Giving Life to Private (Rated) Credit

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  - U.S. insurers hold $1.2T in private investments as of 2025
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  - Undermine risk-based regulation and increase/hide financial fragility
  - Not a niche problem but a broad stability concern
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  1. Do private ratings offer a source of capital relief?
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- **Our Setting:** The U.S. life insurance industry (**$500B privately rated bonds**)

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  - **Answer: Yes.** Privately rated bonds yield 90bps $\uparrow$ relative to publicly rated bonds

Do Priv Ratings Mitigate RBC Policy and Boost Private Debt Issuance?

- 2021 bond-based RBC reform $\rightarrow$ exogenous shock to capital requirements
  - 6 $\rightarrow$ 20 risk categories, coarse $\rightarrow$ granular ratings-based schedule
  - Identification $\rightarrow$ pre-reform bond portfolio + post-reform charges

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- **Q1: Do private ratings attenuate RBC policies through rebalancing?**
  - **Answer: Yes.**
  - 1SD shock to capital charges $\rightarrow$ $\sim$1pp (50% relative) tilt toward private ratings
  - Ratings inflation $\rightarrow$ effect of policy on de-risking $\downarrow$ $\sim$50%

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- **Q2: Does the demand for private ratings boost private bond issuance?**
  - **Answer: Yes.**
  - Firms 1SD higher connection to exposed insurers $\uparrow$ private issuance $\sim$16%

Literature

- **Credit Ratings in Opaque Markets**

  Post-GFC: Skreta & Veldkamp 2009, Benmelech & Dlugosz 2010, Bolton et al 2012, Griffin & Tang 2012

  Ratings Agencies: Opp et al 2013, Dimitrov et al 2015, Bruno et al 2016, Behr et al 2018

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- **Regulation, Insurer Asset Demand, and Private Markets**

  Private Markets: Kirti & Sarin 2024, Meisenzahl et al 2025, Carlino et al 2025, Huber et al 2026

  Portfolio Choice: Ellul et al 2011, Ge & Weisbach 2021, Becker et al 2022, Bhardwaj et al 2025, Li 2026

  Valuation: Li, Oh, & Ricciardi 2026, Sen, Sharma, & Viceira 2026, Drexler & Polacek 2026

  Regulatory Arbitrage: Becker & Ivashina 2015, Merrill et al 2019, Fringuellotti & Santos 2021, Weinlich 2024

  This paper: entire causal chain focusing on the current developments of private markets

  risk-based regulation $\rightarrow$ *demand for inflated ratings* $\rightarrow$ *financial stability* $\rightarrow$ *firm issuance*

Institutional Details

Risk-Based Capital Timeline

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    Example: AAA through A- = NAIC 1 (39 bps charge)

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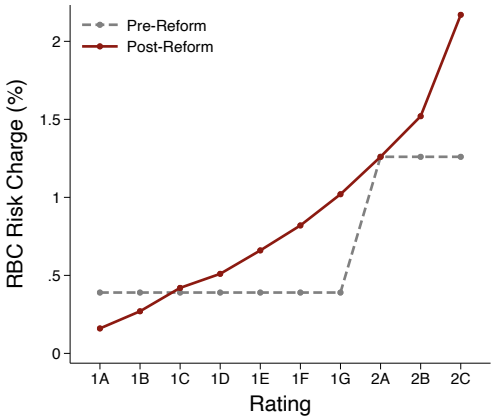
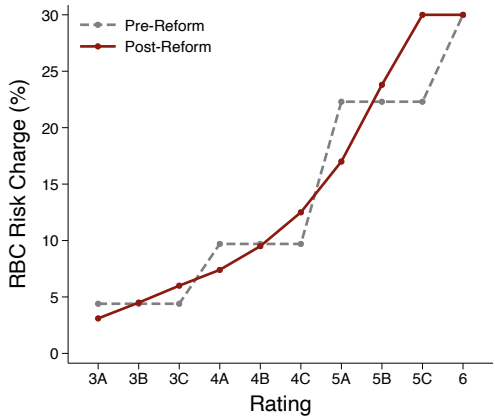
  2021 (Jun): NAIC adopts proposal, implements with 2021Q4 filings

2021 Risk-Based Capital Reform



(a) Investment Grade (NAIC 1-2)



(b) High Yield (NAIC 3-6)

How are Risk Designations Determined?

- Insurers file their bond holdings with the *Securities Valuation Office (SVO)*
- For **publicly rated** bonds: if rating is reputable, bond is "filing exempt"
  $\rightarrow$ Direct mapping from credit rating to risk factor

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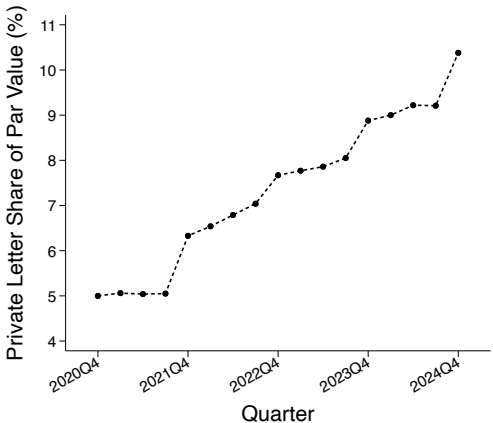
$\Rightarrow$ **Assessment:** great opportunity for ratings arbitrage!

