Triparty Contracts in Long Term Financing

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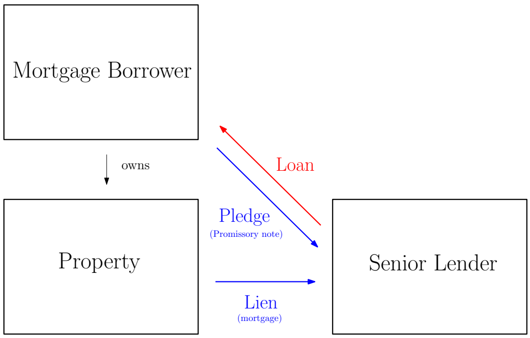
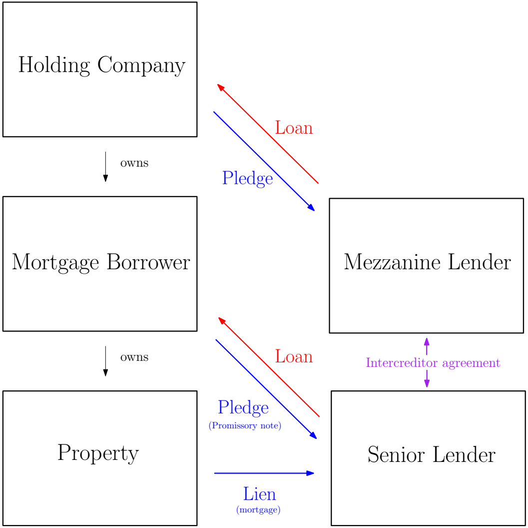
Mezzanine Finance

"Mezzanine financing is basically debt capital that gives the lender the rights to convert to an ownership or equity interest in the company if the loan is not paid back in time and in full. It is generally subordinated to debt provided by senior lenders such as banks and venture capital companies."

Mezzanine Finance



Mezzanine Finance



Motivation

- Intermediate seniority financing (Mezz loans, e.g.) is ubiquitous
- What purpose does it serve?
  1. Completes the market (Allen and Gale, 1988)
  2. Expert capital (Holstrom and Tirole, 1997)

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  3. This paper: back-up QB

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- . . . without dead-weight loss
- Back-up QBs are essential

Mezz is a blend of human and physical capital

- It is optimal for Mezz lenders to invest in the project early
- This makes it cheaper to provide the needed incentives when they are called upon
- If poaching is an issue, even more necessary

Beyond Mezz

- Our findings apply to any context where a principal must delegate operation of a risky project
- Ex: CEO succession plans
- Companies often have continuity plans with CEOs in waiting
- Heir-apparents receive a bump in their compensation when they take over

Literature

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- De Marzo and Fishman (2007)

Other related papers

The model

- $t = 0, 1, 2$, one good, no discounting
- Agents 1 and 2 are endowed with $\epsilon \in \left[0, \frac{1}{2}\right)$ at date 0
- Either agent can operate a risky project
- Agent P has one unit of the good at date 0 but no ability to run the project
- Storage technology with gross payoff R at date 2

Projects

- Project requires 1 unit of good at date 0
- If activated and operated by agent 1, the project yields y_H at date 1 with probability π ...
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- At date 1 the project can be interrupted for payoff S

Moral hazard

- Only the operator observes output
- They can secretly consume y at utility cost ϕy
- Idle agents earn outside and inalienable utility V_o

Bilateral contracts

1. Investment $k_1 \leq \epsilon$ by agent 1 and $k_P \leq 1$ by principal
2. Payment $\{w_i(h) \geq 0 : i = 1, 2\}$ from the principal to the agent for all possible histories h of cash flow , and,
3. Scrapping probabilities $s(0), s(y_H)$

Date 2 problem

The principal maximizes:

$$W_2^c(V_2) = \max_{w_2^L, w_2^H} \pi(y_H - w_2^H) + (1-\pi)(-w_2^L)$$

subject to:

$$\pi w_2^H + (1-\pi) w_2^L = V_2 \text{ (promise keeping)},$$

$$w_2^H \geq w_2^L + (1-\phi) y_{H.} \text{ (truth telling)},$$

and

$$w_2^H, w_2^L \geq 0 \text{ (limited liability)}.$$

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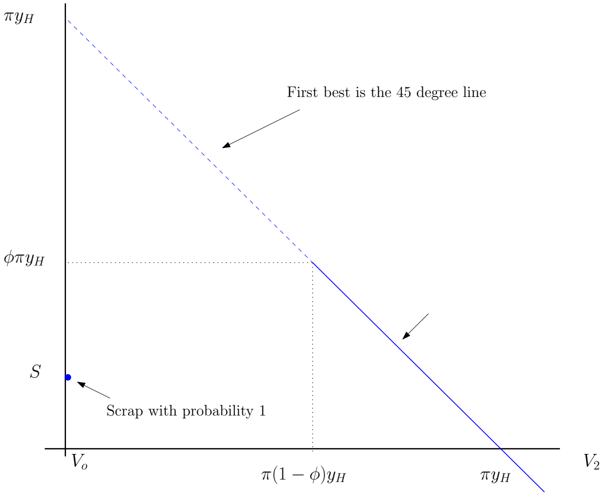
Period 2 value function



