Accounting Rules, Trading Incentives, and Systemic Risk

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Based on the following papers, with A. Ellul, C. Lundblad, and Y. Wang

"Is Historical Cost Accounting a Panacea? Market Stress, Incentive Distortions, and Gains Trading" *Journal of Finance* (2015)

"Mark-to-Market Accounting and Systemic Risk: Evidence from the Insurance industry" *Economic Policy* (2014)

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Research Motivation

- The recent crisis has revived major policy debates on **[A] accounting rules (MTM vs. HCA)** and **[B] risk-based capital regulations**.
  - We study how **trading incentives** generated by **[A] x [B]** may affect systemic risk? Both **before** and during **a crisis**.
- Why important? ABA's letter to SEC:

"The problems that exist in today's financial markets … One factor that … exacerbated these problems is fair value accounting."

- U.S. Congress and European Commission also moved to modify/suspend MTM.

Usual Wisdom

- Consider an insurer that <u>invests heavily in ABS</u>.
- During the crisis of 2007-9, many ABS were severely downgraded → increased regulatory capital →lower risk-based capital ratio (RBC ratio).

$$\text{RBC Ratio } \downarrow = \frac{\text{Statutory Capital}}{\text{(Required) Risk-Based Capital } \uparrow}$$

- Under **MTM**: Statutory Capital ⬇ → RBC Ratio ⬇⬇
  - Since all price decline has been reflected, the insurer has incentives to **sell downgraded ABS** to restore the RBC ratio.
  - This leads to fire sales and downward spiral in ABS prices.
  - And, … **systemic risk**.

This usual wisdom is only one side of a much more complex picture. Both MTM and HCA affect trading incentives both during and before the crisis.

$$\text{RBC Ratio} \downarrow = \frac{\text{Statutory Capital}}{\text{(Required) Risk-Based Capital} \uparrow}$$

	MTM	HCA
Crisis	**Price declines already reflected in statutory capital** → Selling troubled assets helps *reduce required capital*. → Fire sales depress prices, further decreasing capital. → Selling even more … → Downward spiral in prices of troubled assets.	**Price declines yet to hit capital** → Less likely to sell troubled assets to avoid realizing losses. → Selling other assets helps realize gains, *increasing capital*. → Less negative effects on prices, but may spread shocks to unrelated assets.
Normal time	**Internalizing probability of fire sales** leads to more prudent portfolios.	**Knowing they have flexibility to avoid losses** during crisis leads to more aggressive risk taking.

Data

Our identification relies on the cross section of insurers:

- 1,961 life and P&C insurers during 2004-2010.
  - Financial information, year-end positions (corporate bonds, ABS, etc.), and daily trading activities from NAIC and Weiss Ratings.
- For each position, insurers provide information on its fair value and book-adjusted carrying value:
  - **MTM: Carrying value = Fair value**
  - **HCA: Carrying value ≠ Fair value**
  - Unrealized gains = Fair value – Carrying value
- Ratings and other characteristics of ABS from Ratings Iquery and corporate bonds from Mergent FISD.

