Feedback and Contagion Through Distressed Competition

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This Paper

Cutting-edge of macro-finance

- Sophisticated model of firm interaction
  - Dynamic game of competition (Bertrand)
  - Endogenous Collusion
- Model of firm capital structure
  - Leland with jump risk.

Quantitative Predictions

- Industry sensitivity to discount rates
- Distress Anomaly
- Understand how firm capital structure ripples through the pricing decisions of an industry

This Discussion

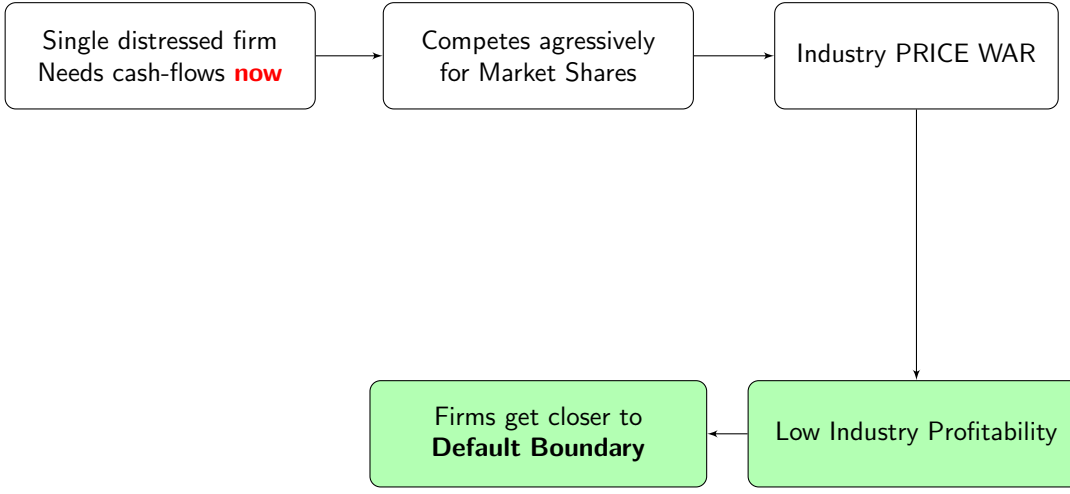
A lot to cover ...

- Present framework and insist on key mechanism:
  - why do firms collude?
  - why do they stop?
- Predictions:
  - How does collusion interact with firm capital structure?
  - ... and vice-versa (feedback/contagion effects)
- Some perspectives on recent trends in product market structure

Plan

1 Framework: Collusion in a Model of Capital Structure

Why distress risk matters for competition



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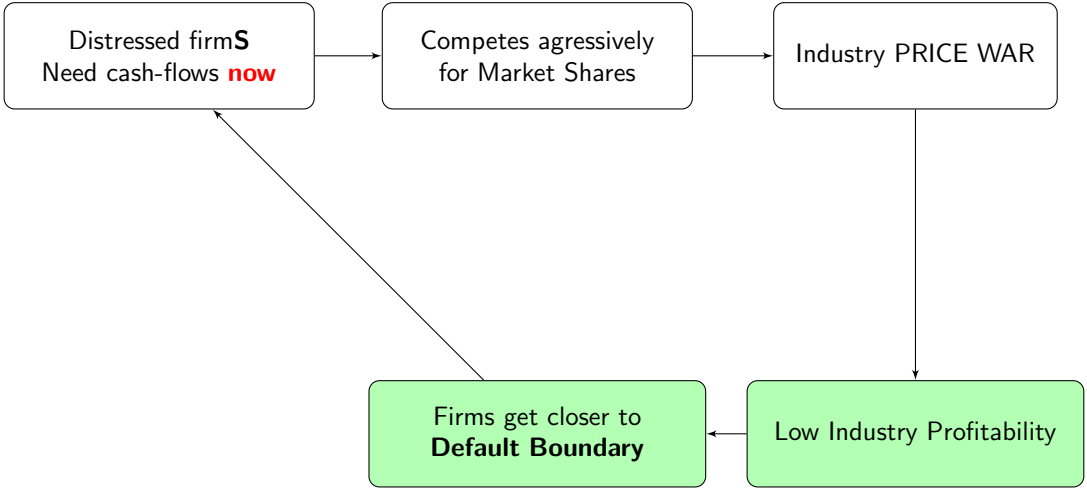

