

Empirical Legal Studies in America

Prof. Daniel Klerman

Sichuan University  
University Immersion Program

July 8-10, 2018

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Agenda for 3rd Class

- Review of last class
- Panel data: Crime
  - John J. Donohue & Justin Wolfers, Uses and Abuses of Empirical Evidence in the Death Penalty Debate (2005)
- Event studies
  - Sanjai Bhagat & Roberta Romano, Event Studies and the Law (2002)
  - Klerman & Mahoney, The Value of Judicial Independence (2005)
- Cross-Country Studies
  - Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer, The Economic Consequences of Legal Origins (2008)
  - Klerman, Mahoney, Spamann & Weinstein, Legal Origin or Colonial History? (2011)
  - Klerman & de Figueiredo, Legal Origin from Outer Space (in progress)

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Review of Last Class

- Lab Experiments
  - Guthrie, Rachlinski & Wystrich experiments testing judges for psychological biases
- Epstein & Martin on how to do empirical legal research
  - Design
    - Questions, hypotheses, causal inference strategy
  - Data and coding
  - Analysis
  - Presentation
- Natural experiments
  - Sunstein et al. on judicial ideology and panel effects

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# Panel Data

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- ## Panel Data
- Time-series data
    - Data for single entity (e.g. firm, state, country) over time
    - Annual death penalty rates for New York state 1960-2010
    - Stock price of Alibaba 2010-2018
    - Problem: Hard to know if other factors causing changes over time
  - Cross-sectional data
    - Unemployment in 50 countries in 2010
    - Settlement rates in 30 courts in 2000
    - Problem: Hard to know if differences are caused by factor analyzing
  - Panel data
    - Time series & cross-sectional
    - Observations for multiple entities over time
    - Death penalty rates for 50 US states over 20 year period
    - Stock prices of all stocks on NYSE 1950-2018
    - Much more powerful than time-series or cross-sectional data
      - But statistics can be complicated

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	Death Penalty Rate				Homicide Rate			
	1960	1961	1962	...	1960	1961	1962	....
Alabama								
Arkansas								
California								
Colorado								
....								

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John J. Donohue & Justin Wolfers

Uses and Abuses of Empirical Evidence in the Death Penalty Debate (2005)




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Death Penalty in US

- Criminal law in US is both state and federal law
- States pass laws that set punishments for most crimes
  - Death penalty, imprisonment, fines, etc.
- All laws, including state laws, must be consistent with US Constitution
- Supreme Court has changed its interpretation of the US Constitution
  - Before 1972. States could decide whether they wanted the death penalty
    - Most did, but execution became unusual
    - Death penalty only for aggravated homicide
  - 1972. *Furman*. Death penalty violates 8<sup>th</sup> Amendment ban on "cruel and unusual punishment"
    - No states could impose death penalty
  - 1976. *Gregg*. Death penalty does not violate 8<sup>th</sup> Amendment, if appropriate procedures are in place to assure fairness
    - Some states started imposing death penalty again, but rare

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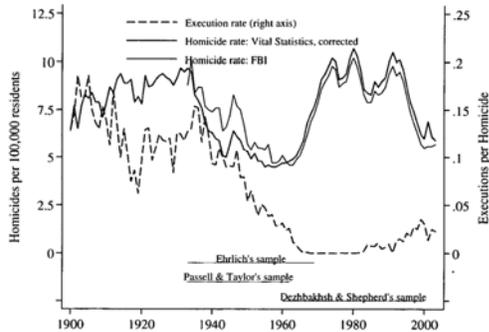
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Time-Series Analysis

Figure 1. Homicides and Execution in the United States




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### Conclusions

- US data does not speak clearly
- Death penalty does not predict year-to-year variation in homicide rates
- Possible that executions deter crime
  - But effect is too small to be detected using current empirical methods
- Note
  - Absence of persuasive proof of hypothesis
    - Does NOT mean that hypothesis is wrong
  - Lack of evidence that executions deter crime
    - does NOT mean that executions don't deter crime
  - When effects are small and other factors are hard to account for
    - We simply may not know
  - Appropriate for empiricists to be cautious about limitations of their methods and conclusions

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### Discussion

- Were you surprised by the results?
- Any questions about the Donohue & Wolfers study?
- Could a similar study be done in China?
  - What do you think you would find?
- Can you think of other panel data studies you could do?

