MILLIMAN REPORT

Asset Allocations and Investment Strategies of U.S. Life Insurers in a Low Interest Rate Environment

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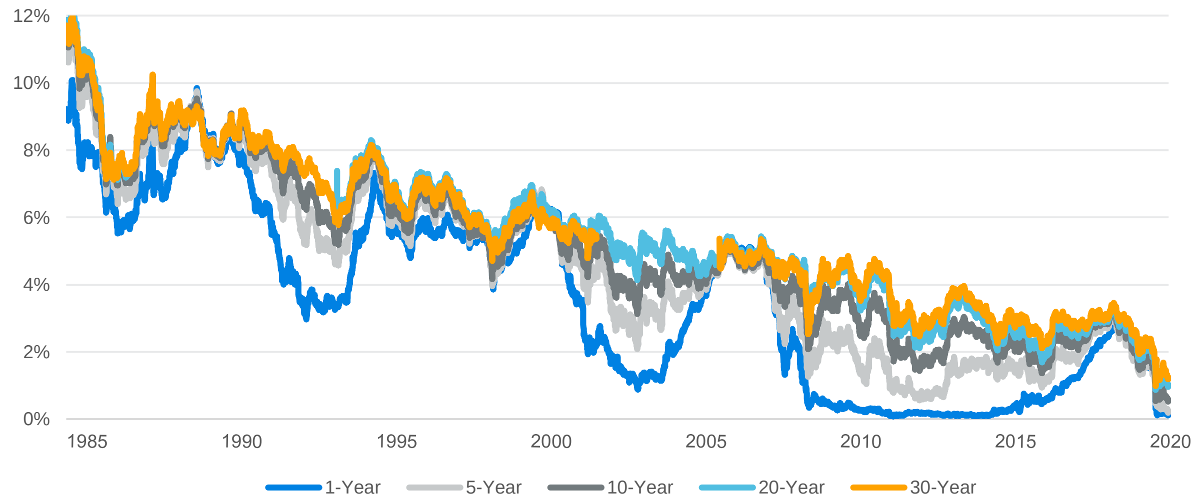
Introduction

After more than a decade of economic expansion, historically low interest rates have persisted since the 2007–2008 global financial crisis, and many believe that the low interest rates are here to stay, especially in light of the current economic environment as a result of COVID-19. As of March 15, 2020, the U.S. Federal Reserve cut rates to zero and launched a new round of quantitative easing in response to the COVID-19 pandemic.

With earnings under pressure, the search for investment yields continues to be a big challenge faced by U.S. life insurers, and it will continue to be one of the most important focuses in the years to come. As companies focus on generating higher returns and managing risks in a prolonged low interest rate environment, this report summarizes the findings based on analysis of U.S. life insurers' asset portfolios and investment strategies.

FIGURE 1: TREASURY CONSTANT MATURITY RATES



Source : Bloomberg

As shown by the graph in Figure 1, Treasury Constant Maturity Rates, the short-term 1-year rate remained near zero from December 2008 to December 2015. The 1-year rate became greater than 1.00% for the first time since 2008 in March 2017, reaching its peak at 2.74% in November 2018. Rates of other maturities were also at their historical lows until December 2015, after which they increased until the end of 2018. During most of 2019, rates trended downwards below 1% with the 1-year rate surpassing the 5-year rate.

Our asset analysis was based on year-end (YE) statutory filings from 2007 to 2019 compiled by S&P Global Market Intelligence, and was focused on the year-over-year changes in bond quality rating, bond maturity, and exposure in various asset groups including: mortgage loans, municipal bonds, private placements, Treasury inflation-protected bonds, structured assets, and Schedule BA assets. Asset mix and investment strategies were further compared among small insurers, medium insurers, large insurers, top holders, and life insurance entities owned by private equity (PE) parent companies, which we coined as life insurance-owned PE companies. The life insurance-owned PE companies were grouped separately in this analysis because their unique investment strategies were weighed more heavily toward structured securities and alternative assets.

In March of 2020, the Federal Reserve cut rates in response to the COVID-19 financial crisis and all Treasury rates other than 1-year have since reached their lowest points. As a result of economic conditions in 2020 due to COVID-19 and the sudden-stop recession, Treasury interest rates have fallen an additional 1% to 1.5%, whereas at the time of this report, only 20-year and 30-year Treasury rates were above 1%. All of the data presented in this report is based on historical information through year-end 2019 and does not anticipate changes to companies' investment strategies that may occur in 2020 and later. While we anticipate some changes in 2020 asset acquisitions due to lower interest rates and credit ratings on available debt, we plan to update this analysis after 2020 data is available, which could show more of the response to COVID-19.

