

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

Amy W. Huber, Stefan Huber, Bella Shan, and Christina Zhu

The Wharton School, University of Pennsylvania

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Abstract

Private equity (PE) firms increasingly own insurers as direct subsidiaries. This ownership places insurers within organizations that also originate, manage, and securitize credit assets. We study whether and on what terms insurers directly owned by PE firms provide financing to affiliated credit businesses. Using a novel dataset linking insurer ownership structures, transactions, holdings, and regulatory stress-test outcomes, we document three findings. First, PE-owned insurers provide substantial financing to affiliated credit businesses: 60.8% of their 2024 structured-security investments are issued by affiliated entities, compared to 1.7% for other insurers. Second, comparing purchases of the same security on the same day, PE-owned insurers pay systematically higher prices when buying from affiliated issuers, implying more favorable financing terms for those issuers. Third, affiliated investments offer higher promised yields but substantially greater downside risk under stress scenarios. We estimate that the overpayment corresponds to a financing subsidy of approximately \$27 million per year for affiliated issuers, while the elevated risk profile would reduce insurer capital by 8.9 percentage points under a 2008 financial crisis stress scenario. Together, our results suggest that PE-owned insurers function as a captive source of capital for affiliated credit activities, raising concerns about policyholder protection and financial stability.

Keywords: Insurance, Private equity, Private credit, Common ownership, Agency frictions

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1 Introduction

Private equity (PE) firms increasingly own insurers as direct subsidiaries. Many of these PE firms have also established themselves as major players in private credit, operating businesses that originate loans, provide project financing, and create structured securities backed by these assets. The result is a financial conglomerate that generates investable capital through insurance liabilities on one side and originates investment products through its credit businesses on the other. This integration has led regulators and industry observers to ask whether insurers' assets are being used to support their owners' credit activities, and, if so, what that means for policyholders and financial stability (NAIC, 2026; [The Economist, 2026](#)). Motivated by these concerns, we examine the implications of integrating capital supply and capital demand within the same financial organization.

Policyholder liabilities provide insurers with stable, long-term funding, making insurer balance sheets an attractive source of capital for credit businesses. Yet this capital must be invested prudently because it backs promises made to policyholders. The key question is whether affiliated investments, which are issued by credit businesses within the same PE organization, alter the economic protection afforded to policyholders. To study this, we differentiate between insurers directly owned and controlled by PE firms ("PE-directly-owned," or "PE-owned" for short), insurers held as portfolio investments by PE funds on behalf of limited partners ("PE-portfolio" insurers), and insurers with no PE ties ("independent" insurers). We first examine whether and to what extent PE-owned insurers provide financing to affiliated credit businesses. We then investigate whether this financing affects policyholders through favorable pricing and risk exposures not fully reflected in regulatory capital requirements.

Our findings reveal that PE-owned insurers systematically channel capital to affiliated credit businesses, on terms that favor the issuer and expose policyholders to more risk. First, PE-owned insurers provide substantial financing to their affiliated credit businesses by pur-

chasing structured securities issued by those businesses. Second, compared to arm’s-length purchases of the same security on the same day, PE-owned insurers pay higher prices when buying from affiliated issuers. Third, securities purchased through affiliated transactions offer higher stated yields but also substantially greater downside risk under regulatory stress scenarios, indicating that PE-owned insurers tend to hold higher-beta investments. Taken together, our findings suggest that PE-owned insurers function as a captive and significant source of capital for affiliated credit activities. We estimate that the favorable pricing received by affiliated issuers is equivalent to a financing benefit of approximately \$27 million per year. Moreover, while affiliated investments may offer higher yields in good times, their expected performance in a macroeconomic downturn would reduce regulatory capital by 8.9 percentage points, nearly the average capital ratio of U.S. life insurers, precisely when policyholders depend most on insurers’ financial strength.

We construct a novel, comprehensive dataset that links PE ownership of insurers with detailed information on insurers’ holdings, transactions, and investment performance. Tracing PE ownership is challenging because PE firms typically hold insurers through complex holding company structures. We identify PE firms’ direct ownership of U.S. insurers by mapping out each insurer’s complete corporate structure using the National Association of Insurance Commissioners’ (NAIC’s) Schedule Y and combining it with the universe of PE investment and M&A transactions in the insurance industry.^{1,2} We then use insurers’ statutory NAIC filings (Schedules D and BA) to obtain detailed data on their transactions and holdings. These data include information on affiliation status, purchase prices, and stated interest rate. Finally, we exploit the NAIC’s CLO Stress Tests, which provide standardized, regulator-generated loss projections under multiple adverse scenarios. Thus, our data allow us to compare investment pricing and performance along two dimensions: whether an insurer

¹We define PE-owned insurers as those with more than 50% of equity held by a PE firm; in 95% of the cases, the ownership is 100%.

²We define a “PE firm” as an organization that has at least one traditional buyout fund. Excluded from this definition are hedge funds, diversified financials, and family offices. Thus, our definition of PE is stricter than that used in studies that also classify hedge funds (Kirti and Sarin, 2024) or diversified financials such as Goldman Sachs (Foley-Fisher, Heinrich, and Verani, 2023) as PE.

is PE-owned and whether a given investment is transacted with an affiliated party.³

We begin by documenting three stylized facts. First, the rise of PE ownership of insurers has been rapid. In the 15 years since the 2008 financial crisis, the number of PE-directly-owned insurers increased more than thirty-fold. The insurance assets managed by PE-directly-owned insurers rose from less than \$1 billion in 2009 to \$696 billion in 2024. This growth is not simply a byproduct of increased PE buyout activity. By 2024, PE-directly-owned insurers outnumbered PE-portfolio insurers two to one and managed twice the assets.

Second, PE-owned insurers invest heavily in structured securities. These structured securities range from CLOs securitizing loans to PE portfolio companies, to ABS backed by digital infrastructure, to privately-placed securities that allow insurers to access private credit through rated debt instruments rather than direct fund equity investments. While all insurers have increased their investments in structured securities, these securities account for twice the share of new investments among PE-owned insurers as among independent insurers.

Third, affiliated investment is pervasive. Because many of these structured securities are issued by credit businesses operated by PE firms, we next ask whether PE-owned insurers predominantly purchase securities issued under common ownership. The concentration is striking: 60.8% of PE-owned insurers' 2024 structured security acquisitions came from affiliated issuers, compared to just 1.7% for other insurers.

We next examine the financing terms extended by PE-owned insurers to affiliated issuers. Our approach is simple in concept: we compare what PE-owned insurers pay for a security to what independent insurers pay for the exact same security on the same day. Relative to this benchmark, PE-owned insurers pay, on average, 7 basis points more when purchasing from affiliated issuers. The overpayment is concentrated in primary-market transactions involving privately-placed securities, where PE-owned insurers pay 40 basis points more than independent insurers. The overpayment is specific to PE-owned insurers' affiliated

³Under NAIC definitions, an investment is classified as affiliated if the insurer and the issuer are under common control, where more than 10% of voting rights creates a presumption of control. We manually verify ownership and find that 94% of the affiliated investments by PE-owned insurers are into issuers wholly owned by the PE firm.

investments, consistent with affiliated issuers receiving financing on favorable terms. In contrast, independent insurers pay lower prices when purchasing securities issued by affiliated entities. Thus, while affiliated transactions generally benefit the purchasing insurer, for PE-owned insurers they instead benefit the affiliated issuer.

We also examine the risk characteristics of affiliated investments. Using the NAIC's 2023 CLO stress test, we find that CLOs with greater ownership by affiliated PE-owned insurers experience significantly larger projected losses under adverse macroeconomic scenarios. Relative to a CLO with no affiliated PE-owned insurer ownership, a CLO whose insurer-investor base consists entirely of affiliated PE-owned insurers exhibits a projected loss rate that is 58 percentage points higher under a stress scenario comparable to the 2008 financial crisis. In contrast, we find no comparable relationship for affiliated investments by PE-portfolio insurers, suggesting that the elevated downside risk is specific to direct PE ownership.

At the same time, the affiliated securities held by PE-owned insurers offer higher promised yields. For the same CLOs studied in the stress test, higher promised yields are associated with greater ownership by affiliated PE-owned insurers. This relationship indicates an additional preference for higher-yield securities beyond the general tendency of insurers to reach for yield ([Becker and Ivashina, 2015](#)), one that is even stronger among investment-grade securities. Collectively, the stress test and yield results suggest that PE-owned insurers tend to hold higher-beta investments from affiliated issuers, which offer higher returns in normal states but are vulnerable in adverse states.

