DEBT AND BANKRUPTCY

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FACTS

Most financing via debt ($> 90\%$)

Debt heterogeneous: Collateral, covenants,...

- Rights in bankruptcy; e.g. secured debt has priority
- Rights outside bankruptcy; e.g. accelerate if covenant violated

DEBT VS. DEBT (NOT JUST DEBT VS. EQUITY)

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Donaldson–Koont–Piacentino–Vanasco: Loans vs. credit lines

FOCUS ON DEBT VS. DEBT $\Longrightarrow$ NEW RESULTS

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Option to take more debt (credit line) can reduce debt taken in equilibrium

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Most committed capital credit lines almost none drawn down (c. 7%)

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Subsidizing bankruptcy can make filing less likely

Ensuring banks well capitalized could decrease lending

DONALDSON–GROMB–PIACENTINO I

FACTS ABOUT COLLATERAL

Current theories suggest collateral matters for low pledgeability

"Collateral pledging makes up for a lack of pledgeable cash"

E.g. weak legal system, low creditor rights, low reputation

But collateral also matters when pledgeability is high

Interbank markets, syndicated loans, etc.

E.g. strong law, creditor rights, regulation, reputation

QUESTIONS

Q1. Why does collateral matter when pledgeability is high?

Q2. Does collateral availability facilitate borrowing?

ROLE OF COLLATERAL

Role of collateral in most finance papers

- Mitigate enforcement problem between borrower and creditor

Role of collateral in this paper

- Mitigate enforcement problem among creditors

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Role of collateral in most finance papers

- Mitigate enforcement problem between borrower and creditor

Role of collateral in this paper

- Mitigate enforcement problem among creditors

These roles correspond to two components of property rights

- "Right of access": right to seize collateral
- "Right of exclusion": right to stop others seizing collateral

THIS PAPER

Model of sequential financing based on three key assumptions

Assumption 1: Pledgeability is limited

Can divert a fraction of cash flows

Assumption 2: Contracts are non-exclusive

Can't commit not to borrow form third party

Assumption 3: Assets can be collateralized

Collateralized assets cannot be pledged to third party

LAWYERS' VIEW

"A secured transaction is the protection...against the claims of competing creditors"

–Kronman and Jackson (1979)

"Borrowers...may protect lenders against dilution by issuing secured debt"

—Schwarz (1997)

RESULTS

R1. Paradox of pledgeability

Cannot borrow unsecured when pledgeability is high

R2. Collateral rat race

Creditors require collateral to protect against collateral

R3. Collateral overhang

Collateral prevents investment in positive NPV projects

R4. Collateral damage (extension)

Increased collateralizability can stifle investment

MODEL

MODEL OVERVIEW

Three dates $t \in \{0, 1, 2\}$ and two states $s \in \{L, H\}$

s realized at Date 1, $\mathbb{P}[s = H] =: p$

Two riskless projects

Project 0 at Date 0

Project 1 at Date 1

At Date t, B can borrow from creditor C_t to invest in Project t

B can borrow secured (i.e. "collateralized") or unsecured

PROJECTS

Project 0

Costs I_0 at Date 0

Pays off X_0 at Date 2

Project 1

Costs I_1^s at Date 1 in state s

Pays off X_1^s at Date 2

PLEDGEABILITY

Fraction θ of payoff is pledgeable

B can divert proportion $1 - \theta$ of project payoff

Creditors get up to θ of payoff according to priority

BORROWING AND INVESTMENT

B borrows from creditor C_t at Date t secured or unsecured

Secured debt

B can secure pledgeable payoff to a creditor

If B secures fraction σ, creditor gets exclusive claim to $\sigma\theta X$

Unsecured debt

B can promise pledgeable payoff unsecured

But B may collateralize projects to another creditor

CONTRACTING ENVIRONMENT

1. Courts treat secured debt as senior

   "the absolute priority rule describes the basic order of payment in bankruptcy. Secured creditors get paid first, unsecured creditors get paid next"

   —Lubben (2016)

2. B cannot commit not to collateralize

   "the secured party whose presence violates the [negative pledge] covenant is entitled to repayment from the collateral before the injured negative pledgee"

   —Bjerre (1999)

3. Collateral is not state contingent

TIMELINE

Date 0	B funds Project 0 from C_0 secured or unsecured or does not
Date 1	State s is revealed
	B funds Project 1 from C_1 secured or unsecured or does not
Date 2	Projects payoff, repayments made, players consume

PARAMETER RESTRICTIONS

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1. Pledgeable fraction of Project 0 is large enough to repay I_0

$$(1-p)\theta X_0 > I_0$$

2. Project 1 has positive NPV in $s = H$ and negative NPV in $s = L$

$$X_1^H > I_1^H \quad \text{and} \quad X_1^L < I_1^L$$

3. Combined pledgeble cash flow less than costs in both states

$$\theta\left(X_0 + X_1^s\right) \leq I_0 + I_1^s$$

4. But greater than cost of Project 1 in state H

$$\theta\left(X_0 + X_1^H\right) \geq I_1^H$$

RESULTS

BENCHMARK: FIRST BEST

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Project undertaken iff positive NPV

