

Life Insurers' Private Credit Investments and Annuity Market Share Capture*

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Abstract

We document that life insurers have expanded their provision of private credit over the past decade, totaling \$849 billion, or 14%, on life insurers' balance sheets in 2024. A substantial part of the growth stems from private credit extension to financial borrowers and to privately placed asset-backed securities. We document that private equity-owned (PE-owned) life insurers drive these trends. We also provide evidence the growth of these investments accounts for 61% of PE-owned insurers' annuity market share increase and that PE-owned insurers have more access to these investment through affiliated issuers. The results are concentrated in the indexed annuity market for which the *new* forms of private credit investments facilitate a better maturity and cashflow match.

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1 Introduction

Private credit has expanded rapidly over the past decade, reaching over \$2 trillion in 2024 (IMF 2024). Life insurers are one of the largest providers of private credit through private placements—unregistered securities that are sold to a limited pool of investors, primarily life insurers, that are distinct from private placement bonds issued under SEC rule 144A.¹ While life insurers have long provided this form of private credit, Figure 1 shows that private placements lending increased from \$386 billion in 2014 to \$849 billion in 2024. Private placements accounted for 14 percent of life insurers’ general account assets in 2024, up from 10 percent in 2014. Despite being an important source of private credit, private placements and the reasons of their recent growth have not been studied.

The brisk growth in private placements coincides with the entry of private equity (PE) into the life insurance sector. Persistently low interest rates after the 2008 financial crisis, combined with high guarantees in legacy annuity contracts placed pressure on insurers’ profitability. Legacy insurers were looking to offload capital-intensive blocks of annuity business and turned to reinsurance agreements primarily with PE firms. Concurrently, PE firms bought life insurers valuing their long-duration and illiquid liabilities as a form of permanent capital to fund their investments. The takeovers led to significant changes in the traditional insurer business model (Kirti and Sarin 2023; Cortes, Diaby, and Windsor 2023).

This paper investigates the underlying drivers and consequences of life insurers’ increased participation in private credit markets. Specifically, we analyze whether PE-owned insurers account for the growth in private credit extension by insurers and whether this investment strategy facilitates insurers heavily invested in *new* forms of private placements to capture a larger share of the annuity market. To date, the literature has focused on regulatory arbitrage mostly within public bond investments in the life insurance sector, but has neglected private placements and contemporaneous changes in the product market.

To analyze the growth in private placements and its drivers, we begin by identify-

¹Issuances under SEC rule 144A require a minimum of publicly available information, which is not the case in the set of unregistered securities that we study. However, both types of investments are referred to as “private placements” by market participants. The private placements we study are also different from direct lending, commonly defined as private loans from, for instance, business development companies, to middle market firms.

ing private placements on life insurer balance sheets based on CUSIPs and classify the borrower industry by matching the private placement data to the Business Entity and Cross References Services (BECRS) database, Mergent Fixed Income Securities Database (FISD), and National Establishment Time-Series (NETS) data.² We document that the new segments, financial borrowers and privately placed asset-backed securities (ABS), account for a large share of the growth. Notably, life insurers started lending to financial firms and funds that themselves extend private credit to middle market firms. Traditional segments, such as project finance, increased as well, but to a lesser extent. This new trend in private placements lending indicates that life insurers have become intertwined with the broader private credit ecosystem.

Next, using cross-sectional regressions, we show that for PE-owned insurers, the private placement share of assets expanded by 7 percentage points more than non-PE-owned insurers between 2017 and 2024. About third of this differential growth is driven by investments in financial and ABS private placements. We also show that PE-owned insurer invest more in floating rate private placements after takeovers. At the same time, there is little evidence that insurers that were PE-owned expanded their holdings of public ABS such as collateralized loan obligations (CLOs). We confirm this result in dynamic estimations and show that PE did not strategically acquire insurers that already had invested differentially more in private placements before acquisition.

We connect the growth in private placement investment to annuity market share. We show that 2024 market share measured as premium share is associated with prior growth in financial and ABS private placement investments in the cross-section. We find that no effect of investing in financial and ABS private placements across all insurers, but for PE-owned insurers the point estimate implies that a one-standard-deviation increase in the financial and ABS private placement share increases the premium market share by 0.16 percentage points or 20 percent of a standard deviation in market share. The results are consistent with the dynamic specification that shows that PE-owned insurers gain annuity market share about three years after the PE-takeover. In contrast, investment in private placements significantly increase directly after takeover, indicating that private

²The BECRS data and related cross reference identifiers are accessed via the S&P Capital IQ Pro database compiled by S&P Global. We access Mergent FISD data through Wharton Research Data Services (WRDS) who compiled the raw data. NETS is compiled and provided by Duns and Bradstreet (D&B). All results based on author's calculations.

placements investment allow PE-owned insurers to successfully compete in the annuity market.

We further tighten the link between prior private placement investment and annuity market share capture by focusing on floating rate private placements. Indexed annuities are variable, market-dependent rate, shorter maturity (5- to 10-year) products that offer some market upside and protection against downside risk. Hence, private placements especially those with the floating rate debt provides a similar duration and generate cashflows that are correlated with the market. Hence, the floating rate provide better cashflow matching for indexed annuities without additional costly hedging. We show that our results are concentrated in these market segments, and that the private placement investments can account for a significant portion of PE-owned life insurers annuity market share increase. Over the sample period, PE-owned life insurers more than doubled their annuity market share (measured as premium share) from 8.5% to 18% and their indexed annuity market share from 16% to 33%. Our estimates imply that the increase in financial and ABS private placement investments from 2017 to 2023 accounts for about 61% of the increase in the annuity market share and all of the increase in the indexed annuity market share.

We also investigate the mechanisms explaining the indexed annuity market share capture by PE-owned insurers. First, we show that private placements and floating rate investments allow for a better asset-liability maturity match for these shorter maturity products. Consistent with a better maturity match, we show that the insurers with large indexed annuity market shares allocate more GA assets to these private placements and floating rate debt and that these investments have, on average, a two-year shorter maturity at issuance. We then show that PE-owned insurers have more access to these investments through the PE parent company. PE-owned insurers hold significantly more private placements and floating rate debt from affiliated issuers—that is, issuers that are owned by the same parent company as the insurer—indicating that PE-owned insurers have more access to precisely the form of debt that best matches the maturity and cashflow of indexed annuities.

Finally, we document that private placements earn a yield that is up to 80 basis

points higher than the yield on comparable public corporate bonds.³ For ABS private placements, the spread difference is 156 basis points compared to 82 basis points for public ABS. We provide evidence that at least part of this higher yield reflects lower liquidity of private placements. We expand the analysis of [Fournier, Meisenzahl, and Polacek \(2024b\)](#) and show that private placements are, on average, only half as likely to be traded as public bonds in a given quarter. Similarly, the sales rate of ABS private placements is only half of the CLO sales rate. Moreover, while public bonds are typically traded using a large broker, we document that private placements are sold over the counter and in some cases to small brokers with limited balance sheet capacity. This finding is consistent with life insurers receiving an illiquidity premium on their investments ([Carlino et al. 2024](#)).⁴ We also show that private placement bonds are more likely to become distressed but less likely to default. This results indicates the costly renegotiation may also be captured in higher spreads.

We contribute to the literature on private credit.⁵ Much of the private credit literature has focused on Business Development Companies (BDCs), likely due to data availability (see, for instance, [Davydiuk, Marchuk, and Rosen \(2023; 2024\)](#); [Chernenko, Ialenti, and Scharfstein \(2025\)](#); [Avalos, Doerr, and Pinter \(2025\)](#)). For context, BDC investments in private credit reached \$407 billion in 2024Q3⁶, which is about half of private credit provided by insurance companies through private placements. To the best of our knowledge, we are the first to comprehensively analyze private credit provided by life insurers through private placements and their implications.

We also add to the growing literature documenting changes in the life insurance industry. [Kirti and Sarin \(2023\)](#) focus on regulatory and tax arbitrage, showing that PE-owned life insurers shifted their public bond investment portfolios towards public, private-label ABS such as CLOs and potential return-financial stability tradeoffs before 2014.⁷ In

³This significant difference is in line with [Böni, De Roon, and Joos \(2020\)](#) who find a spread difference of 116 basis points in a sample of 310 European issuers of private and public bonds between 2002 and 2015.

⁴Life insurers can experience runs, especially when they finance themselves with short-term liabilities ([Foley-Fisher, Narajabad, and Verani 2020](#)). Hence, increases in illiquid assets expose insurers to more fire sale risk.

⁵A related literature studies the migration of credit from banks to private markets, see, for instance, [Irani et al. \(2020\)](#); [Gopal and Schnabl \(2022\)](#).

⁶Since 2020, a large share of the growth is driven by new perpetual-life BDCs <https://www.lsta.org/news-resources/bdc-quarterly-wrap-3q24/>.

⁷[Becker, Opp, and Saidi \(2022\)](#) provide additional evidence on the importance of capital requirements

contrast, we focus on the growth in private credit after 2017 and show that sharp increases in private credit provision to financial borrowers and privately placed ABS allowed PE-owned insurers to capture a larger share of the annuity market. Moreover, since the trends we document start when their sample period ends, we provide new evidence on shifts in the insurance market. [Ozdogli and Ryfe \(2025\)](#) show the life insurers' portfolios are more similar when they have common asset managers. [Foley-Fisher, Heinrich, and Verani \(2023\)](#) link CLO investments to liquidity transformation undertaken by life insurers in addition to regulatory arbitrage.⁸ We provide evidence on the size of a potential liquidity premium of private placements. [Carlino et al. \(2024\)](#) detail life insurers' involvement in the CLO and BDC markets and the regulatory arbitrage in these markets, which are distinct from the private credit we study. [Koijen and Yogo \(2016\)](#) document increased use of reinsurance in the life insurance industry to reduce capital requirements, and [Becker and Ivashina \(2015\)](#) reach-for-yield within NAIC bond ratings categories.⁹

Our findings complement recent research on the effects of PE takeovers.¹⁰ Using supermarket scanner data, [Fracassi, Previtro, and Sheen \(2022\)](#) show that after PE takeovers, target firms grow by introducing new consumer products and expanding their geographic reach. We show that PE-owned insurers increase their annuity market share by focusing on newer products, indexed annuities, matched by more private placement investments. Other research has focused on the effects on performance, on the real side [Davis et al. \(2025, forthcoming\)](#) find productivity effects of PE takeovers, while on the financial side [Johnston-Ross, Ma, and Puri \(2025\)](#) show that distressed banks taken over by PE perform better ex post with positive spillovers to the local economy, and [Kirti and Sarin \(2023\)](#) document changes in life insurers' public bond holdings up to 2014.¹¹ We show that PE life insurers drove the increase and changes in the sectoral composition in private credit provision from 2017 on and that the compositional change led to greater interconnectedness with the broader financial system.

and regulatory arbitrage in the insurance sector.

⁸[Bhardwaj, Ge, and Mukherjee \(2025\)](#) show that cashflow shocks of property and casualty insurers affect insurers' CLO investments and subsequent lending of CLOs to firms.

⁹For a broader overview of life insurance investments and financial decisions, see [Koijen and Yogo \(2023\)](#). For investment decision of property and casualty insurers, see, e.g. [Ge and Weisbach \(2021\)](#).

¹⁰[Bernstein \(2022\)](#) provides a summary of the earlier literature.

¹¹A significant literature looks the effects in the health care sector, see [Gao, Kim, and Sevilir \(2025\)](#) and references therein.

The remainder of the paper is organized as follows. Section 2 provides the background for private placements and indexed annuities. The data, including the identification and classification of private placements, are summarized in section 3. In section 4 we present our main analysis. Section 5 concludes.

2 Life Insurer Investments and Products

In this section, we provide background on the private placement market. We then provide an overview of the annuities market that accounts for over 60 percent of life insurers' premiums and zoom in on indexed annuities that experienced the largest growth in market share.

2.1 The Private Placement Market

Private placements are one type of unregistered security. A security is a private placement if it is not required to be registered with the SEC, if it is not publicly offered, and if it is sold only to a limited number of accredited investors. As such, private placements allow companies to raise capital without needing to meet the legal and disclosure requirements for issuing equivalent public securities.¹² Almost all private placements are debt securities, especially those held by life insurers.

In contrast to private placements, publicly traded securities must be registered with the Securities Exchange Commission (SEC) and require significant disclosures following the Securities Act of 1933, often referred to as the “truth in securities” law, as well as subsequent legislation.¹³ However, these disclosures also create a substantial regulatory burden for issuing companies. To reduce the cost of issuing securities, not all security offerings, such as private placements, are required to be registered with the SEC.

¹²A security is a tradable financial instrument typically issued in the form of an equity security, like a stock, or a debt security, like a bond.

¹³These disclosures are regulated by the SEC and include the requirement for bond issuers to produce a prospectus detailing the terms of the bond issuance, any significant risks from the offering, the financial condition of the issuing company, and how the proceeds of the bond issue will be used. Additionally, companies that issue publicly traded securities must file quarterly reports detailing their financial balance sheets and describing any material risks to the company. These disclosures are meant to protect investors by fully informing them of any information relevant to their investment and to prohibit deceit and fraud in the sale of securities.

Despite what the name might suggest, both publicly traded and privately held companies issue private placement debt. Historically, private placements were typically issued by mid-cap companies (\$2 to \$10 billion in market capitalization), but more recently large-cap companies (\$10 billion or more in market capitalization) have increased participation in the market, which has increased the size and diversity of the market. Private placements are also issued by both domestic and foreign companies. Approximately 70% of private placements held by life insurers are issued domestically, and the remaining 30% are cross-border with almost all the issuance coming from Canada, the United Kingdom, Australia, and Europe.

To the best of our knowledge, life insurers are the dominant players in the private placement market. We also find evidence that life insurers own a majority of outstanding private placement issuance. Using a 2017-2024 matched sample of transactions from the S&P transaction database we identify 621 private placement bonds, totaling \$25 billion in outstanding issuance. Life insurers own 65 percent of the total outstanding issuance with median ownership of 76 percent. Figure [A1](#) provides a distribution of the par value-weighted proportion of issues held by life insurance companies from 2017-2024. Each bar is stacked to indicate the share attributable to different transaction size groups.

2.2 Annuities Market

Contrary to their name, life insurers' main products are annuity contracts. Beginning in the early 80's and accelerating in the 90's, the life insurer business model shifted from providing income protection against early death through life insurance products to offering retirement funding and longevity risk protection through annuities ([Oberstedt et al. 2013](#)). While in 1980 half of reserves and premiums were from life insurance, they accounted for less than 30 percent in 2024. In contrast, annuities comprised almost two thirds of the industry's liability reserves in 2024 ([ACLI 2024](#)). Figure [2](#) shows the increase in annuities by annuity type that we discuss below.

Annuities allow policyholders to accumulate savings on a tax-deferred basis or to transform an immediate lump sum payment into a guaranteed stream of income. Deferred annuities have two phases: the accumulation phase and payout phase. In the accumulation phase, policyholders pay premiums and accumulate savings on a tax-deferred

basis. Policyholders have limited access to their funds during this phase and any early withdrawals incur a significant surrender penalty. During the payout phase, the policyholders receive payments according to the contract's schedule and can typically withdraw the accumulated cash value with little or no penalty. Insurers compete to attract policyholders by offering the strongest guaranteed returns and product features that best meet the savings needs of consumers. Historically, deferred annuities have come in two forms: fixed and variable.