These results have economically meaningful implications for insurance policyholders. The overpayment we document shows that policyholders' resources are used to lower the cost of financing for affiliated issuers. We estimate that the average 9-basis-point overpayment, applied to PE-owned insurers' approximately \$45 billion of affiliated investments in 2024, corresponds to a financing benefit of approximately \$27 million per year for affiliated credit businesses. At the same time, the higher-beta profile of affiliated investments increases insurers' vulnerability to adverse shocks. The additional losses implied by the NAIC's stress

test translate into a reduction in insurer equity capital of 8.9 percentage points, a substantial amount relative to the roughly 9% capitalization ratio of the average U.S. life insurer. Taken together, these findings suggest that affiliated investments can transfer value to PE credit businesses and increase insurer risk in ways that are not fully captured by existing prudential capital requirements.

Overall, our findings reveal a deep integration between insurers and affiliated credit businesses within PE organizations that has implications for financial stability. Credit activities associated with PE firms are often viewed as largely self-contained and financed by capital from limited partners. In contrast, we show that insurer balance sheets provide an important source of financing for these activities and bear a meaningful share of the associated risks. Given the central role of insurers in corporate bonds and many asset markets, these interconnections have broader implications for financial stability as PE firms continue to expand their presence in credit intermediation.

Our paper contributes to three strands of literature. First, it extends a growing literature on private credit by highlighting its increasing integration with insurers under common PE ownership. Recent research studies the rise of nonbank lending as an increasingly important component of modern financial intermediation (e.g., [Chernenko, Erel, and Prilmeier, 2022](#); [Ivashina, 2025](#); [Jang, Kim, and Sufi, 2025](#)). Against this backdrop, [Kirti and Sarin \(2024\)](#), [Foley-Fisher, Heinrich, and Verani \(2023\)](#), and [Meisenzahl, Overpeck, and Polacek \(2025\)](#) show that PE-backed insurers participate in credit intermediation through investments in privately-placed and structured credit products. We contribute by examining how insurer capital is used to acquire products issued within PE organizations. To do so, we are the first to distinguish between insurers owned directly by PE firms and insurers held as portfolio companies by PE funds. We show that PE-directly-owned insurers shift their portfolios not only toward private and structured credit products, but also toward securities issued by affiliated entities under common ownership with the insurer. Moreover, financing provided through these affiliated investments differs systematically from arm's-length transactions,

resulting in more favorable financing terms for affiliated issuers and greater downside risk for insurers. Collectively, our findings suggest that PE-directly-owned insurers function as a captive source of financing for affiliated credit businesses.

Second, our study complements the literature on the impact of PE ownership. This literature has thus far focused on PE's impact on portfolio companies (e.g., [Kaplan and Strömberg, 2009](#); [Acharya, Gottschalg, Hahn, and Kehoe, 2013](#); [Davis, Haltiwanger, Handley, Jarmin, Lerner, and Miranda, 2014](#); [Bloom, Sadun, and Van Reenen, 2015](#); [Gupta, Howell, Yannelis, and Gupta, 2024](#); [Eaton, Howell, and Yannelis, 2020](#)). By examining the impact on insurers that are directly owned and operated within PE groups, we study a distinct mode of PE involvement: one without a near-term exit. This organizational structure removes the pressure to improve standalone value for a near-term exit, but creates scope for the PE group to use the insurer as a permanent capital vehicle. We emphasize that our estimates of the costs associated with affiliated investments should not be interpreted as a complete welfare assessment of PE ownership in insurance. For instance, we find that PE-owned insurers purchase securities from unaffiliated issuers at lower prices, suggesting that sophisticated ownership may generate benefits as well as costs.

Finally, our paper contributes to the literature on related-party transactions and agency conflicts. Unlike classic tunneling (e.g., [Johnson, La Porta, Lopez-de Silanes, and Shleifer, 2000](#); [Bertrand, Mehta, and Mullainathan, 2002](#); [Baek, Kang, and Lee, 2006](#)), which involves transfers from minority to controlling shareholders, we focus on transfers from debt-like claimants (insurance policyholders) to equity holders of affiliated credit businesses. In this respect, our setting is closer to the literature on conflicts of interest in delegated asset management, which examines whether fiduciaries steer beneficiary capital toward affiliated entities or products (e.g., [Pool, Sialm, and Stefanescu, 2016](#); [Ferreira, Matos, and Pires, 2018](#)). More broadly, our paper relates to research on risk-taking incentives in financial intermediaries with limited liability (e.g., [Jensen and Meckling, 2019](#); [Hellmann, Murdock, and Stiglitz, 2000](#)), where private incentives can diverge from the interests of ultimate claimants.

We show that affiliated investments create a similar tension in insurance, one that is not fully addressed by existing prudential regulation. In doing so, we connect to the literature documenting gaps between economically meaningful risks and regulatory capital measures in insurance (e.g., [Kojen and Yogo, 2016, 2015](#)).

The remainder of the paper proceeds as follows. Section 2 describes how we construct the panel of insurers' investments and PE ownership of insurers. Section 3 documents three stylized facts. Section 4 investigates the pricing and performance of PE-owned insurers' investments in affiliated securities. Section 5 estimates the potential impact of affiliated investments on policyholders and financial stability, and Section 6 concludes.

2 Data Construction

This section describes how we construct the panel of PE ownership in insurance and how we use it to build the sample of transactions used in the pricing analysis and the sample of holdings used in the performance analysis.

2.1 Data on PE Ownership

We identify PE ownership of the insurers in our sample through a highly manual, multi-step process that combines several data sources.

We begin by mapping the complete holding company structure of each insurer as reported in Schedule Y of NAIC statutory filings. Schedule Y identifies the insurer's ultimate parent and all subsidiaries within the holding company system, along with ownership percentages at each level of the corporate hierarchy. This ownership tree allows us to distinguish insurers owned directly by PE firms from insurers held as portfolio companies within PE funds.

Next, we obtain a comprehensive list of PE firms from Preqin and match these entities to each insurer's ultimate parent. We adopt a conservative definition of a PE firm, restricting the classification to firms that manage PE funds. This definition includes firms such as Apollo Global Management, Blackstone, Carlyle, and KKR, while excluding hedge funds, family

offices, and diversified financial services firms such as Eldridge Capital and Guggenheim Partners.

We define PE ownership as direct ownership by a PE firm ("PE directly owned," or "PE-owned" for short). Specifically, we classify an insurer as PE-owned only if it is owned directly by the PE management company and not by a PE fund. This distinction is important because insurers held through PE funds ("PE portfolio companies") are typically intended for eventual exit, and their operations are shaped by fund-level return objectives and investment horizons rather than by the PE firm's broader incentives.

To determine the timing of PE ownership, we track the effective dates of all insurance industry mergers and acquisitions during our sample period. We obtain transaction dates from S&P Capital IQ and verify ownership transitions using multiple additional sources, including Schedule Y statutory filings, state insurance regulators' examination reports, and other public sources (e.g., media coverage). We classify an insurer as "PE-owned" whenever it is majority-owned directly by a PE firm.⁴ In more than 95% of the PE-directly-owned cases, the PE firm's direct stake is 100%.

2.2 Sample of Transactions for the Pricing Analysis

We construct our sample using insurers' Schedule D and Schedule BA statutory filings from the NAIC, which we access through the S&P Capital IQ Pro platform. These schedules provide detailed transaction-level information on insurers' fixed-income purchases and sales.

We focus on purchases of structured securities. In particular, we retain transactions classified as "Other Loan-Backed Structured Securities." This classification includes three broad categories of assets: CLOs, ABS tied to collateral ranging from auto loans to business loans, and privately-placed securities. Notably, we exclude mortgage-backed securities because these are standardized securities with more transparent pricing.

Our objective is to assess the prices paid by PE-owned insurers for affiliated securities

⁴The sole exception is Athene. Although Apollo's direct ownership did not exceed 50% before 2022, the combined ownership of Apollo and affiliated entities has exceeded 50% since Athene's inception in 2009.

relative to contemporaneous benchmark prices constructed from transactions in the same security by independent insurers.

We merge transaction records with our hand-collected panel of PE ownership to determine whether each trade occurred before or after an insurer became PE-owned. We apply several data-cleaning filters to ensure accurate construction of the benchmark price. First, we drop observations with missing acquisition dates. Second, we exclude transactions with missing or invalid security identifiers. Finally, we drop observations with missing information on par value or transaction price, which are necessary to construct our benchmark price measures. Applying these filters yields a transaction-level dataset of 330,120 structured security purchases, each matched to valid same-day benchmark transactions in the same security.

We identify affiliated transactions using the affiliated flag reported in Schedules D and BA, where an entity is an affiliate if it “controls, is controlled by, or is under common control with” the insurer (NAIC, 2021). Ownership of 10% or more of voting securities creates a presumption of control, although control may also arise through other arrangements. In practice, most affiliated entities in our sample are wholly owned by the PE firm that also owns the insurer. For example, when Athene, which is owned by Apollo Global Management (“Apollo”), purchases a CLO issued by ALM XIX, Ltd., the transaction is classified as affiliated because ALM XIX, Ltd. is a CLO manager that is 100% owned and managed by Apollo. We verify these relationships by manually tracing the corporate ownership structure reported in Schedule Y.

