Dynamic Financial Constraints: Which Frictions Matter for Corporate Policies?

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The title says it all

- Which frictions matter for corporate policies?

- And the answer is, "It depends."

Large public firms	$\Longleftrightarrow$	trade-off models
Small public firms	$\Longleftrightarrow$	limited commitment models
Private firms	$\Longleftrightarrow$	moral hazard models

All three models share these features

- Shareholder value gets maximized
- Infinite horizon, discrete time
- Decreasing returns technology that uses capital
- Investment with capital adjustment costs

They differ along the financing dimension

Tradeoff	Deadweight default costs and no external equity
Limited commitment	The outstanding amount of state contingent securities must be less than a fraction of the capital stock
Moral hazard	The repayment to the principal must keep the firm from lying about profits

What are these empirical policy function estimations?

- By now, we are all familiar with moment matching exercises.
- But what moments do you match?
- Bazdresch, Kahn, and Whited (2018):
- Match the actual model solution.

The policy function is the model solution

- Rule that tells you what to do given where you are.
- But how do you match a deterministic, **unobservable** function?
- Match
  - An **estimate** of the policy function in actual data
  - An **estimate** of the policy function in model-simulated data

The moral hazard and limited commitment models are not about leverage.

- "Debt" is a **state contingent** repayment to the principal.
- You can come up with combinations of real-world securities that mimics this state contingency.
- This combination is not debt.
- And it is not unique.

Take a stand!

- Be very specific about how the contract is implemented.
- This is part of the hypothesis you are testing.
- Does this implementation make intuitive sense?
  - limited commitment
- Are the results robust to other implementations? Why? Why not?

They use a Wald test to distinguish models

- But this particular Wald test cannot do this.
- It tells you if an empirical prediction differs across models.
- It provides no ranking.
- Except when it reduces down to an overidentification test.
- Notoriously terrible at pinpointing the source of differences.