Fixed annuities offer policyholders a guaranteed fixed rate of return that typically follows the 10-year Treasury rate. The insurer bears the investment risk on this product and earns a profit by generating a spread on the invested assets above the payouts made to the annuity holder.

Variable annuities are an investment account where policyholders choose investment allocation and bear the investment risk. The policyholder return is linked to the investment return of the assets and the insurer earns fees for managing the investments. Variable annuities typically offer additional guarantees known as “riders”, under which the insurer bears the associated investment risk. These riders include minimum guaranteed benefit riders, which act as a minimum return on the policyholders' investments, and living benefit riders that guarantee a minimum payout, so long as the annuitant is alive.

Indexed annuities Following the 2008 Financial Crisis, a third type of deferred annuity gained popularity, the indexed annuity, which grew from about \$150bn in reserves to \$500bn in 2024 (see Figure 2). Indexed annuities come in two main forms fixed indexed annuities (FIAs) and registered indexed linked annuities (RILAs). Indexed annuities combine the guaranteed returns of fixed annuities with exposure to market upside found in variable annuities. In general, FIAs offer returns that are linked to an index, such as the S&P 500, but the policyholder does not have full exposure to the index. Returns are capped through either participation rates, which limit the percent of total return the policyholder receives; interest rate caps, which impose a ceiling on the annual return; or margin fees. In a FIA, the policyholder's principal is fully protected and downside risk is minimal. RILAs have a similar upside proposition as FIAs with returns linked to an index, but RILAs can experience principal losses. RILAs limit downside risk through

buffers, which limit first dollar losses for the policyholder; and floors, which set the maximum percentage loss the policyholder absorbs ([FINRA 2022](#)).¹⁴

3 Data

3.1 Data Sources

Our analysis draws on detailed regulatory data of U.S. life insurers' bond holdings from 2004 to 2024. The Schedule D Part 1 of the from the National Association of Insurance Commissioners (NAIC) statutory filings provides asset-level information on all long-term debt securities held by life insurers, which we access via S&P Global Market Intelligence. These filings allow us to identify private placement bonds and their issuers. We identify private placements and separate them into subsets based on a special character in the sixth, seventh, or eighth position of the security's private placement number. This number is reported somewhat misleadingly in insurance regulatory filings as "CUSIP" (Committee on Uniform Security Identification Procedures).¹⁵ Private notes issued by domestic private companies have a special character in the sixth position of the issuer CUSIP. Public and foreign issuers have a special character in the seventh or eighth position; CUSIPs of foreign issuers also begin with a letter that denotes the country of origin. We complement the NAIC data with three additional sources: S&P Capital IQ's company database and Dun & Bradstreet National Establishment Time Series (NETS) database for information on private firms (e.g., firm name, industry, and corporate parent details), and Mergent's Fixed Income Securities Database (FISD) accessed via WRDS for information on public issuers of private placement bonds.

Using the definition above, we find that from 2004 through 2024, life insurers held

¹⁴In the low-rate period, insurers were burdened by the high guarantees on fixed rate policies, and variable annuities riders offered in the pre-crisis period. Fixed index annuities emerged as a way for insurers to offer policyholders the ability to access market returns with some downside protection, while limiting their own investment risk. The growth in indexed annuities is tied to the development of hybrid indices that contain several different asset classes and utilize volatility control strategies to limit losses. These products come with a strong marketing pitch, offering attractive upside returns, often without caps or with participation rates above 100%, and little to no downside risk ([Moore and Pechter 2022](#)).

¹⁵To be clear, private placements do not technically have a CUSIP. Instead, they are issued Private Placement Numbers (PPNs) by CUSIP Global Services. PPNs share the same structure as CUSIPs, except for a special character in the 6th, 7th or 8th digit. For more information see: [CGS Private Placement Numbers](#)

approximately 52,778 distinct private placement bond issues, issued by 19,385 unique issuers. We further categorize these issuers into three groups based on their identity: about 70% are U.S. private companies (domestically domiciled firms that are not publicly traded), roughly 13% are U.S. public companies (domestic issuers that are publicly traded or SEC-reporting), and the remaining 17% are foreign issuers. When weighting by value about 48% are U.S. private companies, roughly 21% are U.S. public companies, and the remaining 31% are foreign issuers.

We classify private placement bonds and asset-backed securities (ABS) using issuer and issue-level detail reported in NAIC Schedule D filings. Corporate securities are identified using the issuer type variable, which indicates whether the issuer is a corporate entity, municipality, U.S. government, or foreign sovereign. Because insurer-reported issuer types are occasionally inconsistent, we assign the most frequently reported issuer type for each nine-digit CUSIP across all filings.

To distinguish between corporate bonds and private ABS, we rely on the annually reported asset type field. Securities are classified as corporate bonds if the asset type is listed as “long-term bond” or a closely related category; asset-backed securities are identified where the asset type is listed as “asset-backed security” or similar. As with issuer type, we assign each security the most commonly reported asset type across insurers to ensure consistency.

Credit quality for each CUSIP is determined using the NAIC designation variable also reported in Schedule D. Starting in the 2020 filings, insurers were required to report ratings at the notch level (e.g., A+, A, A-). Before 2020, NAIC designations reflected broader rating bands, with NAIC 1 encompassing all securities rated A or higher, and NAIC 2 covering BBB-rated instruments. The NAIC designation typically reflect the rating assigned by one of the eight nationally recognized statistical rating organizations (NRSROs) approved as an NAIC Credit Rating Provider (CRP), including S&P, Moody’s, and Fitch. Securities without a rating from a CRP are assigned a rating designation by the NAIC’s internal Securities Valuation Office (SVO).

3.2 Identifying Private Placements

To assign each private placement in our data set to an industry, we build on the work of [Fournier, Meisenzahl, and Polacek \(2024a\)](#) to undertake a multi-step issuer matching procedure. First, for any private placement issued by a public-company issuer, we leverage the Mergent FISD database. We match the bond’s six-digit issuer CUSIP to Mergent FISD records to retrieve the issuer’s NAICS (North American Industry Classification System) code. Then at the two-digit NAICS code level, we separate out utilities and infrastructure (22), finance and insurance (52), and real estate (53), and label the remainder as non-financial.

To match private issuers of private placements to their respective industry, we turn to string matching using the description of the issue listed in the Schedule D filings. We start by pulling the full list of BECRS (Business Entity Cross Reference Services) CIQ (S&P Capital IQ) codes for private companies. We use a Jaccard name matching algorithm to match each company name in the BECRS and S&P data to the bond description variable in NAIC statutory filings.¹⁶ We first attempt to match on the company’s own name; if an issuer’s name does not yield a high-similarity match in the BECRS and S&P data, we then try matching based on the parent company name.

To supplement our private issuer matching, we pull the entire sample of companies in the National Establishment Time Series Database (NETS) from Dun and Bradstreet and again use Jaccard name matching for previously unmatched private placement issuers.¹⁷ To further supplement our matching process, we use closed-end fund (CEF) data from the SEC. We match these funds to the bond description variable in our NAIC statutory filings for any issuer that was not previously matched. Since all the entities recorded in the CEF database are financial entities, their industry is labeled as such.

Together, this matching process successfully matches 86% of the total actual cost-weighted value of private placement bondss from 2004-2024 and 78% of the value in 2024. The matching results are broken out by source in the appendix in table [A1](#).

¹⁶Jaccard name matching algorithm tokenizes each name into a set of words or character shingles and then calculates the Jaccard similarity, or the ratio of the intersection to the union of these token sets, between every pair of names. Pairs exceeding a specified Jaccard similarity threshold are kept as matches. This method has been widely used in many strands of economic literature.

¹⁷The NETS data contains industry variables and parent company information.

3.3 Identifying Private Equity Owned Insurers

We identify private equity owned insurers in three ways. First, we identify private equity acquisitions of life insurers in the news. Second, we use deals in the S&P Mergers and Acquisitions database where private equity involvement is identified. Third, we use the NAIC Jurat data to identify NAIC groups with private equity ownership and track individual insurers that move into these groups. Only insurers where private equity has a majority ownership stake are included as a “PE-owned insurer”.¹⁸

Tables 1 and 2 provide the summary statistics for our cross-sectional regression samples. All other summary statistics can be found in the Appendix.

4 Empirical Analysis

We start our analysis by documenting the growth and sectoral shifts in private placement investment of life insurers. We then show that these shifts are driven mainly by life insurers that were taken over by private equity companies. Next, we show that insurers investing more in financial sector and asset-backed security private placements expanded their market share in the annuity market. We provide evidence better maturity matching and access to private placement can account for the indexed annuity market share gains of PE-owned life insurers. Finally, we document that private placements earn higher yields than comparable public bonds and link this to lower liquidity in the secondary market.

4.1 Evolution of PP investments

Life insurer investments in private placements reached about \$849 billion in 2024 more than doubling since 2014. To understand whether this growth was driven by increased credit provision to traditional sectors (e.g. utilities and infrastructure) or an expansion into new sectors, we classify private placements by industry as described in Section 3.2.

Figure 3 shows the evolution of life insurers’ private placement holdings by industry over this period. The data reveal significant sectoral shifts starting in 2017: Utilities

¹⁸We access S&P Merger and Acquisitions Database and the NAIC Jurat data via S&P Capital IQ Pro and S&P Market Intelligence.

and infrastructure accounted for 17.0% of private placements in 2017, but their share declined to 14.1% in 2024, even though total private placement lending to these sectors increased by about \$45 billion over this period. In contrast, the financial sector and asset-backed security (ABS) categories grew substantially. The share of financial sector investments (e.g. financial firms and REITs) rose from 21.2% to 23.3%, reaching a total of roughly \$198 billion in 2024. Likewise, the share of privately placed ABS jumped from 9.8% to 14.3%, with total ABS holdings tripling to around \$125 billion over the same period. This pattern marks a notable broadening of insurers' credit intermediation: a sector that traditionally financed large corporates and infrastructure is now extending credit to other financial intermediaries and structured vehicles.

A significant portion of the surge in private-placement ABS is tied to affiliates of private-equity-owned insurers. Of the \$82 billion increase in privately placed ABS holdings from 2017 to 2024, about \$50 billion was issued by financing vehicles affiliated with life insurer owned by private equity firms. Apollo's insurance arm Athene, together with its related entities, accounted for roughly \$21 billion of this growth in privately placed ABS holdings, while KKR's Global Atlantic contributed about \$18 billion and Blackstone's Everlake and Resolution Life added around \$10 billion. Much of the ABS debt issued by these affiliates is held on the sponsoring insurer's own balance sheet, but a considerable portion (about 24%, or \$13 billion in 2024) has been purchased by other insurers. The collateral backing private ABS deals is varied but predominantly corporate and specialty assets, such as credit tenant leases, ground leases, middle-market loans, intellectual property royalties, and other corporate receivables, rather than the consumer loan pools typical of public ABS.

The largest issuers of private placement ABS include a mix of funds and stand-alone entities. The ABS are backed by different types of collateral ranging from commercial loans to royalty payments.¹⁹ The largest financial issuers also include a range of compa-

¹⁹For example, AP Grange Holdings is a stand-alone entity created by Apollo to finance a joint venture deal in Intel Ireland's state-of-the-art Fab 34 wafer manufacturing facility. Atlas Securitized Products Fund is an Apollo spin-off from the former Credit Suisse portfolio that provides structured financing solutions for specialty finance companies, financial sponsors, corporates, REITs and other clients. Blue Eagle 2021 is a KKR vehicle backed by a corporate loan portfolio. Hannon Armstrong finances large energy projects and investments in sustainable infrastructure. Blackstone Rated Senior Direct Lending Associates LLC is a direct lending platform. Softbank Vision Fund is a technology-focused venture capital fund. Lightning 2021 and Thunderbird 2021 are KKR-affiliated securitized asset and private equity funds. Trademark Royalty 2018 is a Goldman Sachs product that monetized 30 years of royalty

nies. However, many of them engage in commercial lending activities and have with ties to life insurers.²⁰ These investments reflect a shift in insurer investment strategy, with life insurers increasingly channeling capital into previously underexplored segments like middle-market credit and niche structured finance.

Alongside the sectoral reorientation, the nature of private placement deals has evolved. Rather than the traditional private placement format of buying long-term, fixed-rate corporate notes, insurers are now also taking on more floating-rate and structured credit exposure. The share of floating-rate private placements in life insurers' portfolios has climbed to its highest level since before the 2008 financial crisis. This uptick in floating-rate holdings coincides with a shift in many insurers' liabilities toward indexed annuities (which credit yields linked to equity indices on top of a guaranteed floor) as assets with adjustable coupons are a better match for index-linked liabilities than fixed rate annuities. On the supply side, the rise in floating-rate deals is linked to the greater involvement of private credit funds and asset managers in issuing private placements. In practice, many of the new private placements are essentially direct lending instruments: loans to mid-sized or unrated firms, often packaged by asset managers into single-tranche ABS or note structures.

Figure 4, left panel shows the ratings distribution of public bonds, private placements, and financial private placements in life insurers' portfolios. While the ratings distribution of private placements is only slightly more skewed to lower ratings than the one of public bonds, the ratings distribution of financial private placement is considerably more skewed to lower rated issuance. The right panel show the ratings distribution of public ABS, CLO, and private placements ABS. While the distribution of private placements is skewed to lower rated issuance, the main caveat is that most ABS private are not tranching and, as such, less AAA-rated private placement ABS exist. As such, the ratings distribution

payments to Vanderbilt University by the Vanderbilt University Medical Center in exchange for the rights to use the university's name.

²⁰Example include Madison Capital Funding, a New York Life subsidiary focused on direct lending to private equity-backed middle-market companies; direct lending affiliates of MassMutual Life; unaffiliated private asset funds, such as Cliffwater Corporate Lending, Vanguard Group, and Bain Capital; Cayman Island-domiciled special purpose vehicles; Arthur J Gallagher & Co., a publicly traded insurance brokerage; Hardwood Funding LLC, the National Basketball Association's league-wide credit facility that issues debt backed by NBA media revenue; and investment managers in the real estate sectors including Clarion Lion Properties Fund, Morgan Stanley's Prime Property Fund, and Prologis' Targeted U.S. Logistics REIT.

is not necessarily evidence of regulatory arbitrage in ABS private placement. When compared to the ratings distribution of financial private placements holding, the ABS private placements are better rated, on average.

Taken together, the evidence shows that life insurers increasingly lend to other financial firms through private placements, and these deal appear to be more complex than traditional private placements. Hence, life insurers have become more exposed to private credit directly through private placements and indirectly by lending to firms and funds that focus on direct lending themselves. This development suggests that the life insurance sector has become more interconnected with each other by co-lending in private placements and with other parts of the financial sector.

4.2 PE drives Private Placement Investment Shifts

Next, we assess which characteristics of life insurers account for the increase in private placement lending. We consider all investments in private placement and then zoom in on private placements to the financial sector and ABS, which experienced the most growth and increased interconnectedness with other parts of the financial system.

We hypothesize that three characteristics could be closely associated with increased private placement lending: a) PE-ownership, b) historical private placement lending, and c) strategic partnerships between traditional life insurers and asset managers including private equity.

