Employee Relations and Bondholder Risk

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Research Overview

- **Context**
  - Non-financial stakeholders
  - Human capital, employee relations
  - Bondholder wealth

- **Objective**

  "Does the firm's employee relations relate to bondholder risk?"

- **Results**
  - Bondholder risk negatively associated with employee relations
  - Employee relations is negatively related to yield spreads and credit ratings
  - Negative relation with non-systematic stock risk; negative but non-significant relation with systematic risk and cash flow risk

Role of Employee Relations: Motivation

- Rise of human capital in today's business environment
  - Changing nature of the firm
  - (e.g., Zingales, 2000)

- Literature has reached no consensus about relevance of employment issues to financial stakeholders

- Employee relations: *"firm's policies and practices aimed at resolving the conflicts inherent in the employment relationship and gaining the commitment of employees, in order to achieve organizational goals and objectives"*

- Related point: growing awareness for CSR, which typically includes employment issues
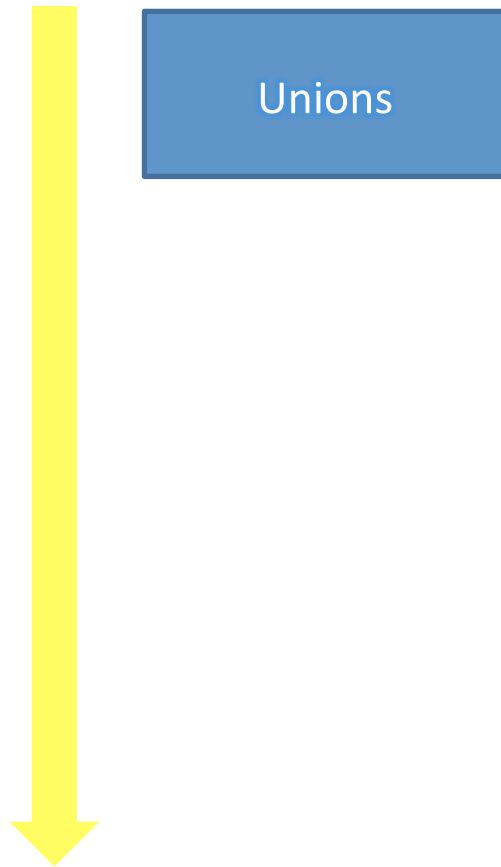
- Why debt?

Motivation

- Debt is primary means of corporate financing
  - New corporate securities issued 2001-2006 (in MM$)

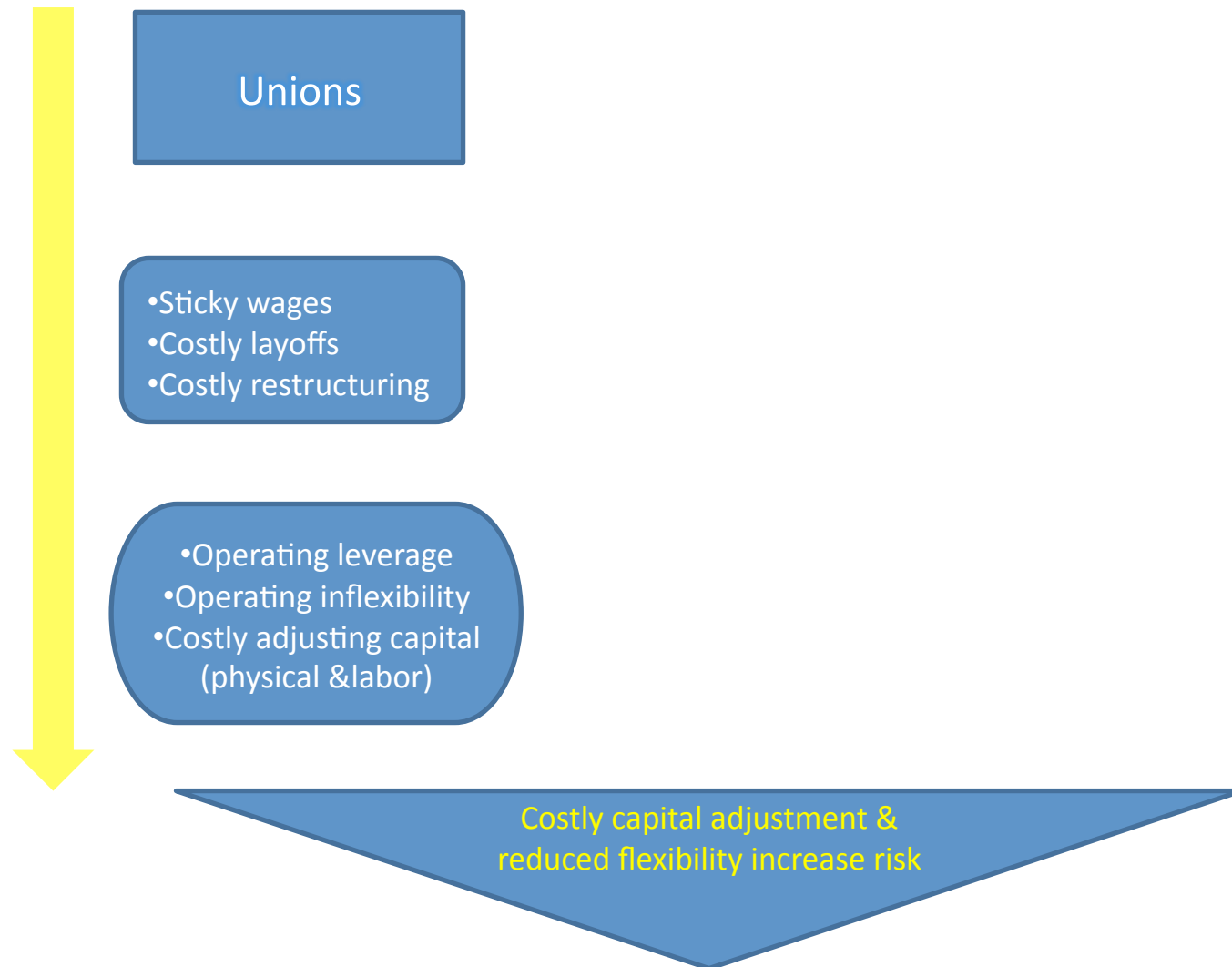| Year	2001	2002	2003	2004	2005	2006	2001-2006	in %
Bonds	1,415,427	1,322,113	1,692,260	1,923,094	2,323,735	2,590,863	1,877,915	(93%)
Stocks	230,049	170,904	182,132	147,585	115,255	119,165	160,848	(7%)
All Securities	1,543,981	1,432,548	1,815,569	2,070,680	2,438,989	2,710,028	2,001,966	(100%)