2.3 Sample of Holdings for the Performance Analysis

2.3.1 CLO Stress Test

To analyze the ex-ante downside performance of insurers’ investments, we use the NAIC’s 2023 CLO stress test. The stress test provides regulator-generated loss projections for each tranche of every broadly syndicated CLO held by U.S. insurers as of year-end 2023. The NAIC generates these projections by running the underlying loan portfolio through the

CLO waterfall under ten scenarios that vary collateral default and recovery rates. Recovery is defined as principal recovered within six months after default. For each scenario, the model estimates tranche-level principal and interest losses, accounting for the CLO waterfall structure, reinvestment assumptions, and the interest rate environment.

Appendix Table A1 summarizes the ten scenarios. Scenarios 1–5 hold recovery rates at historical levels while varying default rates from two standard deviations below the historical mean (Scenario 1) to two standard deviations above it (Scenario 5), with Scenario 3 corresponding to the historical mean. Scenarios 6–8 combine stressed recovery assumptions with default rates ranging from the historical mean (Scenario 6) to two standard deviations above it (Scenario 8). Scenarios 9 and 10 represent tail events that combine the highest default rate with severely impaired recoveries, equal to 75% and 50%, respectively, of the stressed recovery rate.

We obtain from Schedule D the par value held by each insurer in its reported CLO holdings and match the reported CLO holdings to their corresponding CLO deal and tranche identifiers in the NAIC stress test. A key challenge is reconciling Schedule D’s inconsistent and messy security descriptions, which often combine abbreviated deal and tranche names into a single string, with the standardized identifiers in the NAIC stress test. We address this challenge by programmatically parsing and standardizing descriptions where possible and using an LLM-based method for more complex cases. All LLM-assisted matches are subsequently manually reviewed and corrected.

The resulting matched sample is at the CLO×tranche level, where each tranche represents a distinct seniority in the cash-flow waterfall. Occasionally, an insurer’s reported security description is more granular than a CLO×tranche, representing a specific security or note-class issued within a tranche that reflects refinancing history or legal, regulatory, tax, currency, or investor-specific features (e.g., note-class A1R, A1S1R, or A2RB2 within the A-rated tranche). In these rare cases, we aggregate CLO×note-class holdings into CLO×tranches that reflect distinct seniority levels, which prevents CLO×tranches with more granular note-

class holdings from mechanically receiving greater weight in the estimation. We then use our hand-collected PE ownership data and Schedule D’s affiliation flag to measure, at the CLO×tranche level, the share of the insurer-investor base that is PE-owned and affiliated. The final sample consists of 1,451 CLO×tranche observations with both stress-test loss projections and insurer holding information.

2.3.2 Returns

To investigate differences in returns, we collect the “Stated Rate of Interest” reported in the 2023 Schedules D and BA for the sample of CLO securities included in the NAIC’s 2023 stress test. The stated interest rate represents the contractual coupon rate in effect at the reporting date.⁵ Because CLO securities are typically issued at par, this measure closely approximates the promised yield and is generally quoted as a spread (discount margin) over a benchmark rate such as SOFR. Therefore, we subtract the benchmark rate (SOFR) on the reporting date to obtain the discount margin, or yield spread, for each CLO security. To preserve possible yield differences, we do not collapse note-classes into seniority tranches. Using the matching procedure described above, the sample consists of 1,564 CLO security observations with both promised-yield and insurer-holding information.

3 Stylized Facts

We document three stylized facts that illustrate the growing integration between PE-owned insurers and affiliated credit markets. These facts motivate our subsequent analyses of financing terms and investment risk.

⁵The stated interest rate for a given CLO security is generally consistent among different insurers that hold the same security. We manually verify that the rare inconsistencies represent reporting errors. To avoid these reporting errors, our tests use the median stated interest rate for each security.

Fact 1: Direct Ownership is the Dominant Form of PE Involvement in Insurance

Figure 1 shows the marked increase in direct PE ownership among U.S. insurance companies. In the 15 years following the 2008 financial crisis, the number of PE-owned insurers increased more than thirty-fold, from 4 in 2009 to 139 by 2024. PE-owned insurers' total assets grew from less than \$1 billion in 2009 to \$696 billion in 2024.

The rise of PE involvement in insurance was already evident in data ending in 2014 (Kirti and Sarin, 2024). Our updated evidence shows that this trend not only continued but accelerated substantially over the subsequent decade. In particular, both the number of PE-owned insurers and their assets increased sharply after 2020, making PE ownership an economically significant feature of the insurance sector.

A unique feature of our data is the ability to distinguish between insurers owned directly by PE firms and insurers held as portfolio companies within PE funds. Figure 1 shows that direct ownership has become the dominant form of PE involvement in insurance. This distinction is important because PE-directly-owned insurers operate as subsidiaries within PE organizations rather than as investments held for eventual exit and subject to limited-partner scrutiny. PE-directly-owned insurers are thus uniquely positioned to engage in transactions that could favor affiliated credit businesses. In the remainder of the paper, we focus on how this ownership structure shapes insurers' investment activities.

Fact 2: PE-Owned Insurers Concentrate Portfolios in Structured-Credit Markets

PE-owned insurers invest systematically differently from independent insurers. Figure 2 shows that, in recent years, roughly 40% of their new investments are in structured securities, compared with less than 20% for independent insurers. Structured securities comprise three broad categories: CLOs, ABS, and privately-placed securities.

Not only do PE-owned insurers invest more heavily in structured securities, but the composition of these investments also differs markedly. Panel (a) of Figure 3 shows that roughly half of PE-owned insurers' 2024 structured-security investments are privately-placed securi-

ties. In contrast, Panel (b) of Figure 3 shows that independent insurers' 2024 structured-security investments are concentrated in CLOs and ABS backed by conventional collateral such as auto loans, credit-card receivables, and student loans.

Although information on privately-placed securities is limited, many appear closely linked to credit intermediation activities within the broader PE ecosystem. One example is the growing use of rated feeder funds, which allow insurers to gain exposure to private-credit funds through rated debt-like securities rather than limited-partner equity interests (Mayer Brown, 2026). Similarly, the CLOs held by PE-owned insurers are often backed by leveraged loans extended to firms with current or prior PE sponsorship. Finally, as shown in Panel (a) of Figure 3, the ABS holdings of PE-owned insurers are less concentrated in traditional consumer collateral and more likely to be backed by loans tied to operating businesses, infrastructure, and other nontraditional assets. Taken together, these patterns suggest that PE-owned insurers are disproportionately exposed to structured-credit markets that are closely connected to the broader PE credit ecosystem.

Fact 3: PE-Owned Insurers' Structured-Security Investments Are Issued by Affiliated Entities

Affiliated investments account for a large and growing share of PE-owned insurers' structured-security acquisitions. Figure 4 shows that more than 50% of the structured securities acquired by PE-owned insurers since 2022 are issued by affiliated entities, growing from near zero in the earlier part of the sample. In contrast, affiliated investments are virtually absent among independent insurers and show no comparable increase over time.

This pattern suggests that PE-owned insurers are not simply more active participants in structured-credit markets, but a growing share of their investment activity is taking place within the organizational boundaries of their PE parents. In other words, PE-owned insurers appear to provide financing to affiliated credit businesses under common ownership. This observation naturally raises a question about whether these transactions are conducted on

arm’s-length terms. We examine this issue in our main analyses.

4 Pricing and Performance of Affiliated Investments

We examine whether affiliated issuers receive financing on favorable terms and whether the investments purchased by PE-owned insurers expose policyholders to greater risk.

4.1 Pricing Analysis

4.1.1 Empirical Design

To examine whether PE-owned insurance companies systematically pay different prices for affiliated securities, we compare transaction prices across insurance companies while tightly controlling for time-varying fundamentals.

A simple comparison of prices across investors would be confounded by (i) cross-sectional differences across securities, (ii) market-wide shocks, and (iii) idiosyncratic shocks to individual securities. To address these concerns, our identification strategy exploits variation in transaction prices *within the same security and on the same day*.

For each focal purchase transaction of insurer i in security s at time t , we construct a benchmark equal to the average transaction price of the same security purchased by independent insurers on day t . Restricting comparisons to trades in the same security and on the same day ensures that transactions are subject to identical time-varying market- and security-level conditions.

