LAW & PROJECT FINANCE

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Seminar at ICRIER, Aug 2010

Agenda

Broad overview of Research in “Law, Economics and Finance”

Law and Project Finance: Motivation and Introduction

Law and Project Finance: Data and Proxies

Law and Project Finance: Empirical Results

Law and Project Finance: Summary and Conclusion

The Law, Economics & Finance literature

- Law and Finance literature (LLSV 1997,98 & others)
  - Analyzes effect of “legal” investor protection on various country-level outcomes
- This literature is international in its perspective
  - Unlike a majority of the other literature in Finance
- Directly relevant for India & emerging countries

The Law, Economics & Finance literature

- LLSV (1997, 1998) started from the following proposition:

- Legal protection of outside investors (shareholders and creditors):
  - Limits the extent of expropriation of such investors
  - by corporate insiders, and
  - thereby promotes economic and financial development

- Much stronger legal protection of investors (and enforcement) in some countries than others
  - Such differences related to the legal origins (English common law vs. French or German Civil law)
  - English common law countries generally better

Pervasive influence on economic & financial outcomes

- Government ownership of banks (La Porta et al. 2002)
- Burden of entry regulations (Djankov et al. 2002)
- Regulation of labor markets (Juan C. Botero et al. 2004)
- Incidence of military conscription (Casey B. Mulligan and Shleifer 2005a, 2005b)
- Government ownership of the media (Djankov et al. 2003a)

Legal protection & Finance

INSTITUTION

OUTCOME

Legal origin

Commercial law

Securities law

(Shareholder protection)

1. Corporate governance
2. Stock market capitalization to GDP
3. Pace of IPO/ SEO activity
4. Self-dealing/ corporate fraud
5. Dispersion of equity ownership
6. Project vs. Corporate debt finance

Bankruptcy law

(Creditor protection)

1. Ex-post: Efficiency of bankruptcy process
2. Ex-ante: Availability of Private Credit
3. Ex-ante: Investment in innovation and economic growth