Source: www.federalreserve.gov

- Anecdotal evidence suggests employee relations attracts attention from creditors
  - Basel II (Operational Risk: V. A. 644; Annex 9)
  - ➤ *"Information on employment practices & policies matter to creditors"*

- Chen et al. (2008), Employees' and bondholders' interests may be particularly aligned

Unions

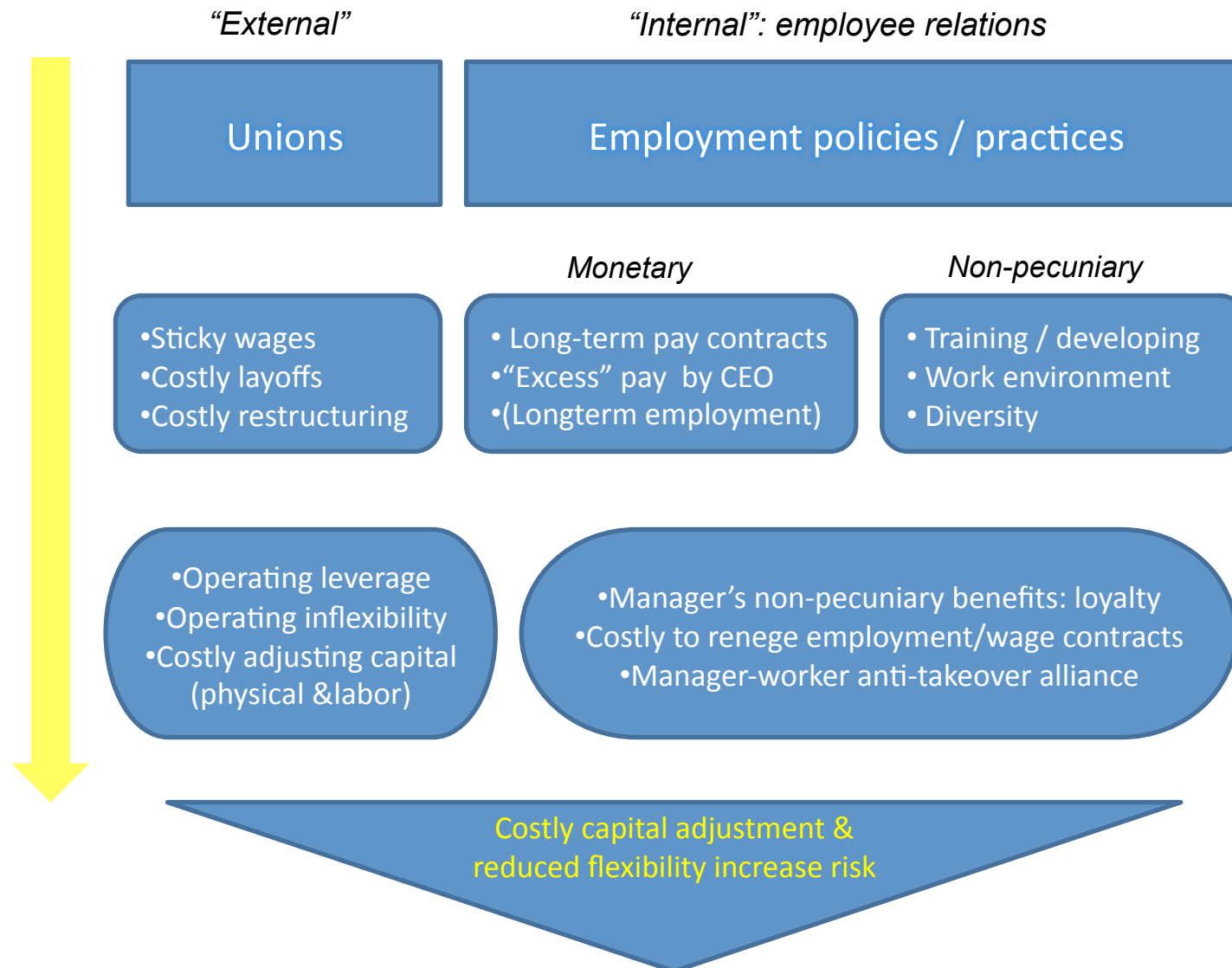# Theory: Labor as Source of Frictions

Unions

- Sticky wages
- Costly layoffs
- Costly restructuring

- Operating leverage
- Operating inflexibility
- Costly adjusting capital (physical &labor)

Costly capital adjustment & reduced flexibility increase risk

Theory: Labor as Source of Frictions

"External"   *"Internal": employee relations*

Unions	Employment policies / practices

Monetary   *Non-pecuniary*

- Sticky wages
- Costly layoffs
- Costly restructuring

- Long-term pay contracts
- "Excess" pay by CEO
- (Longterm employment)

- Training / developing
- Work environment
- Diversity

- Operating leverage
- Operating inflexibility
- Costly adjusting capital (physical &labor)

- Manager's non-pecuniary benefits: loyalty
- Costly to renege employment/wage contracts
- Manager-worker anti-takeover alliance

Costly capital adjustment & reduced flexibility increase risk

PAGANO & Volpin (Journal of Finance, 2005)

"… even when…long-term labor contract an ineffective takeover deterrent…management can count on employees to act in their defense against raiders."…