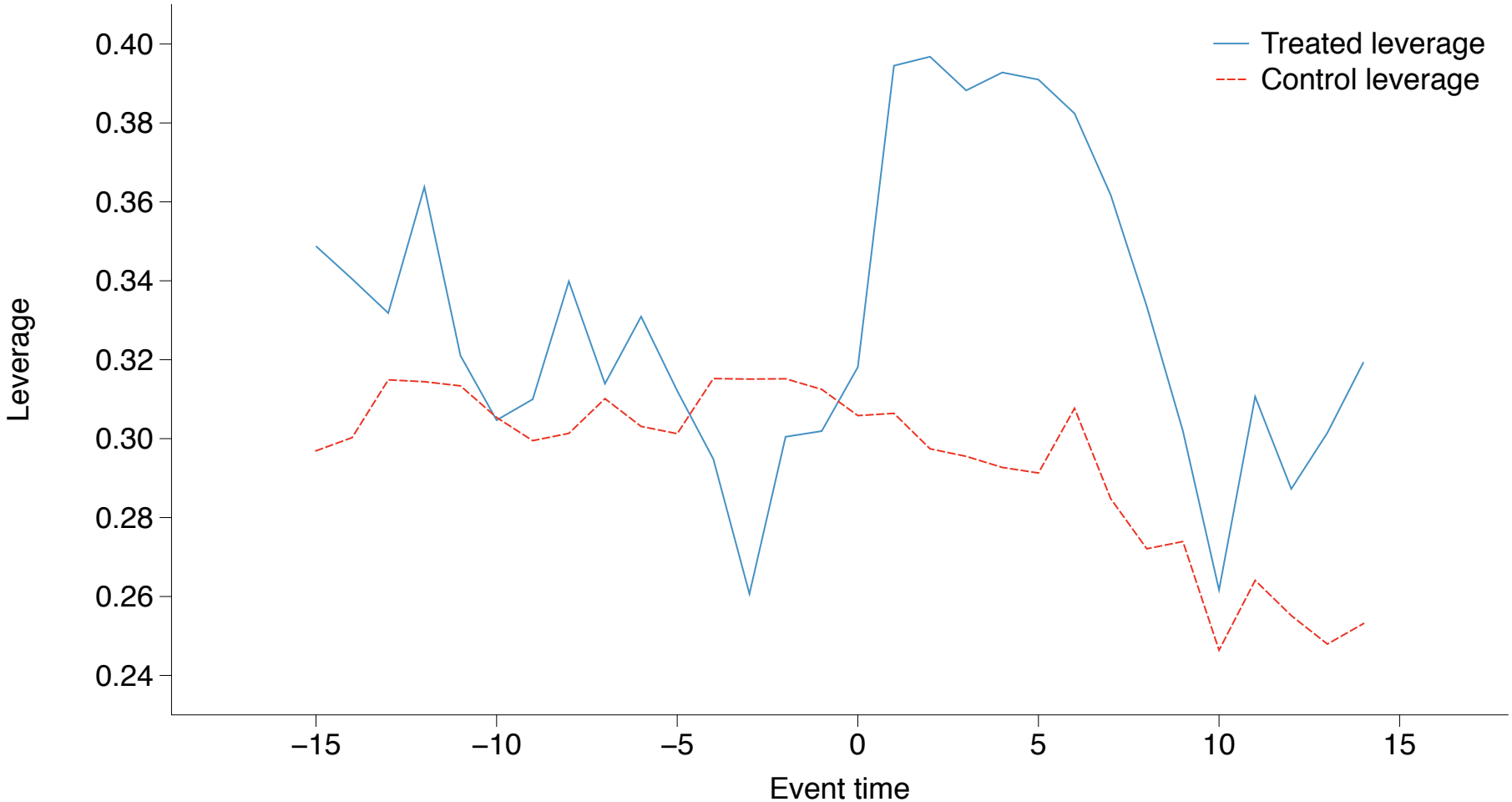
I want to see it with my eyes

- Model comparisons really should be done with ocular econometrics.
- You want to find an instance in which one model says up and another says down.
- There is a strong analogy with difference-in-difference estimation.

