Outline of the Main Elements in an Honors Thesis in Economics
(Econometric Analysis Topic)

EC 418: Economic Analysis of Community Issues
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Step 1: Introduction

- Begin by getting the readers attention to the big context in which your paper fits. Make sure to highlight why we should care about this topic.
- Briefly refer to/discuss the work of the previous literature on the issue.
- Highlight what is missing from the previous literature and then explain your paper’s approach and exact research question.
- Briefly summarize the analysis your paper undertakes, including a sentence or two each on the data and methodology used.
- Describe your paper’s results and conclusions in a paragraph or two and tie this back to how this informs the overall issue that motivates the paper.
- Think of this as an “Executive Summary”
Step 2: Literature Review

• Be efficient and stand on the shoulders of giants (and dwarves).
  – Will help with hypothesis development and methodology.
  – Will alert you to potential pitfalls.
  – Will help with data sources.
  – Read with a critical eye and look for improvements you can make.

• Sources
  – Academic searches
    • EconLit
    • Google Scholar
    • Web of Science
  – Other literature
    • Relevant government organizations
    • Policy “think tanks”
Step 2: Literature Review

• Keywords can be crucial for good literature searches.
• Once you have one paper “on topic”, follow the references.
• Be efficient in reading the literature – read only abstract and introduction before deciding whether to read entire paper.
• Start reference list immediately. Styles vary across economics outlets, so just choose a style and stay consistent. Example:

Step 3: Hypothesis Development

• Need to specify a proposed relationship between variables that can be tested.

\[ y = f(X) \]

• Theory behind such a relationship should be explained and expected sign of correlations should be given.

• Previous literature should be a useful guide.

• Often, the magnitude of the hypothesized relationship is more the focus of the study, as the predicted sign of the relationship should be not in doubt.
  
  – Ex: Quantity demanded should be inversely correlated with price, but the magnitude of this relationship (elasticity) is quite important for many issues.
Step 4: Data Description

- First – a few comments on data collection
  - Our contacts will be good sources of information on where to find data, but other sources are:
    - Bill and I
    - [www.fedstats.gov](http://www.fedstats.gov)
    - [www.oregon.gov](http://www.oregon.gov)
    - Google searches
  - Be clear about unit of analysis.
    - Individual level? Aggregate level?
    - How does this relate to hypotheses and theory?
  - Data is never perfect.
    - Measurement issues.
    - Missing data for certain observations.
    - Time constraints versus the perfect data set.
Step 4: Data Description

• Describing the data in the paper
  – It is important to understand and document the basic features of your data before discussing regression results.
    • Descriptive statistics: Means, standard deviations, etc.
    • Graphs of trends in main variables are often helpful. Most familiar to our clients.
    • Charts and tables should be self-explanatory without referring to the text.
Step 5: Econometric Methodology

• **Choice of Methodology**
  – Characteristics of data and nature of hypotheses will affect methodology chosen.
    • Ex: Estimating demand equations requires worrying about endogeneity of price and quantity.
    • Ex: If dependent variable is a “0/1” variable, OLS is not likely the best regression technique.
  – Previous literature again can be a useful reference.
  – OLS is always a good starting point and can then get more sophisticated from there. In truth, virtually all private consulting work never gets beyond OLS.
Step 5: Econometric Methodology

• Reporting econometric analysis.
  – First, evaluate overall fit and performance of estimation
    • $R^2$ and F-test
    • Do coefficient signs match expectations? Statistical significance?
    • Plots of residuals may be informative as well.
  – Evaluate results with respect to main hypotheses.
    • Sign and significance.
    • Magnitude (i.e., economic significance).
  – Report alternative specifications to test sensitivity of results.
    • Appropriate subsample results.
    • More sophisticated techniques to control for data or potential statistical problems.
Step 6: Conclusion

• Restate problem/issue and why we should care.
• Concise statement of hypotheses and empirical evidence.
• Policy implications. How could results inform future decisions?
• Possible extensions.
  – More extensive data collection.
  – Apply similar analysis to related problem/issue.
  – Further statistical sophistication that could be added to check robustness of results.
  – Alternative samples to examine.