Buying from the Family: Private Equity-Owned Insurers and Their Affiliated Investments

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October 23, 2026

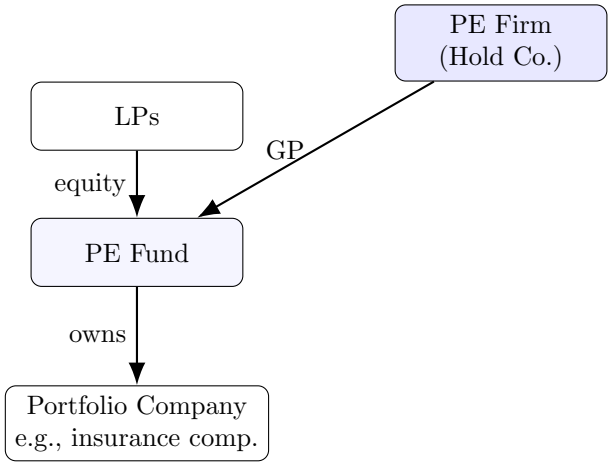
Federal Reserve Bank of Chicago Inaugural Conference on Insurance

Motivation

- Insurance companies are increasingly under the direct ownership of PE firms
- At the same time, PE firms have expanded rapidly into private credit

  $\Rightarrow$ **Insurers are increasingly integrated with credit businesses**
  - Insurers: generate investment capital from policyholder liabilities
  - Credit businesses: originate assets requiring financing
- Insurers can be natural investors in private credit
  - Integration may reduce frictions
  - But could also weaken market discipline (Coase 1937)
- **Research Q: How does integration shape insurer investment?**
  - Which assets are integrated insurers willing to finance, on what terms, and with what consequences?

Organizational Structure



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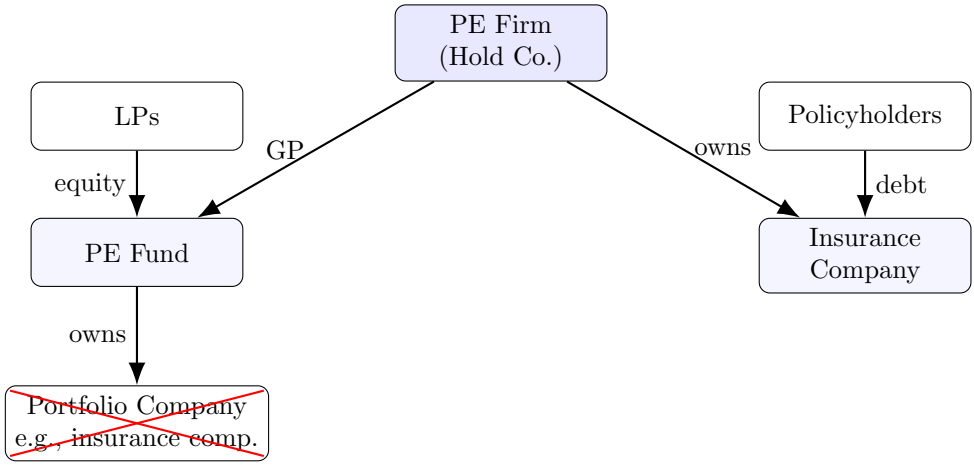
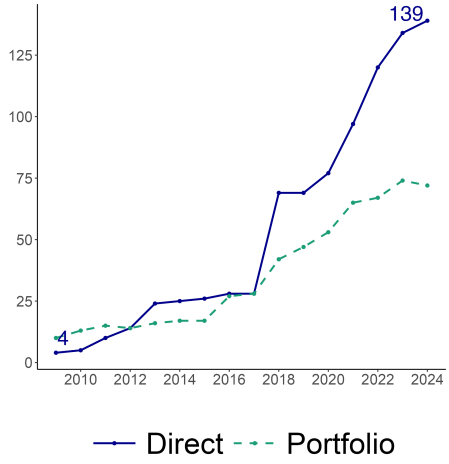
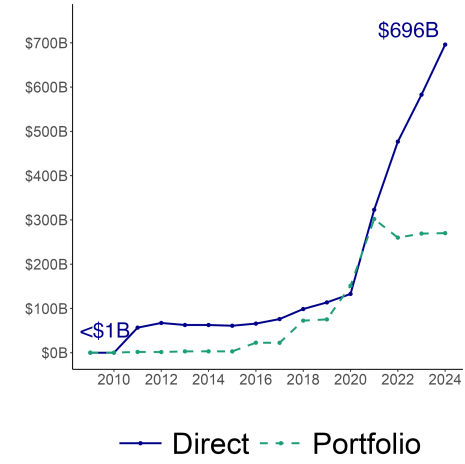
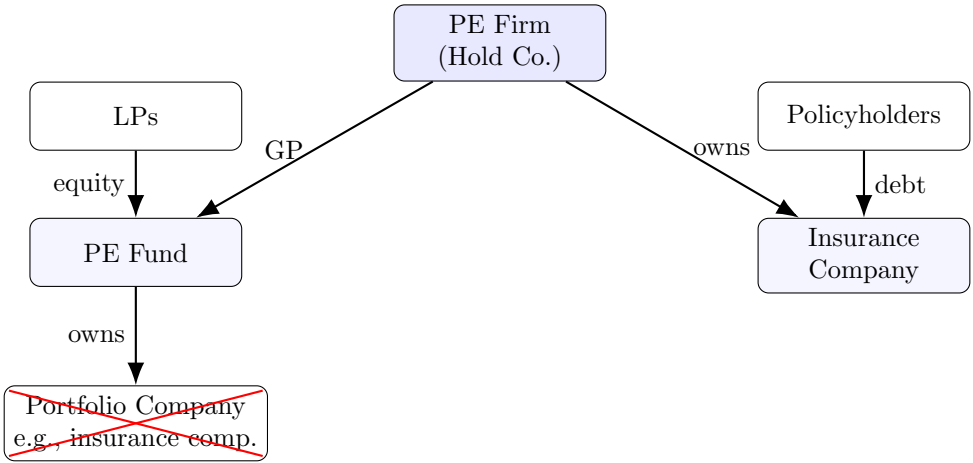