Data

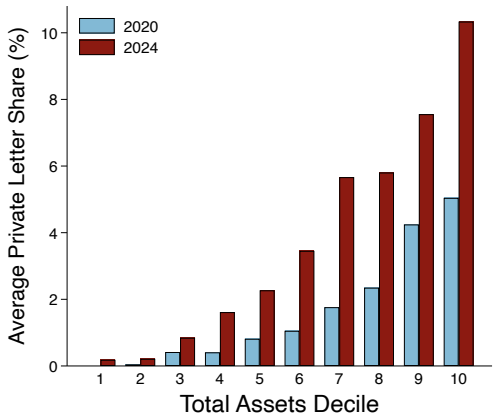
- **NAIC Schedule D** — insurer × bond holdings panel, 2020-2024
  - Key vars: par value, carrying value, yields, risk factors, SVO Symbol (PL)
  - Extras: callability, capital structure, maturity, private placement (PP), asset type
- **Mergent FISD & Refinitiv** — firm-level bond issuance panel, 2018-2024
- **WRDS Bond Return** — public bond market yield panel
  - used for robustness only

Characteristics of Bonds with Private Letters

Fact 1: Private Letter Holdings Doubled in 5 Years



(a) Aggregate Growth in PL Holdings



(b) Growth by Size Decile

Fact 2: Bonds with Private Ratings are Different

	Rating Type		
% of par value that is...	Private	Public	Difference

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Senior Secured	42.0	25.3	**16.7**
Variable Rate	25.3	13.6	**11.7**
Callable	20.0	69.8	**-49.8**

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Callable	20.0	69.8	**-49.8**
Maturity < 5	23.2	18.5	**4.7**
Maturity $\in [5, 10)$	28.2	22.5	**5.7**

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Maturity < 5	23.2	18.5	**4.7**
Maturity $\in [5, 10)$	28.2	22.5	**5.7**
Issuer Obligation	61.1	74.3	**-13.2**
Loan-Backed/Structured Security	24.9	13.1	**11.8**

Fact 3: Bonds with Private Ratings have Cheaper Capital Charges

$$(\text{RBC Risk Factor})_{ibt} = \beta\ \textbf{(Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating	
Observations	
Within R^2	

▸ +Time-varying controls ▸ +Insurer Disagreements

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Private Rating	0.85***
	(0.13)
Year FE	✓
Maturity FE	✓
Observations	236,358
Within R^2	0.001

▸ +Time-varying controls ▸ +Insurer Disagreements

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Private Rating	0.85^{***}	-1.94^{***}
	(0.13)	(0.32)
Year FE	✓	✓
Issuer FE		✓
Maturity FE	✓	✓
Observations	236,358	232,718
Within R^2	0.001	0.002

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Private Rating	0.85^{***}	-1.94^{***}	-1.92^{***}
	(0.13)	(0.32)	(0.44)
Year FE	✓	✓	
Issuer FE		✓	
Issuer × Year FE			✓
Maturity FE	✓	✓	✓
Observations	236,358	232,718	195,741
Within R^2	0.001	0.002	0.001

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Private Rating	0.85^{***}	-1.94^{***}	-1.92^{***}	-1.94^{***}
	(0.13)	(0.32)	(0.44)	(0.46)
Year FE	✓	✓		
Issuer FE		✓		
Issuer × Year FE			✓	✓
Bond Controls				✓
Maturity FE	✓	✓	✓	✓
Observations	236,358	232,718	195,741	176,656
Within R^2	0.001	0.002	0.001	0.009

▸ +Time-varying controls ▸ +Insurer Disagreements

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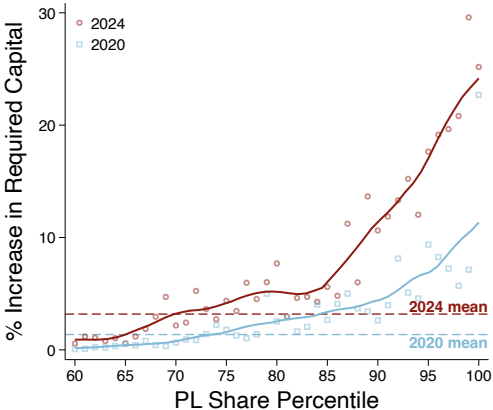
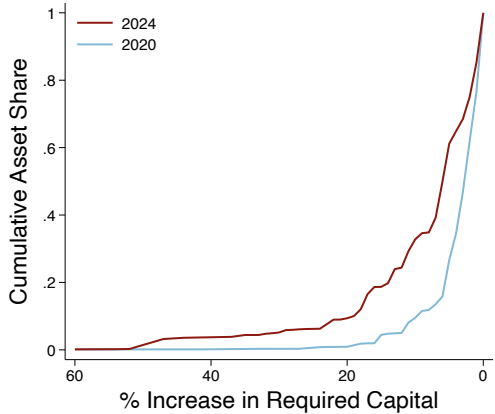
Private Rating	0.85^{***}	-1.94^{***}	-1.92^{***}	-1.94^{***}	-1.76^{***}
	(0.13)	(0.32)	(0.44)	(0.46)	(0.37)
Year FE	✓	✓			✓
Issuer FE		✓			
Issuer × Year FE			✓	✓	
Bond Controls				✓	
Bond FE					✓
Maturity FE	✓	✓	✓	✓	✓
Observations	236,358	232,718	195,741	176,656	213,187
Within R^2	0.001	0.002	0.001	0.009	0.005