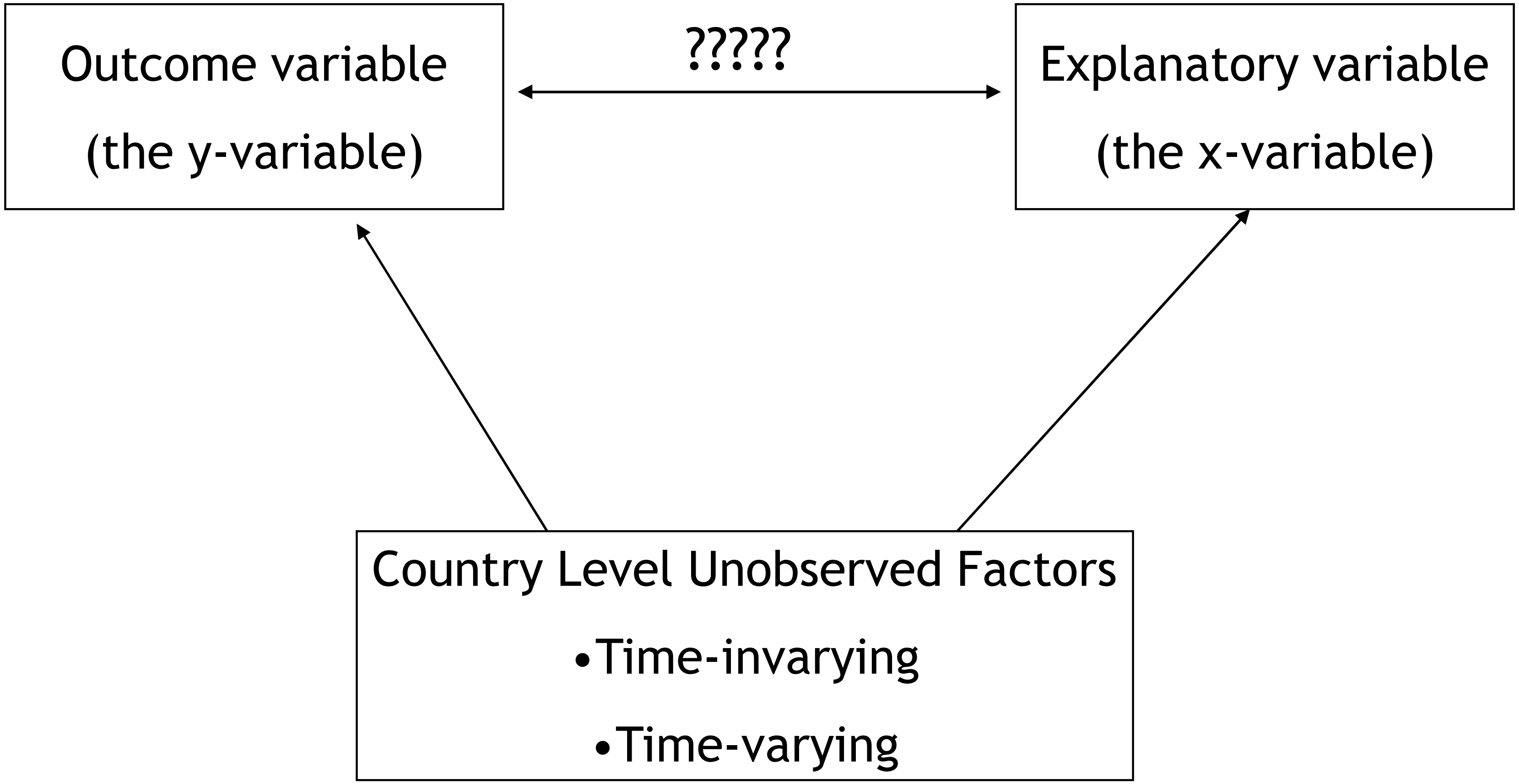
Labor law

(Labor protection)

1. Ex-post: ability to hire/ fire; militancy of labor
2. Ex-ante: Investment in innovation and economic growth

Challenges in empirical work

❑Inferring causal effects of any legal/ institutional variable on a particular outcome is challenging



Tackling these challenges: Examples

INSTITUTION	**OUTCOME**
Commercial law Securities law (investor protection)	Project Finance vs. Corporate Debt Finance Subramanian and Tung Revise and Resubmit *Journal of Law, Economics & Organizations (2010)*
Bankruptcy law (Creditor rights)	Innovation & Country-level economic growth Acharya and Subramanian *Review of Financial Studies*, 2009
Labor law	Innovation & Country-level economic growth Acharya, Baghai and Subramanian Revise and Resubmit *Review of Financial Studies*, 2010a, 2010b

Legal origin

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Broad overview of Research in "Law, Economics and Finance"

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Law and Project Finance: Summary and Conclusion

Motivation

- Rapid growth in use of Project finance
  - From < $10 billion per year in late 1980s to almost $500 billion per year over the last decade (Esty, 2005)
- Bulk of Project Finance today in developing countries
  - 63% of the project loan amounts to developed world in 2000
  - Less than 30% over the last decade
- Importance of Project Finance:
  - In 2004, US corporations invest $34 billion in project finance
  - More than $25 billion that VC funds invested in startups
  - About half of $73 billion raised by US companies through IPOs
- Yet, very little academic research in Project Finance
  - More than 50 papers in A journals in VC and IPO areas
  - Not even one in an A journal in Project Finance!

Critical Importance of Project Finance in India

- India needs to double its infrastructure spending to $1 trillion in the five years to 2016-17 to achieve 10% annual growth rates (Mint, 23rd March '10)

- "It will not happen automatically. We would need continuous improvements in our policy regime and implementation process"

  -Prime Minister's statement

- One aspect of this implementation
  - Project Financing vs. Corporate Debt Financing

Main Thesis of our research

- Project Finance offers an alternative method of financing to corporate debt finance for financing large projects
  - when legal protection of outside investors is poor
- Country's laws and enforcement provide weak protection to outside investors
  - Possibility of expropriation of outside investors by insiders in Corporate Debt Finance => Reduced debt capacity
- Inefficiency created by weak legal protection: reduced debt capacity in Corporate Debt Finance
- Project Finance is a organizational/ contractual response to such inefficiency

Key Findings

- We find using Bank Loans in thirty-nine countries
- Project Finance is more likely in countries where:
  - Legal protection against insider stealing is weak
  - Creditor protection are weak
- Laws against insider stealing & creditor rights substitute for each other
- Offer a new illustration in the context of debt financing that Law matters!
  - Project Finance offers a private and costly substitute for weak legal investor protection
  - Stronger investor protection lead to more Corporate Debt finance