Date 0: Invest in Project 0

Date 1, state H: Invest in Project 1

Date 1, state L: Do not invest in Project 1

OVER-INVESTMENT PROBLEM

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B always wants to invest in Project 1

Suppose B borrows secured from C_1

Dilutes any unsecured debt B has to C_0

B transfers cost of Project 1 to C_0

B thus captures PV of Project 1, not NPV

B borrows and invests even if negative NPV

RESULT 1: UNSECURED DEBT ACHIEVES FB FOR LOW θ

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B always wants to invest at Date 1 so FB attained unsecured iff

Unconstrained in state H:

$$\theta\left(X_0 + X_1^H\right) \geq I_1^H$$

But constrained in state L:

$$\theta\left(X_0 + X_1^L\right) < I_1^L$$

B always unconstrained in H; B constrained in L iff

$$\theta < \theta^* := \frac{I_L}{X_0 + X_1^L}$$

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FB attained with unsecured debt iff pledgeability low ($\theta < \theta^*$)

RESULT 2: PARADOX OF PLEDGEABILITY

PARADOX OF PLEDGEABILITY

Increasing pledgeability relaxes borrowing constraint with C_1

Standard effect of pledgeability

Increasing pledgeability tightens borrowing constraint with C_0

New effect of pledgeability

PARADOX OF PLEDGEABILITY

Suppose θ is high

If C_0 lends unsecured, B dilutes C_0 in $s \in \{L, H\}$

C_0 is not repaid in either state

So C_0 will not lend unsecured for high pledgeability

RESULT 3: COLLATERAL RAT RACE

COLLATERAL RAT RACE

C_0 requires collateral as protection against dilution

Collateralization protects against collateralization

COLLATERAL RAT RACE

If B collateralizes σ_0 of Project 0, FB attained iff

Unconstrained in state H:

$$\theta\Big((1-\sigma_0)X_0 + X_1^H\Big) \geq I_1^H$$

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Feasible for some $\sigma_0 \in [0,1]$ whenever I_1^H not too large

RESULT 4: COLLATERAL OVERHANG

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B constrained in state H

Collateralization prevents borrowing and efficient investment

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Collateral overhang captures "asset encumbrance"

"Asset encumbrance not only poses risks to unsecured creditors...but also has wider...implications since encumbered assets are generally not available to obtain...liquidity"

PLEDGEABILITY VS. COLLATERALIZABILITY

PLEDGEABILITY VS. COLLATERALIZABILITY

Suppose fraction of a project is pledgeable but not collateralizable

Can be seized in the future

but hard to assign property rights to today

E.g. assets built while doing project, don't exist at inception

Specifically B can collateralize at most μ_t of Project t at Date t

I.e. $\sigma_t \leq \mu_t$, so B collateralizes at most $\mu_t \theta X_t$

RESULT 5: COLLATERAL DAMAGE

COLLATERAL DAMAGE

First best is attained only if μ_1 is sufficiently small

High μ_1 makes it easier to borrow collateralized at Date 1

- Triggers collateral rat race

Higher μ_1 means μ_0 must be higher to protect against dilution

- More collateral used at Date 1, more required at Date 0

COLLATERAL DAMAGE

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Collateral demand may be increasing in collateral supply

TWO ROLES OF COLLATERAL

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Suppose secured debt increases pledgeability to $c\theta > \theta$

Reliance on collateral is u-shaped in θ

Low θ: classical role of collateral dominates

Collateralize to make up for lack of pledgeable cash

High θ: new role of collateral dominates

Collateralize to protect against dilution

ANSWERS

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Q1. Why does collateral matter when pledgeability is high?

A1. To protect against dilution

Q2. Does collateral availability facilitate borrowing?

A2. No. Can undermine unsecured borrowing

CONCLUSIONS

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Collateral protects creditors against the claims of other creditors

Paradox of pledgeability

- High pledgeability makes it easier to dilute
- Induces collateral rat race

Can't do projects due to collateral overhang—asset encumbrance

More collateral may decrease efficiency—collateral damange

THE PARADOX OF PLEDGEABILITY

DONALDSON–GROMB–PIACENTINO I: CODA

"CRITIQUE"

There is a "critique" extending analysis of our baseline model

(i) Shows increasing θ cannot decrease welfare in our baseline model

(ii) Suggests statements about collateral backfiring unfounded

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But (i) consistent with our results and (ii) true in extension (μ_1)

We showed "collateralizability" (μ_1) can hurt in extension

They showed "pledgeablility" (θ) cannot in baseline

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We showed "collateralizability" (μ_1) can hurt in extension

They showed "pledgeablility" (θ) cannot in baseline

Response: Showed increasing θ can hurt in extension

Same idea: Risk of dilution in future undermines debt capacity today

DONALDSON–GROMB–PIACENTINO II

FACTS

Firms rely on different types of debt at once

- Including secured and unsecured with and without covenants

Secured debt has "absolute priority"

Unsecured debt has covenants limiting new secured debt

- Negative pledge covenants common (e.g. 44% in Billett et al 07)
- If covenants violated, right to accelerate debt

LAWYERS' VIEW ON N.P. COVENANTS

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In the case of a debtor...indebted to secured creditors acceleration by unsecured creditors...seems somewhat futile

—Hahn (2010)

QUESTIONS

Q1. Why rely so heavily on negative pledge covenants?

