Discussion of "The Aggregate Dynamics of Capital Structure and Macroeconomic Risk," Harjoat Bhamra, Lars-Alexander Kuhn, and Ilya Strebulaev

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The Model

- Dynamic capital structure embedded in a consumption-based asset pricing model.

- Cash flow process of firm n, is given by

$$\frac{dX_{n,t}}{X_{n,t}} = \theta_t dt + \sigma_X^{id} dB_{X,n,t}^{id} + \sigma_{X,t}^{s} dB_{X,t}^{s},$$

The Model

- Epstein-Zin-Weil preferences produce a pricing kernel at time t:

$$\pi_t = \left(\beta e^{-\beta t}\right)^{\frac{1-\gamma}{1-\frac{1}{\psi}}} C_t^{-\gamma} \left(p_{C,t} e^{\int_0^t p_{C,s}^{-1} ds}\right)^{-\frac{\gamma-\frac{1}{\psi}}{1-\frac{1}{\psi}}}$$

Optimal Default and Refinancing

- Scaling property (as in Fischer, Heinkel, and Zechner (1989) and Goldstein, Ju, and Leland (2001)).
- Solve for optimal default boundaries,

$$\{X_{D,11}, X_{D,12}, X_{D,21}, X_{D,22}\}.$$

and, optimal restructuring boundaries,

$$\{X_{U,11}, X_{U,12}, X_{U,21}, X_{U,22}\}.$$

Result 1: Leverage Along the Business Cycle

- Optimal leverage is procyclical at the refinance point, but countercyclical in aggregate dynamics for a “realistic” set of parameters.
  - Refinance only to increase leverage.
  - Calibration: homogeneous firms?
- Matches previous empirical studies: Korajczyk and Levy (2003), Covas and Den Haan (2007), and Korteweg (2008).

Result 2: Low-leverage puzzle?

- Macroeconomic risk leads to substantial lower leverage at refinancing: 22%-32%.
  - Intuition: $BC = Q_L D_L + Q_H D_H$
- Does this explain the low-leverage puzzle?
- In aggregate dynamics, however, leverage is 44%-38%.
  - Different from Chen (2009).

Result 3: Path-dependence

- Firms that refinanced during a boom are more likely to default in a contraction.

- Firms that refinanced during a contraction are more likely to refinance in an expansion.

Result 7: Default Clustering

- “Defaults cluster and also can occur in a worsening macroeconomic environment, despite there being no change in earnings.”
  - Discrete nature of the model.

New Directions

- Investment, financing and macroeconomic risk.

- How macroeconomic risk affect agency costs of debt?

- $AC = Q_L A_L + Q_H A_H$

Chen and Manso (2009)

- Underinvestment and Macroeconomic Risk.

- $AC = Q_L \Omega_L \Delta_L + Q_H \Omega_H \Delta_H$

  – More pro-cyclical cash flow from assets in place, amplifies the impact of macroeconomic risk.

  – Effects of cyclicality of growth options ambiguous.

Agency Cost for Different Coupon Rates

		No Macro		Macro	
	SR/NPV	0.1	0.2	0.1	0.2
	0.20	0.15	0.15	2.41	1.79
$c = 0.3$	0.25	0.21	0.23	2.96	2.26
	0.30	0.25	0.30	3.45	2.74
	0.20	0.98	0.91	6.26	4.42
$c = 0.6$	0.25	1.63	1.64	9.29	6.62
	0.30	2.34	2.56	12.40	9.02
	0.20	4.98	4.24	12.73	8.54
$c = 1.2$	0.25	9.11	8.11	21.03	14.01
	0.30	14.02	13.11	30.75	20.59