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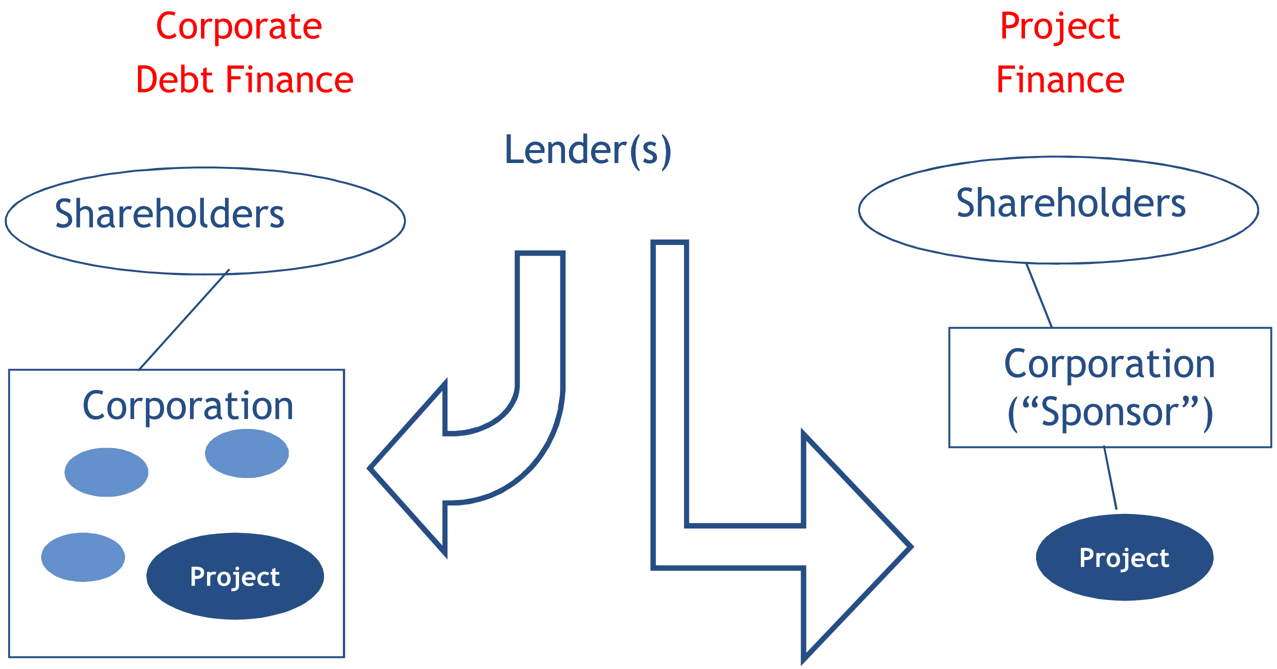
LAW & PROJECT FINANCE

Institutional Features



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- Nevitt and Fabozzi (2000): PF involves four distinguishing features
  1. Creation of a legally independent project company
  2. Project Company invests only in the project for which it was created
  3. Project debt is structured without recourse to sponsor
- =>Project cash flows are the essential means to repay lender
- Fourth essential feature underemphasized by existing literature
  - PF involves severe constraints on use and disposition of project cash flows
- PF involves high leverage, bulk of which is bank debt

Project Finance versus Corporate Debt Finance

Project Finance	⟺ Corporate Debt Finance
❑ Single, discrete project in an independent entity	❑ One of multiple projects in the Sponsor Corporation
❑ Easy separation of project cash flows	❑ Project cash flows commingled with other projects of the sponsor
❑ Cost of lender monitoring of project cash flows low	❑ Cost of lender monitoring of project cash flows high
❑ Minimal growth options	❑ Valuable growth options
❑ Detailed contractual arrangements over use of cash flow feasible	❑ Detailed contractual arrangements over use of cash flow: (i) difficult (ii) costly

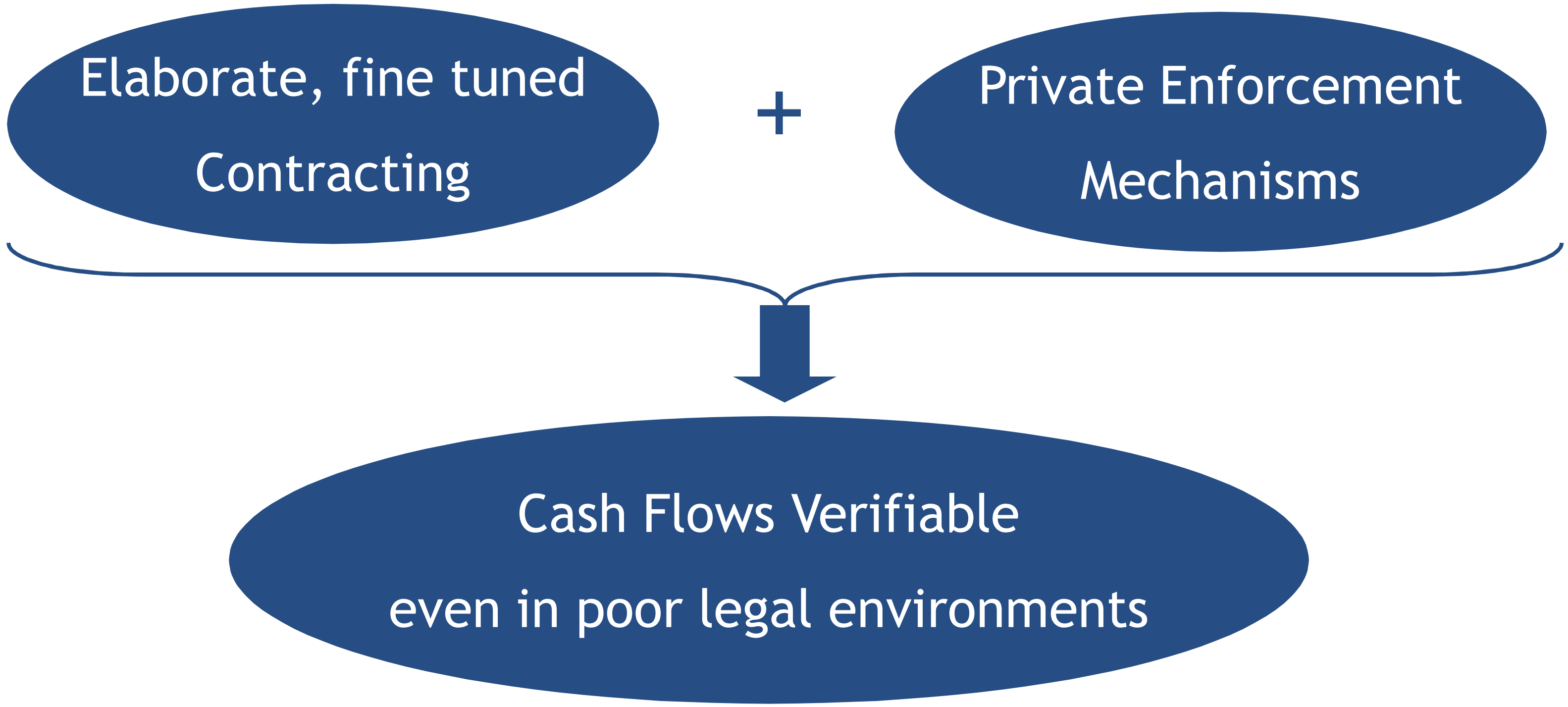
The Cash Flow Waterfall Contract (CFWC)