The relative price is the difference between the price paid and the benchmark price, defined formally as

$$Relative\ Price_{i,s,t}^{Benchmark} = P_{i,s,t} - \overline{P}_{s,t}^{Benchmark},$$

where $P_{i,s,t}$ is the price of the focal transaction, expressed as a percentage of par value, and $\overline{P}_{s,t}^{Benchmark}$ is the value-weighted average price of other purchases of the same security on the same day, excluding transactions involving insurers with any PE ties:

$$\overline{P}_{s,t}^{Benchmark} = \frac{\sum_{j \in \mathcal{W}_s^{(-i, \text{NoPE})}(t)} P_{j,s} Q_{j,s}}{\sum_{j \in \mathcal{W}_s^{(-i, \text{NoPE})}(t)} Q_{j,s}}, \quad (1)$$

where $Q_{j,s}$ is the par value traded in transaction j and $\mathcal{W}_s^{(-i, \text{NoPE})}(t) \subseteq \mathcal{W}_s^{(-i)}(t)$ denotes the set of trades executed by insurers without any PE ties.⁶

This approach is conceptually similar to examining raw prices while including security \times day fixed effects to absorb common market conditions and time-varying security-specific shocks. Yet constructing an explicit benchmark offers two advantages. First, it allows the benchmark to be value-weighted rather than implicitly equal-weighting transactions. Second, it enables us to exclude transactions by PE-owned and PE-portfolio insurers in the benchmark so that the benchmark is not mechanically influenced by the trading activity we study. This approach is related to transaction-cost measures used in OTC markets, such as the *Ask-Dealer Ratio*, which compares customer transaction prices to the prices at which dealers trade among themselves over the same horizon (e.g., [Schestag, Schuster, and Uhrig-Homburg, 2016](#)).

The construction of this relative price measure allows us to test whether certain investor groups systematically pay higher or lower prices than other investors trading the same security under nearly identical conditions.

We do so by estimating the following regression specification:

$$\begin{aligned} \text{Relative Price}_{i,s,t}^{Benchmark} = & \beta_1 \text{All PE}_{i,t} \times \text{Affiliated}_{i,s,t} + \beta_2 \text{All PE}_{i,t} + \beta_3 \text{Affiliated}_{i,s,t} \\ & + \delta_y + \epsilon_{i,s,t}, \end{aligned} \quad (2)$$

where $\text{Relative Price}_{i,s,t}^{Benchmark}$ corresponds to the relative price that insurer i paid to acquire security s at time t , measured as the price paid less the benchmark price, expressed as a percentage of par value. $\text{All PE}_{i,t}$ is an indicator variable equal to 1 if insurer i is owned by

⁶We exclude independent insurer i 's transaction in the benchmark used for its transactions.

PE at time t , which includes both directly-owned and PE-portfolio insurers. $Affiliated_{i,s,t}$ is an indicator variable equal to 1 if the acquired security s is issued by an entity affiliated with insurer i . We control for transaction year fixed effects (δ_y) to absorb temporal variation in the regulatory environment, and we cluster standard errors by security.

To examine whether different types of PE ownership are associated with differential pricing effects, we estimate a more detailed version of Equation (2):

$$\begin{aligned}
 Relative\ Price_{i,s,t}^{Benchmark} &= \beta_1 PE\ Direct_{i,t} \times Affiliated_{i,s,t} + \beta_2 PE\ Portfolio_{i,t} \times Affiliated_{i,s,t} \\
 &+ \beta_3 Affiliated_{i,s,t} + \beta_4 PE\ Direct_{i,t} + \beta_5 PE\ Portfolio_{i,t} + \delta_y + \epsilon_{i,s,t},
 \end{aligned}
 \tag{3}$$

which decomposes $All\ PE_{i,t}$ into two mutually exclusive indicators: $PE\ Direct_{i,t}$ is an indicator variable equal to 1 if insurer i is directly owned by a PE firm, and $PE\ Portfolio_{i,t}$ is an indicator equal to 1 if insurer i is a PE-portfolio company.

4.1.2 Results

Table 1 reports the estimation results. Columns (1) and (2) present estimates of Equation (2). Across both fixed-effects specifications, the interaction between $All\ PE$ and $Affiliated$ is positive and statistically significant. The finding indicates that insurers with ties to PE firms pay higher prices when purchasing securities issued by affiliated entities, relative to independent insurers buying the same security on the same day.

Columns (3) and (4) present estimates of Equation (3), which decomposes the effect by type of PE ownership. The results show that the pricing differential is concentrated in the group of PE-directly-owned insurers. Specifically, the interaction between $PE\ Direct$ and $Affiliated$ is positive and statistically significant, indicating that PE-directly-owned insurers pay higher prices for affiliated securities. By contrast, the interaction between $PE\ Portfolio$ and $Affiliated$ is positive but not statistically significant. This pattern is consistent with

the presence of independent limited partners constraining the extent to which PE-portfolio insurers can provide favorable financing to affiliated issuers.

The estimated effect is economically meaningful. The coefficient on the interaction term $PE\ Direct \times Affiliated$ is 0.071 in both specifications, implying that PE-directly-owned insurers pay a premium of approximately 7 basis points when investing in affiliated securities.

In contrast, the coefficient on $Affiliated$ is negative and statistically significant across all specifications, implying that independent insurers purchase affiliated securities at a discount. This finding suggests that, within traditional insurance groups, affiliated issuers provide favorable financing terms to the insurer, consistent with the insurer remaining the primary economic focus of the organization.

As Figure 3 shows, PE-owned insurers disproportionately invest in privately-placed structured securities compared with their independent counterparts. We therefore examine pricing within this prominent investment type.

We do so by re-estimating Equation (3) in the subsamples of registered and private securities. Table 2 presents the results. We find positive and significant coefficients on the interaction of $Affiliated$ and $PE\ Direct$ in the private-security sample in Columns (1) and (2). Columns (3) and (4) also show positive and significant interaction term coefficients in the subsample of registered securities, but the effect is only one-third of the private-sample estimate, implying that the aggregate result is driven by private, opaque securities.

Having established that differential pricing is concentrated in privately-placed affiliated securities, we further examine whether it occurs in the primary or secondary market. This distinction is important because the former is akin to a direct funding advantage for the affiliated issuer, whereas the latter would correspond to liquidity provision for other holders of these securities.

Identifying primary-market transactions in privately-placed securities is challenging because information on these securities' issuance dates is generally not publicly available. But an ad hoc classification that assigns the first-ever insurer acquisition of a security as primary

market may be erroneous because the first insurer acquisition could be in the secondary market. To address these limitations, we develop a machine-learning classification procedure that uses patterns in trades relative to observed issuance dates for registered securities. Within registered securities, we consider the first insurer acquisition of a given security to be a primary-market event if it occurs on or before the security’s issuance date reported by S&P Capital IQ. We then train an XGBoost classifier using features that capture trading activity around the first acquisition date, including trading volume and patterns of trade occurrence in subsequent periods. These features exploit the fact that trading activity in the primary market is typically more temporally concentrated than in the secondary market. The classifier achieves an out-of-sample AUC of 0.877.

We apply the trained classifier to privately-placed securities, for which issuance dates are unavailable, to identify first insurer acquisition dates that are likely associated with primary-market activity. For each security whose first insurer acquisition date is classified as primary-market, we designate all transactions occurring within 30 days of that date as primary-market transactions.⁷

Table 3 presents the results of estimating Equation (3) in the private primary and secondary market subsamples. We find a strongly positive and significant coefficient on the interaction of *Affiliated* and *PE Direct*, implying that PE-directly-owned insurers pay a premium in the primary market relative to other market participants. The magnitude is also economically significant, with the estimated funding advantage around 40 basis points of the securities’ par value. Overall, these results suggest that insurance companies provide a funding advantage to their ownership group for the primary issuance of private securities.

⁷The 30-day window is motivated by the distribution of issuance dates relative to first acquisition dates among registered securities. In the training sample, reported issuance dates occur within 10 days after the first acquisition date at the median and within 30 days at the 90th percentile. Acquisitions are often spread out in the pre-issuance date period. Our results are robust to alternative definitions of the primary-market window; Appendix Table A2 reports estimates using a 10-day window.

4.2 Performance Analysis

We next investigate the risk-return profile of PE-owned insurers’ affiliated investments.

4.2.1 Downside Risk

We begin by examining expected investment performance under adverse economic conditions. This dimension is particularly relevant for policyholders, whose claims depend on insurers remaining solvent during periods of stress. A key empirical challenge is the limited realized-loss history of structured securities in insurer portfolios, which makes it difficult to evaluate outcomes across different economic states. We address this challenge using the NAIC’s 2023 CLO stress test, which provides standardized, regulator-generated loss projections under ten macroeconomic scenarios for each tranche of every broadly syndicated CLO held by U.S. insurers as of year-end 2023. Section 2.3 describes the stress test methodology and our procedure for matching stress test projections to insurer holdings. Our unit of observation is a CLO deal×tranche.

To test whether securities predominantly held by affiliated PE-owned insurers are expected to perform differently, we relate each CLO×tranche’s projected loss to the composition of its insurer-investor base. Specifically, for each CLO×tranche, we compute the share of insurer holdings attributable to affiliated PE-directly-owned insurers (“Aff. PE Direct Share”) and to affiliated PE-portfolio insurers (“Aff. PE Portfolio Share”).