The first characteristic, PE ownership, is related to access to new segments of the private placement market and risk appetite. First, as documented above, life insurers lend to financial firms that are themselves connected to PE and the direct lending space. Second, [Kirti and Sarin \(2023\)](#) show that up to 2014 PE-owned life insurers shifted their bond portfolio to more public ABS, suggesting a higher risk tolerance of these insurers. We therefore expect that PE-owned firms expand their private placement holdings more than non-PE-owned firms.

The second characteristic, insurers that historically had more exposure to the private placement market, measures specialization. Insurers with more specialized expertise in private placements are better positioned to take advantage of emerging opportunities in this market. Hence, if specialization drives private placement investments, we would

expect the historic (2017) private placement share of assets to predict the growth in private placement investments between 2017 and 2024.

The third characteristic, strategic partnership with asset managers, is a specific channel through which life insurers could participate in the private placement market. [Ozdagli and Ryfe \(2025\)](#) show that life insurers' portfolios are more likely to include the same bonds if they have the same asset manager. This suggests that asset manager distribute bonds and private placements across insurers. We therefore expect life insurers partnering with asset managers to hold more private placements.

We test the three hypotheses on the importance of each of these characteristics below by first providing graphical evidence and then conducting regression analyses.

4.2.1 Graphical Evidence

Significant PE-ownership of life insurers emerged after the 2008 financial crisis. Figure 5, left panel shows that PE ownership increased steadily until 2017, when PE-owner insurers accounted for about 8 percent of the industry's general account assets. A second wave of PE takeovers of life insurers after 2020 contributed to a significant increase to 14 percent of general account assets in 2024.

Figure 5, right panel shows that the investment behavior of PE-owned life insurers differs substantially. Specifically, while PE-owned insurers account for 14 percent of general account assets, they held over 40 percent of financial and ABS private placements in 2024. At the same time, PE-owned insurers held only 14 percent of private placements. This suggests that PE ownership is an important determinant for the growth of private placements in the financial and ABS segment. While PE-owned insurers also invest more in CLOs, their share of industry CLO investments is 25 percent, indicating that CLO investments are less concentrated in PE-owned insurers than financial and ABS private placements.

Next, we show the changes in asset holding by the three characteristics (PE-ownership, prior investment share, and asset manager use) that we propose as potential driver of private placement growth. The top panel of figure 6 shows PE-ownership growth and difference in investments by PE-ownership status. While the asset share of private placements was 14 percent in 2024 for PE-owned and non-PE-owned insurers, the trajectory

from 2017 onward and sectoral composition differs substantially. The private placement share of general account assets for PE-owned insurers was only 6 percent in 2017 but increased by 8 percentage points to 14 percent in 2024. For non-PE-owned insurers, the increase was less than 4 percentage points over the same time period.²¹ As shown by the middle four bars of the top panel, the growth in financial and ABS private placements accounted for three-fourth of the entire private placement growth (6 percentage points of assets) of PE-owned insurers. By 2024, financial and ABS private placements reached 8 percent of assets for PE-owned insurers, while they were only 4 percent of non-PE-owned insurers' assets.

We also compare changes in CLO holdings by PE ownership status in the right four bars of the top panel as they are the focus of the prior literature (Carlino et al. 2024; Kirti and Sarin 2023). Between 2017 and 2024, PE-owned insurers' CLO share of assets remained unchanged, and non-PE-owned insurers' CLO share increased only somewhat.

The middle panel of figure 6 compares the holdings of the life insurers that were specialized (the 75th percentile) in private placements, financial and ABS private placement, and CLOs respectively to those that were not specialized (the 25th percentile). Across all asset classes, growth in investment shares are comparable between specialized and not specialized insurers, suggesting that prior specialization does not account for growth in the private placement market.

The bottom panel of figure 6 compares the same asset holdings of the life insurers with and without asset managers. A life insurer with an asset manager is defined as delegating at least 10 percent of assets to be managed by a third party. Across all asset classes, growth in investment shares are comparable between insurers with and without asset manager, after accounting for PE-ownership, suggesting that asset managers cannot account for the growth in the private placement market.

4.2.2 Cross-sectional evidence

We now supplement the graphical evidence for PE being the main driver of increased private placement investments, especially in financial and ABS private placements, with

²¹The lower share of private placement investments of PE owned insurers in 2017 also suggests that prior investments in private placement is not a determinant for a life insurer becoming a PE takeover target.

regression analyses. While one potential concern with the analysis is that PE strategically took over life insurers that exhibited large growth in financial and ABS private placements, we have shown above that PE-owned life insurers exhibited smaller asset shares of private placements compared to their non-PE owned peers.

In our cross-sectional regressions, we therefore separately include indicators for whether the life insurer was PE owned in 2017 or taken over by PE between 2018 and 2023 and estimate the following regression.

$$\Delta PP_i = \beta_1 \text{PE Insurer 2017}_i + \beta_2 \text{New PE Insurer}_i + \gamma X_i + \epsilon_i \quad (1)$$

where ΔPP_i is the percentage point change in the private placement share of assets. PE Insurer 2017 equals one if the life insurer was PE-owned in 2017, New PE Insurer equals one if the life insurer was taken over by PE between 2018 and 2023, and X_i is a vector of controls including the log of total assets and the annuity market share in 2017.

Table 3 shows the results of estimating equation 1. Column 1 shows that for life insurers that were previously owned by PE—that is, taken over before 2017, the private placement share of assets expanded by 7.7 percentage points from 2017 to 2024. This estimated effect is more than one standard deviation of the change in the private placements share (6.07). The point estimate is highly statically significant. For insurers that were taken over by PE between 2017 and 2023 the point estimate is somewhat smaller at 5.8 percentage points. The findings are consistent with the larger increase in the private placement share of assets shown in figure 6.

Next, we test whether specialization in private placements measured the private placement share of general account assets drove the expansion in private placements. Column 2 shows that the point estimate is negative and highly statistically significant. We can therefore reject that life insurers that had previously specialized in private placements account for the rapid growth in private placements.

The third hypothesis is that asset managers investing for life insurers account for the growth in private placement lending. Column 3 shows the results. We do not find any evidence that relationships with asset managers, either established by 2017, newly established between 2018 and 2023, or with PE asset managers drove the expansion of private placements.

Last, we test the three hypotheses together. Column 4 shows that the point estimates on PE-ownership remain basically unchanged, economically large, and statistically significant, while the effect of specialization remains negative and unchanged. Taken together, columns 1-4 indicate that PE-owned insurers account for the growth in private placements.

In columns 5-8, we repeat the regression with the change in the share of financial and ABS private placements. PE ownership is associated with a 3-5 percentage points increase in the financial and ABS private placement share. These effects are economically large compared to the standard deviation of the change in the financial and ABS private placement share (2.21). We can again reject that specialization drove increases in private placements and find no effect of asset manager relationships after controlling for PE-ownership.

In contrast to the findings for the changes in the share of private placements, we do not find that insurers owned by PE in 2017 increased their holdings of CLOs (column 9). However, we do find an effect of newly taken over insurers consistent with the literature on the broader transformation of insurer balance sheets after PE takeovers. Prior specialization in private placements and asset manager relationship do not explain changes in the CLO share.

In sum, we find support for PE ownership driving the growth in the private placement share of insurers' balance sheets. About one third of the estimate effect comes in part from new segments, financial and ABS private placement, and is consistent with prior specialization having a negative relationship with these investments.

4.2.3 Dynamic Estimation

To tighten identification between growth in private placements and PE-ownership of life insurers, we now estimate the change in private placement holdings dynamically and focus on the growth in financial and ABS private placements and floating rate private placements. We consider the latter because returns on floating rate investments move with the cycle and hence are a closer match for indexed annuity liabilities that offer variable, market-dependent returns. We estimate the following regression using the doubly robust difference-in-difference estimator based on the work of [Callaway and Sant'Anna](#)

(2021) and Sant’Anna and Zhao (2020).

$$\text{Share PP}_{it} = \alpha_i + \delta_t + \sum_{t-5}^{t+5} \beta_t PE_{it} + \gamma X_{it} + \epsilon_{it} \quad (2)$$

where Share PP_{it} is the private placement share of general account assets of insurer i in year t and PE_{it} is an indicator that is equal to 1 if the insurer is owned by PE. We include time fixed effects (δ_t), insurer fixed effects (α_i), and a vector of controls X_{it-1} that includes log general account assets, alternative investment share of GA assets, bond investments of GA assets, statutory leverage ratio, and share of industry annuity reserves.

Figure 7 plots the results of estimating equation 2.²² Panel a) shows the results for all takeovers of insurers by PE. There is no evidence of a pre-trend, indicating that PE did not systematically acquire insurers already increasing their investments in financial and ABS private placements. After the takeover, the private placement share increases significantly for PE targets to about 6 percentage points after two years. The differences are persistent. We detect a positive and significant effect even five years after the takeover, indicating a permanent change.

We repeat the analysis, estimating the effects separately for three different acquisition waves: 2014-2016, 2017-2019, and 2019-2021. Panels d), g), and j) show the results. While the estimated coefficients in the post-period are positive for all three waves, we find the largest effects in the 2017-2019 acquisition wave, where the estimated effect reaches 8 percentage points after five years. While the coefficients for the later waves are estimated somewhat imprecisely, the evidence supports the interpretation that PE-owned insurers drove the expansion of private placement investments.

We repeat the regressions focusing on the financial and ABS private placements share of assets shown in panels b), e), h), and k). The patterns are very similar to those estimated with all private placements. While the estimated effect is somewhat smaller, peaking at about 3 percent in the sample with all acquisitions. However, the effect on more recent acquisitions is larger, more persistent, and are more precisely estimated, with the effect reaching 6 percent in panel h).

The results show that PE-owned insurers drove both the overall increase and the sectoral shift in private placement activity. One implication of these sectoral changes

²²The summary statistics for the sample are reported in the Appendix.

is that PE-owned insurers significantly increased their linkages with other parts of the financial system through financial and ABS private placements.

4.3 Private Placement Investments and Annuity Market Share

We now test whether increased investments in higher yielding private placements (financial and ABS private placements) and floating rate private placements allow PE-owned life insurers to increase their market share in the annuity market. Earning higher spreads and being able to better match assets and liabilities allows life insurers to offer higher guarantees and thus attract new customers.²³ Hence, investing in private placements with higher spreads allowed insurers to offer higher yields on annuities.

While the annuity market exhibits steady growth, we see significant increases in indexed annuity reserves from about \$300bn in 2017 to \$500bn in 2024. The reserve share of indexed annuities increased from 19 percent in 2017 to 26 percent in 2024. Figure 8 shows that PE-owned insurers capture an outsized share of the indexed annuity market. While PE-owned insurers account for 14 percent of general account assets in 2024, they held over 35 percent of indexed annuity reserves. Having documented that PE-owned insurer also drove the increase and compositional shift in private placements (see section 4.2), we hypothesize that investments in financial and ABS private placements allowed PE-owned life insurers to capture market share in the annuity market by facilitating sales of indexed annuities.

We observe net annuity premiums by type. We therefore test this hypothesis in two ways. First, we test the relationship between annuity premium shares and financial and ABS premium share. Second, we test whether after PE takeovers we observe an increase in their annuity premium market share and their use of indexed annuities, measured as a share of their net annuity premiums. Since, net annuity premiums can also increase through the purchase of annuity blocks or decrease through ceding policies, we include controls for reserves assumed from non-affiliates and reserves ceded to affiliates. The fact that indexed annuity premiums expanded disproportionately during the sample period and after takeovers suggests that new policies drive the results.

²³Verani and Yu (2024) highlights the effects of interest rate risk in the annuity markets.

4.3.1 Cross-sectional evidence

We start formally testing whether increases in financial and ABS private placement investments allow (PE-owned) insurers to capture a larger annuity market share by estimating whether changes in private placement investment predict annuity premium market share.

$$\begin{aligned} \text{Premium Share}_{i,2024} = & \beta_1 \Delta \text{Fin \& ABS PP}_{i,2017-23} + \\ & \beta_2 \Delta \text{Fin \& ABS PP} \times \text{PE}_{i,2017-23} + \beta_3 \text{PE}_i + \gamma X_i + \epsilon_i \end{aligned} \quad (3)$$

where $\Delta \text{Premium Share}_{i,2024}$ is premium share of insurer i in 2024. $\Delta \text{Fin \& ABS PP}_{i,2017-23}$ is the change in financial and ABS private placement share of assets, and PE is an indicator that is equal to 1 if the insurer was PE-owned as of 2017. Insurer controls (X_i) are log GA Assets, share of industry annuity reserves, and change in reserves assumed in 2017.

Table 4 shows the results of estimating equation 3 for the total annuity market share. Column 1 shows that for all life insurers changes in financial and ABS private placement investment do not predict changes in premium market share. Next, we assess whether the effect differs by PE-ownership. Column 2 shows the results for PE ownership in 2017. We find that premium market share increases due to investments in financial and ABS private placements are concentrated in PE-owned insurers. The interaction term of these investments with PE is three times the coefficient in column 1 but is statistically significant. The effect is also economically significant. The point estimate implies that a one-standard-deviation increase in the financial and ABS private placement share (2.21) for an PE-owned insurers increases the premium market share by 0.16 percentage points. For comparison, the average annuity market share in 2024 is 0.29 percent and the standard deviation 0.79. This finding indicates that insurers that invested differentially more in financial and ABS private placements captured market share from insurers that did not invest in these private placements over the sample period.

In our sample, the 47 PE-owned insurers had an average premium market share of 0.18% in 2017 to 0.37% in 2024, translating to a total market share of 8.5% and 18% respectively. The average change in financial and ABS private placements share of assets for PE-owned life insurer from 2017 to 2023 is 1.6 percentage points (compared to a

sample mean of 0.70%). Hence, our estimated coefficient implies that the increase in these private placement investments accounts for about 61% of the total increase in annuity market share of PE-owned insurers.

In column 3, we drop the insurers that were taken over by PE after 2017 and find slightly larger effects.

In columns 4 to 6, we use the change in floating rate private placement investments and its interaction with PE ownership as explanatory variable. We find significant effects for all insurers (column 4), which in magnitude appear to be concentrated in PE-owned insurers but the estimates are imprecise (columns 5 and 6).

In columns 7 to 9, we repeat the estimations with the changes in the CLO share and do not find any significant results, except for PE-ownership in 2017. This result suggests that increases in public ABS investment did not support the expansion of PE-owned insurers in the primary annuity market.

Next, we zoom in on the indexed annuity market. Since indexed annuities offer a variable, market-dependent rate, shorter duration (5- to 10-year) with caps to up- and downside risks, higher yield financial and ABS private placement and, in particular, floating rate products offer a good asset-liability match. We therefore expect that market share capture is most pronounced in the indexed annuities market.

Table 5 shows the results of estimating equation 3 with the net indexed annuity premium share as dependent variables. The estimated effects on the change in financial and ABS private placement share, shown in column 1, is triple the estimated effect for all premiums (table 4, column 1) but is not precisely estimated. However, the estimated interaction term with 2017 PE ownership in columns 2 and 3 are even larger, suggesting that the effect of private placement investments on overall market share is driven by growth in the indexed annuity market share. A one standard deviation increase in the financial and ABS private placement share increases the 2024 indexed annuity market share by 0.54%. PE-owned insurers had an average premium indexed annuity market share of 0.34% in 2017 to 0.70% in 2024, translating to a total market share of 16% and 33% respectively. Our estimated coefficient evaluated at the mean of PE-owned insurers increases (1.6) implies that the increase in these private placement investments

can account for all of the increase in indexed annuity market share of PE-owned insurers.²⁴ The results also suggest that these new investments drove the increase in indexed annuity share of total annuities outstanding.