- Project Company enters into detailed contracts
- Cash flow Waterfall Contract (CFWC): a critical contractual arrangement in PF
- Dictates the order in which project cash flows may be distributed (First for Operating expenses, then to pay interest and loan principal)
- Cash flow Waterfall Contract adjusts for a number of contingencies
  - Required payments may be increased/ decreased depending upon some key financial ratios
- CFWC commonly also includes “cash sharing”, “mandatory cash sweep”, “cash flow lockup” provisions
  - When project exceeds expectations, cash sharing provisions kick in
  - When the project performance is below expectation, lock up and mandatory cash sweep provisions may be triggered

Private Enforcement Mechanisms lend teeth to CFWC

- CFWC is enforced through a network of Project Escrow accounts
- Accounts are under the control of the lender
  - Provide the lender control over the borrower's activities without involving the lender in the borrower's day-to-day business activities.
- Lender-controlled project accounts lend teeth to CFWC
  - The teeth matter especially in weak legal environments (poor enforcement)

Project Finance enhances cash flow verifiability



Costs and benefits of Project Finance vis-à-vis Corporate Debt Finance

- Compared to Corporate Debt Finance, Project Finance offers the benefit of cash flow verifiability

- Primary cost: Loss of managerial flexibility
  - Cash flow controls preclude managers from funding any growth opportunities
  - Bill Young (Head of Specialized Finance Group at BP-Amoco): "I think of Corporate Finance as a way to avoid the inflexibility associated with Project Finance. When you sign a Project Finance deal, you have to live with a giant stack of documents full of provisions that hinder your ability to respond to a changing environment or to exploit opportunities." (Esty and Kane, 2001)

- Secondary cost: Considerable transaction costs

Empirical Hypotheses

- H1: Project Finance more likely than Corporate Debt Finance when protection against insider stealing is weaker
- H2: Project Finance more likely than Corporate Debt Finance when creditor protection is weaker
- H3: Creditor protection and protection against insider stealing are substitutes
- H4: “No automatic stay on secured assets" component should have a greater effect than the other components of creditor rights

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Dependent Variable

- Bank loans to Project Finance <u>versus</u>
- Bank loans to Corporations for their large investments (Corporate Debt Finance)
  - Bank loans comprise bulk (80%) of Project Debt
- Corporate Debt Finance:
  - Capital expenditure loans
  - Corporate Purpose Term Loans > $ 0.5mn (min. size of Project Finance loan)
- Data from Dealscan
- Exclude some outlier industries
  - Agriculture, Forestry and Fishing (only seven Project Finance deals)
  - Public Administration (only four Corporate Debt Finance deals)

Loan Characteristics for PF and CDF categories

Summary Statistic	Project Finance	Capital expenditures	Corporate Purpose Term loans
Observations	1595	774	2743
	Deal Amount (in $ millions)		
Mean	255.2	215.5	244.4
Median	123.9	155.0	100.0
Std. Devn.	482.2	597.9	635.1
Minimum	0.5	0.5	0.8
Maximum	10513.8	10586.3	10588.9
	Maturity (in years)		
Mean	10.7	10.5	10.4
Median	10.6	10.5	10.4
Std. Devn.	0.7	0.4	0.4
Minimum	9.5	9.5	9.5
Maximum	20.0	12.8	12.8
	Number of Lenders		
Mean	7.1	5.3	5.0
Median	4	3	3
Std. Devn.	7.4	6.1	6.4
Minimum	1	1	1
Maximum	50	48	96

