

Birkbeck, Univ of London  
MSc Financial Engineering

# How to Choose a Dissertation Topic

Online at  
[www.ems.bbk.ac.uk/faculty/  
phdStudents/smith/](http://www.ems.bbk.ac.uk/faculty/phdStudents/smith/)

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(I did the MSc Finance & Commodities in 2008-2009,  
now doing a PhD in Mathematical Finance)

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## Finding More Info on Dissertation

- **Dissertation Guidelines**  
(See [http://www.ems.bbk.ac.uk/for\\_students/msc\\_finEng](http://www.ems.bbk.ac.uk/for_students/msc_finEng))
- **Student Handbook** (same location)
- **Beverley Downton**
- **Previous MSc Students, Personal Tutors**

## Key Points

- Worth 2 modules (i.e. 33% of overall mark)
  - I think the course handbook is **WRONG** (it currently states “dissertation has the same weight as one course”)
- Only way to judge your ‘individual’ work.
- Proposal due “end of week 6 of spring term” (course handbook) = 12 Feb  
“27<sup>th</sup> February” – dissertation guidelines from 2008/09
- Dissertation due end of August
- Single supervisor.
  - Expect 3-5 meetings of 30 minutes with your Supervisor.
  - Supervisors’ time is limited in July / August, they may only visit Campus occasionally.
- **Proposal is *your* roadmap to use later.**



# Timetable - Suggested



## Dissertation



## Exams





# Timetable - Risky Method



## Dissertation

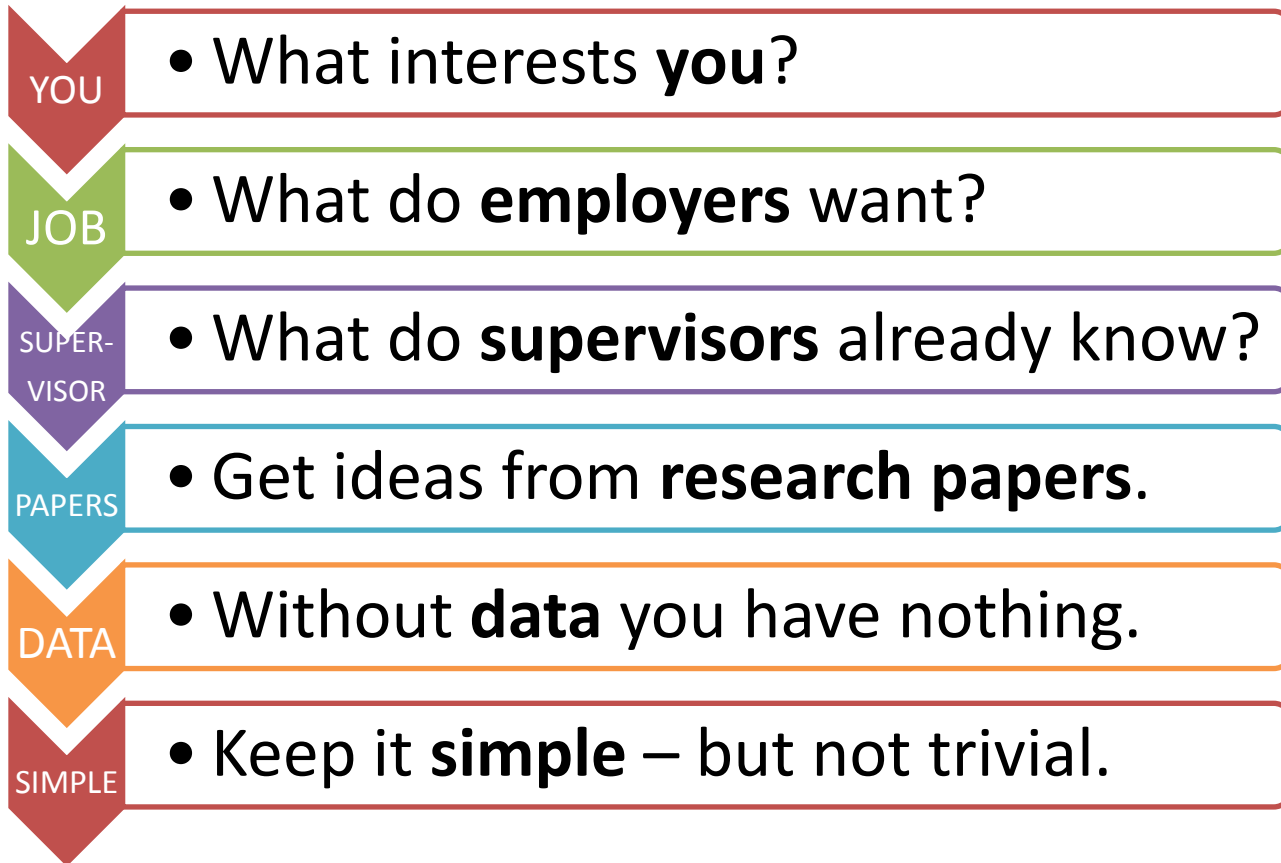


## Exams





# Choosing a Topic



## What interests **you**?

- What would you like to know a **lot** more about by August?
- Existing skills and interests
  - Software?
  - Econometrics?
  - Prior work experience?

## What do employers want?

- List your dissertation on your CV.
- Title should be clear and interesting.
- Sell your skills and interests through your dissertation.
- Great topic to discuss at interview.