▸ +Time-varying controls ▸ +Insurer Disagreements

Fact 3b: Downgrading PLRs Would Increase Req. Capital Significantly



(a) Tail



(b) Cumulative Asset CDF

▸ Aggregates & Ratios

Fact 4: Bonds with Private Ratings have Capital Efficient Returns

$$\text{Yield}_{ibt} = \beta \textbf{ (Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating
Rating × Year FE
Maturity FE
Observations
Within R^2

Fact 4: Bonds with Private Ratings have Capital Efficient Returns

$$\text{Yield}_{ibt} = \beta \textbf{ (Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating	1.44***	0.95***
	(0.12)	(0.15)
Rating × Year FE	✓	✓
Maturity FE	✓	✓
Bond Controls		✓
Insurer Filings	✓	✓
Observations	62,791	29,355
Within R^2	0.002	0.002

Fact 4: Bonds with Private Ratings have Capital Efficient Returns

$$\text{Yield}_{ibt} = \beta \textbf{ (Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating	1.44***	0.95***	2.95***	2.71***
	(0.12)	(0.15)	(0.21)	(0.28)
Rating × Year FE	✓	✓	✓	✓
Maturity FE	✓	✓	✓	✓
Bond Controls		✓		✓
Insurer Filings	✓	✓		
WRDS (public bonds)			✓	✓
Observations	62,791	29,355	43,549	29,742
Within R^2	0.002	0.002	0.004	0.005

Summary of the Facts

Bonds with private ratings ...

(Fact 1) ... have doubled their portfolio share on insurers' balance sheets in 5 years

(Fact 2) ... are often private in nature and are distinct from traditional bonds

(Fact 3) ... appear inflated, and the magnitude is meaningful for RBC

(Fact 4) ... provide capital-efficient yields relative to similarly-publicly-rated bonds

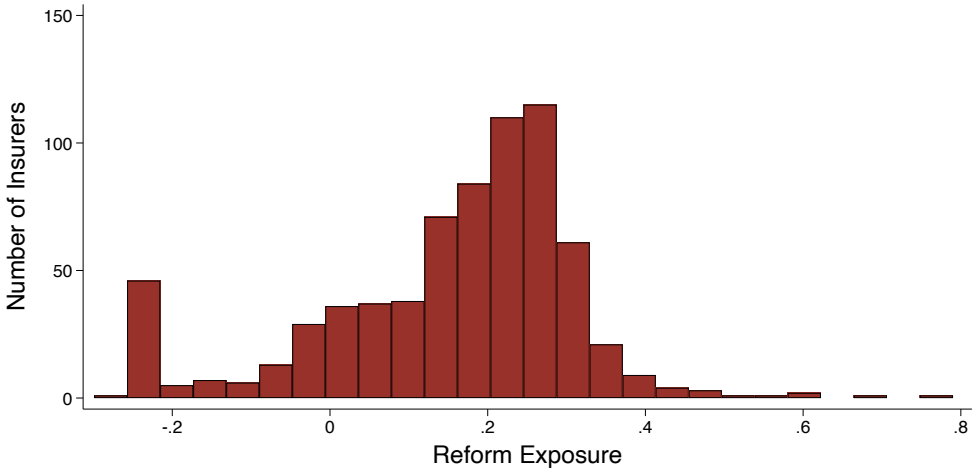
Do insurers use private ratings for capital relief?