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### Event Studies

Sanjai Bhagat & Roberta Romano

Event Studies and the Law (2002)



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### Event Studies

- Use stock and/or bond prices to measure effect of legal change or other event
- Assumes markets are efficient
  - Reflect all available information
  - “wisdom of crowd”
- Usually study effect on some stocks (treatment)
  - As compared to effect on other stocks (control)
- Usually compare effect over a few days (“event window”)
- Important to analyze date when market first learned information
  - Date legislation first introduced or passed uncertain legislative threshold
    - Note date legislation went into effect
  - Want events that “surprised” the market

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### Examples

- Effect on stock prices when firm changes incorporation to Delaware
  - Usually positive
  - Shows that good corporate law enhances firm value
  - Event is date intent to reincorporate is announced
    - Not actual date of re-incorporation
- Effect on stock prices of anti-takeover legislation
  - Theory is ambiguous
    - Take-overs generally raise prices
      - So anti-takeover legislation could have negative impact
    - Anti-takeover legislation could help managers bargain for higher sales price
      - So could have positive impact
    - Studies show no consistent effect
- Effect of Corporate Governance and Staggered Boards
  - Bebchuk, Cohen & Ferrell (2009)
  - Sepe and Cremers (2017)

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Dan Klerman & Paul Mahoney

The Value of Judicial Independence:  
Evidence from 18th-Century  
England



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## Overview

- Event study
  - Impact of increases in judicial independence
    - increased security of tenure, salary, jurisdiction
  - As measured by 18th-century securities prices
- Main results
  - Tenure “during good behavior” associated with 5-10% positive, statistically significant returns
  - Other changes associated with positive returns, but not individually statistically significant

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## Background

- New Institutional Economics
  - Protection of property and contract is key to economic growth
- North & Weingast (1989)
  - Glorious Revolution (1688) led to institutional changes which allowed government to credibly commit to debt repayment and protection of property/contract rights

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## Theory I

- Independent judiciary can help assure
  - repayment of sovereign debt, by providing impartial adjudication of claims
  - impartial enforcement of private contracts, by insulating adjudication from pressure from litigants
  - political stability, providing neutral adjudication of treason and other political cases

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## Theory II

- These benefits should impact stock and government bond prices, because
  - 18th-century companies, especially Bank of England, were major government creditors
  - Improvements in contractual adjudication should increase returns to contracting and investment
  - Political stability should increase returns and decrease risk

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## Reasons to be skeptical

- English judges may have been independent, *de facto*, even before the 18th century.
- Even in the 18th century, judicial independence could be revoked by statute.
- Judges dependent on others for enforcement.
- Judges still appointed unilaterally by king
- Clark (1996) and Stasavage (2003) find little economic impact of Glorious Revolution.

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## Historical Background

- Before 18th century, English judges could be removed, at will, by king
- Coke removed by James I
- James II removed twelve judges in 4 years
- Charles II defaulted on debts
- Show trials: Algernon Sidney & others
- William III blocked attempts to increase judicial independence

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### Data

- Equally-weighted market index of daily prices of Bank of England, East India Company, Million Bank, Royal Africa Company, South Sea Company
  - usually 3-4 available for each relevant period
- Consols
  - Government bonds, sold to individuals
  - Starting in mid 18th century
- Amsterdam prices of English securities
  - East India Company, Bank of England, South Seas Company

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### Methodology I

- Simple Event Study
- Expected return and variance from
  - 100 day estimation period
- Cumulative Abnormal Returns
  - 3 day window around events

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### Methodology II

- Event study with Amsterdam as control
- Info from Indies & continent reached London & Amsterdam at approximately the same time
- But info from England took 3 days to get to Amsterdam
- So  $CAR_{Lon} - CAR_{Am}$  captures impact of event but controls for info from rest of world, as long as event windows ends within 3 days of event
- Unfortunately, must use 2-week event window