" workers can take industrial or political action to oppose takeovers. Employees' lobbying against a change in control is complementary to long-term contracts as a takeover deterrent."
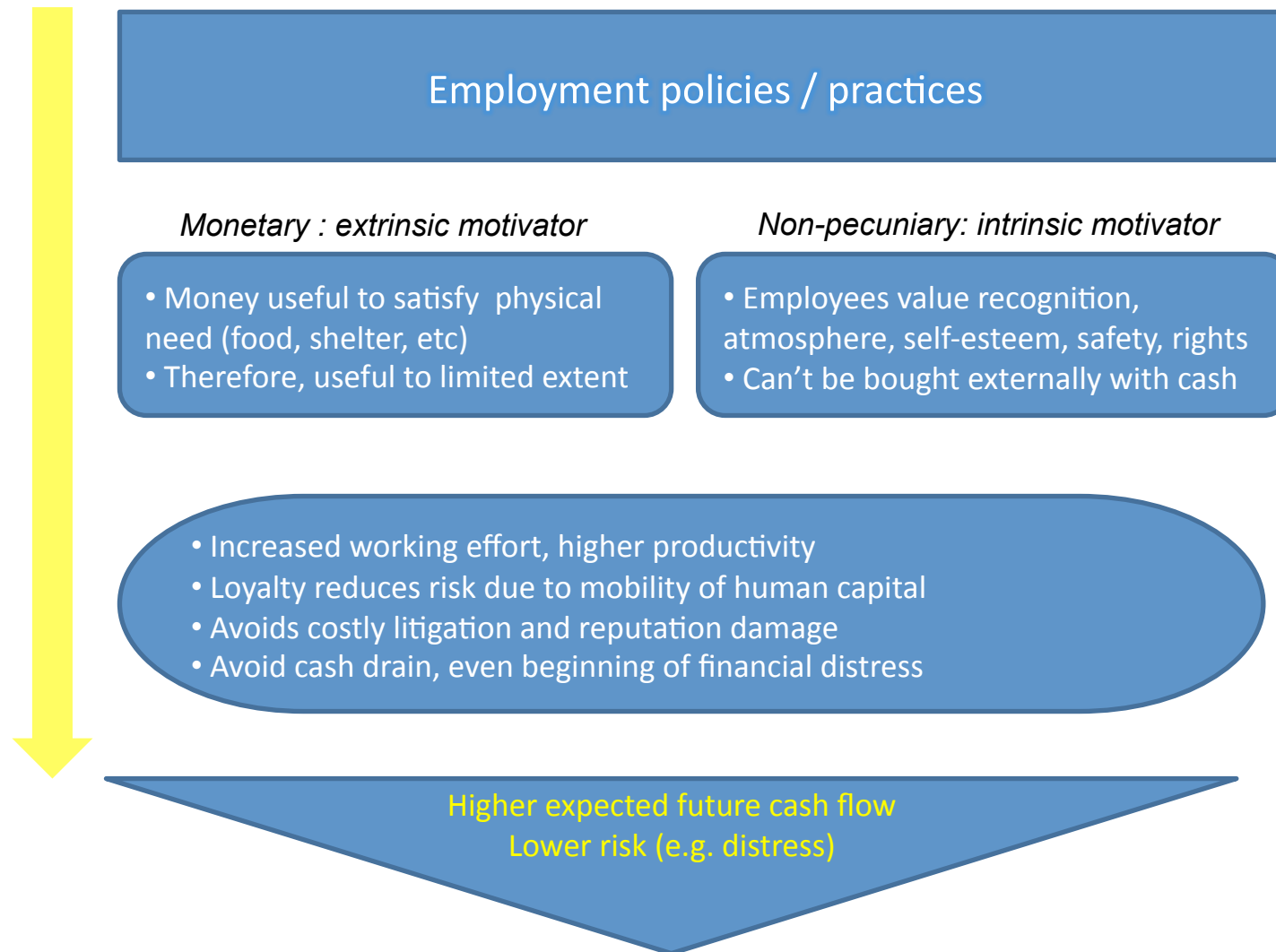
Related studies

- Costly capital changes and layoffs, sticky wages, reduced operating flexiblity. Has been tested with unions (Chen et al., 2008)

- Manager-employee relation => implicit takeover defense (Pagano & Volpin, JF2005). Theory by study on employee stock option plans (Rauh, 2006)

- Managers have incentive to provide excess pay to workers to extract non-pecuniary benefits (Cronqvist et al., 2009), such as loyalty towards manager.

- Costly capital change and operating inflexbility have been linked to risk borne by investors (e.g., Rubinstein, 1973; Booth, 1991; Cooper et al., 2006)

- Bondholder risk?

Theory: Advantage Through People

Employee Relations for Work Motivation and Risk Reduction

Employment policies / practices

Monetary : extrinsic motivator

- Money useful to satisfy physical need (food, shelter, etc)
- Therefore, useful to limited extent

Non-pecuniary: intrinsic motivator

- Employees value recognition, atmosphere, self-esteem, safety, rights
- Can't be bought externally with cash

- Increased working effort, higher productivity
- Loyalty reduces risk due to mobility of human capital
- Avoids costly litigation and reputation damage
- Avoid cash drain, even beginning of financial distress

Higher expected future cash flow
Lower risk (e.g. distress)

Theory: Better Performance, Lower Risk

- **Human capital evolved into a key competitive asset in business (Pfeffer, 1996)**
  - Proper management of employees is in interest of financial stakeholders.

  - Strong employee relations: beyond traditional output-based incentive systems. Achieving more working effort and loyalty from employees through intrinsic motivators, such as job satisfaction (e.g., Akerlof, 1982).

  - Prevents possible costly litigations that create direct costs such as damages and legal fees, and indirect costs such as reputation loss

  - Risks are heightened mobility of employees; able to withdraw investment that the firm makes in human capital

  - Prevent drains on cash balance that could even mark onset of financial distress (Kane et al., 2005).

Operational Risk

- **Basel Committee on Banking Supervision (2006)**

- Employment Practices and Workplace Safety (p.305):

    "Losses arising from acts inconsistent with employment, health or safety laws or agreements, from payment of personal injury claims, or from diversity / discrimination events."

    - Employee Relations (e.g. compensation, benefit, termination issues, organized labor activities)
    - Safe Environment (e.g. general liability, employee health & safety rules events, workers compensation)
    - Diversity & Discrimination (all discrimination types)

➢ Employment-related law suits constitute more than 50% of civil rights complaints filed at U.S. District Courts

Employee Litigation

Types of civil rights complaints (involving private suits) filed in U.S. district courts, 1990-2006[a]

Year	Total	Employment	Voting	Housing	Welfare	Other[b]
1990	18,914	8,272	140	367	135	10,000
1991	19,892	8,370	247	452	130	10,693
1992	24,233	10,771	494	527	125	12,316
1993	27,655	12,962	213	590	114	13,776
1994	32,622	15,965	224	730	122	15,581
1995	36,600	19,059	208	735	116	16,482
1996	42,007	23,152	229	932	83	17,611
1997	43,278	23,796	141	854	91	18,396
1998	42,354	23,735	108	838	66	17,510
1999	41,304	22,490	102	1,136	63	17,513
2000	40,908	21,032	167	1,284	80	18,345
2001	37,878	19,371	173	1,151	53	17,130
2002	37,391	19,225	209	1,231	61	16,665
2003	37,602	18,768	139	1,261	63	17,371
2004	37,374	18,040	152	1,169	54	17,959
2005	33,390	15,344	143	821	48	17,034
2006	30,405	13,042	122	593	49	16,599

a. Excludes prisoner petitions from 1990-2000.

b. Specific types of civil rights cases within the "other" category cannot be distinguished.

Sources: For 1990-2000, U.S. Department of Justice, Office of Justice Programs, Civil Justice Data Brief (July 2002). For 2001-2006, Annual Report of the Director. Washington, D.C.: Administrative Office of the U.S. Courts (table C-2).