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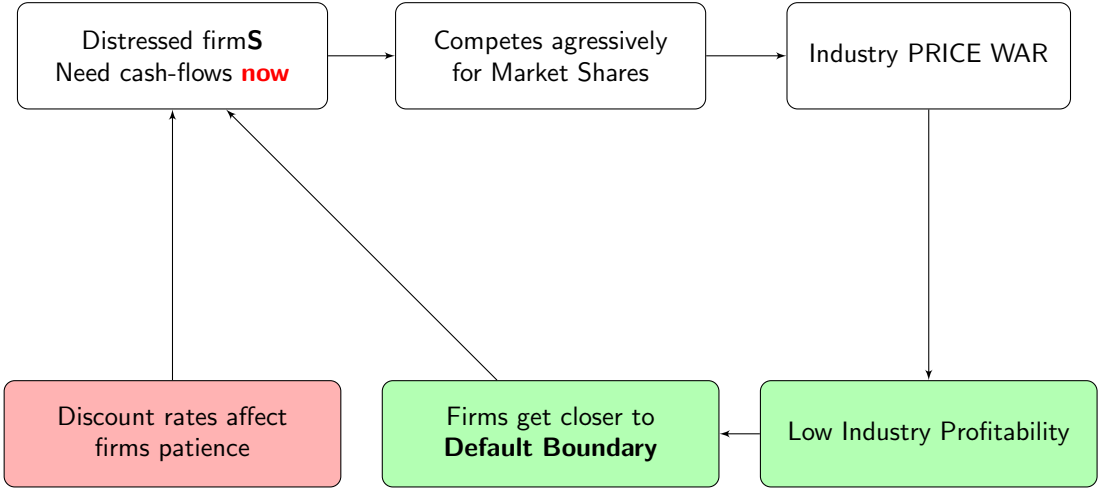


A Framework for Competition with Capital Structure

Competition

- Two firms facing isoelastic demand curve, and **fixed** marginal costs
- **Taste shocks** (customer base) shift relative demand curves of competing firms
  - Aggregate risk and Jump risk which drives most of the variation in cash-flows
- Firms choose *collusion strategy* or *competitive strategy*
  - trade-off short term market shares for long-term profit margins
- Other stuff
  - Entry threat

Capital Structure

- Choose debt level at $t = 0$ (issues of stationarity?)
- Given initial debt level variation in profits drive how close firms are to their default boundary

Collusion

How to Sustain Collusion

- Isoelastic demand determines market shares:

$$\frac{C_i}{C} = \frac{M_i}{M} \cdot \left(\frac{P_i}{P}\right)^{-\eta}$$

  1. Peaceful equilibrium (for firms): collude maximize joint profit by sustaining high prices P_i and P_j
  2. Competitive equilibrium: lower your price to *steal* market shares: $\downarrow P_i$, $\uparrow C_i$ and higher revenues in the short run (before the other firm responds): $\uparrow P_i C_i$

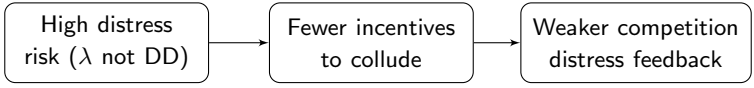
- Relation to the default boundary
  - Far from boundary: trade-off leans towards sustaining long-term gains and firms collude
  - Close to boundary: strong incentives to deviate, firms chose short-term gains and compete

Distress Loops

The threat of non-collusion on (asset) prices

- After a bad taste shock $\downarrow M_i$, firms lower their profit margins: *some competition*
- This brings firms closer to their default boundary
- Second round effects on profit margins: *distress feedback loop*

The role of discount rates



- High discount rates: tilt the trade-off towards short-term gains and the competition equilibrium
- Only matters if firms do actually collude
- Discount rates **do not matter** when distress feedback channel **is not operative**

Collusion

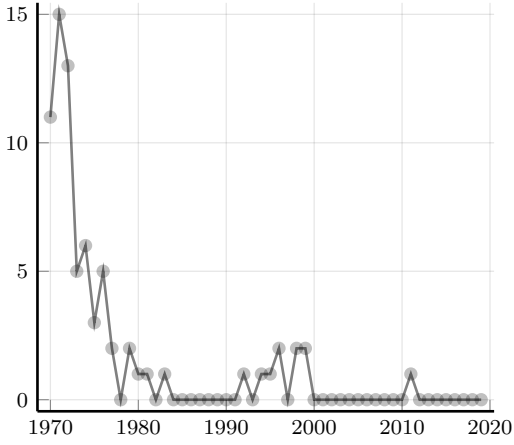
Test of theory across all industries

- Could benefit from narrower focus on the empirical side
- Which industries do collude? Where do we have tangible evidence of firms not competing on prices?
- Large literature in IO studies implicit collusion
  - Hard to disentangle collusion (and high prices) from demand growth/capacity constraints/product differentiation
  - Some recent work on IO focuses on specific industries: airlines, hospitals, beverage, retail gas industry

What shapes collusion?