Our outcome variable is the expected loss rate generated by the NAIC stress test. The NAIC projects principal and interest losses for each CLO×tranche and macroeconomic scenario, after accounting for both default probabilities and recovery rates. We scale projected losses by the CLO×tranche’s par value to obtain an expected loss rate that is comparable across CLO×tranches.

We estimate the following regression for each scenario k :

$$Loss\ Rate_{c,r} = \beta_1 Aff.\ PE\ Direct\ Share_{c,r} + \beta_2 Aff.\ PE\ Portfolio\ Share_{c,r} + \alpha_r + \delta_v + \varepsilon_{c,r}, \quad (4)$$

where $Loss Rate_{c,r}$ is the projected loss rate for tranche r of CLO c under scenario k , $Aff. PE Direct Share_{c,r}$ and $Aff. PE Portfolio Share_{c,r}$ denote the shares of the insurer-investor base attributable to affiliated PE-directly-owned and affiliated PE-portfolio insurers, respectively, and α_r and δ_v are seniority (i.e., tranche) and vintage fixed effects. The inclusion of seniority fixed effects restricts comparisons to CLOs with the same seniority position in the payment waterfall, while vintage fixed effects restrict comparisons to CLOs issued under similar market conditions and at the same stage of their life cycle. Standard errors are clustered at the CLO level.

Table 4 reports the results. Across the benign and moderate scenarios (Scenarios 1–6), a higher share of affiliated PE-owned insurers in the investor base is not associated with higher projected losses; the estimated coefficients are economically small and statistically insignificant. However, beginning with Scenario 7, the relationship changes sharply. A CLO×tranche whose insurer-investor base consists entirely of affiliated PE-owned insurers is projected to experience an additional 12.2 percentage points of loss under Scenario 7, increasing to 58.0 percentage points under Scenario 8 and rising further under the more severe tail scenarios (Scenarios 9 and 10). On average, affiliated PE-owned insurers account for roughly 68% of the investor base in the CLO×tranches they hold, implying economically meaningful increases of approximately 8.9 percentage points in projected losses under stress.⁸ In contrast, we find no comparable relationship for the share held by affiliated PE-portfolio insurers.

Although our main specification controls for waterfall seniority position, one concern is that the results are driven by the few observations in the speculative-grade CLO×tranches. We therefore repeat the analysis using only CLO×tranches with NAIC designations 1 and 2, which broadly correspond to investment-grade securities.⁹ The results, reported in Appendix Table A3, are virtually unchanged.

⁸Section 5 provides details about the computation of this impact.

⁹NAIC designations are regulatory capital categories. NAIC 1 broadly corresponds to AAA, AA, and A ratings, while NAIC 2 broadly corresponds to a BBB rating.

4.2.2 Promised Yield

The previous section documents the downside performance of affiliated PE-owned insurers' investments under stress. We next examine their promised yield, allowing us to characterize both the upside and downside performance of these investments.

Following [Becker and Ivashina \(2015\)](#), we examine whether higher-yielding securities attract greater investment by affiliated PE-owned insurers. Specifically, we estimate:

$$\textit{Affiliated PE Share}_s = \theta \textit{Yield Spread}_s + \psi \textit{Insurer Holding}_s + \alpha_r + \delta_v + \varepsilon_s, \quad (5)$$

where *Affiliated PE Share_s* denotes either the share of the insurer-investor base of CLO security *s* attributable to affiliated PE-directly-owned insurers (*Aff. PE Direct Share_s*) or to affiliated PE-portfolio insurers (*Aff. PE Portfolio Share_s*). *Yield Spread_s* is the difference between the stated interest rate and SOFR, *Insurer Holding_s* is the log of insurers' holdings of security *s* and controls for unobserved characteristics that make the security attractive to insurers, and α_r and δ_v are seniority and vintage fixed effects.

Table 5 reports the results. Even within the same tranche seniority and vintage, CLO securities with higher yield spreads are held disproportionately by affiliated PE-owned insurers (Column (1)). A 100-basis-point increase in yield spread is associated with a 0.2-percentage-point increase in the affiliated PE-direct ownership share of the insurer-investor base. Prior research shows that insurers generally reach for yield ([Becker and Ivashina, 2015](#)). Our results show that, conditional on this well-established tendency, higher-yield securities disproportionately attract affiliated PE-directly-owned insurers. This incremental relationship is absent for affiliated PE-portfolio insurers (Column (2)).

Because [Becker and Ivashina \(2015\)](#) show that reaching for yield is concentrated among investment-grade securities, we repeat the analysis using only CLO securities with NAIC designations 1 and 2. The results, reported in columns (3) and (4) of the same table, are even stronger: the association between yield spread and affiliated PE-direct ownership

approximately doubles, while remaining insignificant for PE-portfolio insurers.

Taken together, the evidence from Tables 4 and 5 suggests that affiliated PE-directly-owned insurers concentrate their investments in securities that combine higher promised yields with greater downside risk. This pattern is consistent with investing in higher-beta securities whose payoffs exhibit greater sensitivity across the business cycle. Such investments may appeal to equity holders with limited liability because they preserve upside while shifting downside risk to debt claimants. In the insurance context, those debt claimants are policyholders, whose promised benefits depend on insurer solvency. In the next section, we quantify the economic magnitude of these effects.

5 Implications for Insurance Policyholders

In this section, we provide simple, order-of-magnitude estimates to gauge the potential impact of affiliated investments on policyholders of PE-owned insurers.

Table 1 shows that PE-owned insurers pay approximately 6 basis points more for affiliated than for unaffiliated securities.¹⁰ In 2024, they acquired roughly \$45 billion of affiliated structured securities.¹¹ Applying the estimated overpayment to this volume implies a financing benefit of approximately \$27 million per year for affiliated credit businesses.

We next assess the implications of the higher-risk profile of affiliated investments. We focus on NAIC stress scenario 8, which combines default rates two standard deviations above historical averages with stressed recovery assumptions and is broadly comparable in severity to the 2008 financial crisis.¹² Under this scenario, an investment whose insurer-investor base consists entirely of affiliated PE-owned insurers has an expected loss rate that is 58 percentage points higher than an otherwise comparable investment with no affiliated PE-owned insurer ownership. By 2024, PE-owned insurers allocated 35.1% of their portfolios to structured

¹⁰Sum of coefficients on “Affiliated × PE Direct” and “Affiliated” in Columns (3) or (4).

¹¹Of the \$197 billion of new securities acquired, 37.6% are in structured securities, with 60.8% of those from affiliated issuers.

¹²In 2009, the default rate for leveraged loans rose to 9.8% from a twenty-year average of 3.2%, while recovery rates declined to 58% from an average of 72% ([CollateralizedLoanObligations.com](https://www.collateralizedloanobligations.com), 2025).

securities, of which 64.5% were affiliated investments. Combining these portfolio shares with the average affiliated PE-owned insurer ownership share of 68% implies an additional portfolio loss of roughly 8.9 percentage points under the stress scenario.¹³

Given the average equity ratio of 9% among U.S. life insurers ([Board of Governors of the Federal Reserve System, 2023](#)), losses of this magnitude could substantially erode insurer capital during periods of stress. Thus, PE-owned insurers both transfer value to affiliated credit businesses through favorable financing and bear the greater downside risk associated with those investments, potentially weakening policyholder protection precisely when it is most valuable.

6 Conclusion

This paper studies insurers that PE firms directly own and integrate into their broader organizations. We show that these insurers play an important role in financing affiliated credit activities through purchases of structured securities issued under common ownership. Relative to arm’s-length transactions, PE-owned insurers pay systematically higher prices when purchasing from affiliated issuers, which lowers the cost of financing for their affiliated credit businesses. At the same time, affiliated investments offer higher promised yields but also exhibit substantially greater downside risk under adverse scenarios. Taken together, our findings suggest that PE-owned insurers function as a captive source of capital for affiliated credit activities, supplying financing on favorable terms while bearing a disproportionate share of the associated risks.

PE organizations are expanding their presence in credit intermediation, and insurer balance sheets have become increasingly intertwined with their credit activities. As private credit continues to expand, understanding these connections may prove important not only for policyholder protection but also for assessing insurers’ evolving role in financial stability.

¹³The 68% ownership share represents the average of PE-owned insurers’ share of total insurer holdings in the CLO×tranches that are held by PE-owned insurers, estimated based on CLOs in the NAIC stress test.