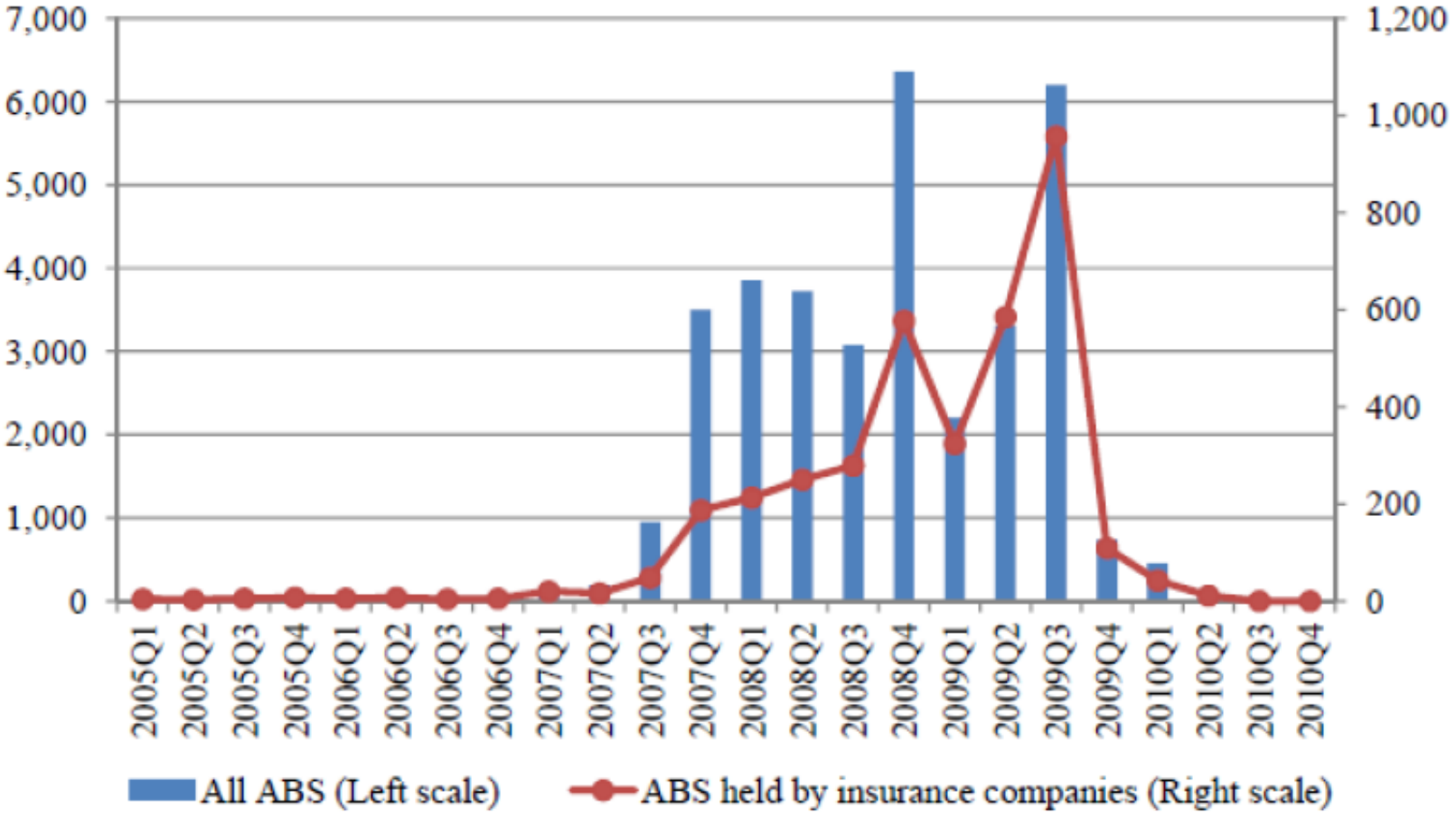
Identification

1. **Between-Insurance-Type: Life as insurers using HCA vs. P&C as insurers using MTM. By regulation,
   - **Life** insurers only have to MTM securities in **NAIC/SVO class 6**, i.e. "in or near default"
   - **P&C** insurers have to MTM securities in **NAIC/SVO classes 3-6**, i.e. all "speculative-grade"
   - Unclean as life and P&C insurers may differ on many dimensions.

2. **Within-Type**: Insurers are regulated at the state level.
   - Group states into **low vs. high MTM groups** for each insurance type based on discretion given to regulators.
   - Average MTM frequencies are **1% vs. 7%** for the low vs. high MTM **life** insurers and **31% vs. 55%** for the low vs. high MTM **P&C** insurers.
   - Results are robust across both identification strategies.

Crisis

Significant downgrades of ABS during the crisis…



Significant differences between life and P&C in % of **speculative-grade ABS that are MTM and sold**.

	Life			Property and Casualty		
	HCA	Revalued	Sold	HCA	Revalued	Sold
All downgrades in the fourth quarter						
** Investment to non-investment	**74%**	**14%**	**13%**	**20%**	**60%**	**20%**
** AAA to non-investment	79%	10%	11%	16%	63%	20%

Multivariate logit confirms that P&C insurers are significantly more likely to fire-sell downgraded ABS.

**** During crisis, MTM → Fire sales of troubled assets.**

Gains trading, i.e. targeted selling of (non-troubled) assets to realize gains, is **widespread among life insurers**.

	Life		P&C		All
	(3)	(4)	(7)	(8)	(9)
	All	All	All	All	All
(1) Unrealized gain pct.	-0.023***	-0.027***	-0.006	-0.005	-0.027***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)
(1) x Low RBC ratio dummy		0.003		-0.001	0.003
		(0.004)		(0.011)	(0.005)
(1) x P&C dummy					0.023***
					(0.008)
Crisis dummy x (1)	0.043***	0.035***	0.017	0.012	0.035***
	(0.010)	(0.010)	(0.013)	(0.015)	(0.010)
Crisis dummy x (1) x Low RBC ratio dummy		0.021*		0.028*	0.022**
		(0.012)		(0.016)	(0.011)
Crisis dummy x (1) x P&C dummy					-0.023**
					(0.011)

**** During crisis, HCA → Gains trading.**

MTM:
Merrill et al. (2014) show that **fire sales of RMBS** generate about 20% price decline during the crisis.