Similarly, the estimated effects for the change in floating rate private placements as explanatory variable are considerably larger, consistent with these products helping insurers to better match indexed annuity liabilities with floating rate investments.

Taken together, the cross-sectional regressions show that increased investments in financial and ABS private placement, which have higher spreads, allowed PE-owned firms to capture annuity market share. However, these results do not establish the direction of causality. Hence, we next turn to dynamic regressions to test whether private placement investments pre-date the increase in annuity market share, which would indicate that private placement investments drove the market share increase.

4.3.2 Dynamic Annuity Market Share Regression

To complement the cross-sectional regression with evidence that insurers expand their market share in the annuity market measured as annuity premium share after a PE takeover. We estimate the following regression using the doubly robust DID estimator based on the work of [Callaway and Sant’Anna \(2021\)](#) and [Sant’Anna and Zhao \(2020\)](#).

$$\text{Premium Share}_{it} = \alpha_i + \delta_t + \sum_{t-5}^{t+5} \beta_t PE_{it} + \gamma X_{it} + \epsilon_{it} \quad (4)$$

where PE_{it} is an indicator that is equal to 1 if the insurer is PE-owned, δ_i time fixed effects, α_i insurer fixed effects, and X_{it} a vector of controls.²⁵

Figure 8 shows the results of estimating equation 4 for premium market share and indexed annuity usage, measured as a share of total net annuity premiums, for different acquisition waves. Panel a shows that, while imprecisely estimated, a positive coefficient on PE for premium share as market share measure. With the indexed annuity usage, we find positive and statistically significant effects 3 years after the acquisition (panel b). After five years, the average PE-acquired insurer increased its premium market share

²⁴The mean change in financial and ABS private placement investments share of assets (1.6 percentage points) multiplied by the average effect (0.248) implies an average market share growth of 0.40% relative to a mean of 0.36%.

²⁵The summary statistics are reported in the appendix.

by more than 0.1 percentage points and its indexed annuity usage by 15 percentage points. This result suggests that increased sales of indexed annuities helped to facilitate their annuity market share capture after PE-takeover. The timing also indicates that private placement investments drive the annuity market share capture. While PE-owned insurers immediately increase investments in private placements (figure 7), they increase their market share only three years after takeover.

These aggregate patterns are driven by 2014-16 acquisitions (panels c) and d)). In contrast, for 2019-21 acquisitions, we find a much smaller effect on the premium share (panel e), while the indexed annuity usage occurs more quickly but has a similar effect (panel f).

In sum, we find that PE-owned insurers, especially those that heavily invested in financial and ABS and floating rate private placements expanded their annuity market share, indicating that these new investments facilitated the expansion in insurance product markets.

4.4 Mechanisms

The large gains of PE-owned insurers in the indexed annuity market raise the question which channels can account for these gains. We limit the sample to annuity-focused insurers defined as insurers with at least one half of reserves in annuities. We first provide evidence that private placements allow for better maturity matching by showing that large issuers of indexed annuities invest more in private placements with shorter maturities. Second, we show that PE-owned life insurers invest in private placements issued by affiliated borrowers, suggesting that the PE owner facilitates access to private placement investment opportunities.

4.4.1 Maturity Matching

Indexed annuities tend to have shorter terms, 7 to 10 years, compared to other annuities. Hence, life insurers with larger indexed annuity business are expected to invest in assets with similar maturity. In the left panel of figure 10 we therefore show the maturity distribution of public and private investments at the time of purchase by indexed annuity market share quartile and for insurers not writing indexed annuities. The maturity distri-

bution across groups exhibits no clear pattern. In the right panel, we show the maturity distribution of private placement investment across the same groups. A clear pattern emerges. Insurers in the third and the fourth quartile of the indexed annuity market share distribution hold more shorter maturity private placements, providing suggestive evidence that indexed annuity business is matched with shorter maturity investments.

We now tighten the link between indexed annuity market share and average maturity. We use a regression framework to test whether the average maturity at purchase is shorter for life insurers with significant indexed annuity business. We restrict the sample to investments purchased between 2020 and 2024 and weighted the maturity by the size of the investment. We again split indexed annuity issuers in quartiles and use life insurers without indexed annuity business as omitted category. In the cross-section of insurers, we estimate

$$\text{Average Maturity}_i = \alpha + \sum_{q=1}^4 \beta_q \mathbb{1}_{\text{Quartile}_i=q} + \gamma X_i + \epsilon_i \quad (5)$$

where i refers to the insurer and X is a vector of controls that includes $\log(\text{GA assets (2024)})$, annuity reserve share (2024), and immediate annuity premium share (insurer-level mean).

Table 6 shows the results of estimating equation 5 for the insurers that invested in the respective asset class between 2020 and 2024. Consistent with the left panel of figure 10, we do not detect an effect of indexed annuity market share on the maturity of all bond investments (column 1). However, column 2 shows that private placement investments of insurers in the third and fourth quartile of the indexed annuity market share distribution have about two years shorter maturity at purchases than insurers without indexed annuity business. For floating rate investments, the difference increases to about 2.5 years shorter maturity (column 3).

In columns 4 and 5, we replace average maturity with the private placement and floating rate share of GA assets, respectively, to ensure that the maturity results are not driven by a small number of private placements and including insurers that did not invest in the respective asset class with a share of 0. To be consistent with our hypothesis that private placements drove annuity market share capture, we also need to observe that insurers with significant indexed annuity market share also invest more in

private placements. Column 4 shows that insurers in the fourth quartile of the indexed annuity market share distribution allocate an additional 7.1 percentage points of GA account asset to private placement investments, an economically large effect. Similarly, insurers in the third quartile allocated 6 percent more of GA assets to private placements. For floating rate investments, the effect increases to more than 8 percentage points for the fourth quartile, and we also detect a statistically and economically significant effect of about 4.8 percentage points for the third quartile.

Taken together, the evidence in this section indicates that life insurers with larger indexed annuity market share purchase more private placements and floating rate investments and these investments exhibit a shorter maturity, consistent with these investments being a better match their indexed annuity liabilities.

4.4.2 Access to Private Placement Investment Opportunities

A second, complementary channel explaining why PE-owned life insurers were able to rapidly expand their market share in the indexed annuity market is access to private placement investment opportunities with shorter maturity. Specifically, it is possible that PE-owned insurers invest in private placements issued by companies owned by the same PE firm. Since large PE firms invest in a large number of companies, PE-owned life insurers may have easier access to a significant share of private placement investment opportunities. In the data, we observe whether an investment of a life insurer was issued by an “affiliate”. An affiliate is defined as a companies owned by the same parent company as the life insurer. To be clear, we observe affiliated investments not only in PE-owned life insurers but also for other insurers. A concrete example would be a CRE loan to a building owned by a different subsidiary.

To test whether affiliated investments of PE-owned insurers and therefore access to private placement investment opportunities can account for the sharp increase in PE-owned life insurers indexed annuity market share, we calculate the ratio of investment in affiliates to general account assets for all bonds and for private placements. If PE firms provide their life insurers with more investment opportunities, then we expect that PE-owned life insurers exhibit a larger share of affiliated investments. We therefore estimate

the following regression:

$$\text{Affiliated Investment Share } 2024_i = \beta_1 \text{PE Insurer } 2024_i + \gamma X_i + \epsilon_i \quad (6)$$

where i indexes the insurer and X is a vector of controls that includes X is a vector of controls that includes $\log(\text{GA assets})$, adjusted capital leverage, bond share of assets, and alternative investment share of GA assets, all measured as of 2024. We only include insurers that purchased investments in the respective category between 2020 and 2024.

Table 7 shows the results of estimating equation 6. We find that PE-owned life insurer affiliated investment share of GA assets are 2.5 percentage points higher than for non-PE-owned life insurers, which is a little more than a one-standard deviation (2.2) increase (column 1).²⁶ This findings is consistent with PE-owned life insurers have access to more investment opportunities through linkages of the parent (PE) company.

The indexed annuity market share results shown in section 4.3 indicated that the market share growth was driven by investments in private placements, especially financial and ABS private placements. In Column 2 we zoom in on affiliate private placement investments and find that PE-owned life insurers have a one-standard deviation (1.8 percentage points) higher affiliated private placement share of GA assets. Columns 3 and 4 show comparable effects for investments in affiliated private placement ABS and financial private placements. While we also find an effect for affiliated public bonds, the effect is smaller in magnitude (column 5). Taken together with the evidence in section 4.3, the results indicate that access to investments in debt of affiliated companies allowed PE-owned life insurers to capture a larger index annuity market share.

4.5 Why Private Placements are Attractive Investments

We now investigate the features of private placements that give investing life insurers an advantage in the annuity market. We hypothesize that the main reason for investment in private placements is that they offer higher yields than comparable longer-duration assets, such as public corporate bonds.

To test this hypothesis, we first calculate the spreads on all fixed-rate bonds and

²⁶For the summary statistics on affiliated investment, see Appendix, table A7.

private placements held by life insurer by subtracting the maturity-matched Treasury rate. We are interested in the additional spread insurers can earn by investing in private placements. Since it is well known that public ABS such as CLOs pay higher yields compared to corporate bonds (see, e.g., [Kirti and Sarin \(2023\)](#)), we treat public and private placement ABS as separate categories. We estimate the following cross-sectional regression on the CUSIP level using assets held in 2024 and purchased in 2020 or later with public corporate bonds as the baseline category:

$$Spread_c = \alpha + \beta_1 \mathbb{1}_{PP_c} + \beta_2 \mathbb{1}_{Public\ ABS_c} + \beta_3 \mathbb{1}_{PP\ ABS_c} + \gamma X_c + \epsilon_c \quad (7)$$

where $X_{c,t}$ is a vector of bond controls that includes the bond rating, origination month, maturity at purchase in years, and credit seniority. The coefficients on the indicator functions capture the additional spread over public bonds for private placements (β_1), public ABS (β_2), and private placement ABS (β_3).

Figure 11 shows the results from estimating equation 7. Spreads of private placements are, on average, 60 bps higher than those on a public bond. Within the private placements, we find that non-financial private placements have a spread of 39 bps while financial private placements have a spread of 78 bps. This difference is smaller than the 116 basis points documented by [Böni, De Roon, and Joos \(2020\)](#) for 310 European issuers of public and private bonds.

For public ABS the difference in spreads is 82 bps consistent with prior literature linking such spreads to regulatory arbitrage ([Carlino et al. 2024](#); [Kirti and Sarin 2023](#)). The difference in spreads is even larger for private placement ABS. The difference in spreads between private placement ABS and a public corporate bond is estimated to be 156 bps.

One potential explanation for why private placements earn higher spreads than comparable public bond and ABS counterparts could be differences in secondary market liquidity.²⁷ We provide two pieces of evidence that private placements are indeed less liquid than public corporate bonds and ABS by comparing the frequency of sales and the structure of the secondary market for each of the asset classes.

²⁷[Carlino et al. \(2024\)](#) argue that life insurers earn an illiquidity premium over other investments, specifically in CLOs, BDCs, and joint venture loan funds (JVLFs), as well.

The first piece of evidence are the frequencies with which private placements and public bonds are sold by life insurers. Figure 12, panel a) shows that while there is a secondary market for private placements, life insurers are considerably less likely to sell private placements than public corporate bonds. While the post-2008 Financial Crisis average sales rate for public bonds is about 8 percent, the sales rate for private placements only half of that, about 4 percent. We see the same pattern in the ABS sales rates. While public ABS have an average annual sales rate of about 6 percent, the sales rate of private placement ABS is only 3 percent, on average (panel b). One potential explanation for the lower sales rate is a smaller pool of potential buyers which consists mostly of other life insurers.

The second piece of evidence that the secondary market for private placements is less liquid than for public bonds is the way private placements are traded. Figure 13 shows that while almost 90 percent of public corporate bonds and about 85 percent of public ABS are traded using a broker, about 80 percent of private placement trades are over the counter. Trading private placements over the counter requires search for a potential buyer, which increases trading cost relative to a public bond. While close to 20 percent of private placement trades involve a broker, the brokers most often intermediating the trades, StoneCastle Securities and The Seaport Group, are small, highly specialized, and have limited balance sheet capacity. This suggests that trading private placements using one of these brokers is also more costly than trading public bonds using a larger broker.

A second potential explanation is that private placements have higher distress and default risk. In these cases, costly renegotiations and workouts are necessary. We therefore test whether private placements are more likely to enter distress (NAICS rating: 5) or default (NAICS rating: 6) compared to their public counterparts, controlling for the rating at origination. We focus on investment grade bonds first purchased by an insurer between 2016 and 2021 with 5 years remaining maturity that are held for at least 1 year. We estimate the following linear probability model.

$$Outcome_c = \alpha + \beta_1 \mathbf{1}_{PP_c} + \gamma X_c + \epsilon_c, \tag{8}$$

where $Outcome_c$ is either distress or default and the vector X_c contains bond-level control variables (original maturity year dummy, NAIC 2 (BBB) at purchase dummy, senior

secured and senior unsecured debt dummies, log par value, number of years held, and year of first purchase dummies).

Table 8 shows the results of estimating equation 8. Column 1 shows that private placements are considerably more likely to enter distress than their public counterparts but not more likely to enter default (column 2). Splitting the sample, we find that for corporate bonds, private placements are more likely to become distressed than public bonds (column 3) but are less likely to default (column 4). This finding is consistent with Bolton and Scharfstein (1996) and Giannetti and Meisenzahl (2023) who show that renegotiations are easier when only a small number of debtors are involved. Since renegotiation is costly, this higher probability of distress can account for some of the spread difference between private placements and public bonds. In contrast, for ABS and floating rate private placements we find that these private placements are more likely to become distressed or to default (columns 5-8), suggesting that the significantly higher spreads of these private placements is at least in part driven by default risk.

In sum, life insurers earn higher spreads and return on assets by investing in private placements compared to their public counterparts. The differences in spreads appear to be driven in part by differences in the probability of distress and costly works and by differences in liquidity of the asset classes.

5 Conclusion

We document that life insurers are large providers of private credit, reaching \$849 billion in 2024. Over the last decade, private placement provision by insurers has continuously increased and expanded to new sectors, in particular financial firms and ABS. This trend was driven by PE-owned life insurers. We show that the private placements pay higher spreads, because of higher probability of distress and costly restructuring as well as low liquidity in the secondary market for private placement. Investments in financial and ABS and floating rate private placements allowed PE-owned life insurers to capture annuity market share. This effect is concentrated in the indexed annuity market, where these private placements provide a better cashflow match to the promised returns.

While private placements have been a crucial source of funding for private firms and

project finance for a long time, these increases and sectoral changes in private placements expose life insurer to more liquidity risk. In addition, lending to financial firms and holding ABS private placements led to more interconnections with the broader private credit ecosystem. Both developments increase the systemic importance of life insurers and calls for additional research examining private placements.