Legal Protection of Outside Investors

- Legal protection against insider stealing
  - Ex-post index of Self-dealing (Djankov et. al., 2006)
    - Measures **hurdles** that insiders must overcome to self-deal
  - 1- Dyck-Zingales control premium
    - Market price based measure => can capture enforcement as well
    - Complements the lawyer survey based DLLS measures
- Index of Creditor Rights (Djankov et. al., 2005)

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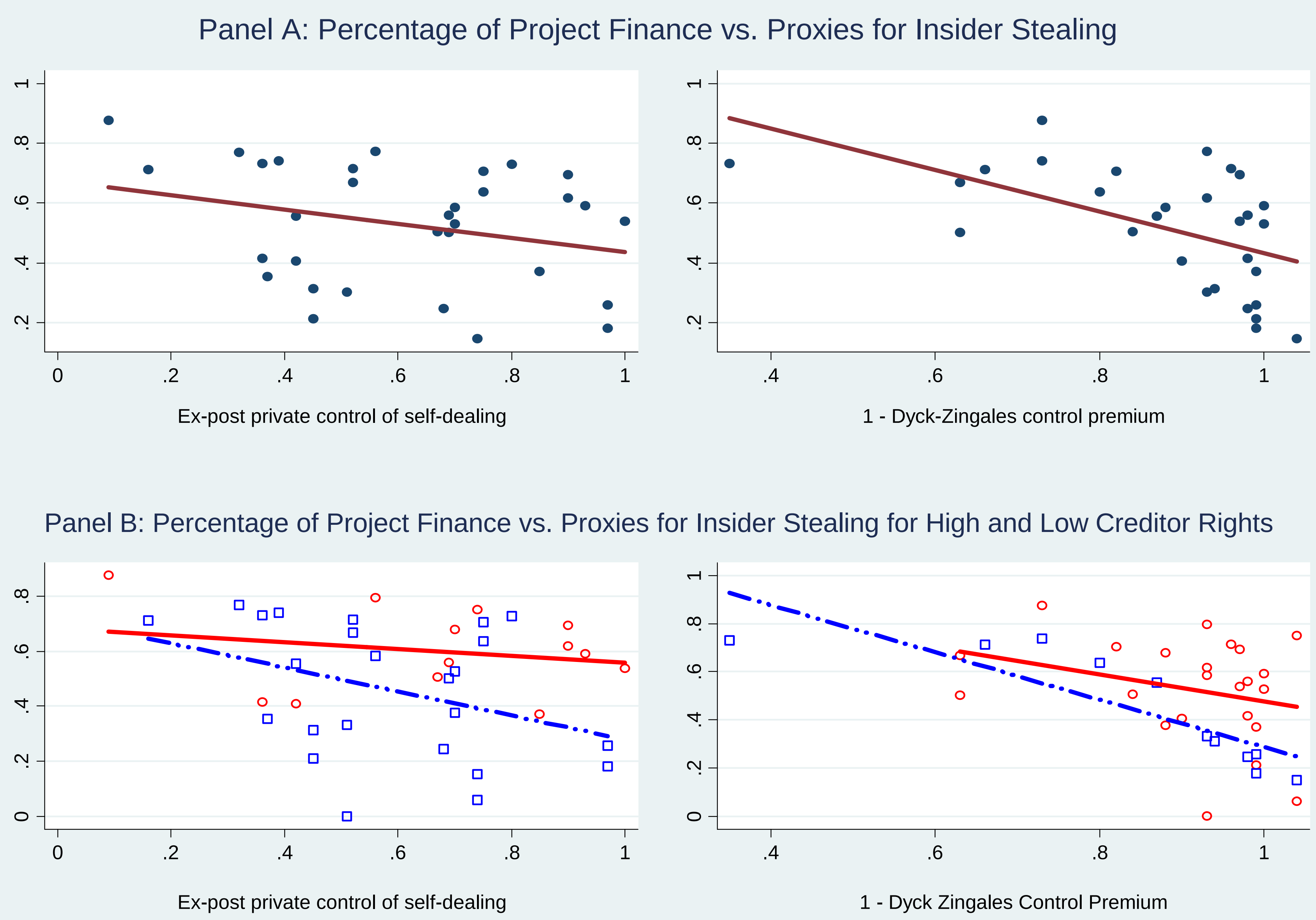
Univariate investigation



Empirical Strategy

- Challenges in inferring a causal relationship:
  - Omitted variables at deal, borrower or lender level
  - Country-level laws correlated with other country-level unobserved factors
  - Other systematic differences in countries driving the choice