- Employment related law suits constitute more than 50% of total claims
- Not covered: court proceedings at state level, EEOC cases

Employee Litigation (2)

**Plaintiff Winners and Awards in Civil Rights Complaints
Terminated by Trial in U.S. District Courts, 1990-2000a**

Year	Total Number	Total %	Monetary awards	Median ($)	Less than $500 k (%)	$ 1 m or more (%)	$ 10 m or more (%)
1990	384	27.7	317	184,000	56.9	38.4	1.3
1991	380	28.1	323	173,000	61.6	36.2	1.5
1992	568	30.9	451	100,000	67.3	27.4	4.4
1993	418	27	349	62,000	81.1	14	4
1994	513	28.6	424	75,000	84.7	9.9	5.4
1995	470	26.1	383	100,000	80.7	13.3	8.6
1996	602	30.4	488	100,000	77.9	15.5	9.8
1997	624	31.6	495	110,000	77.6	15.6	9.7
1998	585	29.9	447	125,000	76.3	14.3	8.9
1999	574	31.9	464	130,000	80.4	14.2	8.4
2000	545	33	416	155,500	77.9	13.7	7.7

Note: Includes jury trials, bench trials and directed verdicts.

a. Number of trial cases disposed for which a judgment was known.

Source: U.S. Department of Justice, Office of Justice Programs, Civil Justice Data Brief (July 2002).

Employee Relations, Empirical Evidence

- Work policies & practices
  - Lower employee turnover
  - Higher productivity, profitability & firm value
  - Higher short and long-term accounting performance
    - *Huselid (1995), Ichnioski, Shaw & Prennushi (1997), Ichnioski & Shaw (1999), Faleye & Trahan (2006)*

- Employee relations/satisfaction
  - Stock return outperformance
    - *Filbeck & Preece (2003), Faleye & Trahan (2006), Kempf & Osthoff (2007), Edmans (2009)*

- Bondholder wealth
  - Union control (Chen, Kacperczyk & Ortiz-Molina, 2007)
  - Employee relations lowers probability of financial distress (Kane, Velury & Ruf, 2005)

Essence of Tests So Far

- Testing relation between employee relations index (ERI) derived from KLD and

    - Yield Speads (at Bond Issue)
    - Bond Issue Ratings
    - Issuer Long-Term Credit Rating

    - Controlling for Union power (Chen, Kacperczyk & Ortiz-Molina, 2007)
    - Controlling for anti-takeover provisions

- Testing relation ERI and various measures of risk

    - Cash flow risk (St. Dev. of Retun on Assets – ROA)
    - Total Stock Risk
    - Systematic and Non-Systematic Risk (CAPM)

Data & Methodology

- U.S. Firms (1995-2006)

- Annual Employee Relations Index (ERI)
  - Engagement in employment-related policies & practices
    - *KLD STATS*

- Credit Risk Proxies
  - Yield Spreads, Bond Ratings, Issuer Ratings
    - *Mergent FISD, Compustat*

- Control Variables
  - Issue & Issuer characteristics
  - Union control, Governance Index
    - *Compustat, UMCD, RiskMetrics*

Employee Relations Index

- KLD STATS database

  - Approx 500 public U.S. firms till 2001
  - 1000 U.S. firms between 2001 and 2003
  - 3000 U.S. firms after 2003

- Annual employment-related indicators from KLD dimensions

  - "Employee Relations"
  - "Diversity" Management

- Performance *strength* & *concern* indicators {0;2}

  - 0 = no strength/concern
  - 1 = strength/concern
  - 2 = significant strength/concern

➢ ***Employee Relations Index (ERI) = Strengths - concerns***

Yield Spread Regressions

— $\ln(Spread) = f(ERI, Issuer\,Characteristics, Issue\,Characteristics, Year)$

	(1a)	(1b)	(1c)	(1d)
Employee Relations (ERI)	-0.0165***	-0.0182**	-0.0318***	-0.0322***
	(-2.30)	(-2.25)	(-3.03)	(-3.07)
Union		0.0001	-0.0014	-0.0014
		(0.09)	(-1.40)	(-1.46)
Gindex (Takeover)				0.0075
				(1.10)
Observations	2,141	1,793	790	790
Adjusted R²	0.66	0.65	0.62	0.62

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

➢ Stronger employee relations - *lower* cost of debt financing

➢ Annual 2-4 basis points decrease per unit in ERI (max. 50 bp)

Bond Rating Regressions

- $Bond\ Rating = f\ (ERI, Issuer\ Characteristics, Issue\ Characteristics, Year)$

	(2a)	(2b)	(2c)	(2d)
Employee Relations (ERI)	0.1160***	0.1140***	0.1153***	0.1144***
	(3.85)	(3.48)	(2.78)	(2.74)
Union		-0.0084**	-0.0062	-0.0063
		(-2.41)	(-1.36)	(-1.39)
Gindex (Takeover)				0.0140
				(0.49)
Observations	2,265	1,895	823	823
Pseudo R²	0.24	0.23	0.24	0.25
X²	416.27	352.04	200.77	202.54
Log-Likelihood	-2,341.97	-1,984.68	-844.91	-844.56

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

➢ Stronger employee relations - *higher* bond ratings

Issuer Rating Regressions

– $Issuer\ Rating = f(ERI, Issuer\ Characteristics, Year)$

	(3a)	(3b)	(3c)	(3d)
Employee Relations (ERI)	0.057***	0.0539**	0.0501**	0.0486**
	(2.59)	(2.43)	(2.23)	(2.16)
Union		-0.0043	-0.0039	-0.0040
		(-1.28)	(-1.11)	(-1.15)
Gindex (Takeover)				0.0232
				(1.55)
Observations	5,568	5,568	2,421	2,421
Pseudo R²	0.19	0.19	0.18	0.18
X²	562.80	562.59	463.03	458.19
Log-Likelihood	-6,936.68	-6,931.56	-3,029.81	-3,026.04

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

➢ Stronger employee relations – *higher* long-term issuer ratings

Controlling for Endogeneity (2SLS)

— $\ln(Spread) = f(ERI, Issuer\ Characteristics, Issue\ Characteristics, Year)$

	(1a[+])	(1b[+])	(1c[+])	(1d[+])
Employee Relations[+] (ERI[+])	-0.1385*** (-4.00)	-0.1817** (-3.83)	-0.2465*** (-4.21)	-0.2339*** (-4.28)
Union		-0.0021 (-1.47)	-0.0046** (-2.16)	-0.0044** (-2.22)
Gindex (Takeover)				0.0105 (-1.01)
Observations	2,106	1,758	767	767
Pseudo R²	0.55	0.46	0.22	0.28
Wald χ²	2389.85	1475.9	585.91	654.25

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1*

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

➤ Instrument: #Employees Firm / Avg. #Employees Industry (3-digit SIC Code)