The RBC Reform – an Exogenous Shock to Required Capital

- **RBC Reform:** exogenous *level* changes in risk-charges *across ratings*
- **Assumption:** **Δ(risk factor)** *exogenous* to **pre-reform portfolio weights**
  - Timing: new risk factors announced in June 2021 vs. portfolio weights in 2020Q4
  - Levels: variations across ratings that receive the same factor pre-reform
- **Reform Exposure:**

$$\text{Exposure}_j = \sum_c (\text{bond portfolio weight})_{\boldsymbol{jc,2020}} \times \Delta(\text{risk-factor})_c$$

Reform Exposure



Did the RBC Reform Incentivize Private Letter Holdings?

$$\text{SharePL}_{jt} = \beta \, \text{Exposure}_j \times \text{Post}_t + \text{controls} + \alpha_t + \delta_j + \varepsilon_{jt}$$

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Post	0.62***			
	(0.14)			
Exposure	6.30***	6.29***		
	(1.08)	(1.08)		
Exposure × Post	4.89***	4.88***	4.66***	4.76***
	(1.10)	(1.10)	(1.07)	(1.07)
Quarter FE		✓	✓	✓
Insurer FE			✓	✓
Size + ROA Controls				✓
Observations	11,428	11,428	11,424	11,356
Within R^2	0.08	0.07	0.02	0.02

▸ Robustness ▸ Financial constraints

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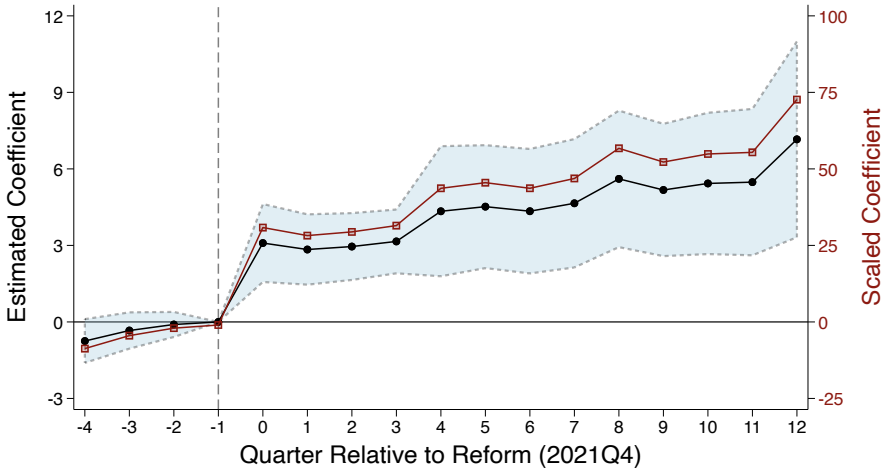

Red: effects of +1SD exposure (% of mean PL share in 2020Q4)

▸ PP control ▸ CV reform

Did Private Ratings Attenuate the Effect of the Reform?

- Regulators should expect **rebalancing** in response to the reform
  - 1G (A-) bonds less capital efficient than 1A (AAA) $\implies$ 1G $\downarrow$, 1A $\uparrow$
  - Measure ex-*post* capital charge:

$$(\text{Ex-Post Charge})_{jt} = \sum_{b \in \text{bonds}} \omega_{jbt} \times (\text{New RBC Factor})_b$$

Rebalancing towards higher ratings $\rightarrow$ **apparent** risk reduction

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- **Question:** how much does shift into PLRs **attenuate** reported risk rebalancing?

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- **Idea:** Use PL inflation estimates from Fact 3 to **downgrade** bonds
  $\rightarrow$ 7 counterfactual charges using different specifications

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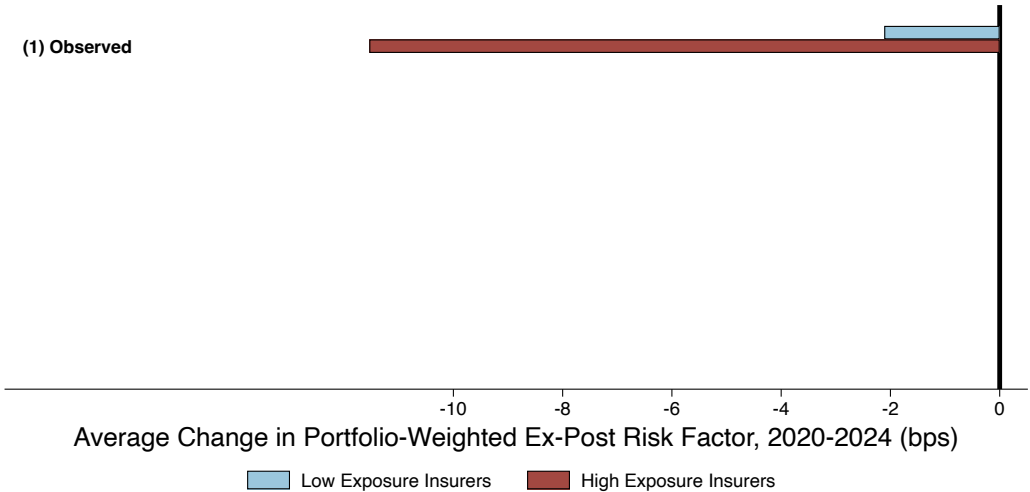