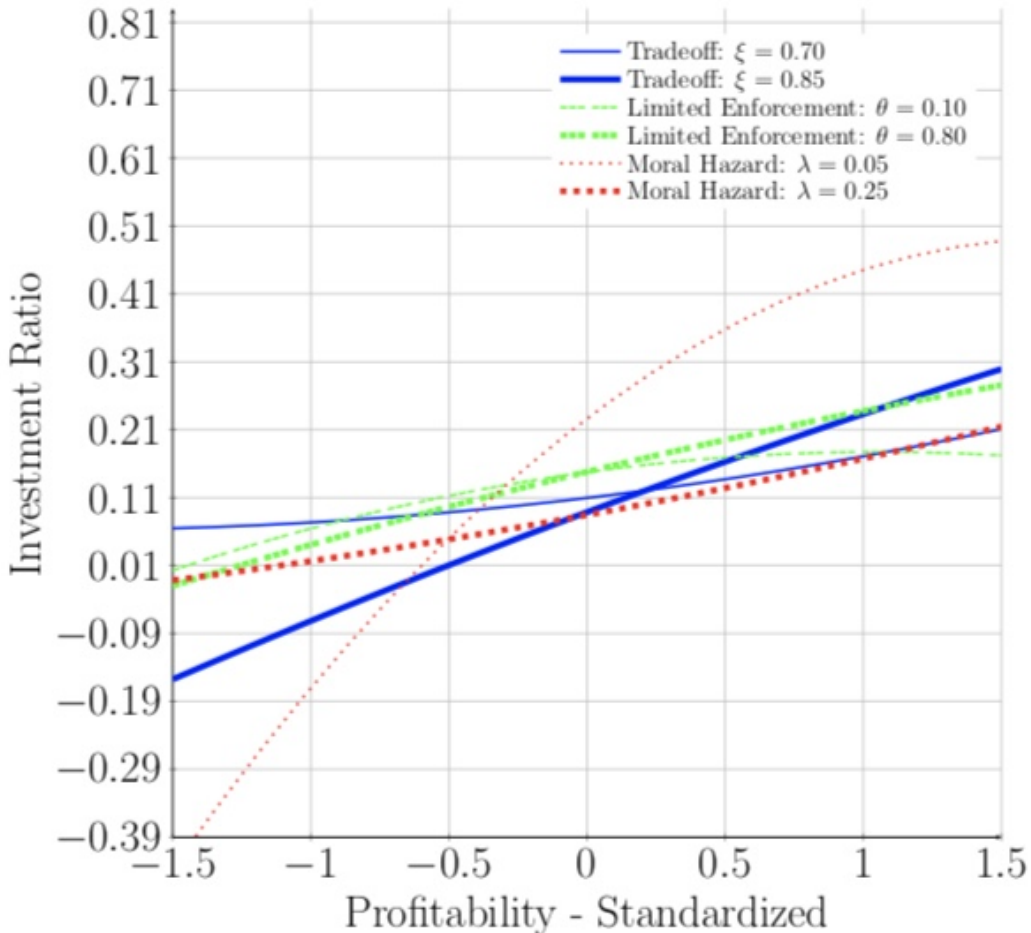
With a diff-if-diff, this sort of thing is not all that convincing.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Post × Treat	0.081**	0.087**	0.084***	0.088***	-0.002	-0.001	0.038**	0.040**	0.048***	0.050***	0.022*	0.024*
	(0.034)	(0.035)	(0.026)	(0.027)	(0.013)	(0.013)	(0.016)	(0.016)	(0.014)	(0.015)	(0.012)	(0.012)
Tobin's Q		-0.002		-0.006		0.004		-0.004		-0.003		-0.002
		(0.009)		(0.007)		(0.006)		(0.003)		(0.002)		(0.005)
Cash Flow		-0.580***		-0.376***		-0.203**		-0.141**		-0.154**		-0.155**
		(0.167)		(0.139)		(0.078)		(0.064)		(0.067)		(0.073)
Leverage		0.146		0.111**		0.035		0.074**		0.037*		0.010
		(0.088)		(0.053)		(0.049)		(0.028)		(0.021)		(0.044)
Sale Growth		-0.005*		-0.003**		-0.002		-0.001		-0.001		-0.001
		(0.003)		(0.001)		(0.002)		(0.001)		(0.001)		(0.001)