Cash Flow and Equity Risk

Firm Risk	Cash Flow Risk (σ_{ROA})	Total Risk (σ_{Ret})	Idiosyncratic Risk (σ_{res})	Systematic Risk (β_{MKT})
Employee Relations (ERI)	-0.0006 (-1.50)	0.0001 (0.48)	-0.1001* (-1.73)	0.0133 (1.43)
Union	-0.0001* (-1.85)	0.0000 (0.93)	-0.0269*** (-3.76)	0.0007 (0.49)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,536	4,705	4,705	4,705
Adjusted R²	0.1	0.41	0.4	0.22

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

➢ Stronger employee relations, *lower* firm-specific risk

Conclusion

- Firm's commitment to employee relations associated with lower bondholder risk

  – Effect on cost of debt economically meaningful: 2-4 basis points

- Stronger employee relations associated with lower firm-specific risk

- Empirically, "friction" effect does not outweigh "risk-reduction" effect

- Future research for further identification:

  – Alternative measures of operating flexibility
  – Explicit distinction between monetary and non-monetary employment practices
  – Studying takeover probability

Appendix

KLD Performance "Strength" Indicators

Union Relations	The company has taken exceptional steps to treat its unionized workforce fairly.
No-Layoff Policy	The company has maintained a consistent no-layoff policy. KLD has not assigned strengths for this issue since 1994.
Cash Profit Sharing	The company has a cash profit-sharing program through which it has recently made distributions to a majority of its workforce.
Employee Involvement	The company strongly encourages worker involvement and/or ownership through stock options available to a majority of its employees; gain sharing, stock ownership, sharing of financial information, or participation in management decisionmaking.
Retirement Benefits Strength	The company has a notably strong retirement benefits program.
Health and Safety Strength	The company has strong health and safety programs.
Other Employee Relations Strength	The company has strong employee relations initiatives not covered by other KLD ratings.

KLD Performance "Strength" Indicators (2)

|	
CEO	The company's chief executive officer is a woman or a member of a minority group.
Promotion	The company has made notable progress in the promotion of women and minorities, particularly to line positions with profit-and-loss responsibilities in the corporation.
Board of Directors	Women, minorities, and/or the disabled hold four seats or more (with no double counting) on the board of directors, or one-third or more of the board seats if the board numbers less than 12.
Work/Life Benefits	The company has outstanding employee benefits or other programs addressing work/life concerns, e.g., childcare, elder care, or flextime.
Women & Minority Contracting	The company does at least 5% of its subcontracting, or otherwise has a demonstrably strong record on purchasing or contracting, with women and/or minority-owned businesses.
Employment of Disabled	The company has implemented innovative hiring programs; other innovative human resource programs for the disabled, or otherwise has a superior reputation as an employer of the disabled.
Gay & Lesbian Policies	The company has implemented notably progressive policies toward its gay and lesbian employees. In particular, it provides benefits to the domestic partners of its employees.
Other Diversity Management Strengths	The company has made a notable commitment to diversity that is not covered by other KLD ratings.

Union Relations	The company has a history of notably poor union relations.
Workforce Reductions	The company has made significant reductions in its workforce in recent years.
Retirement Benefits Concern	The company has either a substantially under funded defined benefit pension plan, or an inadequate retirement benefits program.
Health and Safety Concern	The company recently has either paid substantial fines or civil penalties for willful violations of employee health and safety standards, or has been otherwise involved in major health and safety controversies.
Other Employee Relations Concerns	The company is involved in an employee relations controversy that is not covered by other KLD ratings.
Controversies	The company has either paid substantial fines or civil penalties as a result of affirmative action controversies, or has otherwise been involved in major controversies related to affirmative action issues.
Non-Representation	The company has no women on its board of directors or among its senior line managers.
Other Diversity Management Concerns	The company is involved in diversity controversies not covered by other KLD ratings.

Sample Distribution of the ERI
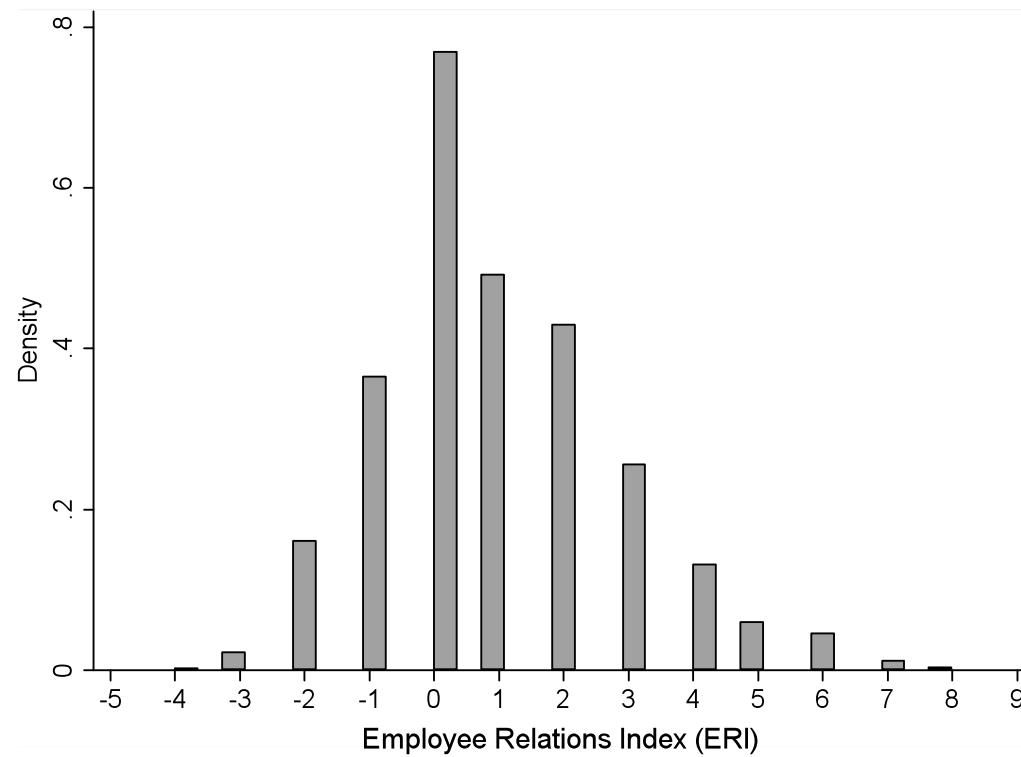
Yield Spread Transformation