Direct Ownership is the Dominant Form of PE Involvement in Insurance





Ownership Structure



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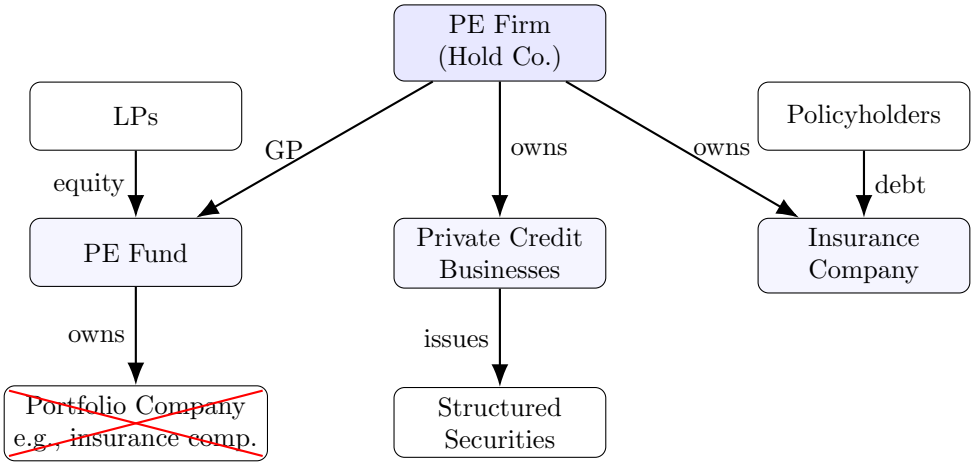