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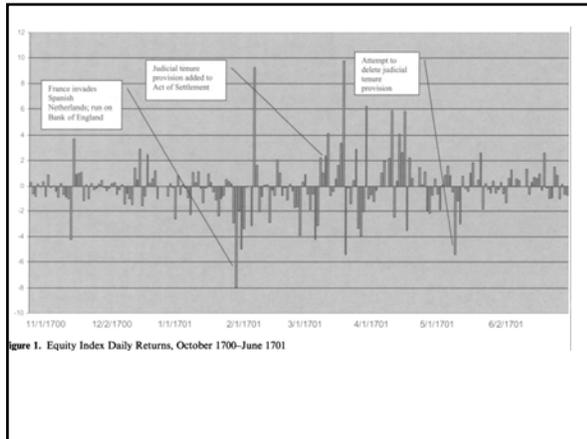
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### Events and Results I Act of Settlement (1701)

	Stocks		Bonds
	Simple CAR	Amster-dam control	Simple CAR
3/11/1701. First mention in Parliament of amendment providing tenure during good behavior.	9.05%* (2.21)		5.81%* (2.74)
5/10/1701. Attempt to delete amendment	-8.65%** (2.21)		-10.10%** (2.74)

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### Events and Results II

	Stocks		Bonds
	Simple CAR	Amster-dam control	Simple CAR
3/3/1761. Tenure surviving demise of drown.	0.83% (0.64)	4.01% (3.92)	0.48% (0.77)
3/14/1759. Proposal to increase judicial salaries by £500-£1000.	0.74% (3.87)	3.87% (3.92)	-0.23% (0.66)
3/8/1779. Proposal to increase judicial salaries by £400-£500.	1.34% (0.92)	7.79%* (3.92)	1.13% (0.98)
6/12/1799. Proposal to increase judicial salaries to £2000-£3000.	0.33% (1.27)		-0.19% (0.82)

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### Summary of Results

- All events had predicted sign for stocks
- Bonds mixed
- Only events relating to Act of Settlement (tenure during good behavior) were large and consistently statistically significant
- Other events
  - not statistically significant if test individually
  - but statistically significant if test jointly

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### Conclusion

- Modest confirmation of
  - value of judicial independence
  - economic effect of institutional reforms associated with Glorious Revolution (1688)

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### Cross-Country Studies

Rafael La Porta, Florencio Lopez-de-Silanes & Andrei Shleifer  
The Economic Consequences of Legal Origins (2008)

Klerman, Mahoney, Spamann & Weinstein Legal Origin or Colonial History? (2011)

Klerman & de de Figueiredo  
Legal Origin from Outer Space (in progress)

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### Legal Origin: Overview

- Nearly all countries have legal systems based on (British) common law or (French) civil law
- Vast literature shows common law legal origin leads to superior outcomes
- But legal system was usually imposed by colonial power
  - So unclear whether effect attributable to
    - Law
    - Other colonial policies (e.g. education)
    - Geography (e.g. climate, terrain, access to rivers and ocean, etc.)
- Klerman et al. (2011)
  - Explores role of other colonial policies
  - Finds other colonial policies more important than law
- Legal Origin from Outer Space
  - Explores role of geographic factors
    - Advantage of common law legal origin disappears when controlling for geographic factors

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### La Porta et al (2009)

- Over the last 2 decades, LLSV have written very influential papers that show link from common law legal origin to good policies and outcomes
  - Investor protection → large capital markets
  - Free labor markets → low unemployment
  - Judicial independence → property rights
- Theory
  - Common law more supportive of free markets
  - Common law more adaptable, less formalistic

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### Legal Origin or Colonial History? (2011)

Dan Klerman, Paul Mahoney, Holger Spamann, and Mark Weinstein



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	Growth 1960-2007	Legal Origin
Botswana	5.7%	Mixed
S. Korea	5.2%	German
Singapore	5.1%	Common
Malaysia	4.5%	Common
Thailand	4.4%	Mixed
Haiti	-0.3%	French
Nicaragua	-0.5%	French
Niger	-0.8%	French
C.A.Rep.	-1.2%	French
Zaire	-3.5%	French