A: Distribution of Spread — B: Distribution of Log-Transformed Spread
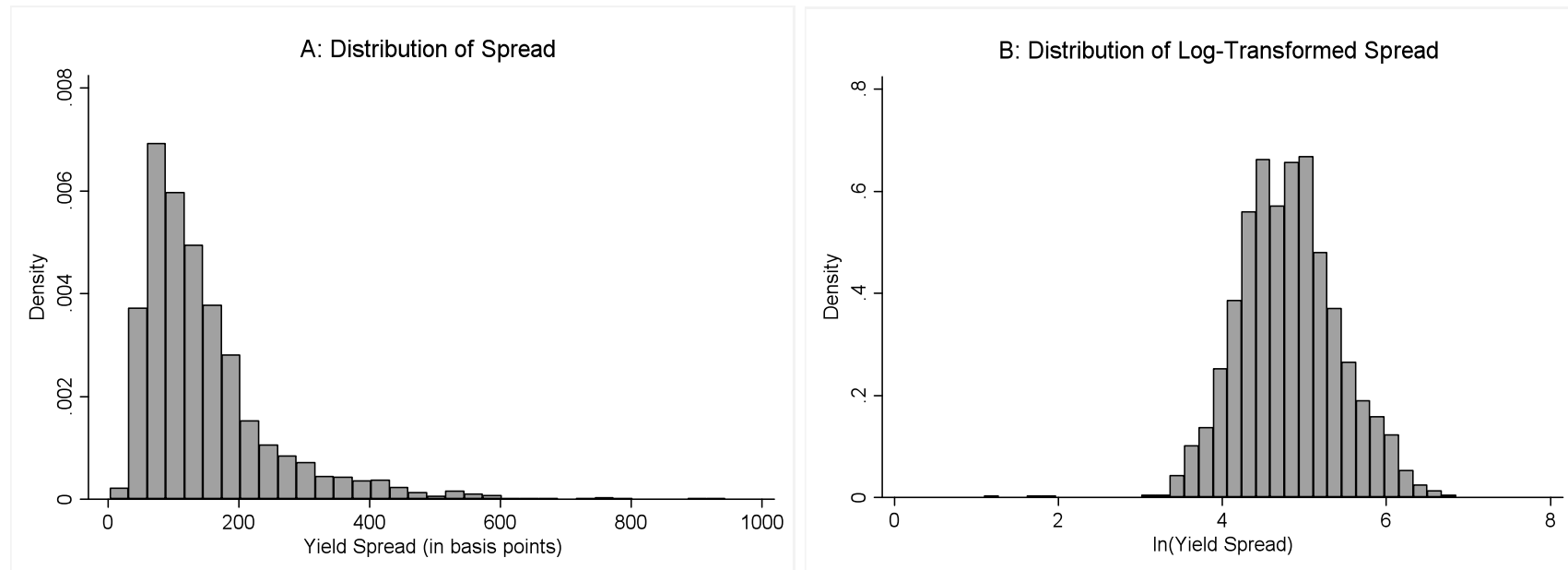
- Yield spread distribution illustrates a typical positive skewness, which motivates us to use its natural logarithm throughout the analysis (see, e.g., Cantor & Packer 1996)

Credit Ratings Schedule

Moody's Rating	S&P Rating	Compustat Coding	Assigned Rating Code	Rating Grade
Aaa	AAA	2	7	Investment
Aa1	AA+	4	6	Investment
Aa2	AA	5	6	Investment
Aa3	AA-	6	6	Investment
A1	A+	7	5	Investment
A2	A	8	5	Investment
A3	A-	9	5	Investment
Baa1	BBB+	10	4	Investment
Baa2	BBB	11	4	Investment
Baa3	BBB-	12	4	Investment
B1	BB+	13	3	Speculative
B2	BB	14	3	Speculative
B3	BB-	15	3	Speculative
B	B+	16	2	Speculative
B2	B	17	2	Speculative
B3	B-	18	2	Speculative
Caa1	CCC+	19	1	Speculative
Caa2	CCC	20	1	Speculative
Caa3	CCC-	21	1	Speculative
Ca	CC	23	1	Speculative
C	D, SD	27, 29	1	Speculative

Credit Ratings Distribution

Bond ratings

Rating Category	Freq.	%	Coding
AAA	32	1.41	7
AA^+ to AA^-	189	8.34	6
A^+ to A^-	826	36.47	5
BBB^+ to BBB^-	916	40.44	4
BB^+ to BB^-	229	10.11	3
B^+ to B^-	63	2.78	2
CCC^+ to D	10	0.44	1
Total	*2,265*	*100*	
Investment grade	1,963	86.67	4 - 7
Speculative grade	302	13.33	1 - 3
Total	*2,265*	*100*	

Issuer ratings

Rating Category	Freq.	%	Coding
AAA	88	1.36	7
AA^+ to AA^-	231	3.58	6
A^+ to A^-	1,465	22.72	5
BBB^+ to BBB^-	1,919	29.77	4
BB^+ to BB^-	1,656	25.69	3
B^+ to B^-	1,035	16.05	2
CCC^+ to D	53	0.82	1
Total	*6,447*	*100*	
Investment grade	3,703	57.44	4 - 7
Speculative grade	2,744	42.56	1 - 3
Total	*6,447*	*100*	

Summary Statistics

Variable	# Obs.	Mean	Std. Dev.	Median	Min	Max
Credit Risk Measures						
Spread (in bp)	2,141	149.25	104.31	120	3	945
Bond Rating	2,265	4.4	0.96	4	1	7
Employee Relations Index						
ERI	2,265	0.94	1.85	1	-4	8
Issuer Specific Controls						
Leverage (%)	2,265	69.35	15.12	68.38	36.08	123.09
Size (in MM$)	2,265	39,087.20	93,165.41	12,921	280.54	979,414.40
Capital Intensity (%)	2,265	57.83	40.21	54.2	0.06	174.85
Interest Coverage	2,265	9.16	8.94	6.44	-1.51	45.96
ROA (%)	2,265	4.23	4.58	3.74	-21.73	15.76
Loss	2,265	0.03	0.18	0	0	1
Financials	2,265	0.14	0.35	0	0	1
Utilities	2,265	0.08	0.28	0	0	1
Issue Specific Controls						
TTM (in years)	2,265	12.48	11.82	10	0.25	100
Issue Size (in MM$)	2,265	439.69	398.12	300	10	2,500
Subordinated	2,265	0.02	0.15	0	0	1
Speculative	2,265	0.13	0.34	0	0	1
Additional Controls						
Union (%)	1,793	16.07	16.34	10.3	0	75.3
Gindex	987	9.91	2.51	10	3	17