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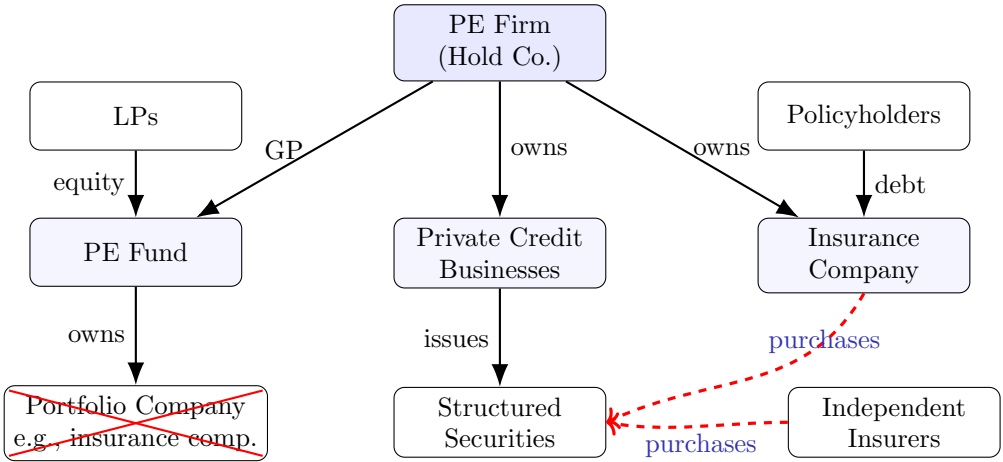

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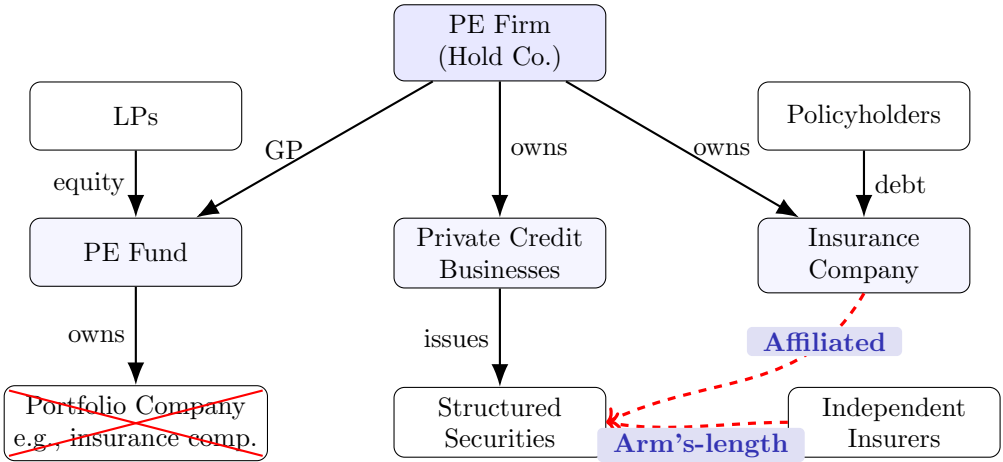

This Paper

Novel dataset

- Map PE ownership of insurers and security issuers
- Link ownership to insurers' holdings and transactions

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How do PE-owned insurers invest?

- Redirect capital to affiliated credit businesses through structured securities
- Pay higher prices and impair and sell less when underwater

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- Redirect capital to affiliated credit businesses through structured securities
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Consequences of affiliated investments

- Subsequent valuation: lower fair value within 2 years of purchase
- Downturn: *additional* 4 p.p. capital loss vs. 7.6% average capitalization
- Financial stability: insurer B/S can propagate shocks into other asset markets (Ellul et al. 2011)

Data

Identification of PE Ownership

- **Backbone:** PDFs of complete corporate structure from NAIC Schedule Y
  - *PE-owned insurer:* directly traced to PE firm
  - *PE-portfolio insurer:* ownership traced to a PE fund
  - *Independent insurer*: no PE ownership
- **Definition of control:**
  - *PE-owned insurer:* ownership percentage $> 50\%$
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- **Identity of PE firm:** universe from Preqin
- **Timeline of ownership:** insurance M&A to identify start vs. end
- **Manual verification:**
  - State regulator examination reports
  - Media and other public sources