▸ Regressions

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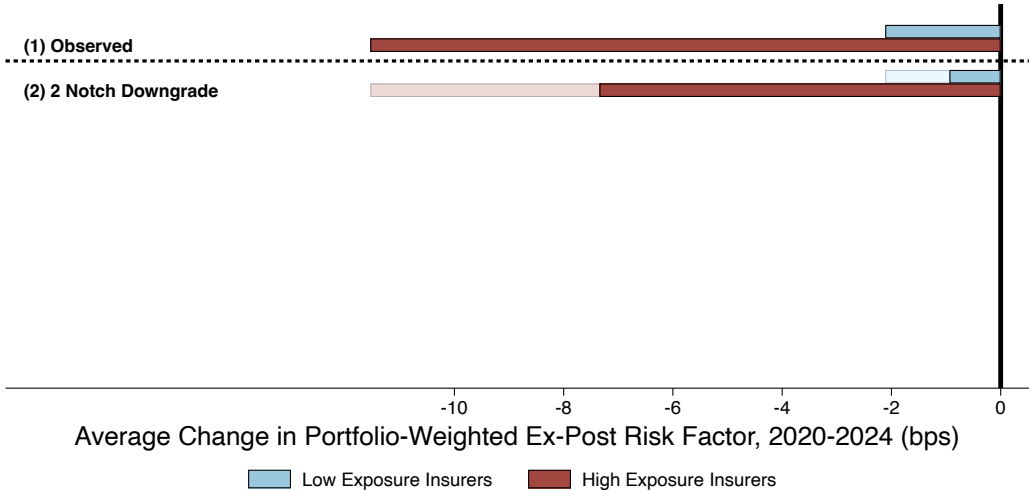

▸ Regressions

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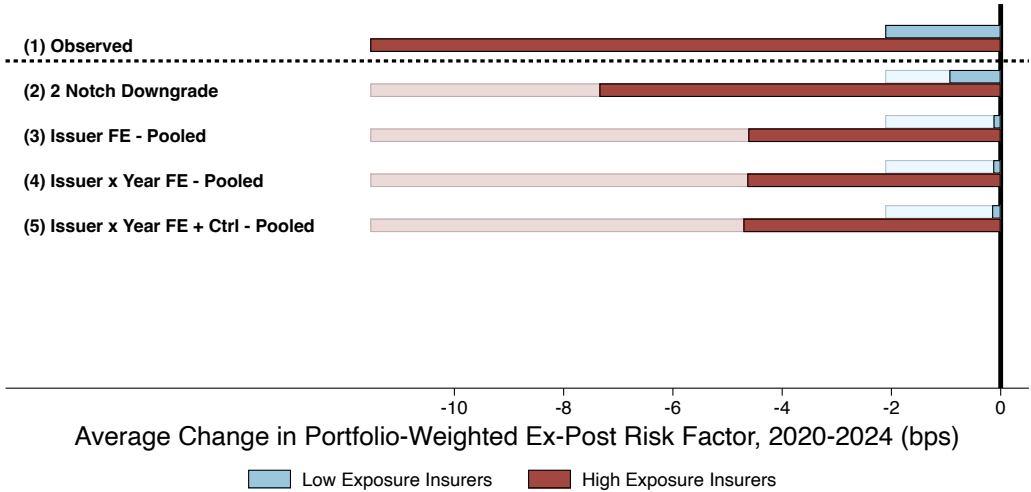

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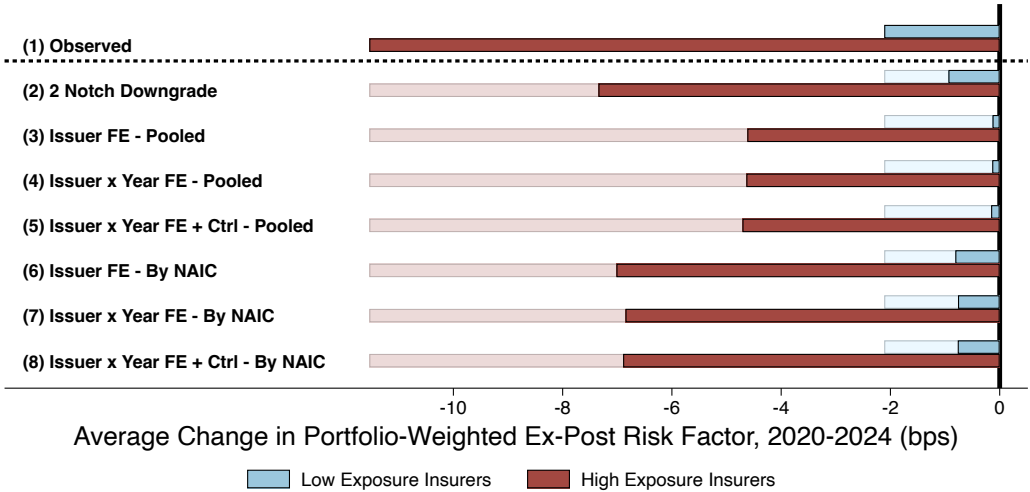