Executive summary

As of December 2019, the life industry held a carrying value of $4.3 trillion in cash and invested assets with an average net yield of 4.41%. Although the average net yield increased slightly in years 2017 and 2018, it dropped by 20 basis points in 2019, and is considerably lower compared to 2007 net yields—a drop of 135 basis points. As interest rates remained low following the financial crisis, the life insurance industry continued to diversify portfolios in the pursuit of higher returns. At year-end 2019, the top four holdings in unaffiliated assets of life insurers were: corporate credits (46%), mortgage loans (14%), loan-backed and other structured assets (7%), and residential-mortgage backed securities (6%). While these assets make up approximately 74% of investments, a 2.7% decrease over the past five years was observed as investments in higher yielding assets such as Schedule BA and mortgage loans have increased.

In addition to analyzing the life industry as a whole, we also considered how company size and type would impact investment portfolios. Small- and medium-sized companies, because of their limited capacity to invest in complex or alternative assets, rely more on investment-grade public bonds to generate yields, and have less exposure in mortgage loans, private placements, bonds below investment-grade, structured securities, and alternative assets. Life insurance-owned PE companies' investment strategies are weighted heavily toward non-agency mortgage-backed assets, other loan-backed securities, and alternative assets including private equities and hedge funds.

Several strategies and key findings of our analysis are summarized below.

INVESTMENT IN MORTGAGE LOANS

Mortgage loans, in particular commercial mortgage loans, have remained an attractive asset class among U.S. life insurers due to the higher yields compared with corporate credits and government bonds. As of December 31, 2019, the total carrying value of mortgage loans held by all the U.S. life insurance companies was approximately $562 billion, and the average gross yield was 4.64%. There has been an upward trend in both the holding amount and the allocation as a percentage of the total unaffiliated investments since 2010. The residential sector also saw an increased exposure in the industry, from 4.7% of total mortgage loans in 2018 to 5.6% in 2019.

In addition, starting in 2019 the National Association of Insurance Commissioners (NAIC) revised its reporting guidelines for mortgage loans so that they are now reported under only four types: commercial, residential, farm, and mezzanine. Summarized historical data based on the new guidelines can be found in our analysis.

INVESTMENT IN PRIVATE BONDS

With superior yields and lower default risk compared to public bonds, investment in private bonds has been steadily increasing for the past several years. At year-end 2019, private bonds accounted for 36% of total bonds, a 12% increase from the 24% of total bonds in 2007 and a 4.4% increase from two years ago. The total private bonds holdings reached $1.13 trillion, a $603 billion dollar increase since 2007.

INVESTMENT IN STRUCTURED ASSETS

While the percentage of bonds invested in residential and commercial mortgage-backed securities has declined since the financial crisis, life insurers have been steadily increasing the allocation of other asset-backed securities (ABS). In 2019, the percentage of total bonds in other structured securities reached 10.1%, the highest since before the financial crisis. Commercial mortgage-backed securities (CMBS) and residential mortgage-backed securities (RMBS) allocation was still much lower than pre-financial crisis levels at 6.0% and 7.6%, respectively. Life insurance-owned PE companies continue to invest heavily in structured securities, with these assets accounting for approximately 44% of total bonds. Investment in structured securities provides further diversification among bond investments lowering the overall portfolio risk.

INVESTMENT IN SCHEDULE BA ASSETS

Life insurer investment in Schedule BA holdings reached a peak of $218 billion in 2019, accounting for 5.2% of unaffiliated investments. With an average gross yield of 6.4%, Schedule BA assets are an attractive asset class for insurers searching for higher returns in the current low interest rate environment. Since 2007, the percentage of unaffiliated investments in Schedule BA holdings as a percent of total portfolio has increased approximately 2.2%.

INCREASED INVESTMENT IN NAIC 2 BONDS

The allocation to high-yield bonds (rated NAIC 3 or lower) increased for a few years after the financial crisis; however, allocation has been decreasing in recent years, reaching its lowest allocation since 2007 at 5.2% in 2019. While investment in high-yield bonds has decreased, life insurers shifted their allocation weights among the investment grade assets in search of higher yields. Over the past two years, allocation of bonds to NAIC 1 in 2019 has decreased by 1.4% to 60.6%, while NAIC 2 allocation has increased 1.9% to 34.2%. Life insurers continue to balance the additional risk of these bonds with the higher return they provide.