HCA:
We find that **gains trading** decrease targeted bonds' prices by about 1-4% but these effects may spread more broadly.

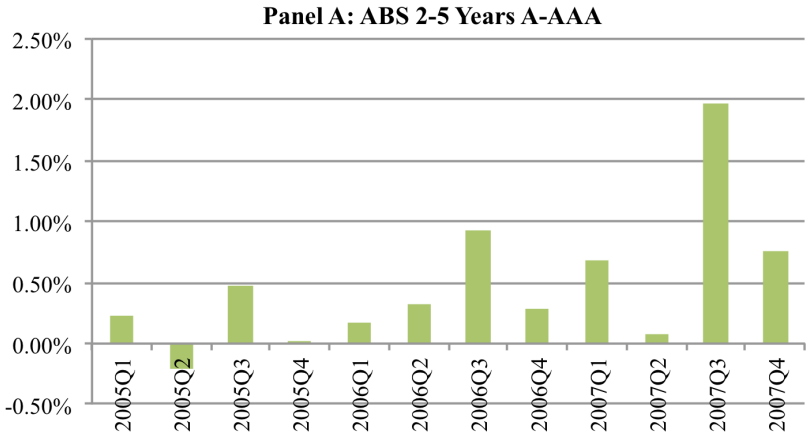
Considering the crisis alone and focusing only on asset price effects, it appears that **MTM may lead to higher systemic risk**.

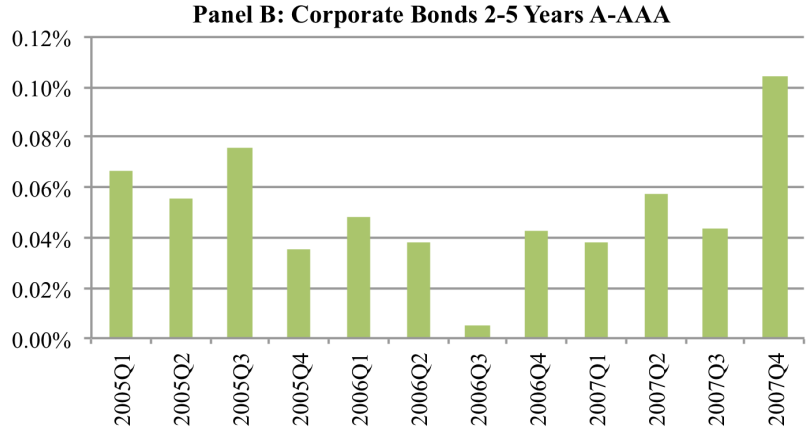
Pre-Crisis

- **Pre-crisis**: P&C insurers show more prudent allocations, increasing allocation to ABS and speculative-grade bonds less than life insurers.
- **Crisis**: P&C insurers cut down ABS and speculative-grade bonds more aggressively than life insurers.

	Allocation change 2004 to 2007 (Pre-Crisis)				Allocation change 2007 to 2010 (Crisis)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Stock	Spec.-grade bonds	ABS	Inv.-grade bonds	Stock	Spec.-grade bonds	ABS	Inv.-grade bonds
Panel A: All insurance firms								
P&C dummy	0.371	-0.361***	-2.041**	5.950***	0.769	-0.605***	-2.656***	2.887**
	(0.767)	(0.118)	(0.838)	(1.197)	(0.575)	(0.215)	(0.504)	(1.183)
RBC ratio difference	0.082	0.033	-0.547**	0.727**	0.166	-0.230*	-0.683***	0.326
	(0.111)	(0.036)	(0.242)	(0.293)	(0.162)	(0.119)	(0.248)	(0.311)
RBC ratio	-0.052	-0.000	0.066	0.096	-0.054	-0.004	-0.011	0.072
	(0.034)	(0.005)	(0.056)	(0.076)	(0.034)	(0.011)	(0.033)	(0.083)
Observations	1,750	1,750	1,750	1,750	1,793	1,793	1,793	1,793
Adjusted R-squared	0.103	0.199	0.090	0.153	0.095	0.022	0.667	0.487

Use "**reaching for yields**" of Becker and Ivashina (2013) as a measure of regulatory capital arbitrage. For the same ratings, **life insurers** buy ABS and corporate bonds that have higher yields than P&C insurers.