Insurers' Investments

- Source: NAIC Schedules D and BA
- **Holdings**
  - Security, Aggregate par value owned
  - Historical cost, Impairment, Fair value
  - Affiliation flag
  - NAIC designations / ratings
- **Acquisitions**
  - Date, Security, Aggregate par value bought
  - Price paid
  - Affiliation flag

PE-Owned Insurers: Capital Allocation

PE-Ownership Selects on Liabilities and Changes Asset Allocation

	Annuities		Equity	
PE Owned	0.149***	0.062	-0.076*	-0.036
Insurer fixed effects	×	✓	×	✓

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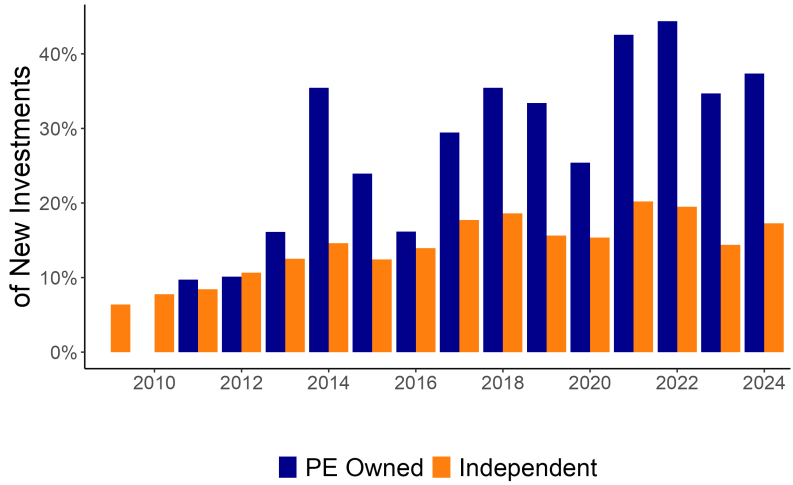
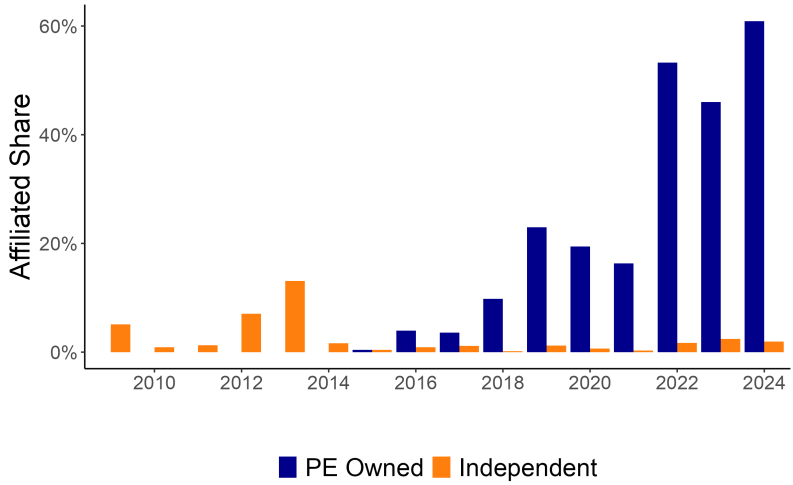
	Structured	Aff. Struct.	Private Struct.	Aff. Private Struct.
PE Owned	0.049***	0.011**	0.012***	0.010**
Insurer fixed effects	✓	✓	✓	✓

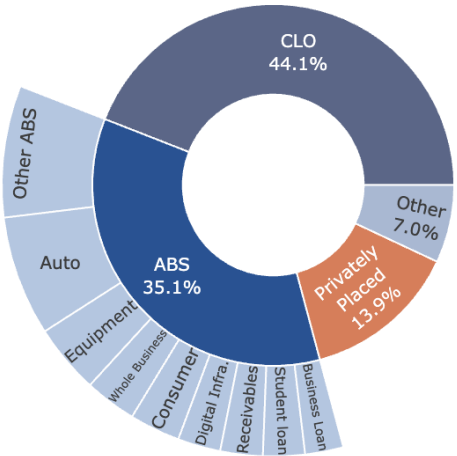
PE-Owned Insurers Concentrate Investments in Structured-Credit Markets