Correlation Statistics

(ρ)	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
(A) ERI		-0.22	0.34	0.05	0.34	-0.07	0.18	0.12	-0.03	0.12	0.04	-0.02	0.23	0	-0.16	-0.15	0.03
(B) Spread	-0.24		-0.63	0.21	-0.2	0.01	-0.51	-0.38	0.2	-0.08	0.14	0.08	0.05	0.08	0.47	-0.01	0.06
(C) Bond Rating	0.35	-0.65		-0.11	0.26	-0.07	0.47	0.35	-0.17	0.18	-0.1	0.05	0.03	-0.06	-0.64	-0.16	-0.02
(D) Leverage	0.03	0.22	-0.15		0.23	-0.04	-0.41	-0.41	0.12	0.26	0.17	0.03	0.11	0.14	0.14	0.01	-0.04
(E) Size	0.35	-0.22	0.32	0.24		-0.17	0.01	-0.18	-0.04	0.34	-0.01	0.05	0.58	0.04	-0.18	-0.1	-0.14
(F) Capital Intensity	-0.11	0.02	-0.07	-0.02	-0.23		-0.1	0.11	0.02	-0.56	0.29	0.11	-0.15	-0.14	0.02	0.38	0.04
(G) Interest Coverage	0.22	-0.41	0.4	-0.33	0.06	-0.17		0.66	-0.22	0.13	-0.3	0.05	-0.03	-0.21	-0.33	-0.16	-0.04
(H) ROA	0.11	-0.4	0.36	-0.35	-0.14	0.07	0.51		-0.26	-0.21	-0.24	0.07	-0.11	-0.14	-0.18	-0.05	-0.04
(I) Loss	0.01	0.25	-0.21	0.12	-0.04	0.02	-0.13	-0.34		-0.04	-0.05	-0.06	0.03	0.04	0.23	-0.01	-0.07
(J) Financials	0.09	-0.06	0.17	0.27	0.42	-0.54	0.12	-0.16	-0.04		-0.12	0.03	0.11	0.16	-0.14	-0.37	-0.01
(K) Utilities	0	0.13	-0.06	0.14	-0.04	0.29	-0.2	-0.22	-0.05	-0.12		-0.09	0.01	-0.04	-0.05	-0.03	0.03
(L) TTM	0	0.03	0.13	0	0.03	0.11	-0.01	0.07	-0.08	0.01	-0.04		-0.05	0.02	-0.04	0.11	0.05
(M) Issue Size	0.26	0.01	0.05	0.03	0.47	-0.13	0.13	-0.04	0	0.03	-0.01	-0.05		0.07	0.03	-0.16	-0.09
(N) Subordinate	-0.02	0.1	-0.14	0.11	0.09	-0.13	-0.11	-0.09	0.03	0.13	-0.05	-0.04	0.06		0.13	-0.1	0
(O) Speculative	-0.16	0.48	-0.69	0.15	-0.18	0.04	-0.24	-0.19	0.22	-0.14	-0.06	-0.12	0.03	0.16		0.11	-0.12
(P) Union	-0.17	0.02	-0.14	0.05	-0.04	0.45	-0.24	-0.11	-0.03	-0.29	0.08	0.09	-0.11	-0.08	0.03		0.08
(Q) Gindex	-0.03	0.06	0	-0.05	*-0.15*	0.06	*-0.1*	-0.04	-0.06	-0.03	0.04	0.06	-0.08	-0.01	-0.12	0.06	

- Pearson product correlations (lower left-hand part)
- Spearman rank-order correlations (upper right-hand part)

Control Variables – Yield Spreads

	(1a)	(1b)	(1c)	(1d)
Leverage	0.0022**	0.0011	0.0007	0.0007
	(2.10)	(1.00)	(0.53)	(0.58)
Size	-0.1263***	-0.1311***	-0.1151***	-0.1120***
	(-9.45)	(-8.83)	(-6.59)	(-6.38)
Capital Intensity	-0.0009**	-0.0010**	-0.0006	-0.0006
	(-2.56)	(-2.20)	(-1.23)	(-1.23)
Interest Coverage	-0.0075***	-0.0072***	-0.0086***	-0.0085***
	(-4.02)	(-3.73)	(-4.33)	(-4.22)
ROA	-0.0274***	-0.0289***	-0.0265***	-0.0262***
	(-8.51)	(-8.23)	(-5.69)	(-5.63)
Loss	0.1604**	0.1940**	0.2315**	0.2393**
	(2.17)	(2.47)	(2.13)	(2.19)
Time-to-maturity	0.0100***	0.0112***	0.0121***	0.0120***
	(11.02)	(10.12)	(7.71)	(7.68)
Issue size	0.0306	0.0364	-0.0108	-0.0114
	(1.35)	(1.42)	(-0.27)	(-0.29)
Subordinated	0.1789***	0.2260***	0.2149***	0.2082***
	(2.82)	(3.11)	(3.29)	(3.26)
Speculative	0.6719***	0.6922***	0.6162***	0.6246***
	(20.40)	(19.12)	(12.76)	(12.64)
Financials	0.0618	0.0824	0.0588	0.0540
	(1.33)	(1.60)	(1.05)	(0.97)
Utilities	0.0471	0.0559	0.0578	0.0598
	(1.20)	(1.35)	(0.94)	(0.97)
Observations	2,141	1,793	790	790
Adjusted R²	0.66	0.65	0.62	0.62

t-statistics in parentheses
*** p<0.01. ** p<0.05. * p<0.1
Standard errors are heteroskedasticity robust & clustered at the firm level
All continuous variables are winsorized at the 1% and 99% level to control for outliers.

Control Variables – Bond Ratings

	(2a)	(2b)	(2c)	(2d)
Leverage	-0.0131***	-0.0117***	-0.0098*	-0.0096*
	(-3.35)	(-2.86)	(-1.82)	(-1.80)
Size	0.4584***	0.4438***	0.4842***	0.4895***
	(9.35)	(7.98)	(6.70)	(6.84)
Capital Intensity	0.0012	0.0028	0.0012	0.0012
	(0.81)	(1.60)	(0.52)	(0.52)
Interest Coverage	0.0341***	0.0302***	0.0377***	0.0380***
	(4.20)	(3.67)	(3.52)	(3.60)
ROA	0.0776***	0.0766***	0.0898***	0.0902***
	(5.66)	(5.30)	(3.78)	(3.79)
Loss	-0.8039***	-0.8403***	-0.1778	-0.1663
	(-3.24)	(-3.09)	(-0.41)	(-0.38)
Time-to-maturity	0.0048*	0.0066**	0.0073*	0.0071*
	(1.85)	(2.15)	(1.86)	(1.79)
Issue size	-0.0396	-0.0923	-0.1440*	-0.1460*
	(-0.73)	(-1.53)	(-1.88)	(-1.91)
Subordinated	-1.2147***	-1.2083***	-1.0613***	-1.0668***
	(-5.37)	(-4.76)	(-2.77)	(-2.79)
Financials	0.7419***	0.6865***	0.6179**	0.6047**
	(3.75)	(3.30)	(2.05)	(2.03)
Utilities	0.1719	0.1318	0.4036*	0.4047*
	(0.88)	(0.67)	(1.77)	(1.78)
Observations	2,265	1,895	823	823
Pseudo R²	0.24	0.23	0.24	0.25
X²	416.27	352.04	200.77	202.54
Log-Likelihood	-2,341.97	-1,984.68	-844.91	-844.56