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Figures and Tables

Figure 1: Life Insurer Private Placement Holdings

This figure shows the evolution of private placement holdings of US life insurers by issuer sector. Identification of private placement is described in section 3.3. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

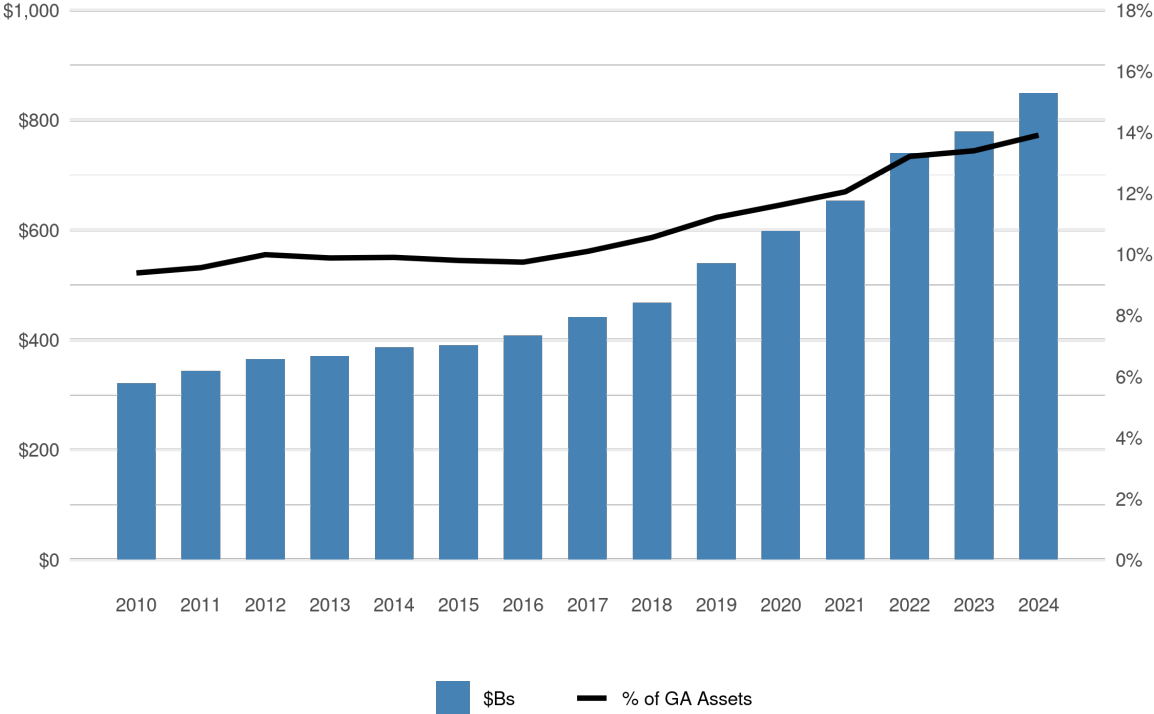


Figure 2: Life Insurer Annuity Reserves (\$Bs)

This figure shows the evolution of US life insurers annuity reserves by type. This figure does not include reserves ceded to offshore affiliates. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

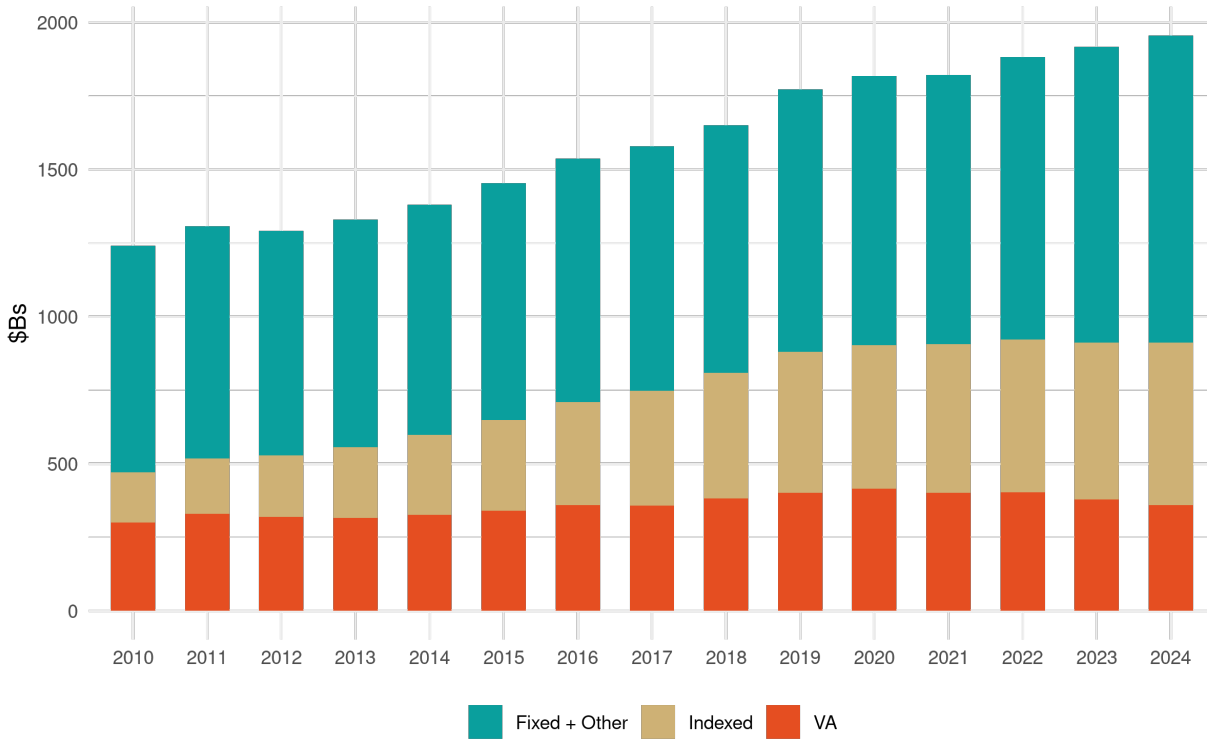


Figure 3: Sectoral Composition of Private Placements 2005-2024

This figure shows the evolution of private placement holdings of US life insurers by issuer sector. Identification of private placement is described in section 3.3. For details on the sectoral classification, see the Appendix. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, and NETS.

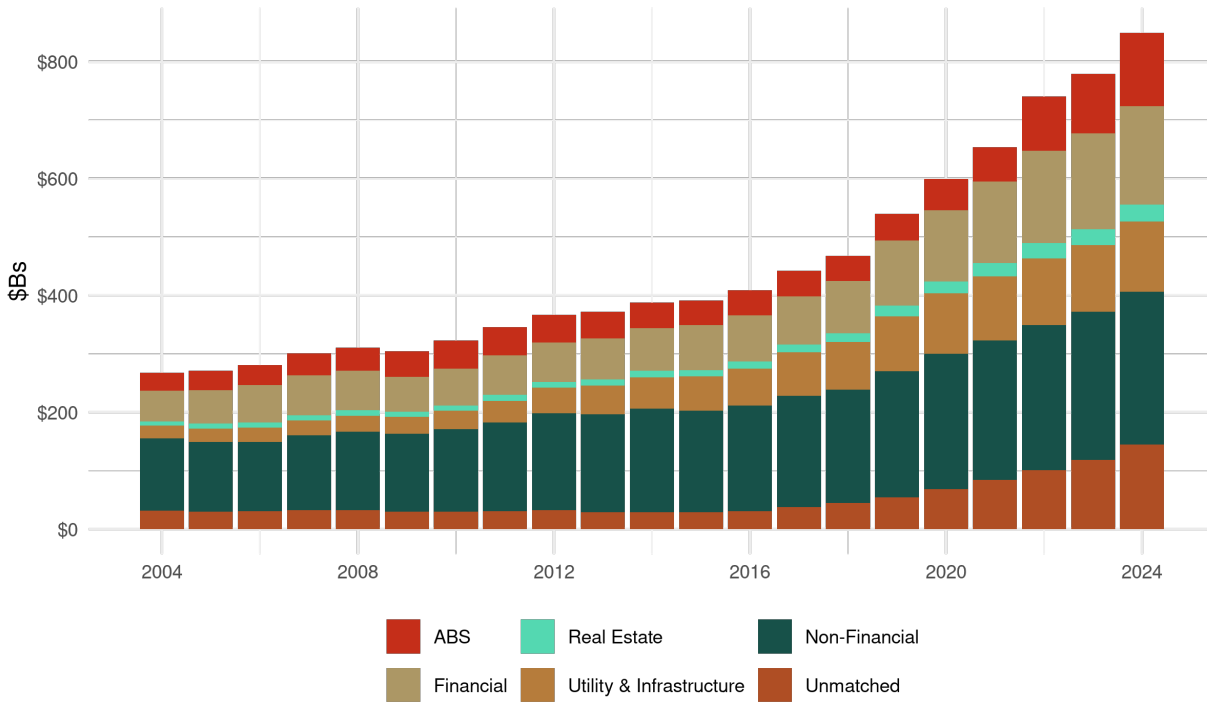
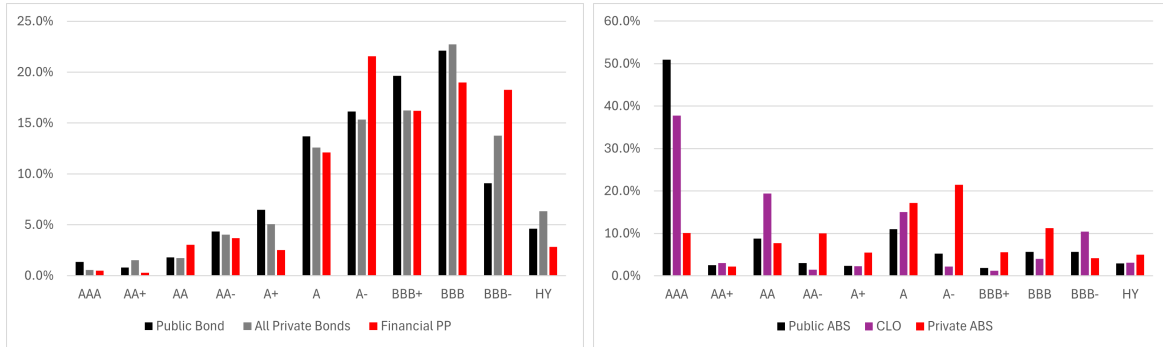


Figure 4: Ratings Distribution 2024 year-end

This figure compares the ratings distribution of public and private placement bonds and ABS of life insurers' 2024 year-end holdings. Source: NAIC statutory filings provided by S&P Capital IQ Pro.



a) Public Bond and Private Placements b) Public and Private Placement ABS

Figure 5: PE Share of Asset Category

The left panel of this figure shows the evolution of the share of life insurance industry general account assets held by PE-owned insurers from 2010 to 2024. The right panel shows the share of assets held by PE-owned insurers of total assets held by life insurers in the respective asset category in 2024. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, NETS, and S&P Merger and Acquisition Database.

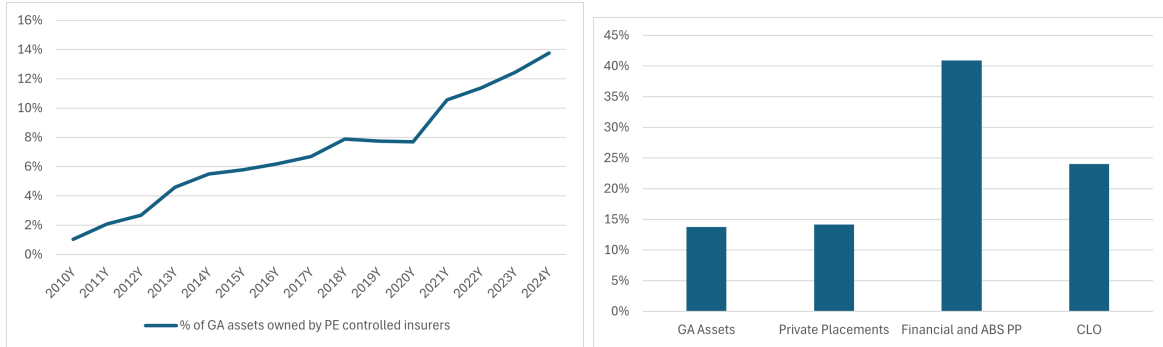


Figure 6: Determinants of Private Placement and CLO Holdings

The top panel shows the share of general account assets invested in each asset category by PE-ownership status in 2017 and 2024. The middle panel of the figure shows the share of general account assets invested in each asset category for top 25% and bottom 75% quartiles of the 2017 private placement holdings distribution. The bottom panel shows the share of general account assets held in each category for insurers who self-manage their investments and insurers who outsource to an unaffiliated asset manager. Source: NAIC statutory filings provided by S&P Capital IQ Pro, S&P BECRS, NETS, and S&P Merger and Acquisition Database.

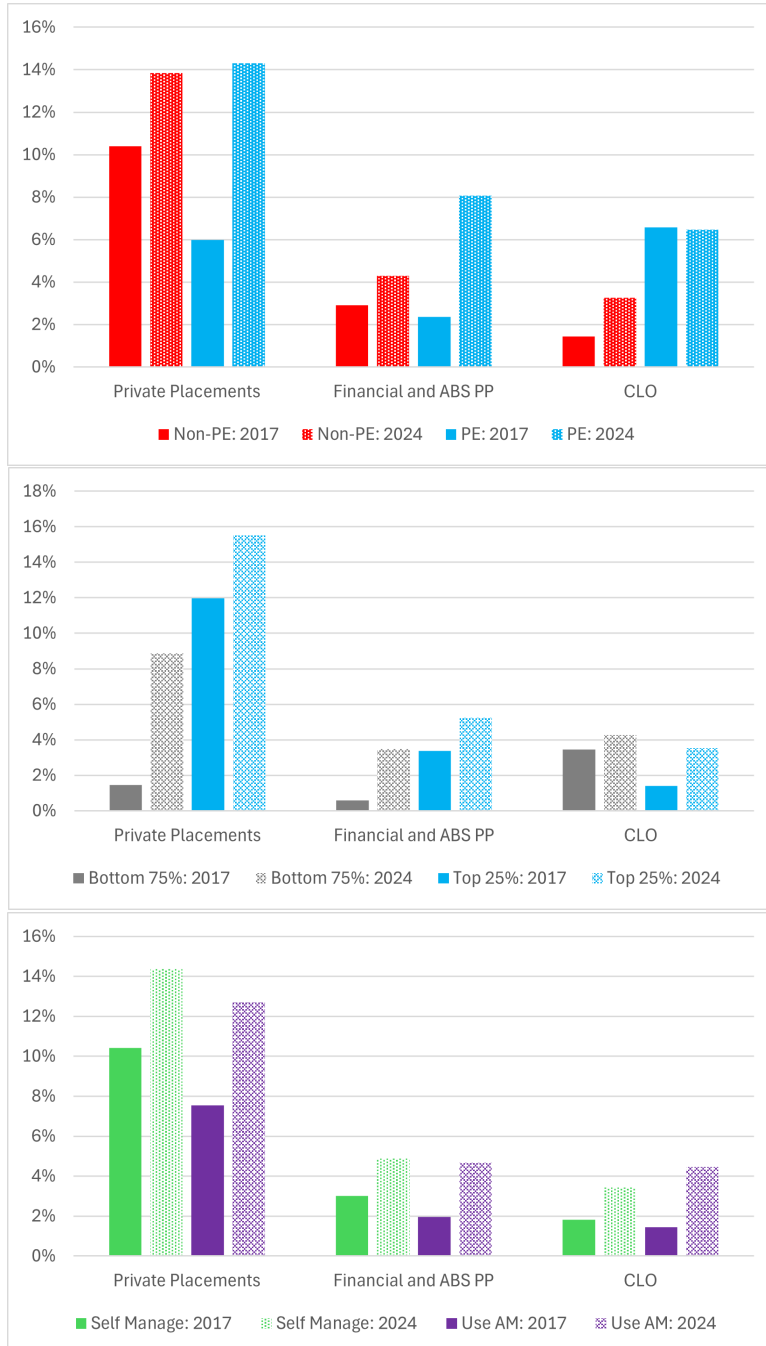


Figure 7: Dynamic Regressions - Private Placement Growth

This figure shows the results from estimating equation 2 with the treatment being the take-over by PE. We show the results for all take-overs, and separately take-overs between 2014-16, 2017-19, and 2019-21. The results shown use the doubly robust DID estimator based on the work of [Callaway and Sant'Anna \(2021\)](#) and [Sant'Anna and Zhao \(2020\)](#).

