

Leverage and Preemptive Selling of Financial Institutions

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Very Simple Model of...

FI = Financial Institution

Questions:

- 1 How quickly should individual FIs get rid of assets if fundamental values decline ?

“Preemptive Selling”

- 2 How much debt should individual FIs take?

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Fundamental FI Tradeoff

Assumptions: Non-financial sector is worse at owning assets than FIs. FIs are competitive. FIs are leveraged. Fundamental values have just dropped, so every FI is now more worried.

Sell Immediately

Avoid all possibility of interim liquidation

if hit, sell *with* peers

Safe Choice

Hold onto Assets

Hope you won't need interim cash

if hit, sell *behind* peers

Risky Choice

Out-of-Equilibrium Scenario I

- Not a single peer financial institution sells.
- As first seller, you get risk-neutral price.
- \Rightarrow SELL
- ... unless are sure that you will not have to sell in the interim.

No FI selling is usually not an equilibrium, unless price remains very high.

Out-of-Equilibrium Scenario II

- Every other peer financial institution sells.
- If you are selling, too, as one of many, you get low price.
- \Rightarrow Take your chances
 - Yes, selling behind the herd is still worse than selling with the herd.
 - But getting lucky (no interim liquidation) is now getting real lucky.

Everyone selling is not an equilibrium, unless price goes very low.

Equilibrium

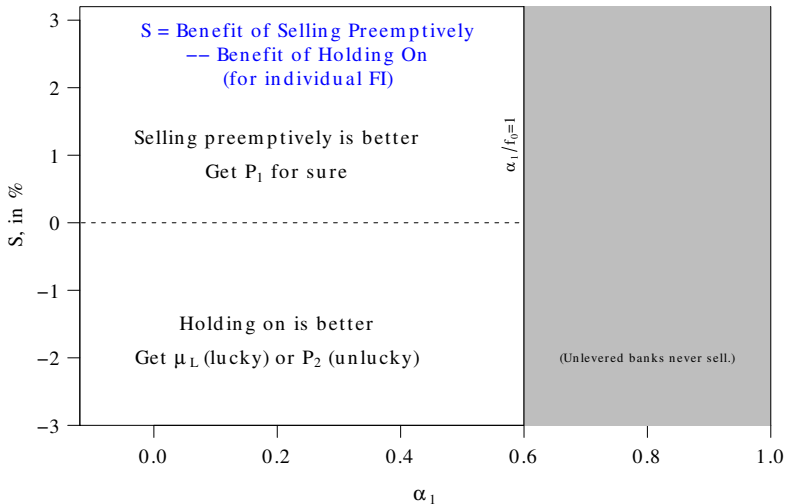
An interior fraction of FIs that sell immediately,
so that

$$\text{EV (selling immediately)} = \text{EV (holding on)}$$

Let's plot

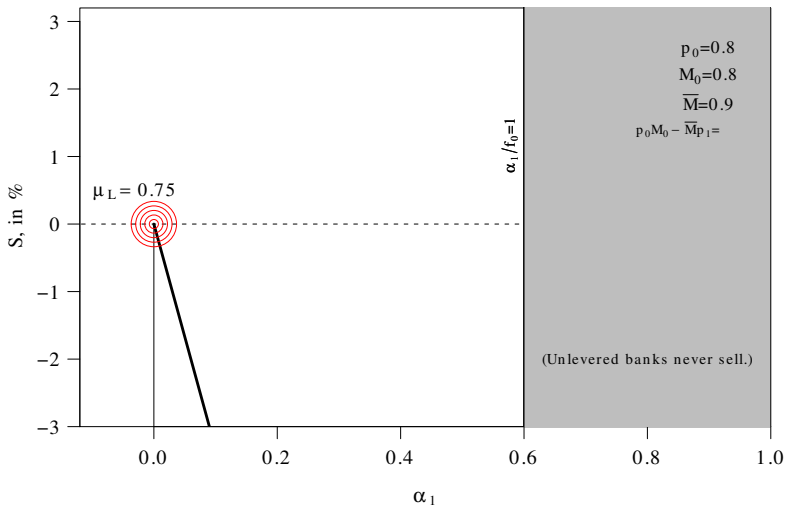
- X-axis = frac of all FIs selling at time 0.
- Y-axis = expected net benefit to selling immediately for one FI (i.e., you).