INVESTMENT IN EMERGING ASSET CLASSES – EXCHANGE TRADED FUNDS

Exchange traded fund (ETF) exposure in the U.S. life insurance industry has grown dramatically since 2007, experiencing its largest increase in recent years. The higher liquidity and greater diversification benefit associated with ETFs have been a major draw for life insurers. In April 2017, the NAIC revised its methodology of how certain fixed-income ETFs can be valued. Starting January 1, 2018, the new systematic value method allowed insurers to treat some fixed-income ETFs like ordinary bonds as these investments can be amortized quarter to quarter. This allows the insurers to continue to build their portfolios. Life insurers have increased their exposure in ETFs from around $0.4 billion at 2007 year-end to $8.3 billion by December 31, 2019.

Detailed analysis of all topics are discussed in this report. Note that the investment strategies of any individual company may differ from what is summarized above.

Overview of U.S. life insurer’s investment portfolios

MAJOR MERGERS AND ACQUISITIONS

Eleven companies included in our analysis finalized important deals in 2017–2020.

In August 2017, MetLife Inc. separated its U.S. retail business and formed an independent company, creating Brighthouse Financial. Both MetLife and Brighthouse are now included in our top 30 life insurance companies.

Voya Financial sold its closed-block variable annuity and fixed index annuity business to investor group Athene Holding Ltd., resulting in two separate entities Voya Financial, Inc. and Voya Insurance and Annuity Company, since renamed as Venerable Insurance and Annuity Company. The $1.1 billion deal was announced in December 2017 and finalized in June 2018. Athene Holding Ltd. is included in our life insurance-owned PE company analysis.

Hartford Financial Services, Inc. sold its Hartford Life, Inc. business to investor group Global Atlantic Financial Group. The sold business is now operating under the name Talcott Resolution. The $1.6 billion deal was announced in December 2017 and finalized in May 2018. Similar to Athene Holding Ltd., Global Atlantic Financial Group is also included in our life insurance-owned PE company analysis.

Prosperity Life Insurance Group was acquired by the private investment firm Elliot Management Corporation in January 2019. Due to this acquisition, Prosperity Life Insurance Group is now included in our life insurance-owned PE company analysis.

Protective Life acquired all of Great-West Life and Annuity Company's individual life and annuity business via reinsurance. The $1.2 billion deal was announced in January of 2019. Both companies are included in our top 30 life insurance company analysis.

Lincoln National Life Insurance Co. and Protective Life Insurance Co. acquired Liberty Life Assurance Company of Boston in a $2.8 billion deal in April 2018. Both Lincoln National and Protective are included in our top 30 life insurance company analysis.

Genworth sold the majority stake, worth $1.8 billion, in Genworth MI Canada, Inc. to Brookfield Business Partners in December 2019. The parent company, Genworth, is included in our top 30 life insurance company analysis.

Kuvare U.S. Holdings, Inc. acquired Lincoln Benefit Life Company in December 2019. Both companies were included in our analysis in 2018, while Kuvare remains in our 2019 analysis.

Prudential Financial, Inc. announced the sale of Prudential of Korea to KB Financial Group in April 2020, a deal worth $1.9 billion. Prudential Financial is included in our top 30 life insurance analysis.

Resolution Life Group Holdings Ltd. announced the acquisition of the in-force life business of Voya Financial. The deal worth $1.13 billion is expected to close in the first quarter of 2021. Voya financial is included in our top 30 company analysis.

New York Life is acquiring the group life and disability insurance business of Cigna. The deal is valued at $6.3 billion and is expected to close in the near future. Both are included in our analysis. New York Life is included in our top 30 life insurance company analysis.

INVESTED ASSETS BY BUSINESS FOCUS

According to the December 31, 2019, statutory filings compiled by S&P Global Market Intelligence, U.S. life insurers held a carrying value of $7.38 trillion in net total assets, and $4.35 trillion in cash and invested assets. By business focus, 52% of the total invested assets were held by annuity focus insurers, 15% by life focus insurers, 15% by life and annuity focus insurers, and the remaining 18% by insurers with specialty accident and health, group accident and health, and other business focuses.

A business focus is assigned by S&P Global Market Intelligence based on the distribution of premiums and annuity considerations across the lines of business.

Figure 2 shows a breakdown of the year-end carrying value of cash and invested assets by business focus from 2007 to 2019.