- Empirical analysis in five steps:
  1. Deal-level logit regressions PF vs. CDF
  2. Industry-level regressions using % of PF as dependent variable
  3. Difference-in-difference tests exploiting changes in legal variables
  4. Relative effect of "no automatic stay on secured assets" versus other components
  5. Inter-industry differences based on free cash flow/assets

Table 2

Logit Regressions: y=1 if PF; 0 if CDF

	(1)	(2)	(3)	(4)	(5)	(6)
Protection against Insider Stealing	-0.745***	-0.964***	-0.743***	-1.187***	-0.677***	-0.941***
	(4.28)	(3.11)	(3.48)	(3.79)	(3.53)	(3.00)
Protection against Insider Stealing * Creditor Rights	0.111**	0.134***	0.107**	0.157***	0.113**	0.136***
	(2.40)	(3.63)	(2.12)	(5.17)	(2.34)	(3.40)
Creditor rights	-0.093*	-0.140***	-0.090*	-0.160***	-0.099**	-0.146***
	(1.90)	(2.84)	(1.83)	(4.14)	(2.03)	(2.89)
All in spread drawn					-0.056	-0.075**
					(1.27)	(2.01)
Log of Deal Amount					-0.003	-0.008
					(0.31)	(0.93)
One if Secured					0.015	0.017
					(1.29)	(1.38)
Maturity					0.129**	0.103
					(2.22)	(1.58)
One if Borrower not rated					0.034	0.018
					(1.02)	(0.62)
One if Senior					-0.136	-0.132
					(1.56)	(1.54)
Free Cash Flow / Assets					0.122***	0.111***
					(5.76)	(5.46)
Tangibility					0.116**	0.077*
					(2.56)	(1.74)
Interest Expense / Net Income					0.012	0.005
					(1.43)	(0.59)
LT Debt / Total Assets					0.229***	0.225***
					(4.19)	(3.54)
Tobin's Q					0.100	0.063
					(1.05)	(0.69)
LT Debt / Total Assets * Tobin's Q					0.799***	0.742***
					(8.13)	(6.79)
Sample	Full	Full	Excludes Corporate Purpose Term Loans		Full	Full
Borrower Random Effects	No	No	No	No	Yes	Yes
Industry Fixed Effects	No	No	No	No	Yes	Yes
Year Fixed Effects	No	No	No	No	Yes	Yes
Observations	5005	4964	2296	2264	4533	4493
R-squared	0.39	0.46	0.24	0.36	0.68	0.71

Robust Standard Errors clustered by country

Table 3 (Industry level OLS regressions)

Protection against Insider Stealing	-0.702***	-1.153***	-0.651***	-1.220***	-0.242***	-0.502***
	(7.84)	(5.89)	(3.70)	(4.66)	(4.14)	(5.25)
Protection against Insider Stealing * Creditor Rights	0.044**	0.071***	0.061	0.126***	0.015*	0.029***
	(2.48)	(3.69)	(1.60)	(3.75)	(2.00)	(3.09)
Creditor rights	-0.027*	-0.063**	-0.047*	-0.125***	-0.008*	-0.025**
	(1.68)	(2.56)	(1.72)	(3.02)	(1.76)	(2.24)
Average of All in spread drawn					0.020	0.016
					(0.75)	(0.51)
Average of Log of Deal Amount					0.004	0.001
					(0.43)	(0.10)
% of Secured Loans					0.016**	0.018***
					(2.29)	(2.78)
Average Maturity					0.126***	0.131***
					(7.86)	(6.89)
% of Borrowers not rated					0.046	0.038
					(1.62)	(1.29)
% of Senior loans					-0.043*	-0.048**
					(1.85)	(2.17)
Free Cash Flow / Assets					0.144***	0.135***
					(3.76)	(3.76)
Tangibility					0.088	0.075
					(1.07)	(0.95)
Interest Expense / Net Income					0.028*	0.025*
					(2.00)	(1.98)
LT Debt / Total Assets					0.250**	0.263**
					(2.13)	(2.29)
Tobin's Q					0.044	0.020
					(0.46)	(0.23)
LT Debt / Total Assets * Tobin's Q					1.318***	1.245***
					(4.74)	(4.45)
Sample	Full	Full	Excludes Corporate Purpose Term Loans		Full	Full
Industry Fixed Effects	No	No	No	No	Yes	Yes
Year Fixed Effects	No	No	No	No	Yes	Yes
Observations	1795	1762	1212	2264	1677	1645
R-squared	0.16	0.19	0.09	0.36	0.75	0.75

Table 4 (Controlling for various country level factors)