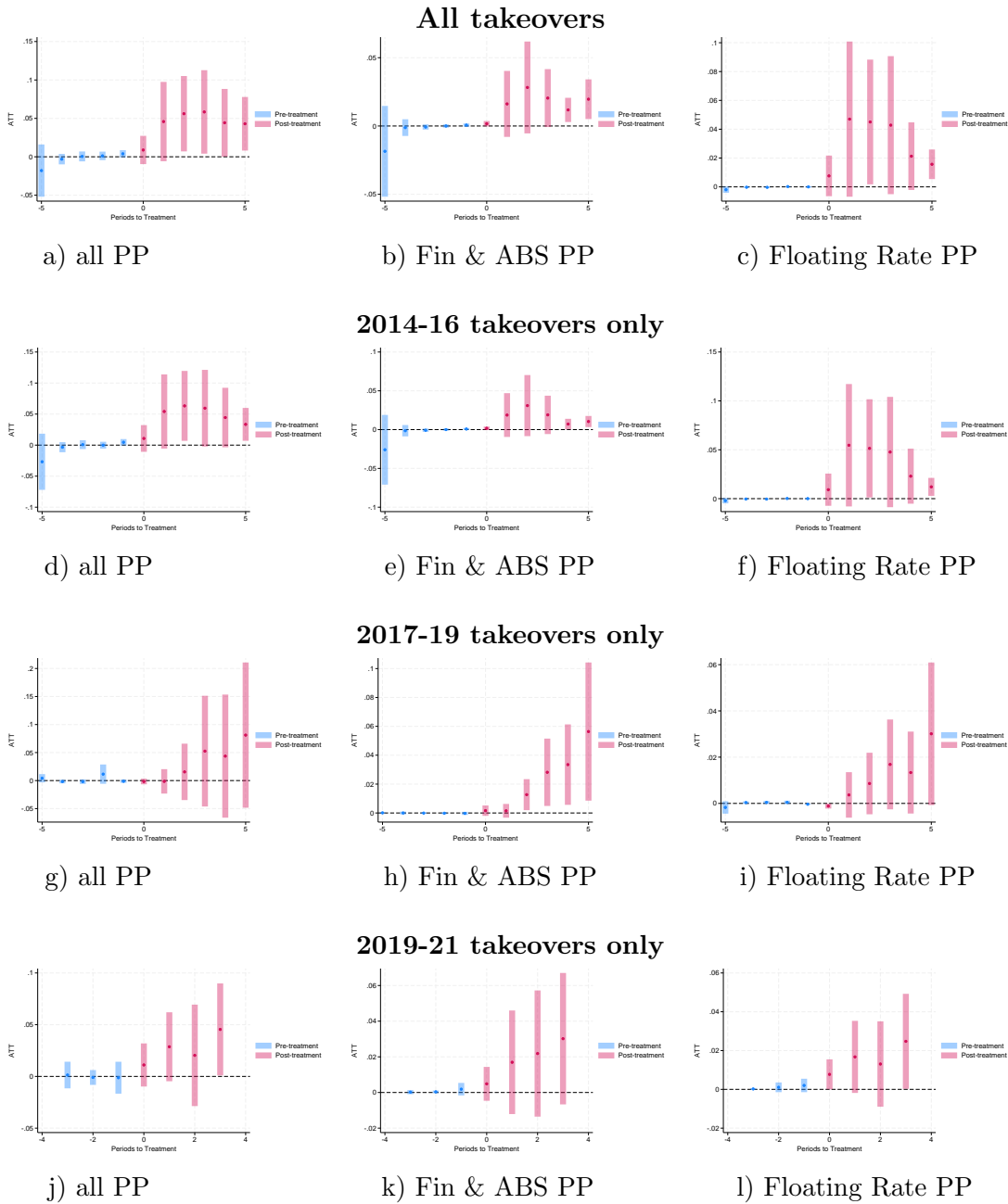


Figure 8: Annuity Reserves

This figure shows the evolution of annuity reserves by annuity type and PE-ownership. Does not include annuity reserves ceded to offshore (re)insurers. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

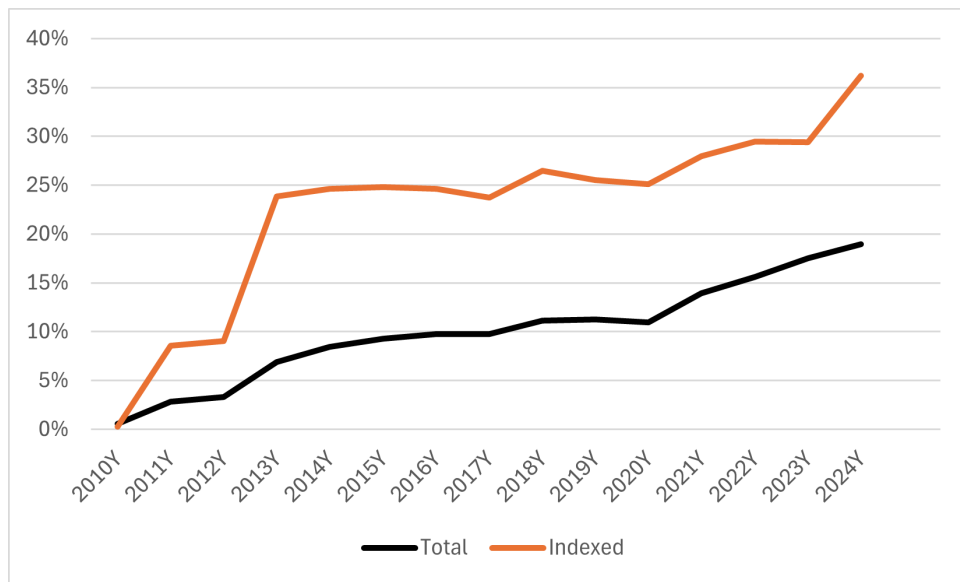
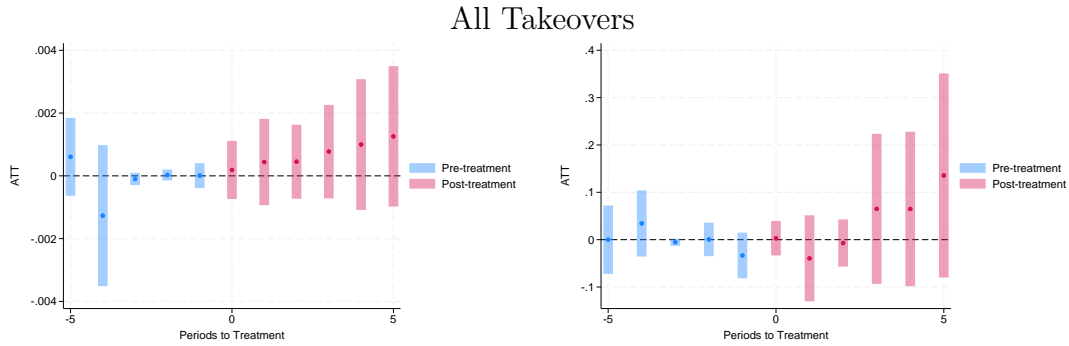


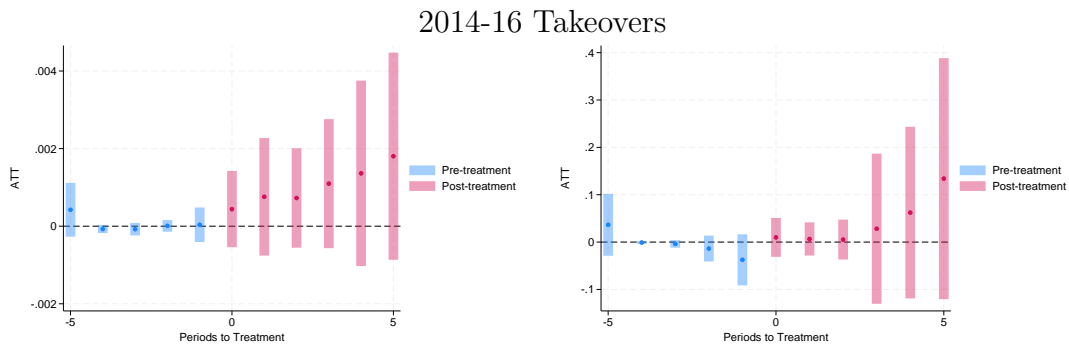
Figure 9: Dynamic Estimation - Annuity Market Share

This figure shows the results from estimating equation 4 with the treatment being the take-over by PE. We show the results for annuity premium market shares and the insurer's net indexed annuity premium shares for all take-overs, 2014-16 takeovers, and 2019-21 takeovers. To account for the potential impact of reinsurance in our measurement of net premiums we include controls for reserves ceded to offshore affiliates and reserves assumed from non-affiliates. The results shown use the doubly robust DID estimator based on the work of Callaway and Sant'Anna (2021) and Sant'Anna and Zhao (2020).



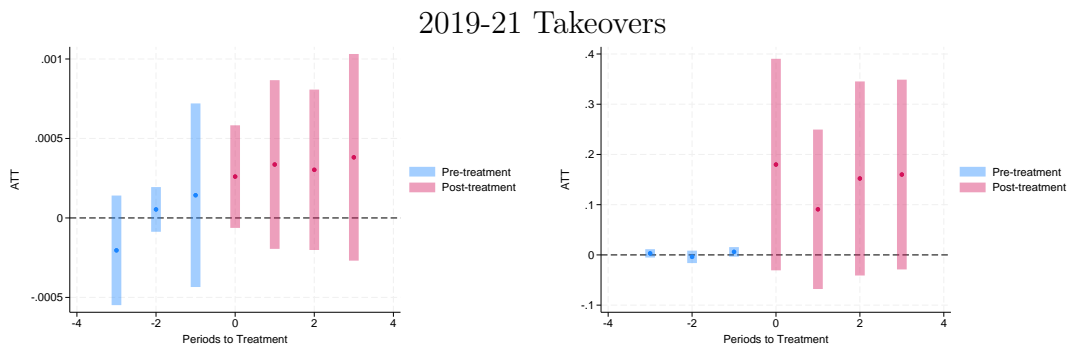
a) Premium Share

b) Net Indexed Annuity Premiums



c) Premium Share

d) Net Indexed Annuity Premiums



e) Premium Share

f) Net Indexed Annuity Premiums

Figure 10: Maturity Distribution at Issuance by Indexed Annuity Group

This figure shows the par-weighted maturity distribution of bonds purchased 2020–2024 for All Corporate (left) and Private Placements (right), by indexed annuity reserve share group. Sample restricted to annuity-focused insurers ($\geq 50\%$ of reserves in annuities). MBS excluded.

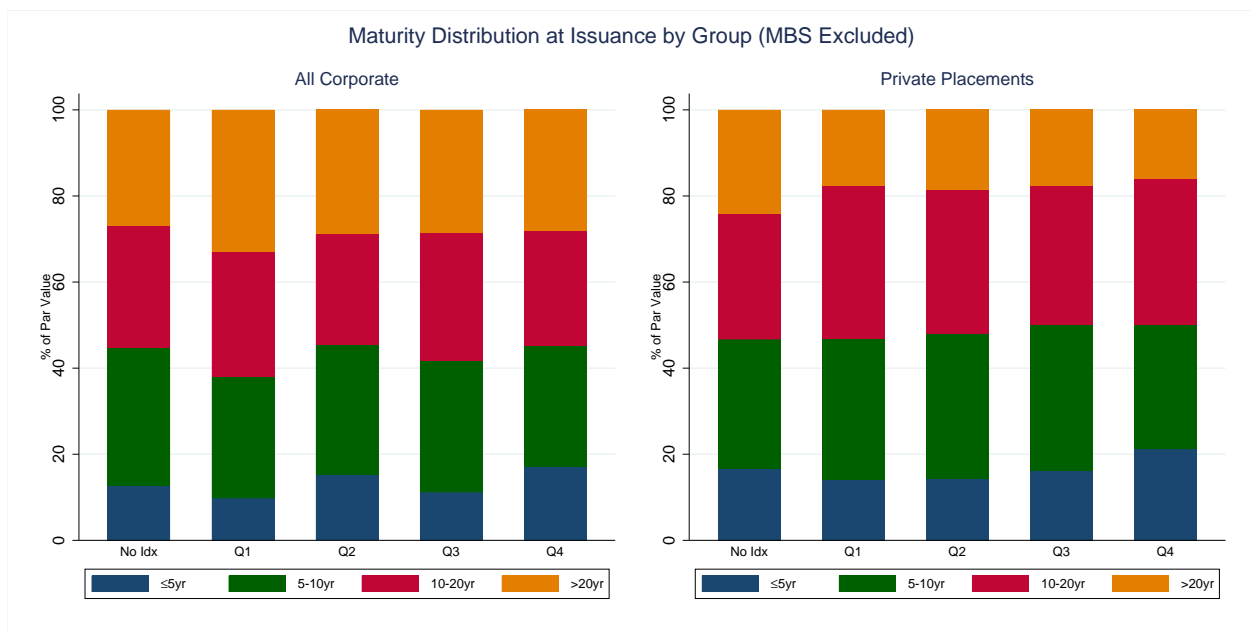


Figure 11: Spread over Public Bond Yield

This figure plots the coefficients from estimating equation 7. Public bonds are the omitted category. The bars indicate 95% confidence intervals. Source: NAIC statutory filings provided by S&P Capital IQ Pro.