S Function



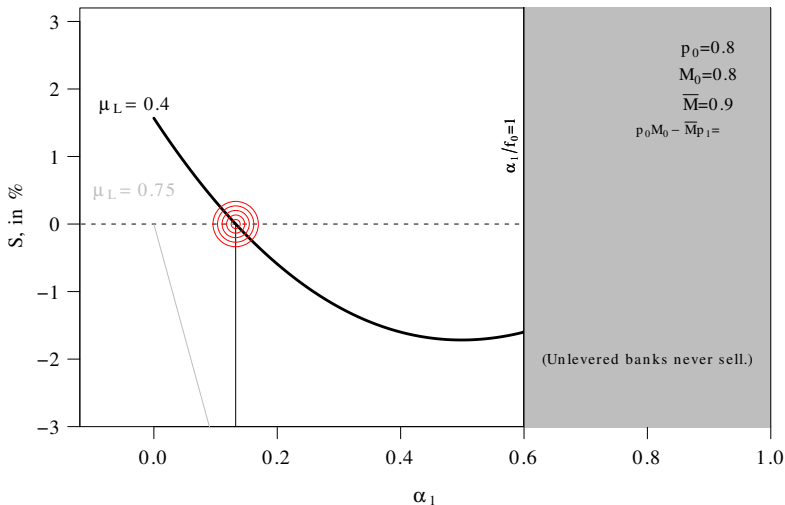
S Function, $\mu_L = 0.75$

Expected (Final) Asset Value Is Still Very High



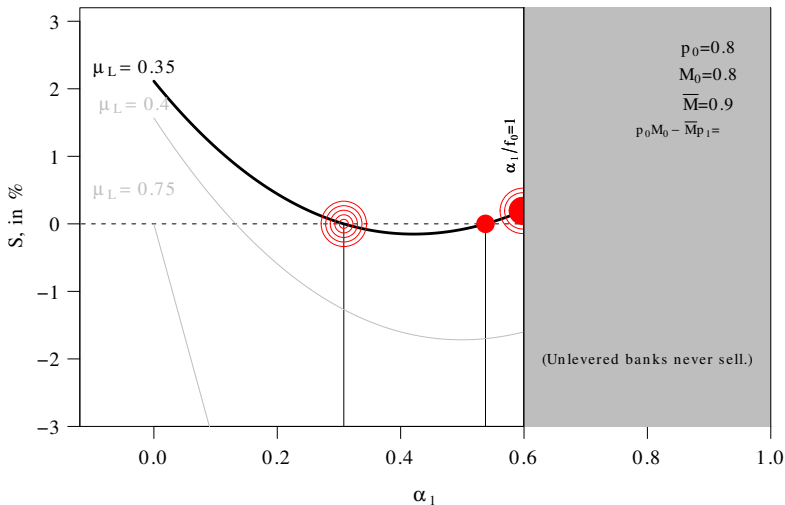
S Function, $\mu_L = 0.40$

Expected Asset Value A Little Lower — you might get hit.



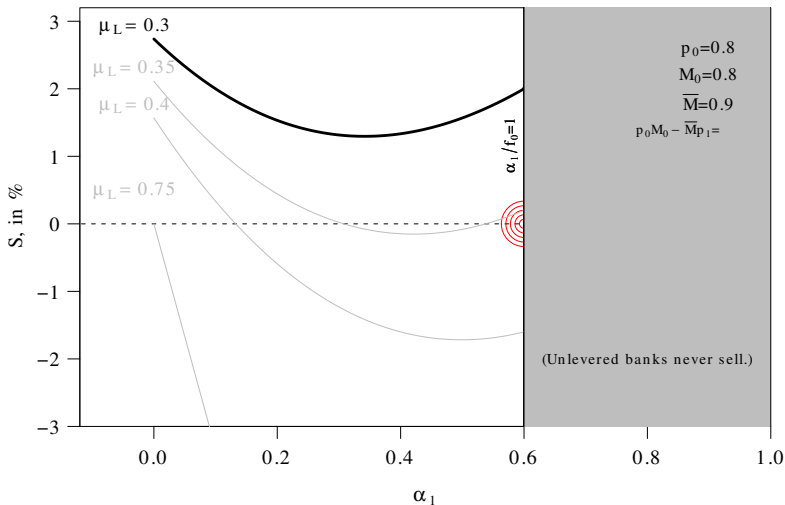
S Function, $\mu_L = 0.35$

Expected Asset Value Even Lower.