Why not just use secured debt to promise priority credibly?

Q2. Why do borrowers use a multi-tiered debt structure?

Why mix secured/unsecured debt with/without covenants?

Q3. Why do some claims have absolute priority in the first place?

Even though it undermines other contracts?

THIS PAPER

Model of sequential financing based on two frictions

1. Limited pledgeability: can't borrow against projects' full PV
2. Contracts are non-exclusive: can sign conflicting contracts

Role of collateral: establish priority among conflicting contracts

Secured debt has absolute priority over collateral

New secured debt dilutes existing unsecured debt

DILUTION HAS TWO SIDES

Dilution can be bad—can lead to over-investment

New investments subsidized at expense of existing creditors

Dilution can be good—can prevent under-investment

Loosens borrowing constraints due to limited pledgeability

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New investments subsidized at expense of existing creditors

Dilution can be good—can prevent under-investment

Loosens borrowing constraints due to limited pledgeability

Optimal debt structure allows good dilution, blocks bad dilution

MAIN RESULTS

1. Unsecured debt can't block dilution—over-investment

2. Secured debt blocks dilution, but maybe too much—under-investment

3. N.p. covenants allow dilution, but acceleration threat deters some

   Acceleration futile to reverse dilution by new secured debt

   But embeds option to dilute other unsecured debt

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   Acceleration futile to reverse dilution by new secured debt

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Right debt structure implements efficiency under current priority rule

RESULTS RESONATE WITH PRACTICE

Explain why negative pledge covenants pervasive

Billet et al 07, Ivashina–Vallée 18

Explain why covenants frequently violated

Chava–Roberts 08, Dichev–Skinner 02, Roberts–Sufi 09

Explain why covenants typically waived following violations

Beneish–Press 93/95, Gopalakrishnan–Parkash 95, Sweeney 94

Explain why covenant use increases in growth opportunities

Billet–King–Mauer 07

Explain why distressed firms use secured debt

Badoer et al. 17, Barclay–Smith 95, Rauh–Sufi 10

CONTRIBUTION

Models of collateral establishing priority Ayotte–Bolton 11, DeMarzo 19, Donaldson–Gromb–Piacentino 19, Stulz–Johnson 85

Focus on priority in bankruptcy, here also outside bankruptcy

Models of covenants Attar et al. 14, Ayotte-Bolton 11, Garleânu– Zwiebel 09, Park 00, Rajan–Winton 95

Focus on debt vs. equity, here debt vs. debt

MODEL

MODEL OVERVIEW

Three dates: $t \in \{0, 1, 2\}$

Risk-neutral players: penniless borrower B; competitive creditors

Projects: Project 0 available at Date 0, Project 1 at Date 1

- At Date 1, quality of Project 1 revealed $Q \in \{H, L\}$, $\mathbb{P}[H] =: q$
- At Date 2, projects succeed or fail, $\mathbb{P}[\,\text{success}\,] =: p$ (corr. $= 1$)

At Date t, B can borrow from creditors to fund Project t

PROJECTS

Project 0

Costs I_0 at Date 0

Pays off $X_0 + Y_0$ at Date 2 if succeeds, zero if fails

X_0 is pledgeable, Y_0 not

Project 1

Costs I_1 at Date 1

Pays off $X_1^Q + Y_1^Q$ at Date 2 if succeeds, zero if fails

X_1^Q is pledgeable, Y_1^Q not

Can liquidate at Date 1 for expected pledgeable c.f. pX

INSTRUMENTS

Secured debt: promise to repay F^{sec} secured by projects as collateral

Unsecured debt: promise to repay without collateral

Unsecured debt with n.p. covenants: promise without collateral

But option to accelerate if B borrows secured

PRIORITY RULE

Secured debt has priority over collateral

- Ahead of all unsecured debt (absolute priority rule)
- Ahead of later secured debt (first-in-time rule)
- Ahead of any other claimants if collateral liquidated/sold

Unsecured pro-rata in default

- Acceleration gives effective priority over other unsec. debt
- But not over secured debt (protected by collateral)

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- But not over secured debt (protected by collateral)
- E.g. sequential service constraint on unsecured debt

PRIORITY RULE REFLECTS PRACTICE

Current law...rests on three "priority principles": First, if the first creditor...makes an unsecured loan, it shares pro rata with later unsecured creditors...on default. Second, if this initial creditor makes an unsecured loan and a later creditor takes security, the later creditor has priority over the initial creditor.... Third, if the initial creditor makes a secured loan, it generally has priority over later creditors

