment Effects
    - ▷ Matching
    - ▷ Propensity Score Matching
    - ▷ Inverse Probability Weighting
    - ▷ Difference-in-Differences
    - ▷ Synthetic Control
    - ▷ Synthetic Difference-in-Differences

▷ Regression Discontinuity

- Choice Model
  - Binary Choice Model
  - Multinomial Choice - Ordered
  - Multinomial Choice - Non-Ordered
  - Nested Logit Model
- Selection Model
  - Tobit Model
  - Others