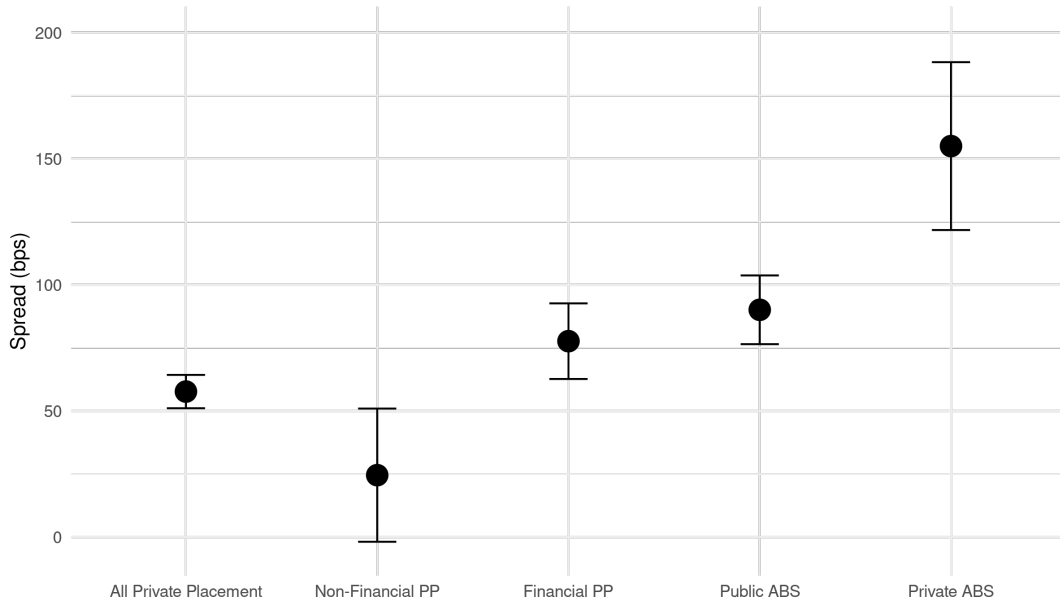
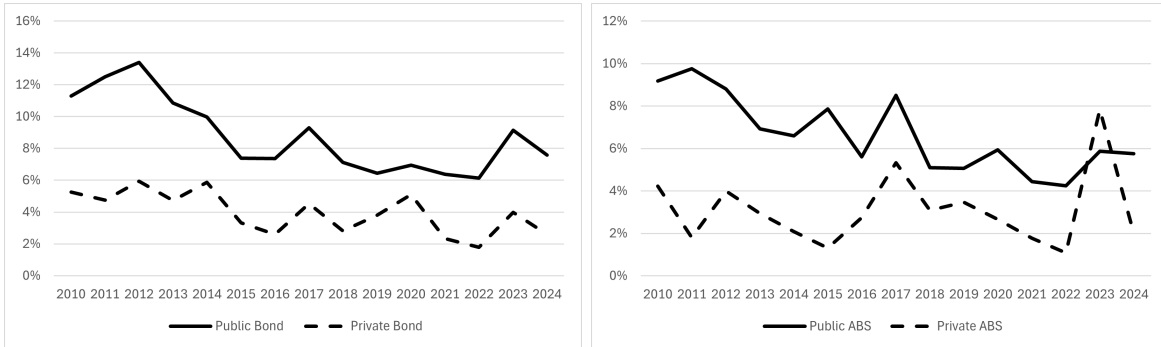


Figure 12: Sales Rates

This figure shows the average probability of observing a sale of an asset in the respective category by a life insurer. The sales information is taken from Schedule D Part 4 . Source: NAIC statutory filings provided by S&P Capital IQ Pro.



a) Public Bond and Private Placements b) Public and Private Placement ABS

Figure 13: Sales by Transaction Type, 2017 to 2024

This figure shows whether a sale of an asset was intermediated through a broker.. We consider public bonds, CLO, other public ABS, private placements, and private placement ABS separately. Source: NAIC statutory filings provided by S&P Capital IQ Pro..

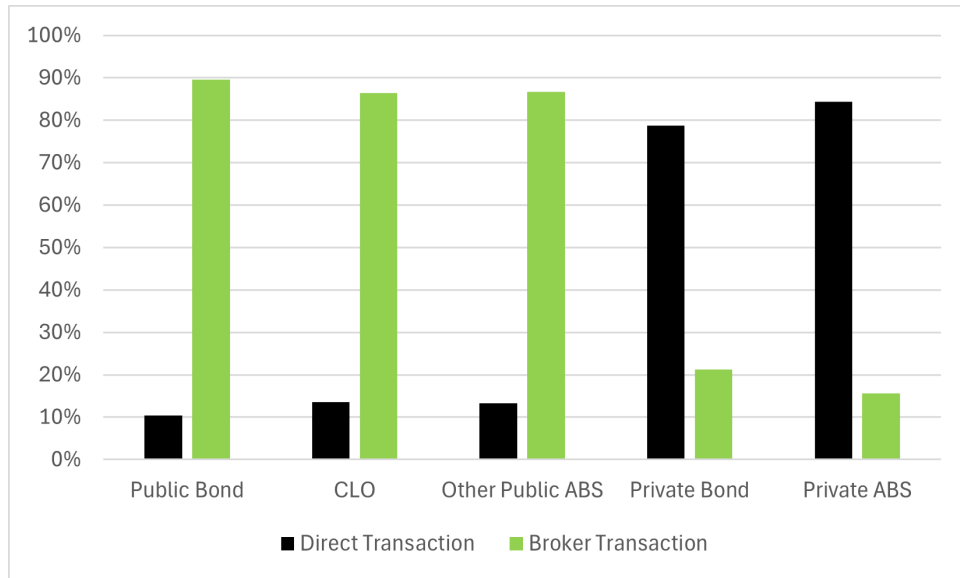


Table 1
Summary Stats 2017 to 2024: Change in Asset Share and Characteristics

	count	mean	sd	p10	p25	p50	p75	p90
Δ in Private Placement Asset Share	336	2.25	6.07	-2.0	0.0	0.0	3.9	9.2
Δ in PP Fin & ABS Asset Share	336	0.90	2.29	-0.8	0.0	0.0	1.4	3.8
Δ in PP CLO Asset Share	336	1.19	3.48	-0.9	0.0	0.1	2.3	5.3
Log GA Assets in 2017 (\$Bs)	336	20.75	2.30	17.6	19.1	20.7	22.6	23.8
PE Insurer (2017)	336	0.10	0.31	0.0	0.0	0.0	0.0	1.0
New PE Insurer	336	0.03	0.18	0.0	0.0	0.0	0.0	0.0
% Private Placements (2017)	336	0.04	0.06	0.0	0.0	0.0	0.1	0.1
Asset Manager GT 10% (2017)	336	0.32	0.47	0.0	0.0	0.0	1.0	1.0
Asset Manager GT 10% (New)	336	0.15	0.36	0.0	0.0	0.0	0.0	1.0
PE Asset Manager GT 10% (2017)	336	0.03	0.17	0.0	0.0	0.0	0.0	0.0
PE Asset Manager GT 10% (New)	336	0.05	0.21	0.0	0.0	0.0	0.0	0.0

Table 2
Summary Stats 2017 to 2024: Annuity Market Share and Asset Composition
Change Regressions

	count	mean	sd	p10	p25	p50	p75	p90
Annuity Premium Share (2024)	329	0.29	0.79	0.0	0.0	0.0	0.1	1.0
Annuity Premium Share (2017)	329	0.30	0.84	0.0	0.0	0.0	0.1	0.9
Δ Annuity Premium Share	329	-0.01	0.24	-0.1	-0.0	-0.0	0.0	0.2
Indexed Annuity Premium Share (2024)	329	0.39	1.62	0.0	0.0	0.0	0.0	0.3
Indexed Annuity Premium Share (2017)	329	0.31	1.32	0.0	0.0	0.0	0.0	0.3
Δ Indexed Annuity Premium Share	329	0.07	0.61	-0.0	0.0	0.0	0.0	0.1
Δ Fin and ABS PP	329	0.70	2.21	-0.9	-0.0	0.0	1.1	3.0
Δ Floating Rate PP	329	0.56	1.60	-0.0	0.0	0.0	0.3	1.6
Δ CLO	329	1.58	3.35	-0.4	0.0	0.4	3.0	5.4
Δ % of Reserves Assumed	329	1.36	11.60	-0.9	0.0	0.0	0.0	1.8
% of Reserves Ceded to Affiliates (2023)	329	0.15	0.28	0.0	0.0	0.0	0.2	0.7
Log GA Assets (\$Bs)	329	20.95	2.32	17.8	19.2	20.9	22.8	24.1
PE-Owned (2017)	329	0.09	0.28	0.0	0.0	0.0	0.0	0.0
New PE Insurer	329	0.04	0.19	0.0	0.0	0.0	0.0	0.0

Table 3

Private Placements Share of Assets and Insurer Characteristics

This table shows the results of estimating equation 1. PE Insurer 2017 is an indicator that is equal to 1 if insurers is PE-owned in 2017, New PE Insurer is an indicator that is equal to 1 if insurer is acquired by PE firm between 2018 and 2023. % Private Placements 2017 is the private placement share of general account assets in 2017. Asset Manager > 10% (2017) is a dummy if the insurer had 10% or more of their assets under management of an unaffiliated asset manager. Asset Manager > 10% (New) is equal to 1 if the insurer did not have a relationship in 2017, but does in 2023. PE Asset Manager > 10% (2017) is equal to 1 if the insurer has more than 10% of their assets under control of an unaffiliated PE asset manager and 0 if not. PE Asset Manager > 10% (New) is equal to 1 if the insurer did not have a relationship with a PE asset manager in 2017, but does in 2023. Controls: Log GA assets and Share of Annuity Market. Change in Asset Share winsorized 1/99, excludes insurers with < \$10 million in GA assets in 2017 or 2024, Robust standard errors.

	PP All			PP Fin & ABS				CLO				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
PE Insurer (2017)	7.666*** (1.550)			6.699*** (1.482)	2.949*** (0.574)			2.517*** (0.561)	0.086 (0.888)			0.244 (0.983)
New PE Insurer	5.828* (2.443)			6.000* (2.541)	3.634** (1.235)			3.464** (1.295)	3.577*** (1.339)			3.275* (1.372)
% Private Placement 2017		-45.304*** (5.741)		-41.458*** (5.514)		-12.283*** (2.281)		-10.730*** (2.063)		5.991 (3.228)		5.540 (3.130)
Asset Manager GT 10% (2017)			1.033 (0.794)	0.685 (0.642)			0.271 (0.223)	0.150 (0.198)			0.040 (0.431)	0.048 (0.421)
Asset Manager GT 10% (New)			2.289 (1.217)	0.835 (1.117)			1.154** (0.437)	0.500 (0.423)			0.485 (0.741)	0.128 (0.704)
PE Asset Manager GT 10% (2017)			4.338 (2.294)	0.185 (2.286)			2.515* (1.068)	1.103 (1.112)			-0.612 (1.131)	-0.526 (1.314)
PE Asset Manager GT 10% (New)			-1.113 (1.495)	-0.763 (1.385)			0.387 (0.843)	0.453 (0.800)			1.567 (0.861)	1.448 (0.911)
Observations	336	336	336	336	336	336	336	336	336	336	336	336
Adjusted R-Squared	0.189	0.176	0.048	0.312	0.293	0.092	0.089	0.326	0.030	0.008	0.006	0.031

Table 4
Private Placements and Industry Annuity Premium Market Share

This table shows the results of estimating equation 3. The dependent variable is the 2024 level of annuity premium share. The sample period is 2017 to 2024. Controls are lagged log GA assets, lagged annuity premium share (2017), percent of reserves ceded to affiliates in 2023, and change in reserves assumed. Columns (3), (6), and (9) exclude insurers acquired by PE after 2017. The sample excludes insurers who did not write annuity premiums in both 2017 and 2024 and insurers with < \$10 million GA assets in 2017. Robust standard errors.

	Fin and ABS PP			Floating Rate PP			CLO		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Fin and ABS PP	0.024 (0.015)	-0.013 (0.015)	-0.021 (0.023)						
Δ Fin and ABS PP x PE		0.072** (0.025)	0.079** (0.029)						
Δ Floating Rate PP				0.048** (0.017)	0.011 (0.019)	0.018 (0.026)			
Δ Floating Rate PP x PE					0.045 (0.033)	0.037 (0.036)			
Δ CLO							-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.005)
Δ CLO x PE							0.003 (0.018)	0.003 (0.018)	0.004 (0.019)
PE-Owned (2017)		0.135 (0.175)	0.130 (0.174)		0.186 (0.192)	0.182 (0.192)		0.328* (0.151)	0.318* (0.151)
Annuity Premium Share (2017)	0.762*** (0.090)	0.774*** (0.090)	0.774*** (0.091)	0.756*** (0.089)	0.770*** (0.092)	0.763*** (0.094)	0.764*** (0.089)	0.774*** (0.090)	0.770*** (0.090)
Observations	329	329	317	329	329	317	329	329	317
Adjusted R-Squared	0.738	0.755	0.757	0.743	0.751	0.752	0.734	0.746	0.748
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exclude New PE?	No	No	Yes	No	No	Yes	No	No	Yes

Table 5
Private Placements and Indexed Annuity Premium Market Share

This table shows the results of estimating equation 3. The dependent variable is the 2024 level of indexed annuity premium share. The sample period is 2017 to 2024. Controls are lagged log GA assets, lagged indexed annuity premium share (2017), percent of reserves ceded to affiliates in 2023, and change in reserves assumed. Columns (3), (6), and (9) exclude insurers acquired by PE after 2017. The sample excludes insurers who did not write annuity premiums in both 2017 and 2024 and insurers with < \$10 million GA assets in 2017. Robust standard errors.

