

# Anatomy of Corporate Borrowing Constraints

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Discussion: Daniel Greenwald (MIT Sloan)

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# Overview

## Contribution #1: Data Work

- ▶ Massive data collection exercise: loan-level data pulled from CapitalIQ, DealScan, FISD, ..., as well as hand collection.
- ▶ Document prevalence of cash-flow-based debt, and earnings-based borrowing constraints.
- ▶ Key constraints: Debt-to-EBITDA and Interest Coverage

$$\text{Debt}_{it} \leq \theta_{it}^{DE} \text{EBITDA}_{it}$$
$$r_{it} \text{Debt}_{it} \leq (\theta_{it}^{IC})^{-1} \text{EBITDA}_{it}$$

- ▶ Show covenants matter: few firms in violation, bunching near limit.

# Overview

## Contribution #2: EBITDA to Debt Link

- ▶ Regression specification

$$Y_{it} = \alpha_i + \eta_t + \beta \text{EBITDA}_{it} + \kappa \text{CashFlow}_{it} + X'_{it} \gamma + \epsilon_{it}.$$

- ▶ EBITDA is an accounting fiction, but is important driver of debt and investment, even after controlling for cash flows!
- ▶ Little effect for:
  - Large firms with no EBCs
  - Small and low margin firms
  - Air and utilities
  - Large Japanese firms
- ▶ Confirmed by IV using redefinition of EBITDA.

## Contribution #3: Firms in the Great Recession

- ▶ Compare borrowing to firm real estate

$$Y_{it} = \alpha_i + \beta RE_{it} + X'_{it}\gamma + \epsilon_{it}$$

- ▶ Find small responses, concentrated in asset-based lending (i.e., mortgages).
- ▶ Conclude little effect of real estate crash on firm borrowing (unlike Japanese case).
- ▶ Drop in EBITDA matters, explaining 10-15% of issuance decline among public firms, 8-10% of decline in CAPX.

# My Comments

1. This is a great paper.
2. Questions about EBITDA regressions.
  - Differences vs. levels?
  - Control more carefully for firm value?
3. Two complications with covenants:
  - Can be renegotiated. Authors: still appear to have bite.
  - Have endogenously set ratios. My analysis: not a problem.
4. Interest rate transmission (unexplored) could be major story.

# EBITDA Regressions

- ▶ Regressions take the form

$$Y_{it} = \alpha_i + \eta_t + \beta \text{EBITDA}_{it} + \kappa \text{CashFlow}_{it} + X'_{it} \gamma + \epsilon_{it}.$$

where controls include  $Q$ , 12 mo. stock return, and lagged cash.

- ▶ LHS variables are flows: net debt issuance and CapEx.
- ▶ Mechanism:  $\text{Debt}_{it} \leq \theta \cdot \text{EBITDA}_{it}$ .
  - If RHS is EBITDA relative to firm/time average, shouldn't LHS be too?
  - If I have low EBITDA, but even lower debt, net issuance should be high.
- ▶ Might also be good to control directly for firm value.
  - EBC logic: safe to lend as long as you can seize firm's future profits.
  - Separate traditional financial accelerator from constraint mechanics.

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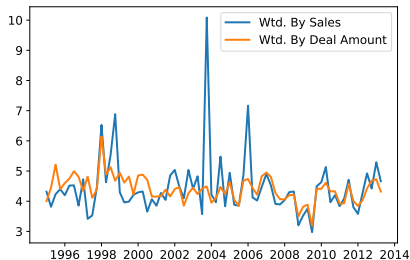
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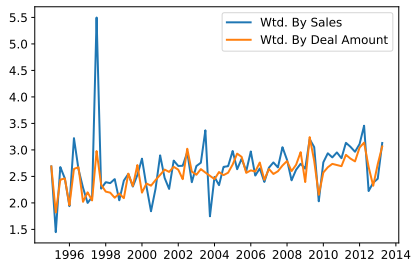
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# Covenant Ratios Over Time

- Complication: covenant limits are endogenously set.



(a) Max Debt/EBITDA Ratio

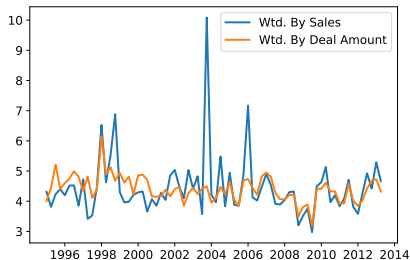


(b) Min Interest Cov. Ratio

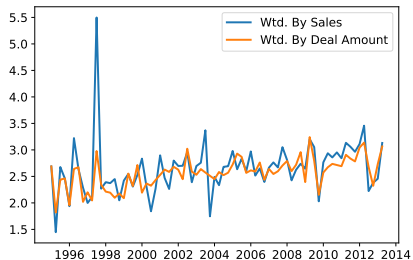
Source: DealScan, Compustat.

