# Empirical Corporate Finance - Intro

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## Objective -1

- The first objective of this class is to discuss where empirical corporate finance has been, where it currently is, and where it should go both in terms of empirical questions and methodology.

- Three basic lines of inquiry:
  - What are the relevant questions in corporate finance?
  - What are the methodologies that we can use to improve identification and power?
  - Which are the successful papers and why?

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## Objective -2

- The second objective of this class is to teach you how to do research successfully. This is much harder!
- Emphasis is on:
  - Evaluating the contribution of the literature
  - Learning how to use econometrics or identification strategies creatively.
  - Understanding what makes a paper a contribution
  - Learn to critically evaluate the literature
- How I will achieve this.

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## This course

- A reading course… especially for finance students, there are a number of "classical" papers that you need to know
- An empirical class:
  - First: the data
  - Second: the methodologies, i.e. identification
- Learn how to do research… you will learn a little bit of it in each of your second year classes, you need to start reading papers in a different way.
  - Less passive readings/more oriented toward the big picture/idea
  - Ask yourself: relevant paper? Why? What is the contribution?
  - You will be more successful in doing this if you read the papers before class. The syllabus gives you the roadmap of what we are going to do.

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## Open questions with every field

- What are the really important questions?
- How successful has the field been in answering those questions?
  - –If not, what are the challenges?
    - Data?
    - Identification?
- Ultimately you can develop the most solid test you want but if the question is uninteresting it will stay uninteresting.
- Always grounded in theory!!

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**Possible successful strategies**

## Finding new topics

- This is the hardest of all.
- Every field goes through expansion phases and contraction phases
- How do you define an interesting topic?
- Last advances in corporate finance
  - Law and finance ( beginning of the 1990s)
  - Behavioral corporate finance (end of the 90s)
  - New developments: experiments in the lab (Fehr and Schmidt, Fehr and Hart) and in the field . Very tentative yet. Mostly based on psychological biases or preferences, meets behavioral corporate finance?
  - Corporate finance meets asset pricing
  - Macro and finance. Mostly theoretical
  - Corporate finance meets development…
  - The financial crisis …
  - Housing and finance

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## Empirical tests are not convincing – you find a better one!

- The topic is an old one, but the approach is innovative:
- Better data
- Better Empirical Measures:
  - Graham (1996) proxy for the corporate marginal tax rate
  - Better measures of q - Abel and Blanchard (1986), Gilchrist and Himmelberg (1996)
  - Proxies for information asymmetry and agency problems…
- Simulation Experiments uncover problems with data (i.e., Power Studies):
  - Chirinko and Singha (2000) showed that the Shyam-Sunder and Myers (1999) test of the pecking order has no power
  - Strebulaev (2006) showed that profitability and leverage could be negatively correlated in a tax-bankruptcy cost tradeoff
  - Xin and Dasgupta (2006) show how mean reversion in leverage can be generated from non-tradeoff behavior

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## Empirical tests are not convincing – identification problems

- Econometrics in *finance* was generally sloppy and not convincing (this is true for both AP and CF), but improving. More in AP where endogeneity is not yet a concern.
- It takes about 6-7 years for our field to catch on the techniques applied in other fields (labor) – more of this: Mitchell's lecture
  - Finance is a subfield of economics
  - Essential to read the economic applied literature to do research in empirical (and also theory) finance
  - Essential to pick another empirical field and attend class sequence in the econ department

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## Methodology: How can we improve identification?

- Corporate finance meets economics:
  - Several econometric techniques applied in labor (& other areas of economics) are creeping into finance:
    - Clustering standard errors
    - Differences-in-differences strategies
    - Regression Discontinuity Design
    - Instrumental Variables
    - Matching techniques
    - More structural approaches – (i.e. structural I.O.)

→These techniques are useful to think about how to approach identification in finance.