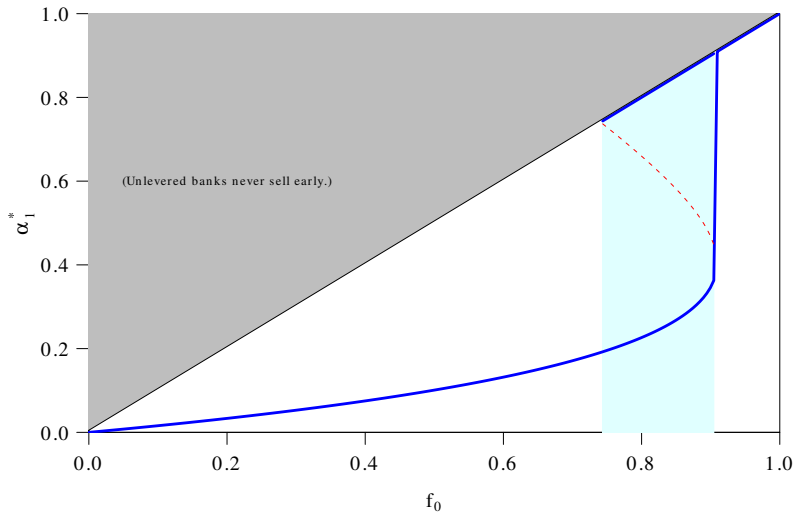


S Function, $\mu_L = 0.30$

Asset Value Really Low.



Map Fraction Selling to Asset Value



“Fragile”!?

Note how changes in value often matter little...

...but then suddenly A LOT

(Competitive FI Sector. Musical Chairs.)

Comparative Statics

How does the fraction of selling FIs change?

- Asset value dropped more → more FIs sell.
- Tighter margin constraints → more FIs sell.
- F Sector better capitalized → fewer FIs sell.
- Banking relatively more profitable → fewer FIs sell.

Bank Leverage

- Knowing this, would FIs not avoid leverage?
- Or reduce (incoming) leverage?

Yes!

No Leverage

Do better if Assets ↓

If ↓, no worries

Safe Choice

Some Leverage

Do better if Assets ↑

If ↓, worry, presell?

Risky Choice

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Risky Choice

Substitutes

- Holding constant time-1 preemptive selling, less time-0 leverage takes down risk.
- Holding time-0 leverage constant, more preemptive time-1 selling takes down risk.
- Economics makes both useful tools (complements)
- ...unless time-0 leverage has become so extreme that really only time-1 preemptive selling remains.

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Typical Implication

Situation becomes “less risky.” In equilibrium

- FIs take on more leverage
- and sell less preemptively (in eqbm).
- ... unless they have max leverage
- and they still want more assets
- so they rely more on preemptive selling

Risk → first less pre-selling, but then Risk → more pre-selling.

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Equilibrium and Implications

- Equilibrium is now both leverage at $t=0$ and subsequent preemptive selling at $t=1$.
- (Resulting equilibrium interest rate, too.)
- Full set of comparative statics.

Empirical Implications

- Preemptive selling not due to current hard margin constraints, but due to fear of future margin constraints.
- FIs look at aggregate FI conditions, not just their own balance sheets.
- FIs first delever if they can. Then pre-sell.
- Margin constraint-related implications.
- Feedback (contagion) effect.
Price declines → more price declines.
- Fragility.
- Looking at individual comparative statics may be possible, but is too delicate for reduced-form spirit of the model.

Conclusion

Big model assumption—markets are not perfect in unrolling. [Not just our paper, many others.] It can matter whether you sell first or last. Liquidity can matter. Otherwise, prices adjust immediately, and selling behind everyone else never matters.

More assumptions: no claim that other effects that we neglected are not important. our model is a sketch to highlight effects.

- First Model on Preemptive Selling in Financial Sector
- Among early models about determinants of Aggregate Financial Sector Leverage
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