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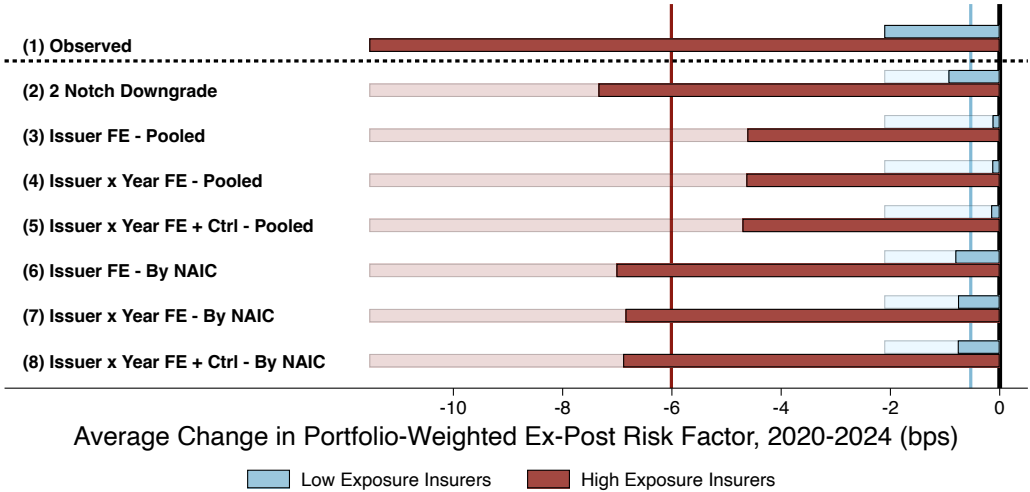


▸ Regressions

Does Private Ratings Demand $\rightarrow$ Private Debt Issuance?

Did the Reform Create Demand for Ratings or Placement?

$$(\text{Portfolio Share})_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

Exposure × Post
Private Rating?
Private Placement?
Quarter FE
Insurer FE
Size + ROA Controls
Observations
Within R^2

Did the Reform Create Demand for Ratings or Placement?

$$(\text{Portfolio Share})_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

Exposure × Post	2.19***
	(0.78)
Private Rating?	✓
Private Placement?	
Quarter FE	✓
Insurer FE	✓
Size + ROA Controls	✓
Observations	11,428
Within R^2	0.08

Did the Reform Create Demand for Ratings or Placement?

$$(\text{Portfolio Share})_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

Exposure × Post	2.19***	2.58***
	(0.78)	(0.71)
Private Rating?	✓	✓
Private Placement?		✓
Quarter FE	✓	✓
Insurer FE	✓	✓
Size + ROA Controls	✓	✓
Observations	11,428	11,428
Within R^2	0.08	0.07

Did the Reform Create Demand for Ratings or Placement?

$$(\text{Portfolio Share})_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

Exposure × Post	2.19***	2.58***	1.49
	(0.78)	(0.71)	(0.97)
Private Rating?	✓	✓	
Private Placement?		✓	✓
Quarter FE	✓	✓	✓
Insurer FE	✓	✓	✓
Size + ROA Controls	✓	✓	✓
Observations	11,428	11,428	11,424
Within R^2	0.08	0.07	0.02

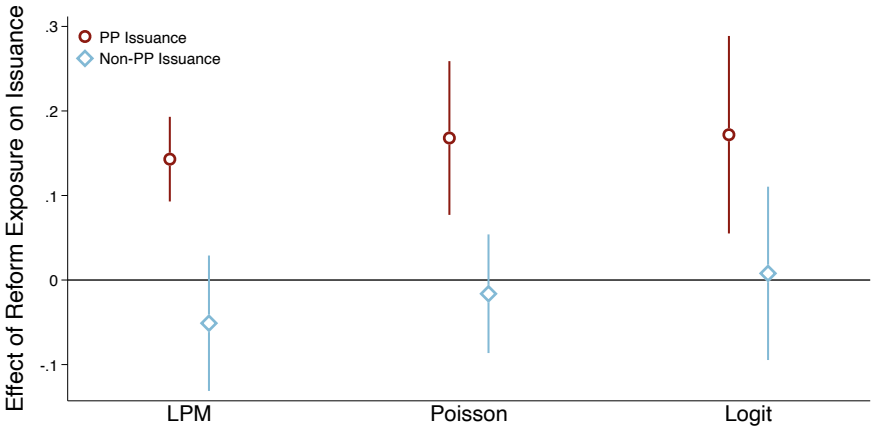
Did Private Rating Demand Increase Private Debt Issuance?

$$(\text{Firm } i\text{'s } \textbf{PP} \text{ Issuance})_t = \beta(\text{Firm Exposure})_i \times \text{Post}_t + \alpha_i + \delta_t + \varepsilon_{it}$$

▸ New PP → PL

Did Private Rating Demand Increase Private Debt Issuance?

$$(\text{Firm } i\text{'s } \textbf{PP} \text{ Issuance})_t = \beta(\text{Firm Exposure})_i \times \text{Post}_t + \alpha_i + \delta_t + \varepsilon_{it}$$



▸ New PP → PL

Conclusion

Private Ratings Reduce Policy Efficacy and Expand Opaque Debt Issuance

- Insurers exploit ratings inflation in opaque bonds to sidestep capital requirements
  - Private ratings $\rightarrow$ capital efficient due to ratings inflation
  - Reform that tightens cap. req's $\rightarrow$ tilt into private ratings $\rightarrow$ reduced efficacy
  - Private *ratings* demand $\rightarrow$ private debt demand $\rightarrow$ private debt *issuance*

- **What's next?**
  - How do we think about liquidity risk interacting with ratings inflation?
  - What is the optimal way to regulate opaque, inflated, and illiquid assets?