Protection against Insider Stealing	-1.863***	-1.581***	-0.871**	-0.779*
	(3.44)	(4.59)	(2.29)	(1.99)
Protection against Insider Stealing * Creditor Rights	0.155***	0.177***	0.057*	0.098**
	(4.42)	(9.96)	(1.83)	(2.59)
Creditor rights	-0.124***	-0.178***	-0.041	-0.092**
	(3.90)	(9.14)	(1.46)	(2.20)
French legal origin dummy	-0.536*	-0.466**	-0.220	-0.227
	(1.83)	(2.46)	(1.37)	(1.27)
German legal origin dummy	-0.346**	-0.274***	-0.115	-0.075
	(2.19)	(3.10)	(1.05)	(0.73)
Scandinavian legal origin dummy	-0.352*	-0.190**	-0.258**	-0.146**
	(1.85)	(2.38)	(2.28)	(2.65)
Enforceability of contracts	0.017	-0.014	-0.011	-0.025**
	(0.59)	(0.71)	(0.75)	(2.21)
Rule of Law	0.160**	0.112**	0.072*	0.114***
	(2.47)	(2.22)	(1.77)	(3.45)
Corruption	-0.153**	-0.138***	-0.038	-0.075*
	(2.26)	(3.39)	(0.91)	(1.78)
Efficiency of Judicial System	-0.056*	-0.037	-0.039*	-0.049**
	(1.65)	(1.23)	(1.92)	(2.37)
Index of Political Rights	0.070**	0.075***	0.046*	0.073***
	(2.12)	(3.25)	(1.91)	(3.31)
Legal Formalism Index	0.132	0.162**	0.061	0.118**
	(1.44)	(2.55)	(1.30)	(2.53)
Public enforcement index	-0.112	-0.148**	-0.018	-0.095*
	(1.21)	(2.32)	(0.34)	(1.72)
One if information sharing operates in 1999	0.376***	0.285***	0.173	0.238**
	(2.75)	(3.14)	(1.55)	(2.56)
Efficiency of the Bankruptcy Procedure	-0.005	-0.004*	-0.001	-0.003
	(1.30)	(1.96)	(0.66)	(1.54)
Log of GDP per capita	0.374*	0.381**	0.114	0.181
	(1.73)	(2.23)	(0.97)	(1.16)
Log of Private Credit to GDP per capita	0.252	0.171*	0.062	0.024
	(1.64)	(1.93)	(0.83)	(0.33)
Accounting Standards	-0.006**	-0.001	-0.003	0.004*
	(2.18)	(0.22)	(1.16)	(1.73)
Sample	Deal	Deal	Country, Industry, Year	Country, Industry, Year
Borrower Random Effects	Yes	Yes	N/A	N/A
Industry Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	4534	4494	1678	1646
R-squared	0.58	0.62	0.40	0.42

Difference-in-difference tests using legal changes

- Country-level changes in creditor rights and in shareholders' right to bring derivative suits
- Shareholder derivative suit: “An action brought by a shareholder of a company in the name and on behalf of that company in order to seek redress for a harm done to the company by the company's directors or officers”
- Availability of shareholder derivative suits offers an important mechanism for the private enforcement of managers' fiduciary duties
- Wider availability of shareholder derivative suits => stronger constraints on insider stealing
- This legal feature is included as a component of the index of ex-post private control of self-dealing

Table 5: Country level legal changes

Panel A: Countries that changed Creditor Rights		Panel B: Countries that changed laws governing Shareholder Derivative Suits	
Country Name	Year	Country Name	Year
Indonesia	1998	Australia	2000 (Instituted)
Israel	1995	Germany	1998 (minimum share ownership required for enforcing claims changed from 10% to 5%)
Japan	1999	Italy	1998 (minimum share ownership required for enforcing claims changed from 10% to 5%)
Sweden	1995	Mexico	2001 (minimum share ownership required for enforcing claims changed from 33% to 15%)
Thailand	1998		

Table 5 – Difference-in-difference tests

Change in Creditor Rights	-0.052***	-0.124***	
	(8.24)	(9.79)	
Change in Creditor Rights Dummy * Ex-post private control of self-dealing	0.017***		
	(7.24)		
Change in Creditor Rights Dummy * (1 – Dyck Zingales Control Premium)		0.030***	
		(9.48)	
Change in Derivative Suit Rules Dummy			-0.108***
			(7.23)
Change in Derivative Suit Rules Dummy * Creditor Rights			0.035***
			(38.73)
Borrower Fixed Effects[1]	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes
Observations	4727	4686	4747
R-squared	0.29	0.31	0.32

[1] The borrower fixed effects subsume country and industry fixed effects

Discussion of Difference-in-difference tests

- Potential endogenous factors in our cross-country tests
- First, PF involves an asset choice + a financing choice (Esty, 2003)
  - May be employed relatively more than CDF in industries that employ assets involving costly agency conflicts.
- Second, pattern of industries in different countries potentially correlated systematically with country-wide unobserved factors
  - Could drive the choice of Project Finance in these industries
- Third, what if rule of law, enforcement of contracts, efficiency of the judiciary, etc. capture enforcement of criminal law but not corporate or bankruptcy laws?
  - Enforcement of these laws may be omitted variables that are correlated with the laws themselves.
- Difference-in-difference tests exploit variation across time within a given industry in a given country
- Provide strong support for the evidence noted in the cross-sectional tests