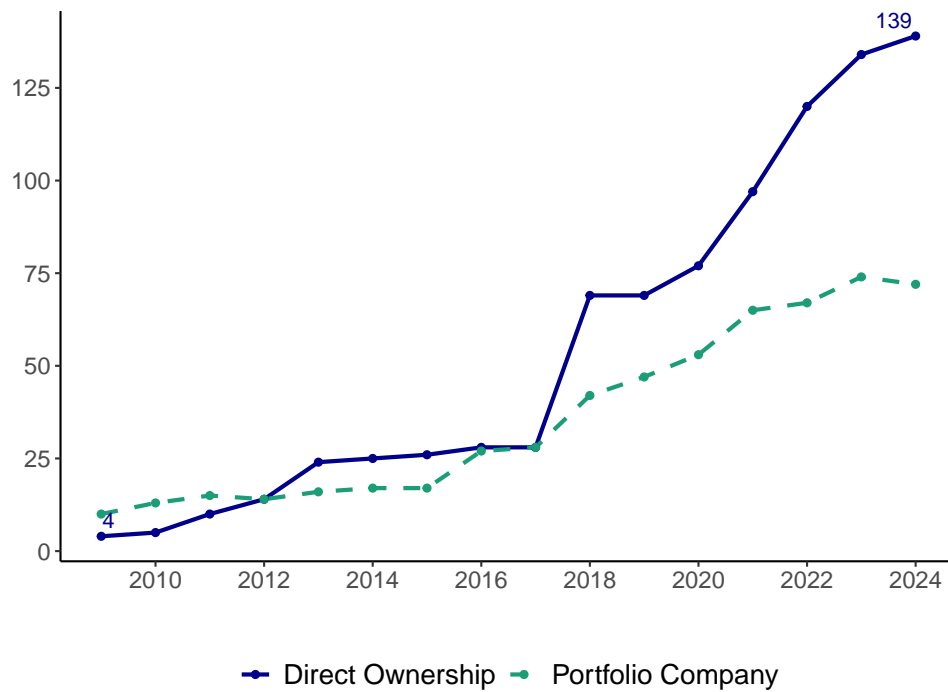
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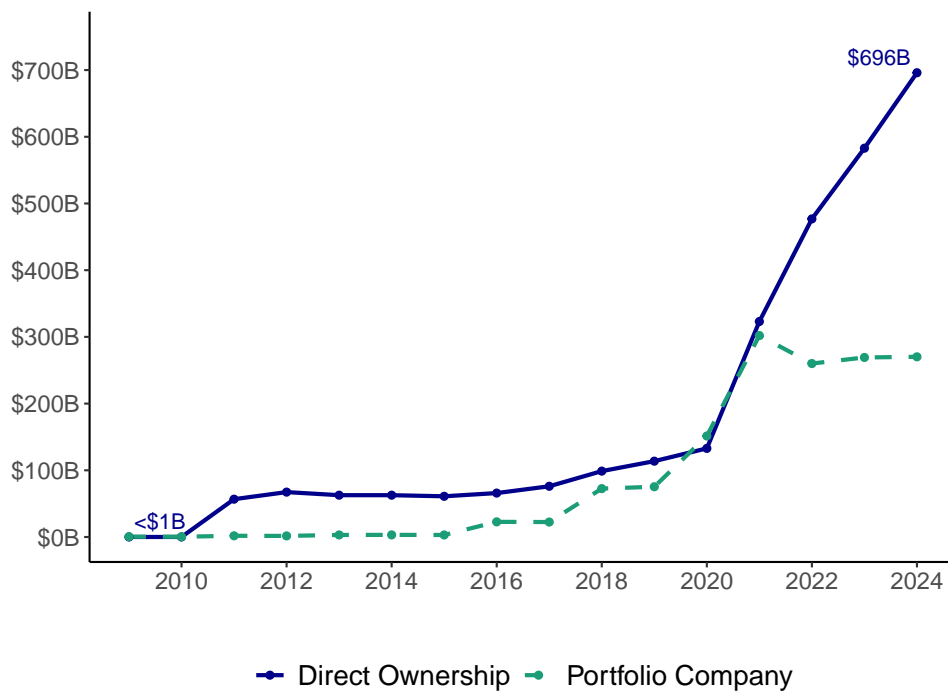
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Figure 1: PE Ownership in the Insurance Sector

(a) Number of Insurers

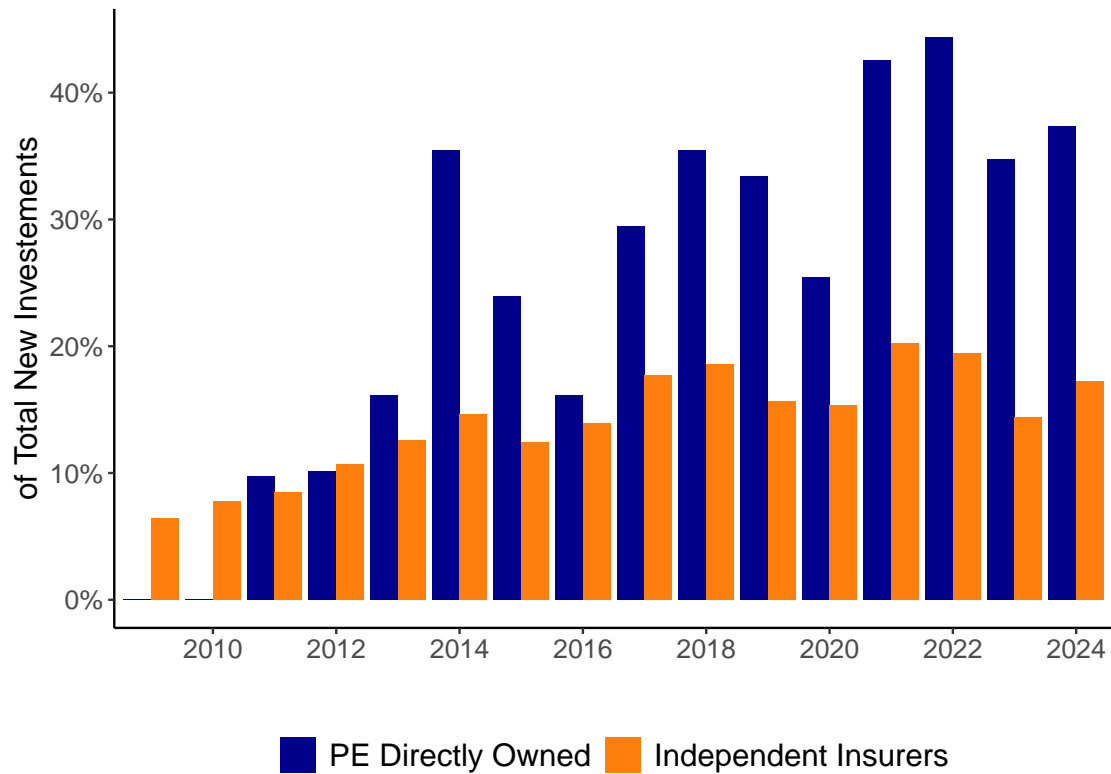


(b) Total Insurance Assets



Panel (a) reports the number of U.S. insurance companies owned by PE firms in the period between 2009 and 2024. Panel (b) reports the total assets (in \$ billions) of these insurers. Each panel distinguishes between direct PE ownership and ownership by a PE buyout fund.

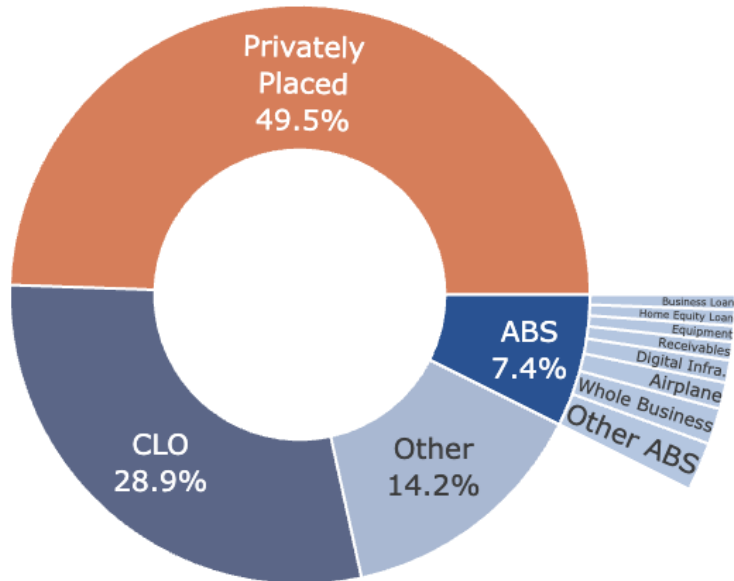
Figure 2: Acquisitions of Structured-Security Assets



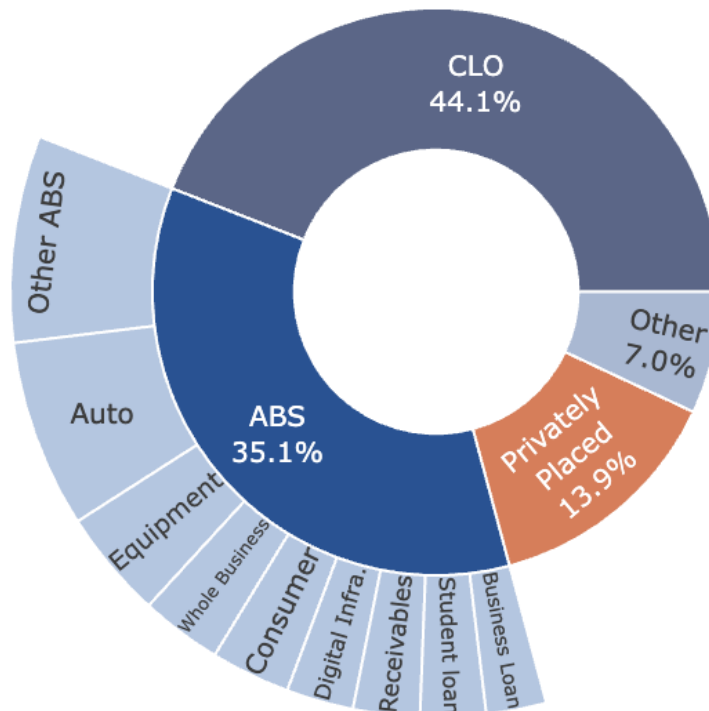
This figure presents the share of insurers' new investments that is allocated to structured securities in the period between 2009 and 2024. The figure distinguishes between insurers directly owned by PE firms and independent insurers.