	Fin and ABS PP			Floating Rate PP			CLO		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Δ Fin and ABS PP	0.061 (0.047)	-0.044 (0.040)	-0.051 (0.040)						
Δ Fin and ABS PP x PE		0.248** (0.076)	0.252** (0.076)						
Δ Floating Rate PP				0.097 (0.052)	-0.034 (0.057)	-0.053 (0.063)			
Δ Floating Rate PP x PE					0.241** (0.090)	0.255** (0.094)			
Δ CLO							-0.001 (0.015)	-0.002 (0.012)	-0.003 (0.012)
Δ CLO x PE							0.011 (0.078)	0.014 (0.078)	0.014 (0.078)
PE-Owned (2017)		-0.082 (0.166)	-0.083 (0.166)		0.030 (0.142)	0.025 (0.141)		0.583 (0.322)	0.562 (0.321)
Indexed Annuity Premium Share (2017)	0.987*** (0.123)	0.993*** (0.122)	1.011*** (0.120)	0.981*** (0.125)	0.989*** (0.123)	1.008*** (0.120)	1.001*** (0.120)	0.997*** (0.121)	1.015*** (0.120)
Observations	329	329	317	329	329	317	329	329	317
Adjusted R-Squared	0.693	0.720	0.736	0.696	0.710	0.727	0.687	0.696	0.712
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Exclude New PE?	No	No	Yes	No	No	Yes	No	No	Yes

Table 6
Maturity at Issuance and Portfolio Allocation

This table reports cross-sectional regressions at the insurer level, pooling bond purchases from 2020 to 2024. The sample is restricted to annuity-focused insurers with annuity reserves \geq 50% of total reserves as of 2024. MBS are excluded. Columns (1)–(3): the outcome is the par-weighted average maturity at issuance (years) for all corporate bonds, private placements, and floating-rate bonds, respectively. Columns (4)–(5): the outcome is total par value purchased 2020–2024 divided by general account assets for private placements and floating-rate bonds, respectively. Q1–Q4 are quartile dummies for indexed annuity reserve share among indexed annuity writers; the omitted baseline is insurers with zero indexed annuity reserves. Controls: log total par, annuity reserve share (fixed at 2024), and immediate annuity premium share (insurer-level mean). Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	Avg. Maturity (years)			Allocation Share	
	(1) All Corp.	(2) Private Pl.	(3) Floating	(4) PP/Assets	(5) Float/Assets
Q1	1.404 (1.330)	1.296 (2.132)	0.942 (0.980)	0.0172 (0.0120)	0.0336* (0.0174)
Q2	1.737 (1.167)	-1.068 (1.143)	-1.169 (0.871)	0.0281 (0.0180)	0.0335 (0.0226)
Q3	-0.623 (1.294)	-2.178* (1.117)	-1.423* (0.833)	0.0597*** (0.0207)	0.0476** (0.0224)
Q4	1.048 (1.219)	-2.211** (0.949)	-1.471* (0.831)	0.0707*** (0.0179)	0.0804*** (0.0249)
Log Total Par	0.0521 (0.226)	0.506*** (0.186)	0.347** (0.140)	0.00542*** (0.00176)	0.00442*** (0.00129)
Annuity Reserve Share	-8.935*** (2.208)	-4.554* (2.600)	-3.224** (1.584)	0.0669** (0.0298)	0.115*** (0.0388)
Immediate Annuity Share	-1.412 (1.211)	1.112 (2.006)	-1.122 (0.926)	0.00477 (0.0112)	0.0145 (0.0171)
N	155	93	139	157	157
R-squared	0.126	0.112	0.098	0.384	0.244

Table 7
Affiliated Investment % of GA Assets (2024)

This table reports cross-sectional regressions at the insurer level for affiliated investments and PE ownership. PE_2024 equals one if the insurer is PE-owned as of 2024. The omitted group is insurers not PE-owned in 2024. Controls are log GA assets, adjusted capital leverage, bonds as a % of GA assets, and alternative investments as a % of GA assets, all measured in 2024. Robust standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

	(1)	(2)	(3)	(4)	(5)
	Bonds	PP Bonds	Affiliated PP ABS	PP Fin. & ABS	Public
PE Owned (2024)	0.025*** (0.008)	0.018*** (0.006)	0.015** (0.006)	0.016** (0.006)	0.007*** (0.002)
Controls	YES	YES	YES	YES	YES
Observations	329	329	329	329	329
R-squared	0.201	0.159	0.144	0.163	0.212

Table 8
Likelihood of Default Regressions: 2016-2021 Purchases

This table shows the results of estimating equation X. The sample period is 2016 to 2024. We restrict the sample to bonds and ABS that are first purchased by an insurer between 2016 and 2021 that are IG at purchase with 5 years remaining maturity that are held for at least 1 year. There is only one observation per bond. Near Default is an indicator equal to 1 if the bond is downgraded to an NAIC rating of 5 (CCC-), while held by an insurer, and 0 otherwise. Default is an indicator equal to 1 if the bond is downgraded to an NAIC rating of 6 (D), while held by an insurer, and 0 otherwise the Controls: original maturity year dummy, NAIC 2 (BBB) at purchase dummy, senior secured and senior unsecured debt dummies, log par value, number of years held, and year of first purchase dummies.

	Full Sample		Bond Only		ABS Only		Full Sample	
	Distress (1)	Default (2)	Distress (3)	Default (4)	Distress (5)	Default (6)	Distress (7)	Default (8)
Private Placement Dummy	0.765*** (0.205)	-0.139 (0.274)	0.780** (0.248)	-0.592* (0.329)	0.929** (0.417)	1.963*** (0.537)	0.624*** (0.221)	-0.383 (0.325)
ABS Dummy	0.717*** (0.233)	0.001 (0.284)					0.760** (0.233)	0.057 (0.285)
Floating Rate x PP							0.765* (0.416)	0.949* (0.561)
Floating Rate Dummy	0.616*** (0.174)	0.652*** (0.221)	0.920** (0.364)	0.906** (0.413)	0.358* (0.209)	0.649** (0.292)	0.463** (0.192)	0.477* (0.244)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	30066	29744	11381	10531	17211	16047	30066	29744
Pseudo R-Squared	0.109	0.079	0.084	0.081	0.155	0.135	0.111	0.081

A Data Matching

Table A1
PP Matching Source Summary

Data Source	# Issuers	# Issuers	Value \$T	Value \$B
	All Years	2024	All Years	2024
BE CRS	8,467	3,363	5.71	463.96
FISD	1,194	233	1.28	99.58
NETS	4,066	997	0.99	89.16
No Match	5,632	2,677	1.35	183.18
SEC	26	17	0.08	13.41
Total	19385	7287	9.40	849.31

B Appendix Tables

Table A2

Dynamic Estimation: 2014 to 2019 PE Acquisitions Summary Stats

	count	mean	sd	p25	p50	p75
Share of Industry Annuity Premiums	255	0.002	0.005	0.0	0.0	0.0
Net Indexed Annuity Premiums % Net	255	0.192	0.322	0.0	0.0	0.3
Private Placements % of GA Assets	255	0.097	0.103	0.0	0.1	0.2
PP Fin & ABS % of GA Assets	255	0.035	0.047	0.0	0.0	0.0
CLO % of GA Assets	255	0.066	0.076	0.0	0.0	0.1
Log GA Assets t-1	255	21.016	1.829	19.9	21.1	22.2
Alternative Investments % of GA Assets t-1	255	0.030	0.052	0.0	0.0	0.0
Bonds % of GA Assets t-1	255	0.739	0.185	0.7	0.8	0.9
Adjusted Capital / GA Assets t-1	255	13.790	8.091	8.6	12.8	16.8
Share of Industry Annuity Reserves t-1	255	0.001	0.003	0.0	0.0	0.0
% of Reserves Ceded to Affiliates t-1	232	0.114	0.249	0.0	0.0	0.0
% of Reserves Assumed t-1	232	0.057	0.300	0.0	0.0	0.0

Table A3**Dynamic Estimation: 2014 to 2016 PE Acquisitions Summary Stats**

	count	mean	sd	p25	p50	p75
Share of Industry Annuity Premiums	179	0.001	0.004	0.0	0.0	0.0
Net Indexed Annuity Premiums % Net	179	0.150	0.299	0.0	0.0	0.1
Private Placements % of GA Assets	179	0.079	0.099	0.0	0.0	0.1
PP Fin & ABS % of GA Assets	179	0.028	0.047	0.0	0.0	0.0
CLO % of GA Assets	179	0.054	0.074	0.0	0.0	0.1
Log GA Assets t-1	176	20.557	1.832	19.3	20.7	21.7
Alternative Investments % of GA Assets t-1	176	0.024	0.057	0.0	0.0	0.0
Bonds % of GA Assets t-1	176	0.729	0.207	0.7	0.8	0.9
Adjusted Capital / GA Assets t-1	176	13.470	8.539	7.5	12.6	17.0
Share of Industry Annuity Reserves t-1	173	0.001	0.002	0.0	0.0	0.0
% of Reserves Ceded to Affiliates t-1	154	0.076	0.210	0.0	0.0	0.0
% of Reserves Assumed t-1	154	0.011	0.033	0.0	0.0	0.0

Table A4
Dynamic Estimation: 2017 to 2019 PE Acquisitions Summary Stats

	count	mean	sd	p25	p50	p75
Share of Industry Annuity Premiums	36	0.002	0.005	0.0	0.0	0.0
Net Indexed Annuity Premiums % Net	36	0.309	0.361	0.0	0.0	0.7
Private Placements % of GA Assets	36	0.101	0.098	0.0	0.1	0.2
PP Fin & ABS % of GA Assets	36	0.040	0.048	0.0	0.0	0.1
CLO % of GA Assets	36	0.078	0.069	0.0	0.1	0.1
Log GA Assets t-1	36	22.081	1.418	20.8	21.3	23.9
Alternative Investments % of GA Assets t-1	36	0.026	0.019	0.0	0.0	0.0
Bonds % of GA Assets t-1	36	0.810	0.112	0.7	0.8	0.9
Adjusted Capital / GA Assets t-1	36	11.590	3.730	9.4	10.7	14.2
Share of Industry Annuity Reserves t-1	35	0.004	0.005	0.0	0.0	0.0
% of Reserves Ceded to Affiliates t-1	36	0.067	0.193	0.0	0.0	0.0
% of Reserves Assumed t-1	36	0.138	0.293	0.0	0.0	0.2

Table A5
Dynamic Estimation: 2019 to 2021 PE Acquisitions Summary Stats

	count	mean	sd	p25	p50	p75
Share of Industry Annuity Premiums	77	0.001	0.002	0.0	0.0	0.0
Net Indexed Annuity Premiums % Net	77	0.085	0.252	0.0	0.0	0.0
Private Placements % of GA Assets	77	0.069	0.066	0.0	0.1	0.1
PP Fin & ABS % of GA Assets	77	0.026	0.043	0.0	0.0	0.0
CLO % of GA Assets	77	0.027	0.024	0.0	0.0	0.0
Log GA Assets t-1	77	21.537	2.260	19.4	22.6	23.7
Alternative Investments % of GA Assets t-1	77	0.039	0.043	0.0	0.0	0.1
Bonds % of GA Assets t-1	77	0.682	0.169	0.6	0.7	0.8
Adjusted Capital / GA Assets t-1	77	7.196	5.473	1.7	6.3	11.9
Share of Industry Annuity Reserves t-1	77	0.002	0.003	0.0	0.0	0.0
% of Reserves Ceded to Affiliates t-1	73	0.071	0.163	0.0	0.0	0.0
% of Reserves Assumed t-1	73	1.197	3.656	0.0	0.1	0.6

Table A6
Dynamic Estimation: Control Group Summary Stats

	count	mean	sd	p25	p50	p75
Share of Industry Annuity Premiums	5538	0.002	0.008	0.0	0.0	0.0
Net Indexed Annuity Premiums % Net	5538	0.057	0.195	0.0	0.0	0.0
Private Placements % of GA Assets	5538	0.044	0.065	0.0	0.0	0.1
PP Fin & ABS % of GA Assets	5538	0.013	0.023	0.0	0.0	0.0
CLO % of GA Assets	5538	0.010	0.026	0.0	0.0	0.0
Log GA Assets t-1	5538	20.527	2.490	18.7	20.5	22.3
Alternative Investments % of GA Assets t-1	5538	0.019	0.031	0.0	0.0	0.0
Bonds % of GA Assets t-1	5538	0.714	0.198	0.6	0.8	0.9
Adjusted Capital / GA Assets t-1	5538	8.621	17.614	4.0	7.2	11.2
Share of Industry Annuity Reserves t-1	5538	0.002	0.009	0.0	0.0	0.0
% of Reserves Ceded to Affiliates t-1	4807	0.059	0.173	0.0	0.0	0.0
% of Reserves Assumed t-1	4807	0.099	0.669	0.0	0.0	0.0

Table A7
Summary Statistics for Affiliated Investments (2024)

This table presents the summary statistics for affiliated investments of life insurers using in table 7.

	count	mean	sd	p25	p50	p75
Affiliated Bonds % GA Assets	329	0.005	0.022	0.000	0.000	0.000
Affiliated PP Bonds % GA Assets	329	0.004	0.018	0.000	0.000	0.000
Affiliated PP ABS % GA Assets	329	0.002	0.015	0.000	0.000	0.000
Affiliated PP Fin. & ABS % GA Assets	329	0.003	0.016	0.000	0.000	0.000
Affiliated Public Bonds % GA Assets	329	0.001	0.006	0.000	0.000	0.000
PE Owned (2024)	329	0.116	0.320	0.000	0.000	0.000

	PE Owned (2024)		Not PE (2024)	
	mean	sd	mean	sd
Affiliated Bonds % GA Assets	0.029	0.053	0.002	0.011
Affiliated PP Bonds % GA Assets	0.021	0.044	0.002	0.010
Affiliated PP ABS % GA Assets	0.016	0.042	0.000	0.003
Affiliated PP Fin. & ABS % GA Assets	0.018	0.042	0.001	0.005
Affiliated Public Bonds % GA Assets	0.008	0.014	0.001	0.002

Table A8
PP Premium Reg Summary Stats - 2024 Year-End Holdings

	count	mean	sd	p10	p25	p50	p75	p90
Yield at Purchase %	14414	5.55	0.90	4.62	5.00	5.43	5.93	6.58
Spread at Purchase %	14414	1.32	0.90	0.38	0.73	1.18	1.68	2.37
Original Maturity in years	14414	14.23	9.16	4.00	6.00	11.00	23.00	29.00
Rating Notch	14414	6.78	2.67	1.00	6.00	7.00	9.00	10.00
Actual Cost \$Ms	14414	17.58	63.04	0.30	1.33	4.97	15.50	43.17
Public Bond Dummy	14414	0.71	0.45	0.00	0.00	1.00	1.00	1.00
Public ABS Dummy	14414	0.22	0.42	0.00	0.00	0.00	0.00	1.00
Private Bond Dummy	14414	0.06	0.24	0.00	0.00	0.00	0.00	0.00
Private ABS Dummy	14414	0.01	0.09	0.00	0.00	0.00	0.00	0.00
CLO Dummy	14414	0.04	0.19	0.00	0.00	0.00	0.00	0.00
PP Financial Bond Dummy	14414	0.01	0.10	0.00	0.00	0.00	0.00	0.00
Senior Secured	14414	0.40	0.49	0.00	0.00	0.00	1.00	1.00
Senior Unsecured	14414	0.54	0.50	0.00	0.00	1.00	1.00	1.00
Subordinated	14414	0.05	0.22	0.00	0.00	0.00	0.00	0.00

Table A9
Summary Stats: Likelihood of Default Regressions

	count	mean	sd	p50	min	max
Near Default (NAIC 5)	30425	0.007	0.08	0.00	0.00	1.00
Default (NAIC 6)	30425	0.004	0.07	0.00	0.00	1.00
Private Placement Dummy	30425	0.145	0.35	0.00	0.00	1.00
Floating Rate Dummy	30425	0.336	0.47	0.00	0.00	1.00
ABS Dummy	30425	0.592	0.49	1.00	0.00	1.00
Floating Rate x PP	30425	0.015	0.12	0.00	0.00	1.00
Log Total Par Value	30244	16.392	1.86	16.59	0.69	22.21
Senior Secured Debt Dummy	30425	0.578	0.49	1.00	0.00	1.00
Senior Unsecured Debt Dummy	30425	0.297	0.46	0.00	0.00	1.00
BBB (NAIC 2) at Purchase Dummy	30425	0.300	0.46	0.00	0.00	1.00
# of Years in Sample	30425	4.017	1.90	4.00	1.00	8.00

C Appendix Figures

Figure A1: Life Insurer Share of Matched Private Placement Issues

This figure uses a sample of private placement issues matched to SP Capital IQ Pro transaction data to graph the distribution of the par value-weighted proportion of issues held by life insurance companies from 2017-2024. Each bar is stacked to indicate the share attributable to different transaction size groups. We match 621 issues, 274 of which are matched directly using CUSIP9 codes and 347 are matched using a combination of labeled maturity date and Jaccard description similarity. Source: NAIC statutory filings provided by S&P Capital IQ Pro and transaction-level data from S&P Capital Pro IQ, filtered for "Debt Capital Markets" and "Rounds of Funding" transactions from 2017 to 2024.