# Covenant Ratios Over Time

- ▶ Below: initial covenant ratios **at origination** in DealScan.



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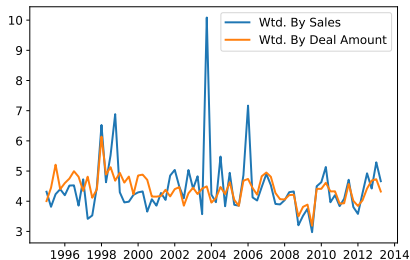


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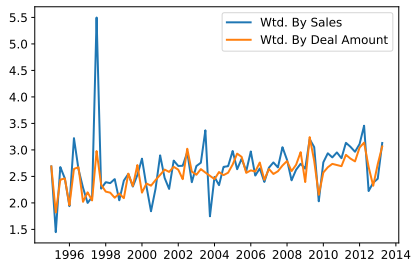
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# Covenant Ratios Over Time

- ▶ Appear noisy but stable over time.



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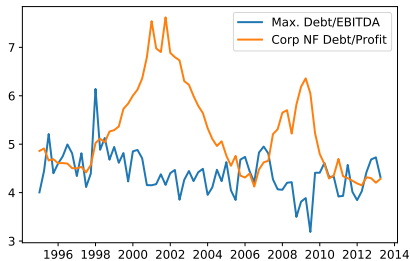


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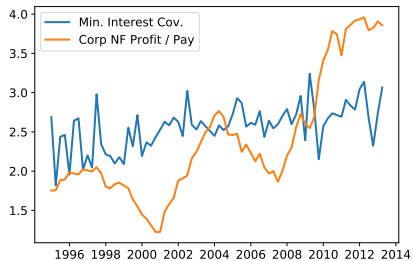
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# Covenant Ratios Over Time

- ▶ Second check: newly imposed caps don't co-move with actual ratios.



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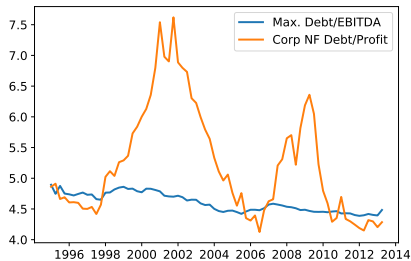


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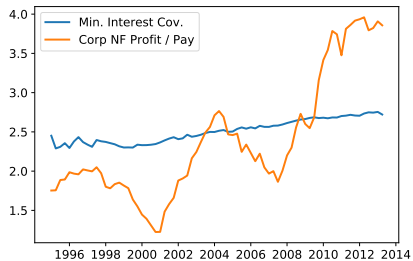
Source: DealScan, Compustat, NIPA, Flow of Funds. Covenant limits are weighted by deal amount. Debt payments assume a 600bp spread over the 3-Month Treasury.

# Covenant Ratios Over Time

- ▶ Now look at all **active** covenants. Provide stable constraints even as underlying variables move.



(a) Max Debt/EBITDA Ratio



(b) Min Interest Cov. Ratio

Source: DealScan, Compustat, NIPA, Flow of Funds. Covenant limits are weighted by deal amount. Debt payments assume a 600bp spread over the 3-Month Treasury.

# Earnings-Based vs. Payment-Based Constraints

- ▶ Two key constraints:

$$\text{Debt}_{it} \leq \theta_{it}^{DE} \text{EBITDA}_{it} \quad (\text{Debt-to-EBITDA})$$

$$\text{Debt}_{it} \leq \frac{\text{EBITDA}_{it}}{\theta_{it}^{IC} r_{it}} \quad (\text{Interest Coverage})$$

- ▶ Authors' data:  $\sim 80\%$  have Debt-to-EBITDA type,  $\sim 80\%$  have Interest Coverage type,  $\sim 65\%$  have both.
- ▶ Key difference: sensitivity to interest rates.
  - Drop in  $r_{it}$  from 10% to 9% would relax interest coverage limit by 10%.
  - Authors' data w/ fixed-rate debt: elast. to short rate at '07-08 rates  $\simeq 6$  or 7
  - Could be key source of transmission!