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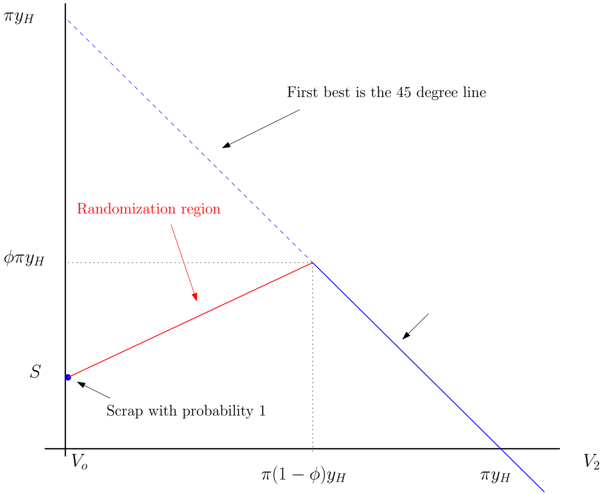

Period 1 value function

$$W_1(V_1|k_P) = \max_{w_1^L, w_1^H, V_2^H, V_2^L} \quad \pi\left[y_H - w_1^H + W_2(V_2^H)\right] + (1-\pi)\left[-w_1^L + W_2(V_2^L)\right] - k_P R$$

subject to:

$$\pi\left[w_1^H + V_2^H\right] + (1-\pi)\left[w_L^1 + V_2^L\right] \geq V_1 \text{ (promise keeping)}$$

$$w_1^H + V_2^H \geq w_1^L + V_2^L + (1-\phi)y_{H.} \text{ (truth telling)}$$

$$w_1^H, w_1^L \geq 0 \text{ (limited liability)}$$

and

$$V_2^H, V_2^L \geq V_o \text{ (lower bound on agent payoff at date 2)}$$

Why scrap?

Assume $V_1 = 0$.

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1. Continue with probability one:

$$\pi y_H + \pi y_H - [\pi(1-\phi)y_H + \pi(1-\phi)y_H] - k_P R.$$

2. Scrap if bad annoucement:

$$\pi y_H + \pi^2 y_H + (1-\pi)S - \pi(1-\phi)y_H - k_P R$$

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For π high enough, option 2 wins.

Full solution

Proposition

The set of solutions to the principal's problem satisfies:

1. *If and only if*

$$2V_o + \epsilon R < \pi(1-\phi)y_H + \pi(1-\phi)y_H$$

then all solutions satisfy $k_1 = \epsilon$ *and* $k_P = 1-\epsilon$*;*

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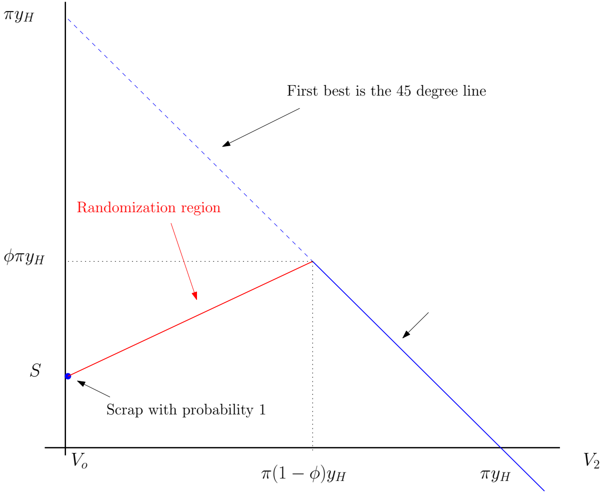
2. *The project is scrapped with positive probability if and only if*
   (a) $2V_o + \epsilon R < \pi(1-\phi)y_H + \pi(1-\phi)y_H$, *and,*
   (b) $\pi - (1-\pi)\frac{\phi\pi y_H - S}{\pi(1-\phi)y_H - V_o} > 0$

Full solution, in words

Unless the first-best outcome obtains then either

1. scrapping occurs with positive probability, or,
2. the principal must overcompensate the agent

Period 2 value function



Needed: a back-up QB

- Inefficient scrapping may happen because it gives the right incentives to the original operator
- Project gets scrapped even though it has positive NPV
- Even when it doesn't happen inside the contract, the principal is forced to overcompensate the agent
- Obvious alternative: fire the original operator and replace him with a new one