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

Control Variables – Issuer Ratings

	(3a)	(3b)	(3c)	(3d)
Leverage	-0.0100***	-0.0098***	-0.0121***	-0.0121***
	(-4.86)	(-4.75)	(-5.14)	(-5.15)
Size	0.4773***	0.4840***	0.4921***	0.4959***
	(14.95)	(15.01)	(13.48)	(13.58)
Capital Intensity	0.0006	0.0010	0.0005	0.0004
	(0.57)	(1.10)	(0.47)	(0.40)
Interest Coverage	0.0006	0.0005	-0.0004	-0.0003
	(0.54)	(0.47)	(-0.37)	(-0.27)
ROA	0.0615***	0.0612***	0.0690***	0.0693***
	(11.88)	(11.79)	(10.48)	(10.45)
Loss	-0.3927***	-0.4001***	-0.3283**	-0.3111**
	(-4.14)	(-4.19)	(-2.38)	(-2.25)
Subordinated	-0.3413***	-0.3476***	-0.3719***	-0.3645***
	(-4.81)	(-4.85)	(-4.62)	(-4.45)
Financials	0.4902***	0.4635***	0.5136***	0.5148***
	(4.28)	(3.89)	(3.88)	(3.84)
Utilities	0.8460	0.8794	-0.3210	-0.3188
	(0.72)	(0.74)	(-0.30)	(-0.30)
Observations	5,568	5,568	2,421	2,421
Pseudo R²	0.19	0.19	0.18	0.18
X²	562.80	562.59	463.03	458.19
Log-Likelihood	-6,936.68	-6,931.56	-3,029.81	-3,026.04

t-statistics in parentheses

*** p<0.01. ** p<0.05. * p<0.1

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

Firm Risk	Cash Flow Risk (σ_{ROA})	Total Risk (σ_{Ret})	Idiosyncratic Risk (σ_{res})	Systematic Risk (β_{MKT})
Size	-0.0011***	-0.6560***	-0.0017	-0.0020***
	(-3.45)	(-3.41)	(-0.06)	(-7.12)
Tobin's Q	0.0009	0.3592	0.2077*	0.0071***
	(0.90)	(0.79)	(1.79)	(5.09)
Leverage	0.0059***	3.7964***	0.1320	0.0152***
	(2.77)	(4.29)	(0.68)	(4.71)
Profit	-0.0186***	-5.2648***	-1.6786***	-0.0286
	(-3.49)	(-3.03)	(-3.07)	(-1.58)
Total Payout	-0.0119**	-6.2566***	-0.6241	0.0039
	(-2.42)	(-2.68)	(-1.56)	(0.47)
Invest	0.0009	0.2120	0.0815***	0.0016*
	(1.56)	(1.45)	(2.95)	(1.86)
Business Concentration	0.0007	0.3964*	0.0037	-0.0004
	(1.49)	(1.73)	(0.10)	(-0.37)
HHI	-0.0001	-0.0712	0.0070	-0.0013*
	(-0.19)	(-0.25)	(0.09)	(-1.83)
Sales Beta	0.0000	0.0103	0.0092	0.0000
	(0.04)	(0.22)	(0.64)	(0.02)
Nasdaq	0.0057***	2.8698***	0.3236**	0.0068***
	(5.13)	(5.03)	(2.31)	(3.38)
Sales Growth	0.0002	0.2444	0.0147	0.0003
	(0.54)	(1.26)	(0.35)	(0.27)
Productivity	0.0008	0.3942	-0.0080	0.0010
	(0.93)	(1.47)	(-0.17)	(0.59)
Year Fixed Effects	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes
Observations	4,536	4,705	4,705	4,705
Adjusted R²	0.10	0.41	0.40	0.22

t-statistics in parentheses

*** $p<0.01$. ** $p<0.05$. * $p<0.1$

Standard errors are heteroskedasticity robust & clustered at the firm level

All continuous variables are winsorized at the 1% and 99% level to control for outliers.

Economic Significance

- A unit increase in ERI equals a 2-4 basis points (bp) decrease in yield spread *
  - $59,400 - $115,920 of annual interest payable in excess of treasury rate**

- Best vs. worst performer: 26-50 bp difference***
  - $772,200 – $1,506,960 of annual interest payable in excess of Treasury rate

Translating logarithmic yield spread:
  - *ERI Coefficient {-0.0165 ; -0.0322}*
  - *Equivalent to a 1.65% - 3.22% change in yield spread*
  - *Median yield spread 120 bp*

** Median bond issue size = $300 mio.; Median interest payable in excess of Treasury rate = $3.6 mio.
  - *Median time-to-maturity = 10 years*

*** ERI range {-4 ; 8}

Bond Ratings - Marginal Effects

Parsimonious Model (2a)

	CCC-D	B	BB	BBB	A	AA	AAA
Employee Relations (ERI)	-0.0000	-0.0010***	-0.0127***	-0.0322***	0.0376***	0.0080***	0.0003*
	(-1.05)	(-2.94)	(-3.72)	(-3.56)	(3.75)	(3.18)	(1.74)
y = Pr[BR = (1; 7)] =	0.0000	0.0029	0.0564	0.4949	0.4140	0.0311	0.0007

*** p<0.01. ** p<0.05. * p<0.1

Complete Model (2d)

	CCC-D	B	BB	BBB	A	AA	AAA
Employee Relations (ERI)	-0.0000	-0.0009**	-0.0138***	-0.0296**	0.0369***	0.0073**	0.0001
	(-0.83)	(-2.07)	(-2.71)	(-2.47)	(2.72)	(2.12)	(1.22)
Union	0.0000	0.0001	0.0008	0.0016	-0.0020	-0.0004	-0.0000
	(0.68)	(1.27)	(1.41)	(1.34)	(-1.38)	(-1.32)	(-0.96)
Gindex (Takeover)	-0.0000	-0.0001	-0.0017	-0.0036	0.0045	0.0009	0.0000
	(-0.43)	(-0.49)	(-0.48)	(-0.49)	(0.48)	(0.49)	(0.44)
y = Pr[BR = (1; 7)] =	0.0000	0.0026	0.0638	0.5280	0.3773	0.0280	0.0003

*** p<0.01. ** p<0.05. * p<0.1