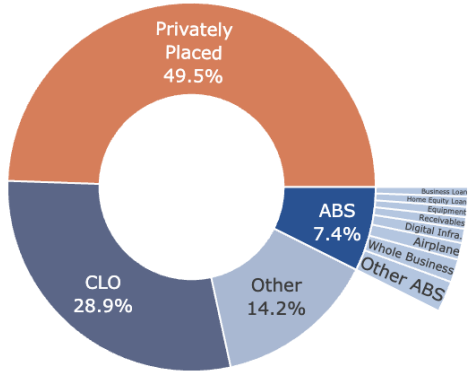
PE-Owned Insurers' Structured-Security Investments Are Issued by Affiliated Entities



Structured Securities Investments by Ownership

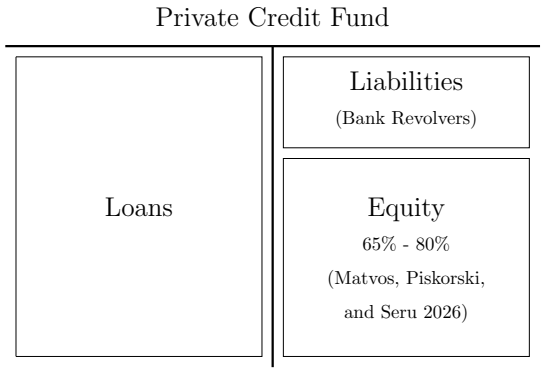


Independent insurers



PE-owned insurers

Structured Securities and Private Credit Intermediation



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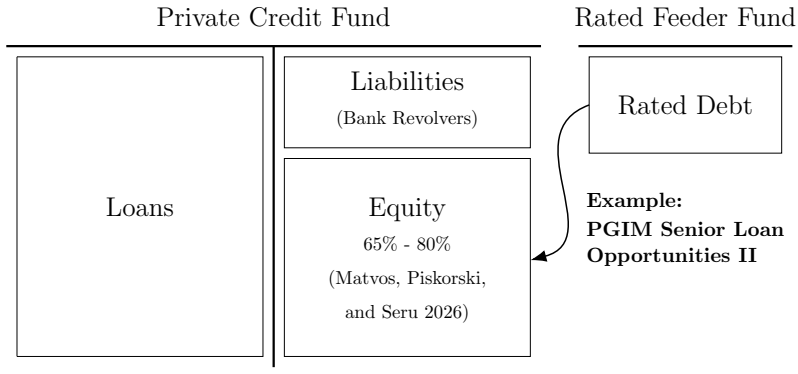

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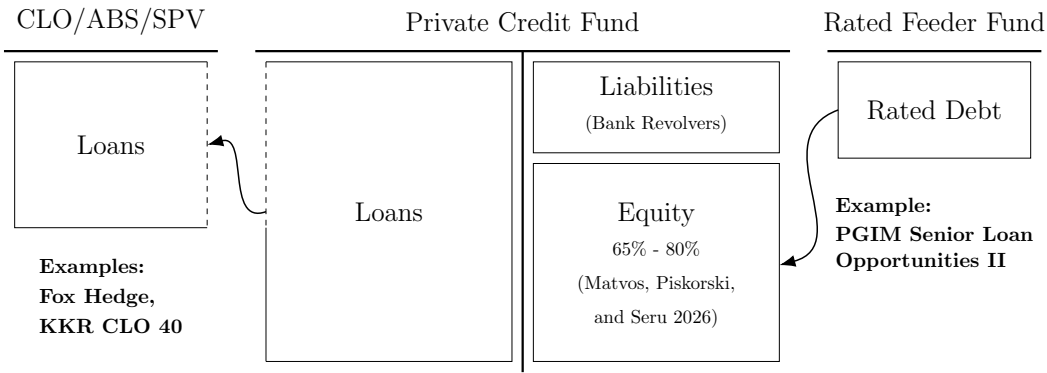