Thank you!

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Appendix

Fact 3: Include Insurer-Bond Pairs with Time Varying Controls

$$(\text{RBC Risk Factor})_{ibt} = \beta\ \textbf{(Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating	0.69^{***}	-3.16^{***}	-3.89^{***}	-2.03^{***}	-2.24^{***}
	(0.07)	(0.18)	(0.30)	(0.44)	(0.18)
Year FE	✓	✓			
Issuer FE		✓			
Issuer × Year FE			✓	✓	
Bond Controls				✓	
Bond FE					✓
Maturity FE	✓	✓	✓	✓	✓
Observations	434,411	426,154	364,006	189,173	385,778
Within R^2	0.001	0.01	0.008	0.009	0.012

▸ Back

Fact 3: Full Insurer-Bond Pair Sample

$$(\text{RBC Risk Factor})_{ibt} = \beta\ \textbf{(Private Rating)}_{it} + \text{controls} + \text{fixed effects} + \varepsilon_{ibt}$$

Private Rating	0.73^{***}	-3.04^{***}	-3.77^{***}	-1.97^{***}	-2.20^{***}
	(0.07)	(0.17)	(0.27)	(0.41)	(0.16)
Year FE	✓	✓			
Issuer FE		✓			
Issuer × Year FE			✓	✓	
Bond Controls				✓	
Bond FE					✓
Maturity FE	✓	✓	✓	✓	✓
Observations	460,133	452,060	389,137	199,495	411,535
Within R^2	0.001	0.01	0.008	0.009	0.012

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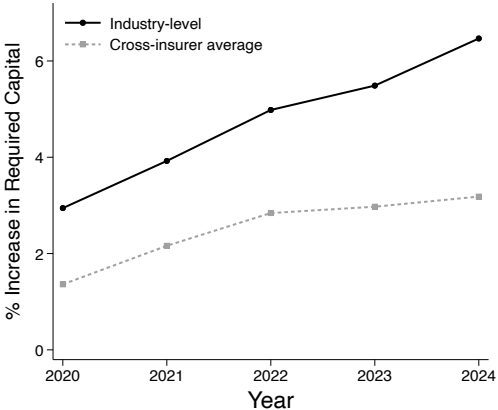
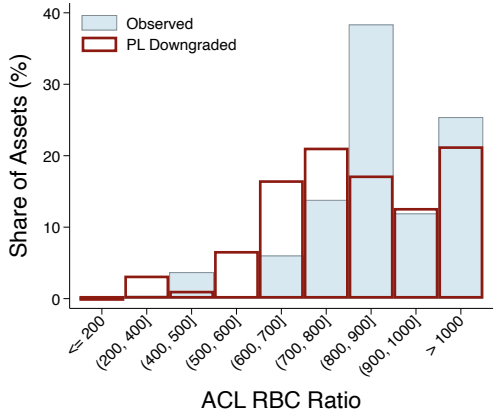
Additional Downgrade Counterfactual Results



(a) Additional Aggregate Req. Capital



(b) RBC Ratios

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RBC Reform Robustness

$$\text{SharePL}_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

	Q4 only	PP control	CV weights
Exposure × Post	5.82***	3.73***	5.25
	(1.25)	(0.91)	(1.12)
Quarter FE	✓	✓	✓
Insurer FE	✓	✓	✓
Size + ROA Controls	✓	✓	✓
Observations	3,329	11,356	11,341
Within R^2	0.04	0.38	0.03

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RBC Reform: Heterogeneity by Financial Constraints

$$\text{SharePL}_{jt} = \beta\ \text{Exposed}_j \times \text{Post}_t + \alpha_t + \delta_j + \varepsilon_{jt}$$

Exposure × Post	6.78**	1.77***	3.37***	0.90***
	(2.88)	(0.63)	(0.99)	(0.33)
Constrained?	✓		✓	
2.5% Trimmed Sample?			✓	✓
Quarter FE	✓	✓	✓	✓
Insurer FE	✓	✓	✓	✓
Size + ROA Controls	✓	✓	✓	✓
Observations	5,857	5,448	5,622	5,388
Within R^2	0.02	0.02	0.02	0.03