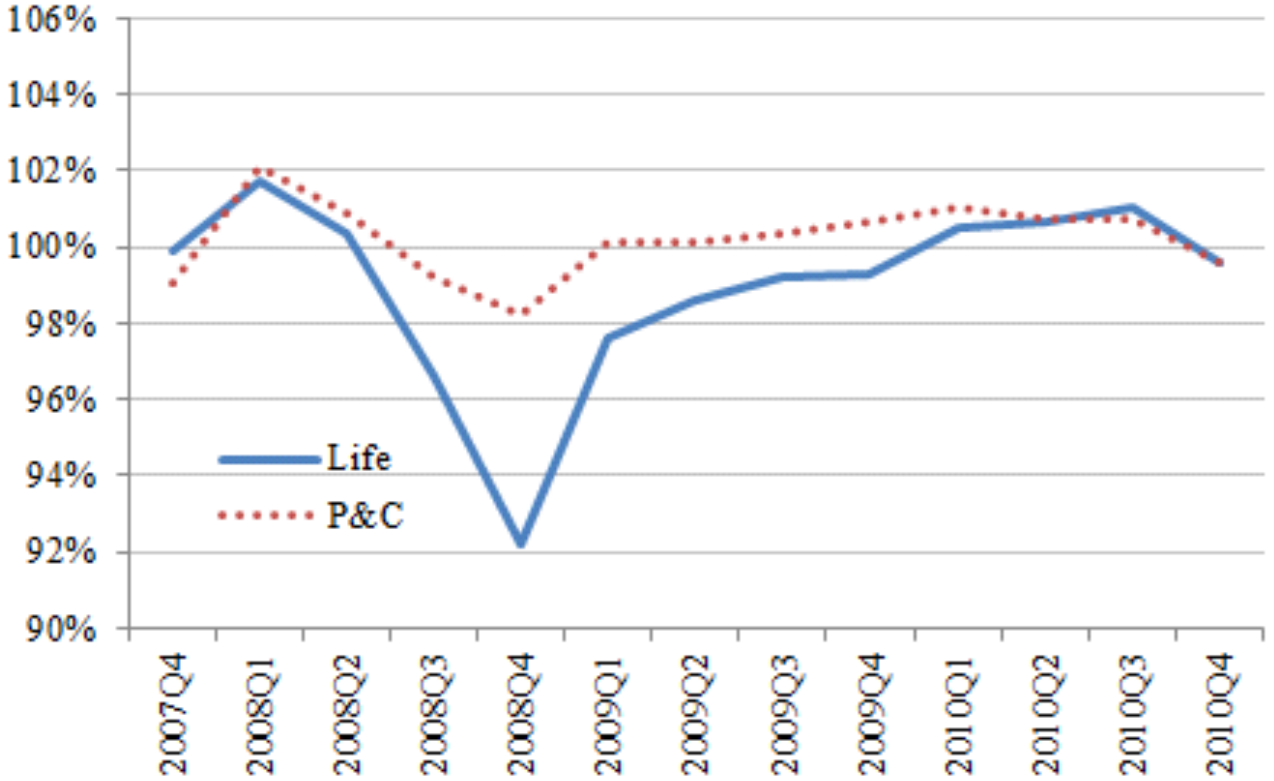




	(2) All	(3) All
P&C dummy	**-0.150*** **	**-0.121*** **
	(0.014)	(0.020)
RBC ratio difference		-0.013**
		(0.006)
RBC ratio		-0.002
		(0.002)
Bond controls	YES	YES
Firm controls	NO	YES
Calendar quarter fixed effects	YES	YES
Observations	48,192	47,849
Adjusted R-squared	0.285	0.287

- It turns out that ABS/bonds with higher yields ex-ante significantly underperform during the crisis.
- **MTM** → Less "reaching for yields" ex-ante → <u>Better performing portfolios ex-post</u>!

Cumulative performance of A-AAA 2-5 year bond portfolio



Conclusions

- We use the insurance industry to investigate the effects of MTM on systemic risk:
  - Market prices do contain information and can serve as early warning signals.
  - Insurers using **MTM** engage **more in feedback trading** than insurers using HCA → **MTM exacerbates systemic events**.
  - Prior to the crisis, insurers using **MTM** engage **less in regulatory arbitrage** (reaching for yields) than insurers using HCA → **MTM decreases the buildup of systemic risk**.
- Net: Portfolios of insurers using MTM do not appear to perform worse during crisis. **Thus, MTM does not necessarily leads to higher systemic risk**.

Discussions

- **Key message**: The distortions engendered by MTM cannot be solved by simply replacing it with HCA.
  - Although HCA may solve a fire-sale feedback problem, HCA generates ex-ante incentives for excessive risk taking and may spread shocks across (otherwise unrelated) asset classes.

- To address the problem of systemic risk, a better way may be to alter the regulatory capital system.
  - Micro- vs. macro-prudential considerations.
  - Ex-ante vs. ex-post incentives.
  - **Caution**: Dangerous to assume that market price movements are not informative and are temporary, and systemic risk is simply about liquidity.