Figure 3: Composition of 2024 Structured-Security Investments by Insurer Type

(a) PE-Directly-Owned Insurers

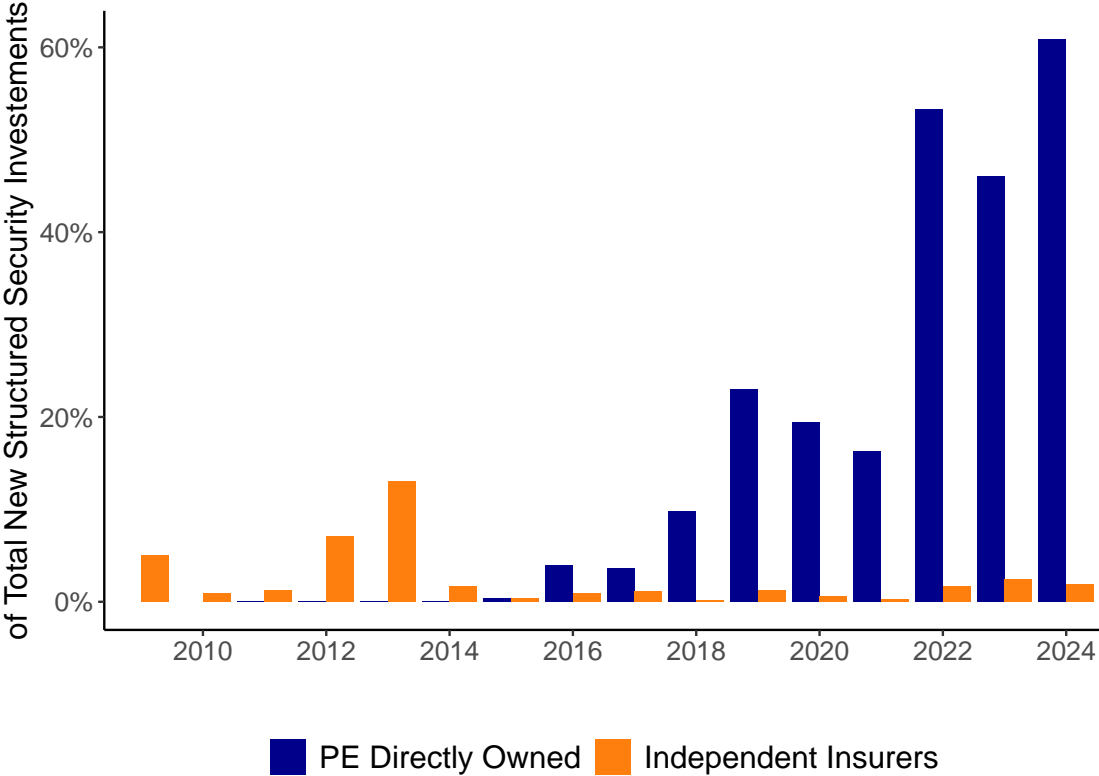


(b) Independent Insurers



This figure presents the composition of insurers' new investments in structured securities by security type in 2024. Panel (a) reports the composition for insurers directly owned by PE firms, while Panel (b) reports the composition for independent insurers.

Figure 4: Affiliated Portion of Structured-Security Acquisitions



This figure presents the share of insurers’ new structured-security investments that is allocated to affiliated securities in the period between 2009 and 2024. The figure distinguishes between insurers directly owned by PE firms and independent insurers.

Table 1: Pricing of Structured-Security Investments

	Relative Price			
	(1)	(2)	(3)	(4)
Affiliated \times All PE	0.061*** (0.019)	0.062*** (0.019)		
Affiliated \times PE Direct			0.071*** (0.021)	0.071*** (0.021)
Affiliated \times PE Portfolio			0.011 (0.048)	0.012 (0.048)
Affiliated	-0.011* (0.006)	-0.011* (0.006)	-0.011* (0.006)	-0.011* (0.006)
All PE	-0.005** (0.002)	-0.005** (0.002)		
PE Direct			-0.008*** (0.002)	-0.008*** (0.002)
PE Portfolio			0.001 (0.004)	0.001 (0.004)
Year fixed effects	No	Yes	No	Yes
Observations	330,120	330,120	330,120	330,120
R ²	0.000	0.000	0.000	0.000

This table presents the results of regressions examining the relation between the price paid for a structured security relative to the price paid by independent insurers for the same security on the same day and whether the transacting insurer is PE-owned and whether the security is affiliated with the insurer. *Relative Price* is defined as the difference between the focal transaction price and the benchmark price, measured in percentage points of par value. The benchmark price is the par-value-weighted average price paid on the same day for the same security in transactions by insurers that are independent. The construction of the benchmark prices is described in Equation (1). *All PE* is an indicator variable equal to one if the transacting insurer is owned by a PE firm or buyout fund at the time of the transaction. *PE Direct* is an indicator variable equal to one if the transacting insurer is directly owned by a private equity firm. *PE Portfolio* is an indicator variable equal to one if the transacting insurer is owned by a PE buyout fund. *Affiliated* is an indicator variable equal to one if the security is issued by an entity affiliated with the transacting insurer. We estimate Equations (2) and (3) with and without year fixed effects. The transaction sample is described in Section 2. Standard errors clustered by security are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table 2: Asset-Type Variation in Pricing

	Relative Price			
	Private		Registered	
	(1)	(2)	(3)	(4)
Affiliated \times PE Direct	0.145** (0.067)	0.137** (0.068)	0.048** (0.024)	0.048** (0.024)
Affiliated \times PE Portfolio	0.076 (0.075)	0.059 (0.077)	-0.218 (0.153)	-0.216 (0.153)
Affiliated	-0.060 (0.061)	-0.055 (0.063)	-0.009 (0.006)	-0.009 (0.006)
PE Direct	-0.026* (0.015)	-0.034** (0.016)	-0.008*** (0.002)	-0.007*** (0.002)
PE Portfolio	0.030 (0.028)	0.024 (0.027)	-0.002 (0.003)	-0.002 (0.003)
Year fixed effects	No	Yes	No	Yes
Observations	11,009	11,009	319,111	319,111
R ²	0.002	0.009	0.000	0.000

This table presents the results of the structured-security investment pricing regressions separately in the subsamples of private and registered securities. We define registered securities as those with a valid CUSIP and treat securities as private if the CUSIP is a pseudo-CUSIP used by the NAIC to identify privately-placed securities. *Relative Price* is defined as the difference between the focal transaction price and the benchmark price, measured in percentage points of par value. The benchmark price is the par-value-weighted average price paid on the same day for the same security in transactions by insurers that are independent. The construction of the benchmark prices is described in Equation (1). *All PE* is an indicator variable equal to one if the transacting insurer is owned by a PE firm or buyout fund at the time of the transaction. *PE Direct* is an indicator variable equal to one if the transacting insurer is directly owned by a private equity firm. *PE Portfolio* is an indicator variable equal to one if the transacting insurer is owned by a PE buyout fund. *Affiliated* is an indicator variable equal to one if the security is issued by an entity affiliated with the transacting insurer. We estimate Equation (3) with and without year fixed effects. The transaction sample is described in Section 2. Standard errors clustered by security are reported in parentheses. Levels of significance are presented as follows: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 3: Pricing of Privately-Placed Investments in Primary and Secondary Markets

	Relative Price			
	Primary		Secondary	
	(1)	(2)	(3)	(4)
Affiliated \times PE Direct	0.400*** (0.069)	0.390*** (0.068)	0.078 (0.119)	0.068 (0.122)
Affiliated \times PE Portfolio	0.723* (0.439)	0.725 (0.449)	0.029 (0.118)	0.000 (0.120)
Affiliated	-0.029 (0.024)	-0.027 (0.025)	-0.084 (0.114)	-0.080 (0.119)
PE Direct	0.011 (0.016)	0.014 (0.017)	-0.042** (0.019)	-0.050** (0.020)
PE Portfolio	-0.031 (0.045)	-0.026 (0.045)	0.050 (0.032)	0.044 (0.031)
Year fixed effects	No	Yes	No	Yes
Observations	3,499	3,499	7,510	7,510
R ²	0.082	0.089	0.002	0.012