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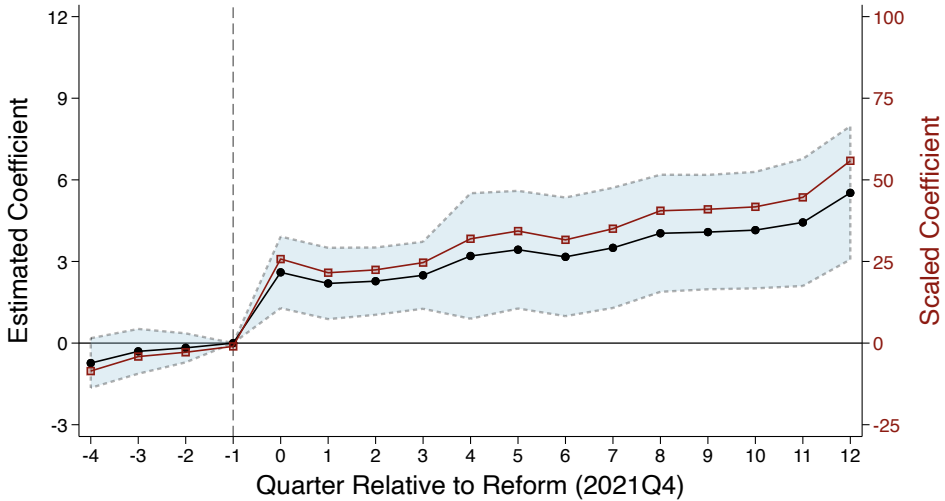
RBC Reform Robustness: Private Placement Share Control



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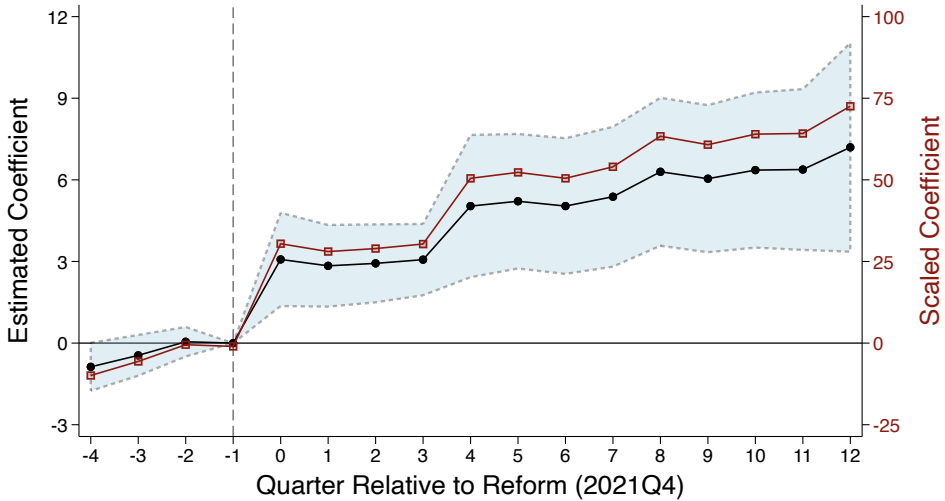
RBC Reform Robustness: CV-weighted Reform Measure



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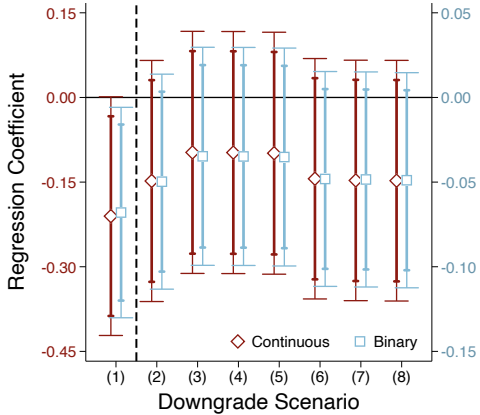
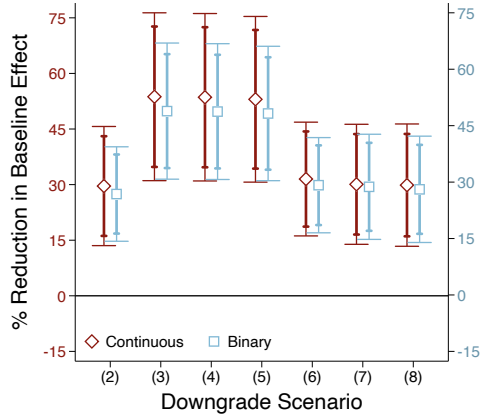
Did Private Ratings Attenuate the Effect of the Reform?



(a) Regression Estimates



(b) Implied Attenuation of PLR Rebalancing

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Likelihood of Newly Acquired PP's Receiving PLR

$$\text{AnyPL}_{bt} = \beta \text{ (Private Placement)}_b + \alpha_t + \varepsilon_{bt}$$

	0 quarters	$\leq$ 4 quarters	$\leq$ 8 quarters
Privately Placed	1.78***	1.61***	1.46***
	(0.40)	(0.38)	(0.39)
% Rel. to non-PP	493%	400%	331%
Quarter FE	✓	✓	✓
Observations	8,371	5,874	4,012
BIC	596.3	686.9	591.7
Pseudo R^2	0.09	0.08	0.05

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