Structured Securities and Insurer Types

Security	Insurer Investor	Affiliated	PE-Owned
PGIM Sr. Loan Opps II	Prudential		
	Nassau		
Fox Hedge	Athene		
	Lincoln National		
KKR CLO 40	Commonwealth Annuity		
	Liberty Mutual		

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	Lincoln National ← Arm's length	✗	✗
KKR CLO 40	Commonwealth Annuity	✓	✓
	Liberty Mutual ← Arm's length	✗	✗

*PE-portfolio insurer

Arm's length = independent + unaffiliated

PE-Owned Insurers: Capital Provision

Price Difference?

- Analysis at transaction-level
- Construct **Benchmark$_{s,t}$**:
  - Value-weighted price paid by arm's length (independent + unaffiliated) insurers for the same security s on the same day t
- Construct **RelativePrice$_{i,s,t}$**:
  - Each transaction's price less Benchmark for that security

$$\begin{aligned} \textit{Relative Price}_{i,s,t}^{\textit{Benchmark}} = {} & \beta_1 \textit{Affiliated}_{i,s,t} \times \textit{PE Owned}_{i,t} + \\ & \beta_2 \textit{Affiliated}_{i,s,t} + \beta_3 \textit{PE Owned}_{i,t} + \delta_y + \epsilon_{i,s,t}, \end{aligned}$$

Pricing Results

	All		Private		Registered	
	(1)	(2)	(3)	(4)	(5)	(6)
Aff. × PE Owned	0.061***	0.062***	0.203**	0.214**	0.039**	0.039**
Affiliated	-0.017	-0.017	-0.155*	-0.157*	-0.010	-0.010
PE Owned	-0.004***	-0.005***	-0.002	-0.016**	-0.005***	-0.005***
Year fixed effects	×	✓	×	✓	×	✓
Observations	330,536	330,536	11,871	11,871	318,665	318,665

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Digging Deeper: Primary vs. Secondary

	Primary		Secondary	
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Aff. × PE Owned	0.481***	0.465***	0.114	0.128
Affiliated	-0.141*	-0.125	-0.162	-0.169
PE Owned	0.008	0.011	-0.008	-0.022**
Year fixed effects	×	✓	×	✓
Observations	3,549	3,549	8,322	8,322

▸ Robustness

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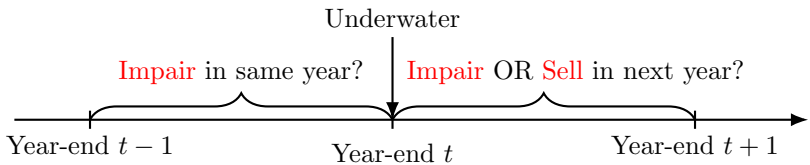
Reaction to Underwater Investments

- Analysis at insurer-security-time level
- Identify **underwater** investments:
  - An insurer's **own** historical cost exceeds **benchmark fair value**: average of arm's length fair values
  - Snapshot at each year end
- Tests:



- Impairment: insurer considers the decline in investment value to be "other than temporary."

Underwater Reaction Results

	Impairment		Sale	
	Same Year	Next Year	All Investments	Underwater
Affiliated × PE Owned	-0.034***	-0.062***	-0.064***	-0.051***
Affiliated	0.043***	0.062***	0.012	-0.017
PE Owned	-0.002***	-0.001	0.083***	0.082***
Security × Year FE	✓	✓	✓	✓
Observations	592,035	404,643	1,146,558	592,035
R^2	0.470	0.545	0.267	0.317

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Information Frictions?

Harder to Value?