## What do supervisors already research?

- An interested supervisor is a helpful supervisor.
- Read the staff web pages.
- Also look for people who **didn't** teach you.
- Ask PhD students for advise on supervisors.
- Talk to several (lots) of possible supervisors. It's not rude.
- Students get re-allocated if supervisors are too popular (this is bad for you, try to avoid)
- Dissertation is a good route into a PhD...



What do **supervisors** already research? –

My own Dissertation was supervised by Prof Geman

<http://www.ems.bbk.ac.uk/faculty/geman/>

#### **Published Papers**

"*Commodities and Numéraire*", 2010, Encyclopedia of Quantitative Finance, Wiley Publisher.

"Realized Variance Options and Convex Orders", 2010, *Quantitative Finance*

"On Pricing Risky Loans and Collateralized Fund Obligations", 2009, *Journal of Credit Risk*

"**Forward Curves**, Scarcity and Price Volatility in **Oil** and Natural Gas Markets", 2009, *Energy Economics*

"Modelling Electricity Prices with Forward Looking Capacity Constraints", 2009, *Applied Mathematical Finance*

"Modeling Commodity Prices under the CEV model", Winter 2009, *Journal of Alternative Investments*

"**WTI crude oil Futures** in portfolio diversification : The time-to-maturity effect", 2008, *Journal of Banking and Finance*

"Valuation of default-sensitive claims under imperfect information", 2008, *Finance and Stochastics*

"Correlations and the Pricing of Risks", 2008, *Annals of Finance*

"A lattice-based Method for the Pricing of Energy Derivatives in the Threshold Model", 2008, *Applied Mathematical Finance*

"Time Consistency in Managing a Commodity Portfolio: A Dynamic Risk Measure Approach", 2008, *Journal of Banking and Finance*

"Seasonal and Stochastic Features in **Commodity Forward Curves**", 2007, *Review of Derivatives Research*

"Water as the Next Commodity", 2007; *Journal of Alternative Investments*

"*Mean Reversion versus Random Walk in Oil and Natural Gas Prices*", 2007, Advances in Mathematical Finance, Birkhäuser Boston

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## Get ideas from research papers

Aggregators

JSTOR,  
ScienceDirect,  
...

Journals

Energy  
Economics

Applied  
Mathematical  
Finance

Papers

"...", Prof  
Helyette  
Geman

"...", Prof J  
Driffill

"...", Prof R  
Brummelhuis

## Get ideas from research papers

- Learn how to access research papers (hint, start at Birkbeck e-library)
  - [JSTOR.org](http://www.jstor.org) (older papers, the 'classics')
  - [ScienceDirect.com](http://www.sciencedirect.com) (the best for modern stuff)
  - [Google Scholar](http://www.google.com/scholar) (good for searching)
  - What have potential supervisors published recently?
- Download 10 to 20 papers, print.
  - Skim, not read. Look for patterns. Highlight. Keep.
  - Be prepared to discard 50%+ as irrelevant.

## Get ideas from research papers

- General format of research papers
  - Abstract
  - Literature Review
  - Data Summary
  - Statistical / Econometric Techniques
  - Result of Analysis
  - Conclusion
- **It's a good template for your dissertation**
- Old ones are often easier to read, but modern ones are more standardised (but deeper econometrics)

## Without data you have nothing

- Do you have a special access (intern, employer etc)
  - CHECK you can use that data use outside the organisation

### Easy to Get

- US Share Prices (Yahoo Finance)
- Daily Data (Yahoo Finance)
- Interest Rates (Federal Reserve, Bank of England)
- US Commodity Spot Prices (Datastream)

### Moderately Easy

- OECD Share Prices
- US Commodity Futures Prices (Datastream)
- Options Prices

### Hard to Get

- Developing World Share Prices
- Hourly / Tick Data
- Bonds
- Credit Ratings / Products
- Non-US Commodities
- Historical Options Prices

## Without data you have nothing

- Request any logins, permissions you need EARLY
- Public data is the safe choice
- Check frequency (daily good, yearly bad)
- Compare Apples with Apples
  - Currency / frequency conversions makes the story complicated
- Check length / quantity of data
  - Comparing data : You are limited by the weakest link
- *Get to know your data*
  - *Graph it, process it, detrend, correlate, ...*
  - *let it influence you and your topic*
  - *Think of it as your new best friend!*

# Recommended Data Sources

- **Yahoo Finance** (By far the easiest)
- **Datastream** (Harder to use, only 1 PC in Birkbeck Library, afternoons only)
- **FRED** (<http://research.stlouisfed.org/fred2/>)
- **data.un.org** (registration required?)
- [www.statistics.gov.uk](http://www.statistics.gov.uk)
- **UK Economic and Social Data Service**  
([www.esds.ac.uk](http://www.esds.ac.uk)) (registration required?)

Keep it **simple** – but not trivial.

- What products are most suitable for company xxx to hedge yyy risk?
- How has factor xxx changed during the recent economic turbulence?
- How did technique xxx cope during the recent economic turbulence?
- How/why does the correlation of xxx and yyy vary?
- How well does technique xxx work in markets yyy and zzz?
- How does factor xxx vary across different markets?



# Summary

Start NOW!

- Or you'll regret it in the summer (barbeque time!)

Papers

- Use as your template.


Data – Let it Guide and Influence you

- Data => topic
- Not topic => data

Supervisors

- Make friends now!

Good luck...

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phdStudents/smith/](http://www.ems.bbk.ac.uk/faculty/phdStudents/smith/)