→If you are serious about this field you need to take the applied micro-econometric field classes (I.O., labor, development, especially)

→Bernie Black's class in the spring

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## Some Examples: Differences-in-Differences

- *Big question*: Does regulation (e.g. increase in minimum wages) affect the economy? In which way? Minimum wage affects consumer demand, but may affect firms' profits.
- *Solution*: Differences-in-Differences:
- Card and Krueger (1994) studied the increase in the minimum wage in New Jersey from 4.25 to 5.05. This change took effect on April 1, 1992. Card and Krueger collected data on employment at fast food restaurants in New Jersey in February and in November 1992. They also collected similar data on restaurants in eastern Pennsylvania, the neighboring state, for the same period. The minimum wage in Pennsylvania remained at 4.25 throughout
  - Choose Pennsylvania to answer the counterfactual
  - Key is the parallel trends assumption: Comparison state employment level were trending in the same manner as New Jersey both prior to (and after) the change in minimum wages
- Dif-in-dif studies in finance:
  - Old question unsolved: does corporate governance matter?
  - First influential study: Bertrand and Mullainathan "Enjoying the Quiet Life? Corporate Governance and Managerial Preferences",JPE, October 2003 (first version 2000)
  - Now triple difference studies…

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## Examples: Regression Discontinuity Design

- *Question*: Does getting a fellowship improve your performance later on?
- Papers: Campbell (1969) studied the effect of National Merit scholarships on applicants' later achievement when the scholarships were awarded on the basis of past achievement. Thistlehwaite and Campbell (1960) study the effects of student scholarships on career aspirations using the fact that awards are only made if a test score exceeds a threshold
- *Problem*: Scholarship are not randomly assigned, e.g., smarter people get a scholarship (hopefully)
- *Solution:* Regression Discontinuity Design
  - Identification of causality was done by matching discontinuities or nonlinearities in the relationship between outcomes and past achievement to discontinuities or nonlinearities in the relationship between awards and past achievement.
- Regression Discontinuity studies in finance:
  - Old question in finance: does access to finance affect investment?
  - Rauh (2006), Bakke and Whited (2012)

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## Examples: Instrumental Variables

- *Question*: What are the long-term labor consequences of military service? (Angrist, AER 1990)
- *Problem*: Military service is not random (e.g., people self-select into service based on labor related characteristics, such as scholastic aptitude)
- *Solution:* Instrumental Variables
- Instrumental variables studies Use the Vietnam era draft lottery as a mechanism generating random assignment to draft eligibility
  - Use random draft eligibility as an instrumental variable for military service
- in finance:
  - Old question in finance: does access to finance affect investment?
  - Early examples: Blanchard et al (1994), Lamont (1997)

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## Examples (a bad and useful one): Instrumental Variables

- *Paper*: Angrist, Joshua and Alan B. Krueger (1991), "Does Compulsory School Attendance Affect Schooling?"
- *Problem:* Weak instruments
- Pros: Changed awareness on diagnostic on IV and how regressions should be reported. Protection against weak IV now standard (F First Stage F tests on the marginal excluded nstrument or sets of instrument and first stage R2)
- Much longer for finance to catch up. Still a lot of papers written with weak instruments. Still diagnostic not well described in papers (show me your first stage!)

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## Example: Matching problems

- In matching models the selection effect is the problem
- Solutions:
  (1) Propensity model (Rosenbaum, Propensity score matching as developed by Rosenbaum and Rubin (1983) The propensity score is the probability that an agent takes treatment. If the analyst knows (without having to estimate) the probability that a person takes treatment, and the assumptions of matching are fulfilled, he can condition on that known probability and avoid selection in means and marginal distributions.
  (2) control functions: (Heckman, 1980; Heckman and Robb, 1986, reprinted 2000; Heckman and Hotz, 1989; Ahn and Powell, 1993)
  (3) instrumental variable models (see e.g. Heckman and Vytlacil, 1999, 2001, 2003 or Heckman, 2001).
  (4) Developing a structural model (labor economics and i.o.)

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## Examples: Matching problems in finance

- The VC- entrepreneur problem. Why firms financed by better VCs do better? Distinguishing between
  - Better VCs invest in better companies (sorting hypothesis)
  - Better VC help manage the company better (influence hypothesis)
- Develop a structural model that distinguish between the two and test it: Sorensen, "How Smart is Smart Money? An Empirical Two-Sided Matching Model of VCs"

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## Organization of the course

- We will meet Thursdays 2:00-5:00 (few exceptions)
- Review session next Wednesday 5:00 to 7:00. Any problem?
- Email and syllabus
- Read the papers before class!
- This is a reading course
- If you are taking the class for credit, you should critically participate to class
- Homework, referee report, and 1 research proposal will be the way I will evaluate you
- Homework will be replication exercise of other papers.
- Mandatory attendance to job market seminar. We will hold a 15 minutes discussion on each corporate finance empirical paper (interpreted broadly).

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