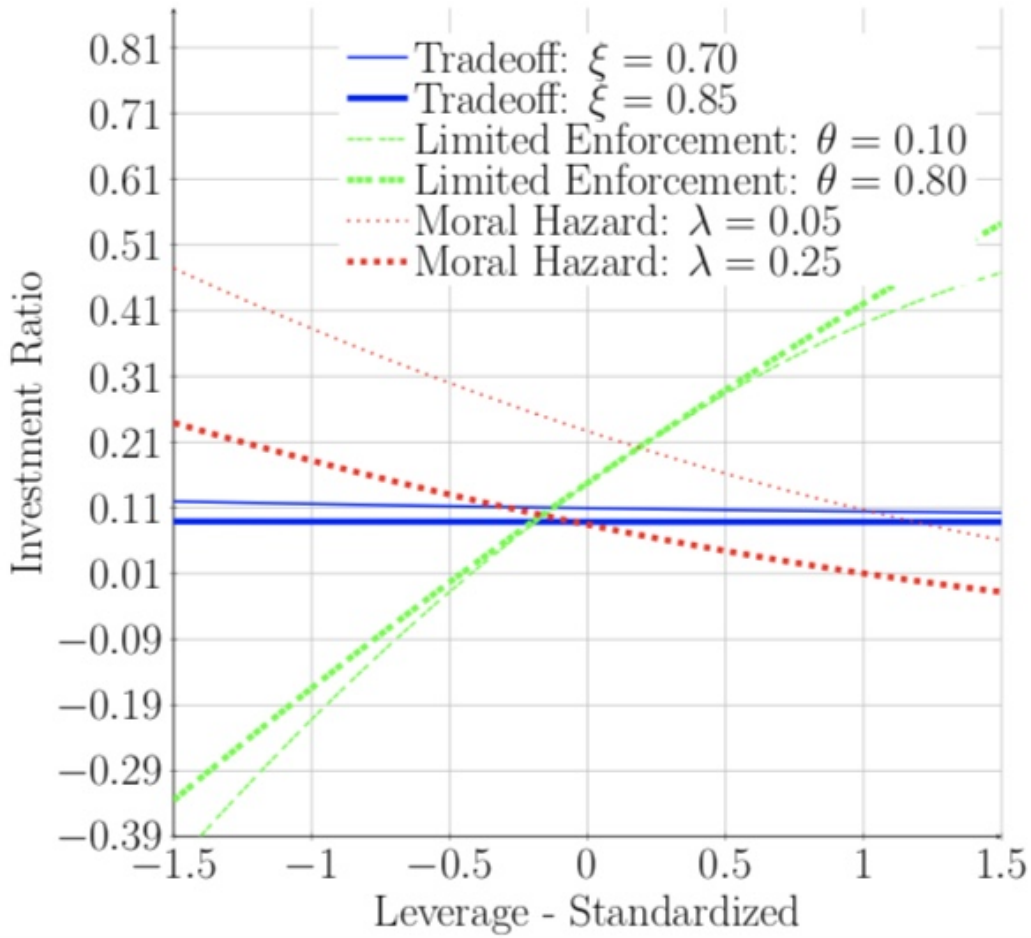
With a diff-if-diff, a picture usually says it all.



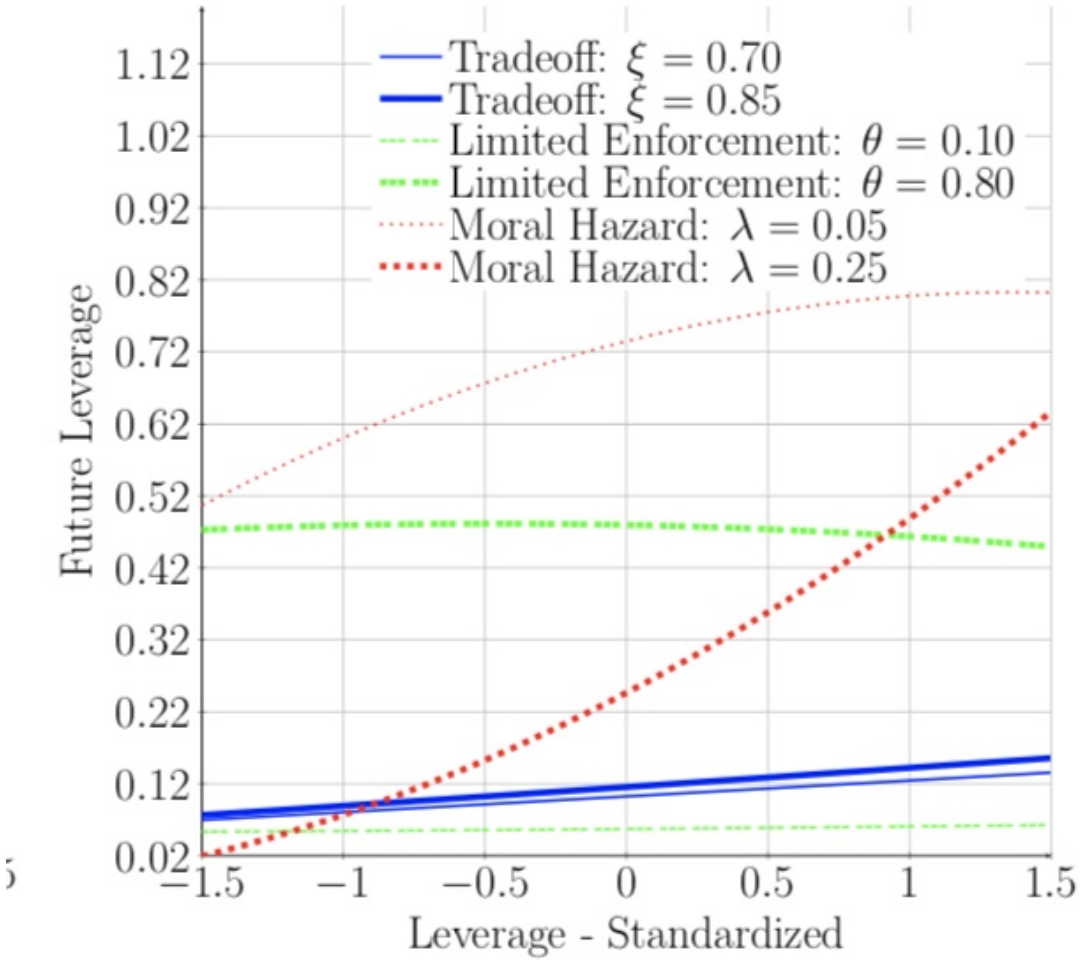
Some of these model policy functions are useless for distinguishing models.