- Collusion is easier with large entry barriers, few competitors, price transparency
- More relevant factors here are: discount rates, market growth
  - Some of these elements correlate with capital structure
  - Importance of understanding the source of collusion for each industry

Trends in Antitrust Enforcement



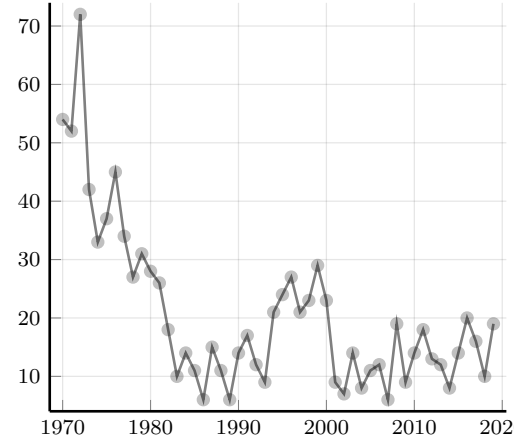


Figure: DoJ Antitrust Suit filed and civil cases brougth; F. S. Morton.

Trends in Profit Margins

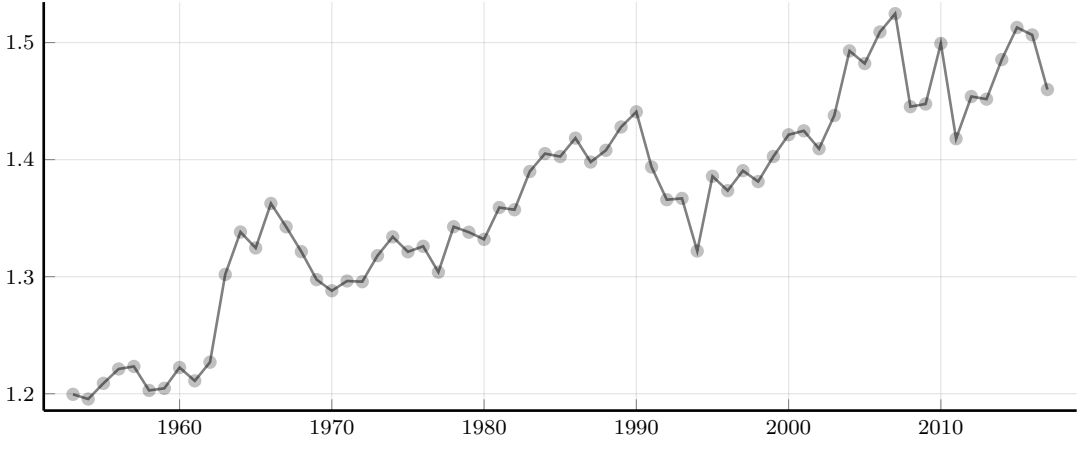


Figure: Rise of markups. De Loecker, Eeckhout, and Unger

Trends in Product Market Structures

Do we have similar trends in capital structure?

- Is financial distress anomaly more prevalent in the 2000s?
- Is the link between capital structure and product markets closer in the 2000s?

Quantitative Implications of the Model

Some Evidence of Mechanisms

- Table 5: Tail risk in equity returns correlates with lower profit margins, higher distress and credit spreads
- Table 7/B: Industries closer to default have their profit margins covary more negatively with discount rates: short-run market shares effect
- Table 8: Market contagion effect

Magnitudes

- What is a reasonable "change in collusion" in response to a firm moving closer to distress

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Table 5: Left-tail idiosyncratic jump risk, profit margin, and financial distress.

	(1)	(2)	(3)	(4)	(5)	(6)
	$\ln(1+PM_{i,t})$		$Distress_{i,t}$		$Credit\_spread_{i,t}$	
$IdTail\_risk_{i,t}$	−1.870***	−2.725***	0.044***	0.053***	0.914***	1.172***
	[−7.70]	[−8.51]	[9.25]	[7.82]	[6.23]	[8.35]
Year FE	No	Yes	No	Yes	No	Yes

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Table 8: Financial contagion effect on profit margins within an industry.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
					$\ln(1+PM_{i,t}^{(L)})$				
		Sorted on market share dispersion				Sorted on entry threat			
$IdShock_{i,t}^{(H)}$	All	T1 (balance)	T2	T3 (imbalance)	T3−T1	T1 (low)	T2	T3 (high)	T3−T1
M1	0.023***	0.051***	0.011	0.019	−0.033**	0.055***	0.007	0.019*	−0.036**
	[2.98]	[5.30]	[0.74]	[1.34]	[−2.09]	[3.14]	[0.90]	[1.67]	[−2.17]
M2	0.027***	0.060***	0.009	0.023	−0.037*	0.067***	0.014	0.009	−0.058***

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Table 7: Implications of the competition-distress feedback effect on profit margins.