—Schwartz (1989)

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—Hahn (2010)

TIMELINE

Date 0	B funds Project 0 from competitive creditors or does not
Date 1	Project 1's quality Q is revealed
	B funds Project 1 from competitive creditors or not
	Acceleration (hence liquidation) or continuation
Date 2	Payoffs realized, repayments made, and players consume

PARAMETER RESTRICTIONS

1. Project 0 efficient; Project 1 efficient if high quality, not if low

$$p\big(X_0 + Y_0\big) > I_0$$

$$p\big(X_1^H + Y_1^H\big) > I_1 > p\big(X_1^L + Y_1^L\big)$$

2. Expected pledgeable c.f. of positive-NPV projects exceeds costs

$$pX_0 + qpX_1^H \geq I_0 + qI_1$$

3. Project 1 is not self-financing

$$pX_1^Q < I_1$$

4. Total liquidation value not too small

$$p\big(X_0 + X_1^Q\big) \quad \geq \frac{I_1}{p}$$

PARAMETER RESTRICTIONS

1. Project 0 efficient; Project 1 efficient if high quality, not if low

$$p\big(X_0 + Y_0\big) > I_0$$

$$p\big(X_1^H + Y_1^H\big) > I_1 > p\big(X_1^L + Y_1^L\big)$$

2. Expected pledgeable c.f. of positive-NPV projects exceeds costs

$$pX_0 + qpX_1^H \geq I_0 + qI_1$$

3. Project 1 is not self-financing

$$pX_1^Q < I_1$$

4. Total liquidation value not too small

$$p\big(X_0 + X_1^Q\big) \quad \geq \frac{I_1}{p} = F_1^{\text{sec}}$$

FIRST BEST

FIRST BEST

Project undertaken iff positive NPV

Date 0: invest in Project 0

Date 1: invest in Project 1 if high quality, not if low

TWO THINGS NECESSARY FOR FIRST BEST

1. B does not invest in Project 1 if $Q = L$

   Problem: non-exclusivity can lead to over-investment

   Borrowing constraints too loose: may need to block dilution

2. B can invest in Project 1 if $Q = H$

   Problem: limited pledgeability can lead to under-investment

   Borrowing constraints too tight: may need dilution

BENCHMARK: EXCLUSIVE CONTRACTS

BENCHMARK: EXCLUSIVE CONTRACTS

Suppose limited pledgeability

- B may not be able to borrow against projects' full PV

But suppose exclusivity

- B can't borrow from third party
- Can write bilateral contingent contract

RESULT 0: EXCLUSIVE CONTRACT IMPLEMENTS FB

EXCLUSIVE CONTRACT IMPLEMENTS FB

Two things necessary for FB

1. B does not invest in Project 1 if $Q = L$

   With exclusivity, can't dilute with new debt to third party

   No incentive to over-invest

2. B invests in Project 1 if $Q = H$ (overcoming non-pledgeab.)

   By PR 3, Project 1 is not self-financing: $pX_1^H < I_1$

   By PR 2, creditor still breaks even on average

   Creditor takes loss if $Q = H$ but makes offsetting gain if L

NON-EXCLUSIVE CONTRACTS

UNSECURED DEBT

RESULT 1: INEFFICIENCY OF UNSECURED DEBT

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Say B takes on unsecured debt F_0^u at Date 0

Unsecured debt can be diluted: over-investment if $Q = L$

Too much bad dilution

SECURED DEBT

SECURED DEBT CAN BLOCK DILUTION

Say B takes on secured debt F_0^{sec} at Date 0 (rest unsecured)

Secured debt F_0^{sec} cannot be diluted, unsecured can be

SECURED DEBT CAN BLOCK DILUTION

Say B takes on secured debt F_0^{sec} at Date 0 (rest unsecured)

Secured debt F_0^{sec} cannot be diluted, unsecured can be

What is B's debt capacity at Date 1?

B'S DEBT CAPACITY

B's debt capacity is max B can borrow (secured)

Can promise new sec. creditors everything not promised as F_0^{sec}

New secured debt paid ahead of Date-0 unsec. debt (APR)

But paid after Date-0 secured debt (first-in-time rule)

$$\text{Debt capacity } = p\Big(X_0 + X_1^Q - F_0^{\text{sec}}\Big)$$

IS FB IMPLEMENTABLE WITH SECURED DEBT?