- Analysis at security-level
- Calculate **dispersion** of arm's-length fair values at each point in time
- Construct **affiliated PE ownership share**:
  - % of total insurer investments held by affiliated PE-owned insurers
  - Measured when security first enters sample
- $\textit{Valuation Dispersion}_{s,t} = \beta\, \textit{Affiliated PE Ownership Share}_s + \delta_{v,h} + \alpha_g + \epsilon_{s,t}$
  - **Vintage-Horizon FE** ($\delta_{v,h}$): year security enters sample *and* # of years since
  - **Granular Ratings FE** (α_g): 20-levels of NAIC designations
    - Corresponds to S&P AAA through CC, including +/- notches
    - Available for securities held by insurers in 2023 and 2024

Dispersion of Arm's-Length Fair Values

	Valuation Dispersion	
Affiliated PE Ownership Share	1.132^{***}	0.942^{**}
Vintage-Horizon fixed effects	✓	✓
Granular Rating fixed effects	×	✓
Observations	77,110	76,780
R^2	0.090	0.113

- Magnitude: A one-SD increase in *Affiliated PE Ownership Share* is associated with an increase in *Valuation Dispersion* of approximately 5% of its mean.

Performance of Affiliated Securities and Implications

Observed Valuation Performance

- Analysis at security-level
- Two measures of observed performance:
  - **Benchmark fair value**: average of arm's-length fair values
  - **Loss position**: benchmark fair value falls below **average** historical cost
- Measures taken at year-end in year of purchase and three subsequent years
- Explanatory variable of interest: **affiliated PE ownership share**
- Control for:
  - **Vintage FE**
  - **Granular Ratings FE**

Observed Performance Results

	Fair Value			
Horizon	t + 0	t + 1	t + 2	t + 3
Affiliated PE Ownership Share	0.414	-1.578	-4.435***	-6.689**

	Loss Position			
Horizon	t + 0	t + 1	t + 2	t + 3
Affiliated PE Ownership Share	-0.133**	0.159***	0.217***	0.130
Vintage fixed effects	✓	✓	✓	✓
Granular Rating fixed effects	✓	✓	✓	✓
Observations	21,795	16,124	12,953	9,764

Stress Test Performance

Empirical Challenge:

- Observed performance all in a relatively favorable economic environment

Solution: NAIC 2023 CLO Stress Test

- Projected loss for all broadly syndicated CLO-tranches insurers held as of 2023
- 10 scenarios that vary (1) default prob and (2) recovery rate

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- 10 scenarios that vary (1) default prob and (2) recovery rate

Using CLO-tranche observations, estimate for each scenario:

$$\textit{Loss Rate}_{c,r} = \beta_1 \textit{Aff. PE Ownership Share}_{c,r} + \alpha_r + \delta_v + \varepsilon_{c,r}$$

- α_r: tranche/seniority FE
- δ_v: vintage FE

NAIC 2023 CLO Stress Test Scenarios

Scenario	Default Rate	Recovery Rate
1	Historical $- 2\sigma$	Historical
2	Historical $- 1\sigma$	Historical
3	Historical	Historical
4	Historical $+ 1\sigma$	Historical
5	Historical $+ 2\sigma$	Historical
6	Historical	Stress
7	Historical $+ 1\sigma$	Stress
8	Historical $+ 2\sigma$	Stress
9	Historical $+ 2\sigma$	$0.75 \times$ Stress
10	Historical $+ 2\sigma$	$0.5 \times$ Stress