This table presents the results of the private securities pricing regressions separately in the subsamples of primary and secondary market transactions. Primary-market transactions are classified using the machine-learning procedure and 30-day primary-market window described in Section 4.1. *Relative Price* is defined as the difference between the focal transaction price and the benchmark price, measured in percentage points of par value. The benchmark price is the par-value-weighted average price paid on the same day for the same security in transactions by insurers that are independent. The construction of the benchmark prices is described in Equation (1). *All PE* is an indicator variable equal to one if the transacting insurer is owned by a PE firm or buyout fund at the time of the transaction. *PE Direct* is an indicator variable equal to one if the transacting insurer is directly owned by a private equity firm. *PE Portfolio* is an indicator variable equal to one if the transacting insurer is owned by a PE buyout fund. *Affiliated* is an indicator variable equal to one if the security is issued by an entity affiliated with the transacting insurer. We estimate Equation (3) with and without year fixed effects. The transaction sample is described in Section 2. Standard errors clustered by security are reported in parentheses. Levels of significance are presented as follows: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 4: CLO Stress-Test Loss Rates

	Loss Rate by Stress Scenario									
	1	2	3	4	5	6	7	8	9	10
Aff. PE Direct Share	-0.001 (0.001)	-0.001 (0.001)	-0.003 (0.004)	-0.017 (0.014)	0.037 (0.051)	-0.016 (0.012)	0.122* (0.068)	0.580*** (0.153)	0.787*** (0.180)	0.779*** (0.174)
Aff. PE Portfolio Share	0.000 (0.000)	0.001 (0.001)	0.012* (0.007)	0.038* (0.022)	0.024 (0.038)	0.031 (0.019)	0.108 (0.101)	0.253 (0.358)	0.214 (0.281)	0.233 (0.295)
Seniority fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vintage fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,451	1,451	1,451	1,451	1,451	1,451	1,451	1,451	1,451	1,451
R^2	0.022	0.027	0.076	0.424	0.635	0.460	0.674	0.734	0.779	0.800

This table presents the results of regressions examining the relation between projected CLO loss rates and affiliated PE ownership. The unit of observation is a CLO dealAff. PE Direct Share is the share of total insurer par-value holdings of a given CLOAff. PE Portfolio Share is the analogous share attributable to affiliated PE-portfolio insurers. We estimate Equation (4) for each scenario with seniority and vintage fixed effects. The holdings sample is described in Section 2. Standard errors clustered by CLO deal are reported in parentheses. Levels of significance are presented as follows: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Table 5: Promised Yield

	Sample: All		Sample: Investment Grade	
	Aff. PE Direct Share (1)	Aff. PE Port. Share (2)	Aff. PE Direct Share (3)	Aff. PE Port. Share (4)
Yield Spread	0.002** (0.001)	0.000 (0.000)	0.004** (0.002)	0.001 (0.001)
Insurer Holding	0.008** (0.003)	0.001 (0.001)	0.010** (0.004)	0.002 (0.001)
Seniority fixed effects	Yes	Yes	Yes	Yes
Vintage fixed effects	Yes	Yes	Yes	Yes
Observations	1,564	1,564	1,375	1,375
R^2	0.048	0.015	0.051	0.018

This table presents the results of regressions examining the relation between affiliated PE ownership of broadly-syndicated CLO securities and their yield spreads. The unit of observation is a CLO security, corresponding to the note-class level used for the promised-yield analysis. The sample includes all CLO securities in columns (1) and (2) and is restricted to investment-grade securities (NAIC designations 1 and 2) in columns (3) and (4). The dependent variable is the share of insurer holdings of the respective CLO security attributable to affiliated PE-directly-owned insurers in columns (1) and (3) and to affiliated PE-portfolio insurers in columns (2) and (4). *Yield Spread* is the security's stated rate of interest less SOFR on December 31, 2023, expressed in percentage points. *Insurer Holding* is the natural logarithm of the amount of the security held by insurers. *Aff. PE Direct Share* is the share of total insurer par-value holdings of a given CLO security that is held by affiliated PE-directly-owned insurers, and *Aff. PE Portfolio Share* is the analogous share attributable to affiliated PE-portfolio insurers. We estimate Equation (5) with seniority and vintage fixed effects. The holdings sample is described in Section 2. Standard errors clustered by CLO deal are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

A Additional Tables and Figures

Table A1: CLO Stress Test Scenarios

Scenario	Default Rate	Recovery Rate	Notes
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	Tail scenarios:
9	Historical $+ 2\sigma$	$0.75 \times$ Stress	Probability $\leq 2\%$
10	Historical $+ 2\sigma$	$0.5 \times$ Stress	

This table summarizes the assumptions used for the 10 stress scenarios in the 2023 NAIC CLO Stress Test. Scenarios 9 and 10 are expected to happen with probabilities less than 0.25% and 0.1% respectively. The table is adapted for readability from <https://content.naic.org/sites/default/files/industry-ssg-clo-adhoc-session-modeling-presentation-10.5.pdf>.

Table A2: Pricing of Privately-Placed Affiliated Investments in Primary and Secondary Markets – 10-Day Classification

	Relative Price			
	Primary		Secondary	
	(1)	(2)	(3)	(4)
Affiliated \times PE Direct	0.441*** (0.072)	0.433*** (0.072)	0.077 (0.118)	0.070 (0.120)
Affiliated \times PE Portfolio	0.711 (0.440)	0.710 (0.450)	0.036 (0.117)	0.010 (0.119)
Affiliated	-0.028 (0.024)	-0.027 (0.025)	-0.083 (0.114)	-0.081 (0.118)
PE Direct	0.013 (0.019)	0.017 (0.020)	-0.039** (0.018)	-0.048** (0.019)
PE Portfolio	-0.019 (0.051)	-0.011 (0.051)	0.043 (0.032)	0.037 (0.030)
Year fixed effects	No	Yes	No	Yes
Observations	2,835	2,835	8,174	8,174
R ²	0.094	0.101	0.002	0.011

This table presents the results of the private securities pricing regressions separately in the subsamples of primary and secondary market transactions. Primary-market transactions are classified using the machine-learning procedure described in Section 4.1. We use a 10-day primary-market window, as opposed to the 30-day window used in our main tests. *Relative Price* is defined as the difference between the focal transaction price and the benchmark price, measured in percentage points of par value. The benchmark price is the par-value-weighted average price paid on the same day for the same security in transactions by insurers that are independent. The construction of the benchmark prices is described in Equation (1). *All PE* is an indicator variable equal to one if the transacting insurer is owned by a PE firm or buyout fund at the time of the transaction. *PE Direct* is an indicator variable equal to one if the transacting insurer is directly owned by a private equity firm. *PE Portfolio* is an indicator variable equal to one if the transacting insurer is owned by a PE buyout fund. *Affiliated* is an indicator variable equal to one if the security is issued by an entity affiliated with the transacting insurer. We estimate Equation (3) with and without year fixed effects. The transaction sample is described in Section 2. Standard errors clustered by security are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.

Table A3: CLO Stress-Test Loss Rates: Investment-Grade Subsample

	Loss Rate by Stress Scenario									
	3	4	5	6	7	8	9	10		
Aff. PE Direct Share	-0.001 (0.001)	-0.009 (0.007)	0.043 (0.050)	-0.006 (0.004)	0.120* (0.069)	0.572*** (0.153)	0.785*** (0.181)	0.778*** (0.175)		
Aff. PE Portfolio Share	0.001 (0.001)	0.010 (0.009)	0.036 (0.029)	0.007 (0.005)	0.123 (0.104)	0.243 (0.361)	0.196 (0.283)	0.213 (0.296)		
Seniority fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vintage fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Observations	1,314	1,314	1,314	1,314	1,314	1,314	1,314	1,314		
R^2	0.012	0.028	0.259	0.041	0.339	0.644	0.736	0.775		

This table presents the results of regressions examining the relation between projected CLO loss rates and affiliated PE ownership in the subsample of investment-grade CLO tranches, i.e., those with NAIC designations of 1 or 2. The unit of observation is a CLO dealAff. PE Direct Share is the share of total insurer par-value holdings of a given CLOAff. PE Portfolio Share is the analogous share attributable to affiliated PE-portfolio insurers. We estimate Equation (4) for each scenario with seniority and vintage fixed effects. The holdings sample is described in Section 2. Standard errors clustered by CLO deal are reported in parentheses. Levels of significance are presented as follows: *p<0.1; **p<0.05; ***p<0.01.