FB implemented if constrained if $Q = L$ but not if $Q = H$:

1. Constrained if $Q = L$:

$$\underbrace{p\left(X_0 + X_1^L - F_0^{\text{sec}}\right)}_{\text{debt capacity}} < I_1$$

2. But unconstrained if $Q = H$:

$$\underbrace{p\left(X_0 + X_1^H - F_0^{\text{sec}}\right)}_{\text{debt capacity}} \geq I_1$$

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or

$$X_1^L < \frac{I_1 - p\big(X_0 - F_0^{\text{sec}}\big)}{p} \leq X_1^H$$

RESULT 2: SECURED DEBT IMPLEMENTS FB IF X_1^H HIGH

SECURED DEBT IMPLEMENTS FB IF X_1^H HIGH

Financing Project 1 requires dilution; can't if all debt is secured

Reduce secured debt to allow dilution

But could allow for too much dilution

If $X_1^L < X_1^H$ can find F_0^{sec} s.t. can fund H project, not L project

Because less dilution needed to fund H than L

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Because less dilution needed to fund H than L

What if need to dilute more to fund H than L project?

UNDER-INVESTMENT WITH SECURED DEBT

Suppose need more dilution to fund H project than L ($X_1^H < X_1^L$)

Any F_0^{sec} blocking funding L project blocks H project too

Secured borrowing blocks future positive-NPV projects

Secured borrowing "encumbers assets": collateral overhang

CAN RENEGOTIATION SOLVE PROBLEM?

High-quality project creates surplus $p\left(X_1^H + Y_1^H\right) > I_1$

Should find Coasian bargain to fund it

But limited pledgeability can make renegotiation infeasible

Renegotiation must make everyone (strictly) better off

But by PR 3, pledgeable c.f. is less than cost, $pX_1^H < I_1$

So can't credibly allocate enough to creditors

NEGATIVE PLEDGE COVENANTS

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Say B takes on unsecured debt with covenants F_0^{cov} at Date 0

Say B violates covenant, funding Project 1 with secured debt F_1^{sec}

Assume F_1^{sec} large enough that can't repay F_0^{cov} ("wlog")

Given violation, creditor with n.p. can accelerate, forcing liquidation

$$\min\left\{ F_0^{\text{cov}}\,,\ p\big(X_0 + X_1^Q\big) - F_1^{\text{sec}} \right\} = p\big(X_0 + X_1^Q\big) - F_1^{\text{sec}}$$

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$$\underbrace{\min\left\{ F_0^{\text{cov}},\ \underbrace{p\big(X_0 + X_1^Q\big)}_{\text{liquidation value}} - F_1^{\text{sec}} \right\}}_{\text{acceleration value}} = p\big(X_0 + X_1^Q\big) - F_1^{\text{sec}}$$

ACCELERATION THREAT CAN DETER DILUTION

B won't dilute if anticipates exercise of acceleration option

Forces liquidation and destroys non-pledgeable c.f. Y

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What if fraction ϕ of F_0 unsecured with n.p. covenants (rest unsec.)?

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But dilutes other unsecured debt $(1 - \phi)$

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Yet another side of dilution: to make acceleration credible

If credible at the right time could lead to efficient investment

FB IMPLEMENTABLE WITH N.P. COVENANTS?

FB implemented if acceleration threat credible if L, not if H:

1. If $Q = L$, accelerate given violation

$$\underbrace{p\left(X_0 + X_1^L\right) - F_1^{\text{sec}}}_{\text{acceleration value}} > \underbrace{\phi p\left(X_0 + X_1^L - F_1^{\text{sec}}\right)}_{\text{continuation value}}$$

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or

$$X_1^L > \frac{(1 - p\phi)}{p(1 - \phi)} F_1^{\text{sec}} - X_0 \geq X_1^H$$

RESULT 3: COVENANTS IMPLEMENT FB IF X_1^H SMALL

COVENANTS IMPLEMENT FB IF X_1^H SMALL

Complement of when secured debt implements FB

If need to dilute more to fund H than L, can find ϕ to implement FB

- If $Q = L$, don't invest: covenant upheld, deterring dilution
- If $Q = H$, invest: covenant waived, allowing dilution

COVENANTS IMPLEMENT FB IF X_1^H SMALL

Complement of when secured debt implements FB

If need to dilute more to fund H than L, can find ϕ to implement FB

- If $Q = L$, don't invest: covenant upheld, deterring dilution
- If $Q = H$, invest: covenant waived, allowing dilution

Acceleration less attractive for large dilution

DON'T ACCELERATE IF DILUTION LARGE

After covenants violated, n.p. debt is endogenously junior

- Paid after new secured debt, ahead of equity
- Both debt-like and equity-like

More equity-like if dilution is large (closer to residual claim)

- Equity is a call option on the assets
- Do not want to exercise (accelerate and liquidate) early
- "Gamble for resurrection" like firm in distress

IS ACCELERATION RENEGOTIATION PROOF?

Liquidation following covenant violation destroys surplus

Can renegotiation reallocate this surplus to avoid liquidation?

No! Liquidation destroys only non-pledgeable c.f.

Can't allocate pledgeable c.f. to make everyone (strictly) better off

OPTIMAL DEBT STRUCTURE

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Can find debt structure that implements FB

Avoids under-investment but block over-investment

I.e. manages trade off between financial rigidity and flexibility

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Can find debt structure that implements FB

- Avoids under-investment but block over-investment
- I.e. manages trade off between financial rigidity and flexibility

Mixes secured and unsec. debt with and w/o cov.