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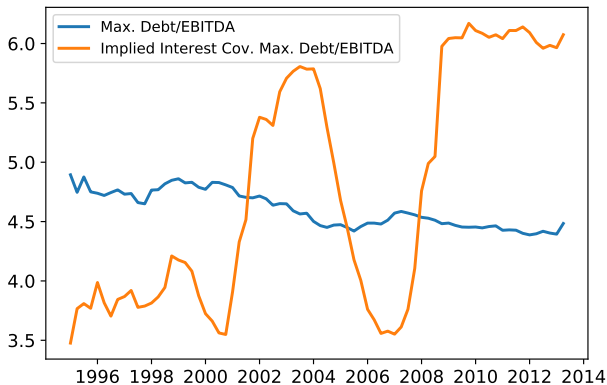
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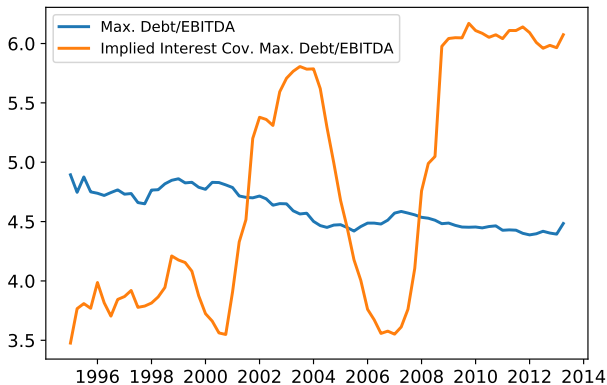
- ▶ Convert Min. Interest Coverage into implied Max. Debt/EBITDA ratio using current interest rate.



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# Comparing the Constraints

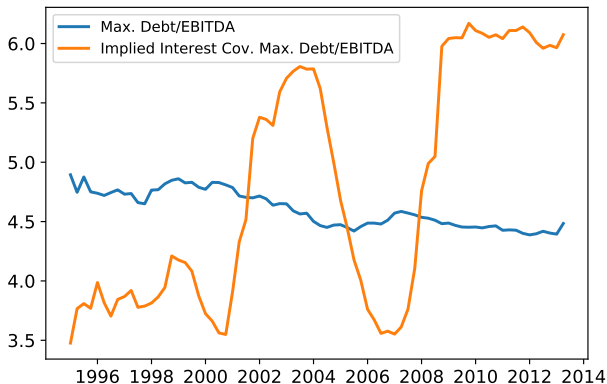
- ▶ Similar in magnitude, one doesn't dominate the other (authors: 45% face tighter IC in '07-'08).



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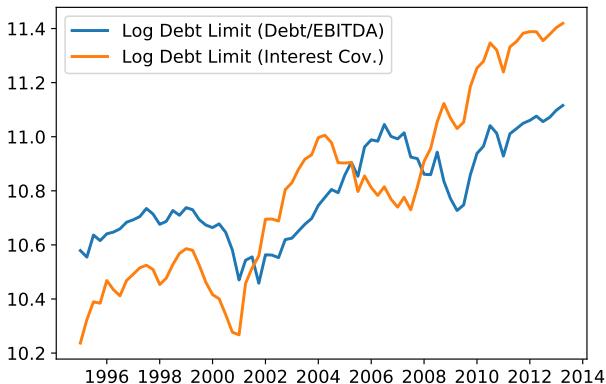
- ▶ Lots of time-variation in which constraint is tighter  $\implies$  state-dependent transmission!



Source: DealScan, Compustat, NIPA, Flow of Funds. Covenant limits are weighted by deal amount. Debt payments assume a 600bp spread over the 3-Month Treasury.

# Comparing the Constraints

- ▶ Note: still get a lot of action from EBITDA in levels.



Source: DealScan, Compustat, NIPA, Flow of Funds. Covenant limits are weighted by deal amount. Debt payments assume a 600bp spread over the 3-Month Treasury.

# Interest Rate Transmission

- ▶ Authors have already done a great job documenting response to shifts in EBITDA. Likely important for macro dynamics.
- ▶ But my hunch: interest rate transmission also key.
  - Links to long literature on response of investment to monetary policy.
- ▶ Suggestion: include interest rates in EBITDA regressions.
  - Should disproportionately affect firms with interest coverage constraints.
  - Can also split by fixed vs. floating rate debt.
  - May need to control for relative tightness of the two constraints.
- ▶ Can we test this state-dependent transmission mechanism?
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# Conclusions

- ▶ Great paper.
- ▶ Update or clarify EBITDA regressions (flow vs. level, firm value)?
- ▶ Check for interest rate effects!
- ▶ These constraints seem model-ready.