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	(1)
French Law, French Colony	0.00
French Law, Not French Colony	0.78
Common Law, British Colony	1.01
Mixed Law, British Colony	2.11
Education in 1960	
Life Expectancy in 1960	
Juries 1960	
Case Law 1973	
Judicial Independence 1960	
Statistical Significance: Legal and Colonial Origin	Yes p=0.00
Statistical Significance: Other variables	

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### Conclusions from 2011 Article

- Common Law countries grew, on average, 0.5% faster
- But common law advantage better explained by colonial policy than by law
  - Non-French colonies with French law grew faster than French colonies
  - British colonies with mixed legal systems grew faster than those with common law
  - Colonial policy variables (education, life expectancy) have more explanatory power than legal variable (juries, case law, judicial independence)

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## Legal Origin from Outer Space

Dan Klerman & Miguel de Figueiredo



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## Geography

- 2011 article could not adequately control for geographic factors
  - Climate, disease environment, topography, natural resources, culture
  - Hard to do in cross-country regression framework
    - Because countries are not homogenous in geographical factors
- Geography matters
  - Different colonization strategies (Acemoglu & Robinson)
  - Malaria impedes development (Sachs)
  - Culture is correlated with geography
- Colonization is not random
  - British were dominant military power from at least late 18<sup>th</sup> century
    - Colonized South Africa
  - French colonized Sahara (Chad, Niger, Mali, Mauritania)
- Accounting for geographic factors is goal of Legal Origin from Outer Space

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## Regression Discontinuity Approach

- Geographic regression discontinuity approach
  - New and powerful way to deal with geographic factors
  - Examine areas close to border between countries of different legal origin
    - e.g. 25km of border between Ghana (common law) and Burkina Faso (French)
  - Regions on both sides are likely to be similar in terms of geography
    - Can check & control for differences using available data
- Especially powerful for Africa
  - Colonial borders drawn in Europe with little knowledge of local conditions
    - Often split ethnic groups, so culture similar across border
    - If border follows natural feature like river, both sides likely to be similar
    - Sometimes straight line borders

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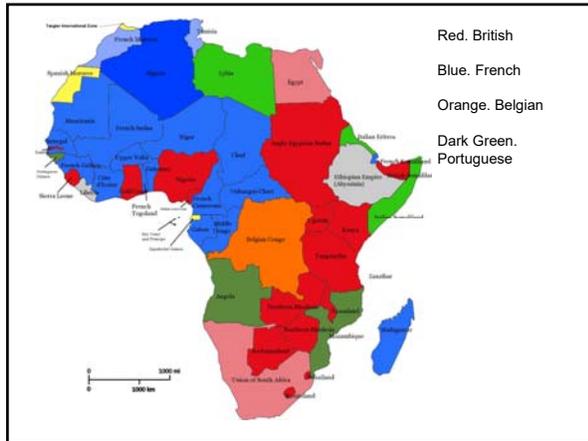
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Covariate Balance: Ghana-Burkina Faso

Variable	Mean Diff.	Standard Error	Baseline Mean
Elevation	25.19	0.41	259.61
Precip. Variance	5.92	0.06	100.06
Precip. Average	-52.48	0.35	963.80
Annual Temp. Range	0.31	0.01	17.88
Temp. Variance	2.19	0.12	196.69
Temp. Day Range	0.29	0.01	12.09
Temp. Average	-0.02	0.00	27.81

Notes: Bandwidth = 100 km. N = 52,489.