DEBT STRUCTURE REFLECTS PRACTICE

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1. Negative pledge covenants are common
   Billett et al. 07, Ivashina-Vallée

2. Covenants are frequently violated
   Chava–Roberts 08, Nini–Smith–Sufi 12, Roberts–Sufi 09

3. Following violations, covenants are typically waived
   Gopalakrishnan–Prakash 95, Nini–Smith–Sufi 12

4. Multi-layered: with and without covenants secured and unsecured
   Rauh–Sufi 10

5. No pecking order of debt types
   Kermani–Ma 19, Rampini–Viswanathan 18, Rauh–Sufi 10

6. Secured debt reduces future investment (collateral overhang)
   Badoer–Dudley–James 17

7. Public and private debt coexist; private debt has more covenants
   Gopalakrishnan and Prakash 95

HOW ARE COVENANTS PRICED?

HOW ARE COVENANTS PRICED?

Empirically covenants are valuable (Matvos 13, Bradley–Roberts 14, Green 18)

Here too: with covenants, do Project 1 if $Q = H$, deterred if $Q = L$

Still, unsecured debt with and without covenants priced equally

- Acceleration is off equilibrium, but disciplines B
- All unsecured creditors benefit from credible threat

Bradley–Roberts: covenants in firms' loans reduce yield on bonds

EXTENSIONS AND ROBUSTNESS

EXTENSIONS AND ROBUSTNESS

1. Continuum of qualities
2. "Coalitional" renegotiation
3. Secured debt with covenants and deductibles
4. Dilution via pari passu debt
5. Financing via subordinated debt
6. Bankruptcy due to acceleration

ANSWERS

ANSWERS

Q1. Why use negative pledge covenants instead of secured debt?

A1. Secured debt can protect too much against dilution

Q2. Why do borrowers use a multi-tiered debt structure instead?

A2. Allows efficient dilution and prevents inefficient dilution

Q3. Why do some claims have absolute priority in the first place?

A3. Allows borrowers to combine instruments to overcome frictions

CONCLUSIONS

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Covenants can be violated and contracts can conflict

- Need priority rule to resolve conflicts

Lawyers argue current priority rule is perverse

But we show it helps implement efficiency via right debt structure

- Debt structure is multi-tiered—rich and realistic

CONFLICTING PRIORITIES:
A THEORY OF COVENANTS AND COLLATERAL

DONALDSON–MORRISON–PIACENTINO–YU

RESTRUCTURING VS. BANKRUPTCY

Two ways to reduce debt

- Bankruptcy
- Out-of-court restructuring (distressed exchange)

Each equally important: c. 40% of defaults

Even after restructuring, end up bankruptcy in three years 35% of time

Interaction of restructuring & bankruptcy not acknowledged in lit.

- Either conflates the two or treats them as substitutes

QUESTIONS

Q1. How do restructuring and bankruptcy interact?

Q2. Do parameters of bankruptcy environment affect ability to restructure?

Do low bankruptcy costs crowd out restructuring?

Does a debtor-friendly Code crowd out restructuring?

Q3. How can relief policies facilitate debt reduction?

THIS PAPER

Model levered firm exposed to costly financial distress

Restructuring and bankruptcy can mitigate distress costs

Two key ingredients:

1. Restructuring inhibited by collective action (hold-out) problem
2. Bankruptcy is choice of firm (could choose to file after restructuring)

RESULTS

R0. Hold-out problem solved by granting priority (Bernardo–Talley 96 and Gertner–Scharfstein 91)

But priority valuable only if bankruptcy likely

R1. Low bankruptcy costs facilitate restructuring

Bankruptcy likely $\implies$ priority valuable

R2. Debtor friendliness has non-monotonic effect

(i) Makes bankruptcy likely $\implies$ priority valuable

(ii) Makes creditor recovery values low $\implies$ priority not valuable

Argue (i) likely dominates (ii) in US $\implies$ Code too creditor friendly

RELIEF POLICY

Analyze effect of $1 subsidy on welfare on two sets of policies

Ex post policies: subsidize DIPs (DeMarzo–Krishnamurty–Rauh 20)

Ex ante policies: forgivable loans (PPP), cash grants (CARES Act)

Insight: policy makers must take effect on restructuring into account

Results:

Don't target unsecured debt: decreases value of priority

Do target secured debt, ex ante or ex post

MODEL

MODEL OVERVIEW

Two dates, 0 and 1; single firm with debt D_0 and risky assets $v \sim F$

Date 0: firm makes restructuring offer and creditors accept/reject

Date 1: v realized; firm repays or files for costly bankruptcy

RESTRUCTURING

At Date 0, firm offers creditors (debt or equity) claims take-it-or-leave-it

Each creditor accepts/rejects taking others' decisions as given

REPAYMENT OR BANKRUPTCY

At Date 1, firm's assets v realized

Repays debt D (outcome of restructuring or D_0) or files for bankruptcy

Filing destroys $(1-\lambda)v$ (bankruptcy costs)

