

BSM946: Conducting Empirical Work

Help!!! I have to write a project!!!

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Today's Plan

- What are the steps in an empirical project
- How to ensure these steps are done appropriately
- Common mistakes
- Areas to think about
- Example

You are all conducting some empirical work in this course

It is a good idea to know the basics of this

Top Tips:

Tip 1: Read Papers!

Read some empirical papers!

Tip 2: The result does not matter!

Evaluating your ability to conduct proper, robust analysis

Not evaluating the results the data may hold

Steps in a research paper

① Introduction

② Literature

③ Methodology

④ Data

⑤ Results

⑥ Conclusions

⑦ References

⑧ Do File!

Do not have to be in this exact order:

- Sometimes data can be before methodology

Do files are required!

What's the point of an Introduction?

Key things to discuss are:

- What area are we going to be looking at?
- Why is this area of importance?
- What is the research question going to be (narrowing the topic down from above!)
- How will the rest of the paper follow

Most important is.....

Outlining a good research question!!!

Tip 3: The question is important

Should be clearly defined so people know what you are testing

Common mistake is to make the question too broad so you cannot fully answer it!

Example question:

What is the link between pay and performance?

What is the link between pay and performance?

Not the worst question ever..... not the best either

Too broad!

What problems might we have:

- What do we mean by performance?
- What do we mean by pay?
- Who are we looking at?

What is the relationship between CEO total remuneration and firm share prices in UK firms

We are pretending this is a linear process....

- *It is unlikely to be so simple*

Cannot carefully design your research question until you know what data is available

- Especially in this case as you do not have much choice of data!

It is more likely that you will look at the data and work out what question you can answer based on the variables, than pick a question and then look for data as is the normal process!

Literature Review

Students seem to hate writing literature reviews...

What is the point of a literature review?

- Not just a collection of work other people have done!
- Should be informing your work
 - What data have other people used?
 - What problems did they face?
 - What methods did they use?
 - What was their dependent variable?
 - What independent variables did they use?
 - What results did they find?

Should be referred to throughout your work:

Lit Review → Methodology, Results → Literature Review

Methodology

This is an econometrics module...

- So this section will be very important!!!

Points to think about:

How are you going to investigate the research question?

Why is OLS not appropriate?

Why is the model you are using appropriate?

What assumptions does this model have, and are they likely to hold....?

- Problems may arise if these assumptions do not hold?

Are there numerous appropriate models?

Can we test between them?

If so, run both, explain how you can test between the models

Can also run OLS and test against this:

- Why do the results differ?
- Is it due to the OLS assumptions not being fulfilled?

Tip 4: Methodology

This section does not have to be overly technical!

Can explain the reasons why models are not appropriate and why other models are appropriate with very few equations

- Please do ensure it is your own work though!!!

When explaining tests...

- explain what the test is doing
- what are the different hypotheses?

Data

- ① Explain some details of the dataset that you are using
 - How was it collected?
 - How was it sampled?
 - Did you clean it in an important way? Or are you using a subsample of it?
- ② Give a summary of the key variables
 - What form does your dependent variable take?
 - Can you provide evidence in a table or graph?
- ③ What independent variables are included and why?

Likely to choose the variables that go into your specification in this section...

Tip 5: Specification

Choosing a specification is an **art**, **not a science!**

Can test different specifications

Should include variables that make economic sense!

Do not be afraid of including more than one specification

- Do not get carried away though!!!
- Need to write up the results

Results

This and the methodology are probably the **two most important parts** of this piece of coursework (as its an econometrics module!)

The methodology has shown the you have the **knowledge to apply the correct model** for this question, and you can explain the process for this decision (one of the aims and objectives of the course)

This section then shows that you **understand, and can interpret**, the results you have gained from your estimation (another one of the aims and objectives for this course)

So the key element of this section will be to....

Tip 6: Results

Show that you understand, and can interpret, the results that you have estimated

What are we looking for:

- ① Which model gives the best fit, if numerous were tested
 - Does this match the theory?
- ② How well does the specification fit?
- ③ What do the results suggest about your variables?
 - Does this match the theory in the data section?