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### Nighttime Lights

- Regression discontinuity approach requires highly localized dependent variable
  - Nighttime light as measure by satellite
- Increasingly used by economists as measure of economic activity
  - More accurate than official statistics for developing countries



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### Nighttime Lights and Africa

- Especially valuable for Africa
- Michalopoulos & Papaioannou (2013)



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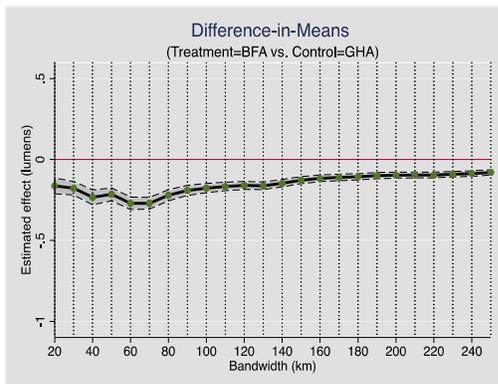
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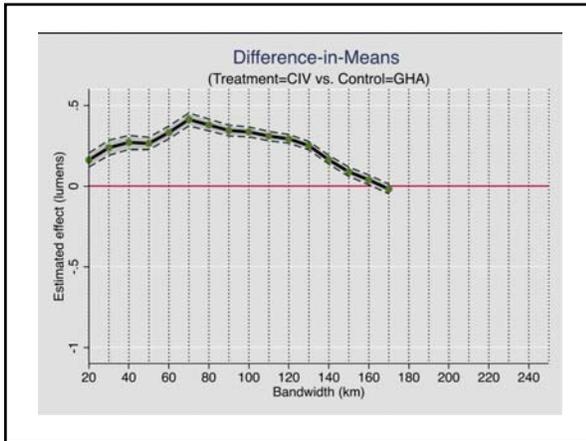
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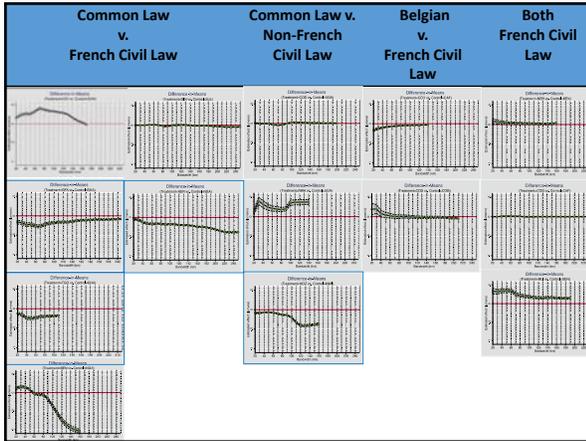
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### Conclusion

- Very tentative, b/c have only analyzed 14 borders so far
- British / common law advantage, if any, is
  - Small and inconsistent
  - Common law brighter in only 4/9 (44%)
    - No difference 3/9 (33%); Civil law brighter 2/9 (22%)
- Average difference at 100km bandwidth
  - Weighted: -0.042 (common law brighter)
    - Weighted by length of border
  - Unweighted: 0.025 (civil law brighter)
- Apparent difference between performance of common law and civil law disappears when control for geography using regression discontinuity analysis
- History is not destiny
  - Modern policies matter more than deep history
- Geography is a factor, but clearly not decisive
  - Substantial differences across borders mean that policies matter, even when geographic factors similar

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### Next Steps

- All borders in Africa
- Control for population
- Control for other geographic factors
  - Ethnic groups
  - Conditions conducive to malaria
  - Ruggedness (Nunn re slave trade)
  - Natural resources
- Economic growth
  - Change in light intensity 1992-2013
- Suggestions? Questions?

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### Discussion

- What do you think about the legal origin debate?
- Is it accurate or informative to talk about China having German legal origin?
- Do you think China has been positively or negatively influenced by its German legal origin?
- Can you think of other ways of studying the effect of legal origin?
- Can you think of other cross-country studies?

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### Next Class

- Tomorrow, 8:15-11:45
- Contracts
  - Florencia Marotta-Wurgler, What's in a Standard Form Contract? An Empirical Analysis of Software License Agreements (2007)
- Non-quantitative studies
  - Lisa Bernstein, Opting Out of the Legal System: Extralegal Contractual Relations in the Diamond Industry (1992)
- File reviews
  - David Studdert et al., Claims, Errors, and Compensation Payments in Medical Malpractice Litigation (2006)
- Exam
  - Multiple choice
  - Open book
  - 10:45-11:45

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