Filing leaves $(1-\theta)\lambda v$ to equity

$$\text{equity payoff} = \begin{cases} v - D & \text{if repay} \\ (1-\theta)\lambda v & \text{if file} \end{cases}$$

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$$\text{equity payoff } = \begin{cases} v - D & \text{if repay} \\ (1-\theta)\lambda v & \text{if file} \end{cases}$$

Define $\hat{v}_D$ as threshold below which firm files: $\hat{v}_D := \dfrac{D}{1-(1-\theta)\lambda}$

BENCHMARK:

RESTRUCTURING WITH SINGLE CREDITOR

BM: RESTRUCTURING WITH SINGLE CREDITOR

Suppose firm offers creditor equity stake $1 - \alpha$

Result: $\exists\, \alpha$ making creditor and firm better off

INTUITION: SINGLE CREDITOR BENCHMARK

Restructuring avoids all distress costs, increasing "size of the pie"

Bilateral bargaining allows firm and creditor to slice it up

Like Coase theorem: assign property rights to achieve efficiency

BENCHMARK:

DEBT-EQUITY EXCHANGE WITH DISPERSED CREDITORS

BM: D/E EXCHANGE W/ DISPERSED CREDITORS

Suppose firm offers creditors equity stake $1 - \alpha$

Result: with dispersed creditors restructuring to equity is infeasible

INTUITION: HOLD-OUT BENCHMARK

Restructuring avoids all distress costs, increasing "size of the pie"

But bargaining impeded by collective action problem

Restructuring succeeds only if each creditor accepts given others accept

- But if others accept, each (small) creditor's debt valued at par
- Prefers D_0 unless $1 - \alpha$ high $\implies$ restructuring too expensive

Free-rider/Hold-out problem causes restructuring to fail

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Free-rider/Hold-out problem causes restructuring to fail

(Like equity, debt write-downs decrease distress but suffer from hold-out)

HOLD-OUTS ARE A REAL PROBLEM

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The holdout problem...occurs when one or more creditors have an incentive to reject a deal that collectively benefits all creditors

—Moody's 17

DISTRESSED DEBT EXCHANGES ARE COMMON

Many successful restructurings recently:

AMC Entertainment, JCrew, Serta Simmons, SM Energy, Envision Healthcare,...

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Many successful restructurings recently:

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All exchanged outstanding debt for debt with higher priority

R0: PRIORITY SOLVES HOLD-OUT PROBLEM

(Bernardo–Talley 96 and Gertner–Scharfstein 91)

R0: PRIORITY SOLVES HOLD-OUT PROBLEM

Suppose firm offers debt with lower face value $D < D_0$ but higher <u>priority</u>

Individual creditor accepts write-down (given others accept) if

$$\underbrace{\big(1 - F(\hat{v}_D)\big)D + F(\hat{v}_D)\,\mathbb{E}\left[\theta\lambda v \,\middle|\, v < \hat{v}_D\right]}_{\text{Accept payoff}} \geq \underbrace{\big(1 - F(\hat{v}_D)\big)D_0}_{\text{Reject payoff}} + 0 \qquad \text{(IC)}$$

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NB 1: hold-out's recovery value $= 0$ given others accept senior debt

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Result: write-down $D_0 - D > 0$ accepted (up to max)

VALUE OF PRIORITY

From binding IC, max write-down is

$$\overline{\text{WD}} = \frac{F(\hat{v})}{1 - F(\hat{v})} \mathbb{E}\left[\theta\lambda v \,\middle|\, v \leq \hat{v}\right]$$

$\overline{\text{WD}}$ captures value of priority

Increasing in $F(\hat{v})$: priority valuable when filing likely

Increasing in $\mathbb{E}\left[\theta\lambda v \,\middle|\, v \leq \hat{v}\right]$: priority valuable when recovery high

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$\overline{\text{WD}}$ captures value of priority

Increasing in $F(\hat{v})$: priority valuable when filing likely

Increasing in $\mathbb{E}\left[\theta\lambda v \,\middle|\, v \leq \hat{v}\right]$: priority valuable when recovery high

NB: unlike in lit., bankruptcy is choice $\implies$ $\hat{v}$ depends on λ and θ

WRITE-DOWN IN TERMS OF MARKET PRICES

Approximate $\overline{\mathrm{WD}}/D_0$:

% write-down $\approx$ secured credit spread $\times$ maturity

$\Longrightarrow$ Creditors accept write-downs if priority valuable

Plug in numbers to compare model and empirical estimates

Model: 42% (Benmelech et al 20: sec. credit spread = 6% & mat. = 7 years for distressed debt)

Empirical: 44% (Moordian–Ryan 05)

R1: LOW BANKRUPTCY COSTS HELP RESTRUCTURING

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(i) and (ii) make priority valuable $\implies$ help restructuring