Contracts with back-up QB

1. Contributions $k_1 \leq \epsilon$, $k_2 \leq \epsilon$, and $k_P \leq 1$
2. Operator name $\{\kappa_i(x) \in \{1, 2\} : i = 1, 2\}$ for all possible histories
3. Payment schedules $\left\{w_i^j(h) \geq 0 : i = 1, 2, j = 1, 2\right\}$ for each agent,
4. Scrapping probabilities $s(0), s(y_H)$

Back-up QBs are essential

Proposition

The maximal payoff the principal can generate with a back-up quarterback in place strictly exceeds all payoffs she can generate with bilateral contracts if and only if:

1. $2V_o + \epsilon R < \pi(1-\phi)y_H + \pi(1-\phi)y_H$, *and*
2. θ *is sufficiently close to 1.*

Back-up QBs must commit early

Proposition

If $\epsilon > 0$ *then all contracts with a back-up QB involve* $k_2 > 0$.

Furthermore, if and only if

$$V_O + \epsilon R < \pi(1 - \phi)y_H$$

then a strictly positive fraction of the capital commitment k_2 *must take place* ***BEFORE*** *date 1 uncertainty is resolved.*

Comparative statics

Corollary

The minimal contribution by the original owner to the project and the minimal contribution of capital by the back-up agent increase strictly with project quality (π) *and falls strictly with the value of the outside option* (V_0) *or the cost of misreporting* (ϕ).

De Marzo and Fishman, 2007

- DeMarzo and Fishman point out that if termination takes the form of a like-for-like agent replacement, termination is renegotiation-proof
- Having such a replacement available is beneficial in their model
- Proof: value of termination goes up

Our contribution

1. Back-up agents need not be the same as original agents, they just need to be good enough
2. Having a replacement in place is strictly beneficial to the principal whether or not termination occurs with positive probability in bilateral arrangements
3. It is typically optimal to have the back-up agent in place commit to the contract **before** it is known whether or not they will be needed
4. Even more generally true when poaching by competing principals is a possibility

Poaching

- Principals need to secure the participation of back-up QBs when needed
- But back-up QBs have an incentive to play the field (especially when they are idle)
- What are the consequences of poaching?

Sequential game of poaching

- Add a second principal with an operating agent $1'$ ready
- Agent $1'$ is identical to Agent 1 but attached to a different project

Sequential game of poaching

- Add a second principal with an operating agent $1'$ ready
- Agent $1'$ is identical to Agent 1 but attached to a different project
- The outcome of the two projects are perfectly correlated
- Projects are only profitable with a back-up QB
- Only agent 2 can be poached

Timing

- Principal 1 offers a contract to agents 1 and 2
- Agent 2 accepts or rejects the offer;
- Principal 2 either offers a contract to agents 1’ and 2, or makes no offer
- Agent 2 accepts or rejects this second offer

Back-up QBs must commit early

Proposition

All subgame perfect equilibria of the poaching game are such that $k_{12} > \frac{\epsilon}{2}$ *in the contract proposed by the first principal.*

Mezzanine in commercial real estate

"If you've never owned and operated properties, you probably shouldn't be a mezzanine lender, because you're really not well positioned to take over properties."

Bruce Batkin, CEO of Terra Capital Partners.

Mezzanine in commercial real estate

- Our model applies neatly to the context of CRE:
  1. significant asymmetric information such as unobservable effort on the part of the owner
  2. the foreclosure process that protects first mortgages is slow and onerous
  3. senior lenders tend to be institutions such as banks and insurance companies with limited expertise and operating capacities
- Mezzanine loans in RE are structured exactly as our model says they should be
- Foreclosing on mezzanine is expeditious and cheap
- Mezzanine lenders, unlike senior lenders, tend to be industry specialists and have operating capacities

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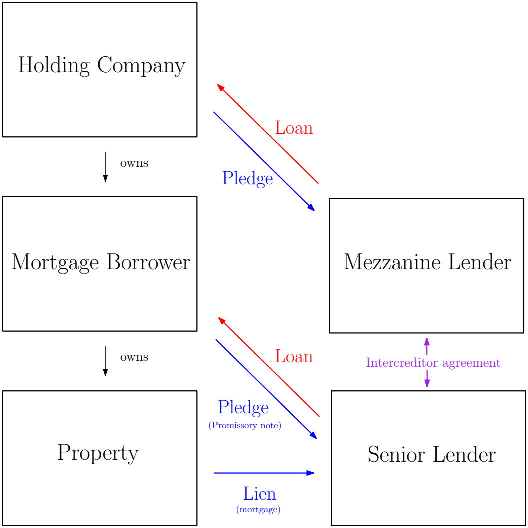

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- **NO!!!!!!!!!!**
- They get paid in intermediate states where the first owner has failed but the project remains viable
- If both Mezz and Senior lenders are under water, they get wiped out

Summary

- Mezz lenders are back-up QBs, their presence makes it cheaper to provide the right incentives to the original owner
- They are an efficient foreclosure device
- Particularly useful in industries where senior debt is collateralized by real estate