But other model policy functions are useful for distinguishing models.

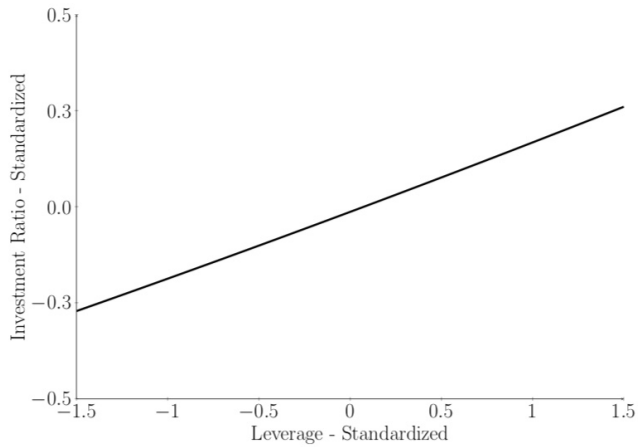


Others seem wrong.

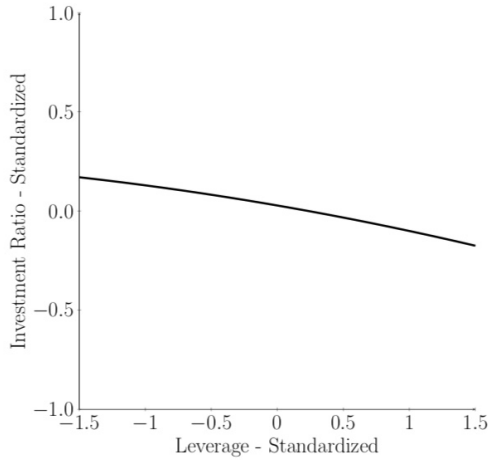


Show me some distinct, robust differences in the policy functions

Private



Public



And tell me why—both in the model and data!

Potentially very useful exercise

- I think of these different models as pertaining to different economic settings.
  - Entrepreneurial finance $\iff$ limited commitment
  - Managerial compensation $\iff$ moral hazard
- So learning where different models explain more data can teach us a lot.
- The statistics in this paper are basically done. Flesh out the intuition.

Bazdresch, S., R. J. Kahn, and T. M. Whited. 2018. Estimating and Testing Dynamic Corporate Finance Models. *Review of Financial Studies* 31:322–361.