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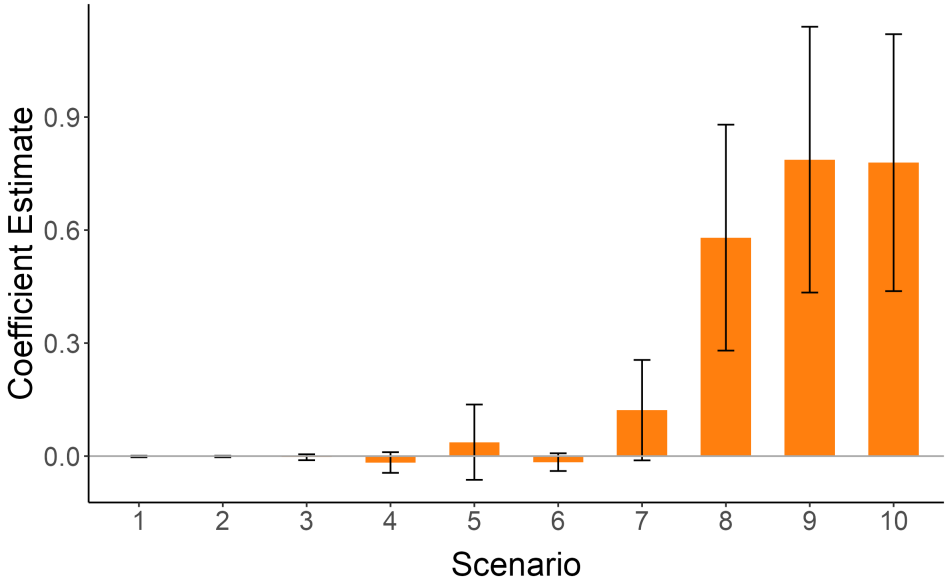
5	Historical $+ 2\sigma$	Historical
6	Historical	Stress
7	Historical $+ 1\sigma$	Stress
8	Historical $+ 2\sigma$	Stress
9	Historical $+ 2\sigma$	$0.75 \times$ Stress
10	Historical $+ 2\sigma$	$0.5 \times$ Stress

Severity

$\approx$ GFC

Downside Performance Result



Implications

Q: What would these affiliated investments mean for PE-owned insurers' capital in a GFC-like downturn?

- NAIC stress test included only broadly-syndicated (BSL) CLOs
- Based on **observed** valuations, other securities are **not** safer than BSL CLOs

▸ Performance by Type

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▸ Performance by Type

A: Apply CLO-stress losses to the whole structured securities portfolio:

Incremental loss **65%** × Structured **32%** × Affiliated **49%** × Avg. ownership **40%** ≈ Add'l loss **4%**

- Avg. PE-owned insurers' equity-to-fixed-income investment portfolio: 7.6%

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Financial stability: significant loss may trigger fire-sale of other assets

- Stress in private credit spills over to broader financial markets

Conclusion

- Insurers are increasingly part of PE firms that also operate private credit
- This integration redirects insurance capital toward affiliated structured credit
  - Capital supplied at higher prices and with greater persistence
- Affiliated investments perform worse and expose insurers to greater losses in a downturn
- Organizational structure of financial intermediation shapes
  - Allocation of policyholder capital
  - Transmission of risk across financial markets

Appendix

Pricing Results: Alternative Primary Classification

	Primary		Secondary	
	(1)	(2)	(3)	(4)
Affiliated × PE Owned	0.494***	0.486***	0.083	0.093
Affiliated	-0.143*	-0.131	-0.121	-0.128
PE Owned	0.003	0.004	-0.001	-0.011*
Year fixed effects	No	Yes	No	Yes
Observations	2,885	2,885	8,986	8,986

Back

Observed Performance by Type

Panel A: Broadly Syndicated CLO Sample

	Fair Value			Loss Position		
Horizon	t + 0	t + 1	t + 2	t + 0	t + 1	t + 2
Affiliated PE Ownership Share	3.088*	1.238*	1.013*	-0.337*	-0.110	0.041
Observations	1,329	1,316	1,146	1,329	1,316	1,146

Panel B: All Other Securities

	Fair Value			Loss Position		
Horizon	t + 0	t + 1	t + 2	t + 0	t + 1	t + 2
Affiliated PE Ownership Share	0.232	-1.713	-5.151***	-0.127**	0.171***	0.222***
Vintage fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Granular Rating fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	20,467	14,808	11,807	20,466	14,808	11,807

Back

References

Coase, R. H. (1937). The nature of the firm. *Economica*, 4(16):386–405.

Ellul, A., Jotikasthira, C., and Lundblad, C. T. (2011). Regulatory pressure and fire sales in the corporate bond market. *Journal of Financial Economics*, 101(3):596–620.