Tables are a great way to show results!

- Need to be clear and logical
- Don't try to put too much in one table

Tip 7: Tables

If a table is not explained.... it doesn't count!

Creating tables in STATA

There are useful commands in STATA to produce good tables...

`findit outreg`

use <http://www.ats.ucla.edu/stat/stata/notes/hsb1>, `clear`
`regress read write`

Source	SS	df	MS	Number of obs = 195		
Model	11608.8938	4	2902.22346	F(4, 190) = 65.23		
Residual	8453.08565	190	44.4899245	Prob > F = 0.0000		
Total	20061.9795	194	103.412265	R-squared = 0.5787		
				Adj R-squared = 0.5698		
				Root MSE = 6.6701		

read	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
science	.2657521	.0648044	4.10	0.000	.1379236	.3935806
socst	.2808959	.0581116	4.83	0.000	.1662691	.3955227
math	.2961578	.0743467	3.98	0.000	.1495068	.4428087
write	.1141745	.0724559	1.58	0.117	-.0287468	.2570959
_cons	2.001966	3.163988	0.63	0.528	-4.239089	8.243021

`outreg using test.doc, replace`

regress read math write

Source	SS	df	MS	Number of obs = 200		
Model	7450.28755	1	7450.28755	F(1, 198) = 109.52		
Residual	13469.1324	198	68.0259215	Prob > F = 0.0000		
				R-squared = 0.3561		
				Adj R-squared = 0.3529		
Total	20919.42	199	105.122714	Root MSE = 8.2478		

read	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
write	.64553	.0616832	10.47	0.000	.5238896	.7671704
_cons	18.16215	3.307162	5.49	0.000	11.64037	24.68394

outreg using test.doc, merge

regress read science socst math write

Source	SS	df	MS	Number of obs = 200		
Model	10368.63	2	5184.31501	F(2, 197) = 96.80		
Residual	10550.79	197	53.5573096	Prob > F = 0.0000		
				R-squared = 0.4956		
				Adj R-squared = 0.4905		
Total	20919.42	199	105.122714	Root MSE = 7.3183		

read	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
math	.5196538	.0703972	7.38	0.000	.380825	.6584826
write	.3283984	.0695792	4.72	0.000	.1911828	.4656141
_cons	7.541599	3.26819	2.31	0.022	1.096471	13.98673

outreg using test.doc, merge

The contents of [test.doc](#) look like those below

	read	read	read
write	0.646 (10.47)**	0.328 (4.72)**	0.114 (1.58)
math		0.520 (7.38)**	0.296 (3.98)**
science			0.266 (4.10)**
socst			0.281 (4.83)**
_cons	18.162 (5.49)**	7.542 (2.31)*	2.002 (0.63)
R^2	0.36	0.50	0.58
N	200	200	195

* $p < 0.05$; ** $p < 0.01$

Not finished yet!

Again, need to explain what the table shows:

- What each column shows
- What are the results for each column?

Conclusions

- What does your work find?
- How does this relate to previous findings?
- Suggested work for future research?
- Limitations?

Tip 8:

Do not spend too much time/words on this section!

Referencing

- You will need to reference relevant papers
- Can find referencing guides online so there should be no reasons for bad referencing
- Reference list at the end of your work doesn't count in your word count
- Need to submit your do-file at the end of your work too (this also doesn't count towards your word count)

Further Examples

Hopefully this has given you some incite into writing an empirical piece

There are other good sources of information on this:

- Wooldridge. J., Introduction to Econometrics 4th Edition, Oxford. - Chapter 19
- Example papers in this weeks folder

Conclusions

- ① Not all of the points raised will be applicable for every project
- ② Select a question you can answer!
- ③ Read and refer to good papers
 - Highly cited, Good journal
- ④ Write the method in your own words
- ⑤ Be careful with your interpretation of results

Questions about the coursework?

If you do have further questions about the coursework do come and see me!