Table 6: No Automatic Stay on Secured Assets

- ❑Hart (1995): ability to seize assets crucial to force a borrower to repay
- ❑=> "No automatic stay on secured assets" component of creditor rights should have a relatively greater effect than other components

	(1)	(2)	(3)	(4)
Proxy for Protection against Insider Stealing:	Ex-post private control of self-dealing	1 – Dyck Zingales Control Premium	Ex-post private control of self-dealing	1 – Dyck Zingales Control Premium
Protection against Insider Stealing	-1.150***	-2.099***	-0.833***	-1.458***
	(6.05)	(4.64)	(4.60)	(3.07)
No automatic stay on secured assets	-0.169***	-0.256***	-0.081**	-0.146***
	(6.72)	(10.35)	(2.05)	(3.10)
Secured creditors first paid	-0.057***	-0.09***	-0.038**	-0.065**
	(3.56)	(2.76)	(2.71)	(2.07)
Restrictions for going into reorganization	-0.002	-0.053	-0.015	-0.029
	(0.05)	(1.43)	(0.76)	(0.95)
Management does not stay in reorganization	0.113**	0.086	0.065*	0.015
	(2.37)	(0.88)	(1.92)	(0.19)
No automatic stay on secured assets * Protection against Insider Stealing	0.291***	0.300***	0.154**	0.181***
	(8.25)	(10.44)	(2.43)	(3.36)
Secured creditors first paid * Protection against Insider Stealing	0.072***	0.111***	0.052**	0.078**
	(3.80)	(3.07)	(2.68)	(2.14)
Restrictions for going into reorganization * Protection against Insider Stealing	0.001	0.055	0.023	0.028
	(0.01)	(1.18)	(0.75)	(0.77)
Management does not stay in reorganization * Protection against Insider Stealing	-0.190***	-0.086	-0.116**	-0.019
	(2.74)	(0.78)	(2.21)	(0.22)
Sample aggregated at what level?:	Deal	Deal	Country, Industry	Country, Industry

Table 7: Examine robustness to several other channels

- Intern-industry differences result could be due to:
  - Industry level factors other than free cash flow to assets
  - Country level factors other than protection against insider stealing and creditor rights
- Alternative Story 1: Greater debt capacity due to reduction in deadweight costs from debt-equity conflicts
  - Add an interaction of growth opportunities (Tobin's Q) and leverage (long term debt to assets)
- Alternative Story 2: A more efficient bankruptcy process rather than our country level variables
  - Add interaction of DHMS measure of efficiency of bankruptcy procedure with fcf/assets
- Alternative Story 3: Other country level variables
  - Add interactions of <u>all other</u> country level variables with fcf/assets

Economic Magnitudes

- One standard deviation ↑ in legal protection against insider stealing:
  - likelihood of Project Finance ↓ by 4.3% - 5.5%
- One point ↑ in creditor rights:
  - likelihood of Project Finance ↓ by 6.7% - 13.1%
  - marginal effect of legal protection against insider stealing ↓ by 9.1% - 16.2%
- Compare two industries with FCF/ assets one standard deviation apart:
  - Economic effects larger in higher FCF industry by 13.8% to 17.5%

Project Finance vis-à-vis other related mechanisms

- Separate legal incorporation: Necessary but not sufficient
  - Makes cash flow separation and the CFWC feasible
  - Not sufficient however; eg. Subsidiary company
- Secured debt with high leverage (SDHL): offers some advantages of PF but is not a substitute
  - SDHL collateralizes debt with specific assets similar to PF
  - High leverage reduces agency costs of free cash flow
  - SDHL misses the Cash flow verifiability and control of the cash that is central to PF
  - In PF, the CFW arrangement adjusts to absorb any free cash irrespective of whether the project generates more or less cash than anticipated

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Summary of Findings

- Law and Finance literature (LLSV, 1997, 1998):
  - Legal investor protection varies systematically across countries
- We show in the context of financing of large investments:
  - Market participants respond to inefficiencies created by weak legal protection using Project Finance
  - Project Finance combines extensive contractual arrangements with private enforcement mechanisms to enhance debt capacity by making cash flows verifiable

Key Contribution

- Our study is the first to offer empirical evidence
  - using a large, cross-country sample
  - of market participants' private contractual responses to weak legal environments

- Possibly the first A-journal research paper on Project Finance

Implications

- Stronger legal protection of outside investors
  - Stronger legal protection against insider stealing
  - Stronger creditor rights
- Leads to more Corporate Debt Finance
- Obviates the need for costly private responses such as Project Finance
  - Project Finance is a specialized form of financing involving significant transaction costs
- Law matters!