BANKRUPTCY COMPLEMENTS RESTRUCTURING

Efficient bankruptcy does not crowd out restructuring

- Facilitates it, by making priority valuable

Due to bankruptcy being "inside option" in restructuring

- I.e. firm might file for bankruptcy, even after successful restructuring

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In line with Schoenherr and Starmans (2020)

- Lower bankruptcy costs $\implies \uparrow$ restructuring

R2: CREDITOR FRIENDLINESS CAN HELP OR HINDER RESTRUCTURING

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Result: $\overline{\text{WD}}$ can increase or decrease in θ (typically hump shaped)

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"Optimal" bankruptcy system does not max creditor recovery value

It balances it with filing incentives

RESULTS DRIVEN BY ENDOGENOUS FILING

In current hold-out models filing exogenous, so could be misleading

$\Longrightarrow$ Code cannot be too creditor friendly

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I.e. new insight driven by new, realistic assumption: <u>firm chooses to file</u>

IS CODE TOO CREDITOR FRIENDLY?

Derive suff. condition s.t. $\overline{\text{WD}} \downarrow$ in θ (in terms of suff. stats.):

$$\%\,\text{write-down} \;\leq \frac{1-\lambda(1-\theta)}{2-\lambda(2-\theta)}$$

Plug in numbers from lit.: $\%$ write-down $\approx 56\%$, $\lambda \approx 90\%$, and $\theta \approx 85\%$ (Moordian–Ryan 05, Hotchkiss et al. 08)

Condition satisfied ($56\% \lessapprox 90\%$)

I.e. US bankruptcy system could favor creditor recovery excessively

In line with Giambona–Lopez-de-Silanes–Matta 19

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($\Longrightarrow$ planner's objective robust to externalities due to bankruptcy)

PLANNER'S PROBLEM

Denote vector of subsidies by $\mathbf{s}$ and associated costs by $\mathbf{q}$

E.g. s_i could be subsidy to firm's assets; cost $q_i = 1$

E.g. s_j could be subsidy to assets in bankruptcy; cost $q_j = F(\hat{v})$

If planner's budget is ε and $\Delta \geq 0$ represents creditors' IC, his problem:

$$\begin{cases} \min\limits_{\mathbf{s}} \quad \hat{v} & \text{(min default prob.)} \\ \text{s.t.} \quad \Delta \geq 0 & \text{(restructuring IC)} \\ \& \quad \mathbf{q} \cdot \mathbf{s} \leq \varepsilon & \text{(planner's budget)} \end{cases}$$

taking into account $\hat{v}$ & Δ depend on $\mathbf{s}$ & D, which also depends on $\mathbf{s}$

FEASIBLE POLICIES

Subsidies to each layer of capital structure in and out of bankruptcy

Nests specific policies, e.g.

- Asset subsidies are subsidies to all layers in/out of bankruptcy
- Restructuring subsidies are subsidies to secured debt
- Debt purchases & forgiveness are subsidies sec. debt out of bankruptcy

INSIGHT: SUBSIDIES AFFECT RESTRUCTURING

Affect $F(\hat{v})$ directly via firm's filing incentive, indirectly via creditors' IC

Result: Optimal to subsidize only secured debt

Reason: Increases value of priority (sec. credit spread)

Subsidies to secured debt in and out of bankruptcy equivalent:

- Can subsidize secured creditors in restructuring (Greenwood–Thesmar 20)
- Can subsidize secured creditors in bankruptcy (DeMarzo–Krishnamurthy–Rauh 20)

ANSWERS

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Q1. How do restructuring and bankruptcy interact?

A1. Via value of priority; priority valuable only when firms choose to file

Q2. Do parameters of bankruptcy environment affect ability to restructure?

A2. Yes, via value of priority—incentive to file and recovery value

Do low bankruptcy costs crowd out restructuring?
No, they catalyze it

Does debtor-friendly Code crowd out restructuring?
Depends, unlikely in the US right now

Q3. How can relief policies facilitate debt reduction?

Q3. Target restructuring, e.g., by subsidizing secured debt in bankruptcy

CONCLUSION

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New take on "bargaining in the shadow of the law" (Mnookin–Lewis Kornhauser 79)

In-court bankruptcy determines out-of-court restructuring

Not because bankruptcy is outside option, but "inside option"

Bankruptcy common even after successful restructuring

$\Longrightarrow$ Bankruptcy and restructuring are complements

RESTRUCTURING VS. BANKRUPTCY

CONCLUSION

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Focus on debt vs. debt conflicts: dilution

Two sides of dilution

- Flexibility to undertake efficient investments
- No commitment not to undertake inefficient ones

Trade-off underlies theories of collateral, covenants, restructuring,...

NEXT STEPS

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Rights against world (property) vs. against counterparties (contract)

- Notice, registration, privity,...

Contractable contracts and conflicting contracts

- Infinite regress problem, "overcomplete" contracts

Debt structure

- Maturity (∞-dimensional), security, specific assets and/or "cash flows"

DEBT AND BANKRUPTCY