	(1)	(2)	(3)	(4)
	$\Delta \ln(1 + PM_{k,t})$			
	All firms in the industry		Top six firms in the industry	
$DD_{i,t}$	T3−T1	Q5−Q1	T3−T1	Q5−Q1
$\Delta Discount\_rate_t$	0.212**	0.369**	0.214*	0.356*
	[1.97]	[1.97]	[1.72]	[1.85]

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Timing

- Frequency of firm cooperation (collusion) is likely to be lower than financial markets
- Show more than just the contemporaneous relation between real side and financial markets: persistent effects
- If taste shocks/customer base are indeed what drives demand, evidence suggests this is very sticky: low volatility in spreads?

Some Identification

Using large tariff changes

- Table 12: Triple difference of Δ−product market (tariff change), hi-lo distress, Δ−discount rate on profit margins
  - look at a few specific industries rather than regression (hard when we split data too much)
- Table 13: with cross price margins, effects are too small. Look directly at spreads?

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Table 12: Impact of market structure changes on the competition-distress feedback.

	(1)	(2)	(3)	(4)
	$\Delta \ln(1+PM_{i,t})$		$\Delta PM_{i,t}$	
$Mkt\_chg_{i,t} \times Low\_DD_{i,t-1} \times \Delta Discount\_rate_t$		1.57**		1.40**
		[2.59]		[2.53]
$Low\_DD_{i,t-1} \times \Delta Discount\_rate_t$	−0.47**	−0.79	−0.36*	−0.61
	[−2.08]	[−1.56]	[−1.82]	[−1.42]
$Mkt\_chg_{i,t} \times \Delta Discount\_rate_t$		0.39**		0.39**
		[2.20]		[2.24]
$\Delta Discount\_rate_t$	−0.25**	−0.35**	−0.24***	−0.34**
	[−3.51]	[−2.03]	[−3.56]	[−2.11]
$Mkt\_chg_{i,t} \times Low\_DD_{i,t-1}$		0.02		0.01
		[1.18]		[1.12]
$Low\_DD_{i,t-1}$	−0.02***	−0.02**	−0.01***	−0.02***
	[−4.02]	[−2.69]	[−4.03]	[−2.79]

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Table 13: Impact of market structure changes on the financial contagion effect.

	(1)	(2)	(3)	(4)
	$\ln(1+PM_{i,t}^{(L)})$			
	M1		M2	
$Mkt\_chg_{i,t} \times IdShock_{i,t}^{(H)}$		-0.04^{**}		-0.04^{**}
		$[-2.39]$		$[-2.20]$
$IdShock_{i,t}^{(H)}$	0.02^{***}	0.02^{*}	0.03^{***}	0.03^{**}
	$[2.62]$	$[1.98]$	$[2.78]$	$[2.47]$
$Mkt\_chg_{i,t}$		0.00		-0.01
		$[-1.37]$		$[-0.62]$
$IdShock_{i,t}^{(L)}$	0.07^{***}	0.08^{***}	0.06^{***}	0.07^{***}
	$[4.92]$	$[4.09]$	$[3.53]$	$[3.23]$
$\ln(1+PM_{i,t-1}^{(L)})$	0.29^{***}	0.24^{***}	0.29^{***}	0.24^{***}
	$[4.95]$	$[7.10]$	$[4.92]$	$[7.21]$

Other Comments

Model?

- Most elements of the production function are fixed
  - What about the cyclicality in cash-flows solely driven by taste shocks
  - What about equilibrium effects: if discount rates trigger default, how do we things of earnings price ratio as a measure of discount rates
- What about aggregate demand? Wages?

On the empirical side

- Show evidence of credit spreads responding
- Are tariffs really affecting collusion equilibrium: examples would be nice!
- Estimating contagion: dealing with the reflection problem

Common Ownership

- ...

Final Thoughts

Very interesting Paper!

Take away

- Tight link between capital structure and dynamic of product market structure
- Empirical evidence of distress anomaly is related to product markets

Great Paper!