FIGURE 2: U.S. LIFE INDUSTRY - CARRYING VALUE OF CASH AND INVESTED ASSETS BY BUSINESS FOCUS (IN $ BILLIONS)

Business Focus	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annuity	1,881	1,917	1,916	1,984	2,091	2,074	2,105	2,214	1,867	2,180	1,689	1,774	2,261
Life	327	334	357	370	380	402	419	442	450	474	551	572	651
Life and Annuities	368	379	395	415	442	463	499	526	830	447	945	973	646
Specialty Accident & Health	129	145	150	168	184	198	193	187	191	200	274	181	159
Group Accident & Health	107	108	112	117	121	121	121	123	131	164	153	156	142
Other	140	136	143	144	146	149	151	144	237	432	467	473	487
Total	**2,953**	**3,020**	**3,074**	**3,197**	**3,362**	**3,407**	**3,487**	**3,636**	**3,705**	**3,897**	**4,079**	**4,129**	**4,348**

NET YIELD BY BUSINESS FOCUS

U.S. life insurers saw a general downward trend in the yields of their asset portfolios from 2007 to 2016, as a result of the economic downturn and the overall decline of interest rates in the U.S. since 2007. The average net yield of the life and health industry's invested assets was 4.41 % as of December 31, 2019. Despite the slight yield pick-up in 2017 and 2018, the yield on an aggregate level reached the lowest point in 2019 and is down 135 basis points compared to the end of 2007.

Figure 3 shows the year-end net yield of the invested assets for the U.S. life and health industry by business focus from 2007 to 2019.

FIGURE 3: U.S. LIFE AND HEALTH INDUSTRY - SUMMARY OF NET YIELD ON INVESTED ASSETS (%)

Business Focus	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annuity	5.74	5.38	5.08	5.20	5.14	4.98	5.02	4.92	4.85	4.58	4.71	4.59	4.34
Life	5.72	5.60	5.35	5.33	5.20	4.85	4.57	4.59	4.59	4.43	4.28	4.23	4.22
Life and Annuities	5.91	5.61	5.42	5.26	5.17	5.03	4.73	4.85	4.41	4.41	4.71	4.84	4.42
Specialty Accident & Health	5.37	4.81	4.74	4.54	4.27	4.10	4.06	4.11	4.06	3.97	3.98	4.39	4.65
Group Accident & Health	6.11	5.75	5.45	5.95	5.24	5.18	4.82	5.10	4.92	5.04	4.46	4.49	4.69
Other	5.75	5.32	5.13	5.48	5.06	4.94	4.92	4.76	4.57	4.79	4.56	4.77	4.82
Total	5.76%	5.41%	5.16%	5.23%	5.10%	4.93%	4.86%	4.83%	4.67%	4.56%	4.58%	4.61%	4.41%

RISK-BASED CAPITAL RATIO

The U.S. life insurers have been rebuilding their surplus position since the risk-based capital (RBC) ratio bottomed at 376% at the end of 2008. The average RBC ratio of the life industry climbed to 485% at December 31, 2014, as a result of the improved general market conditions after the global financial crisis and the efforts undertaken by the life insurers to solidify their overall financial positions. The RBC ratio has since been declining, hitting its lowest since 2009 at 420% in 2018, and increased slightly to 431% at 2019 year-end. According to the 2017 Tax Cuts and Jobs Act (TCJA), the after-tax C1 factor increased by 10.8% for bonds, and bonds like with NAIC 1-5 increased by 21.5% for bonds NAIC 6 and common stock, and increased by 17.9% for reinsurance credit risk. It also increased the C2 factor for life by 17.9%. The increase in RBC factors led to an increase in required capital; thus, the decline in 2018 RBC reflects the impact of 2017 TCJA. The RBC ratio of 431% in 2019 is still lower than the pre-TCJA level.

Figure 4 shows the RBC ratio trend from 2007 to 2019 by business focus.

FIGURE 4: U.S. LIFE AND HEALTH INSURERS - RBC RATIO BY BUSINESS FOCUS

Business Focus	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Annuity	395%	377%	423%	454%	461%	472%	480%	497%	477%	476%	498%	451%	462%
Life	402%	376%	414%	441%	449%	463%	475%	485%	475%	475%	4696%	425%	437%
Life and Annuities	423%	406%	426%	457%	484%	496%	502%	515%	514%	567%	496%	457%	471%
Specialty Accident & Health	422%	341%	386%	432%	398%	464%	552%	592%	582%	606%	461%	317%	298%
Group Accident & Health	311%	286%	309%	330%	337%	327%	313%	315%	317%	322%	313%	312%	306%
Other	404%	393%	409%	420%	430%	436%	445%	461%	415%	428%	446%	414%	535%
Total	402%	376%	414%	441%	449%	463%	475%	485%	475%	475%	469%	420%	431%

As insurers search for assets that can provide higher returns than government bonds and corporate investment-grade bonds in this prolonged low interest rate environment, the regulatory capital requirement has become one of the most important considerations in asset selection and portfolio construction. The incremental return of adding a new investment would need to be justified by the associated regulatory capital charges and the resulting impact on the RBC ratio.

Figure 5 shows the trend of the life insurers' average net portfolio yield, RBC ratio, and Treasury yields of 1-year, 10-year, and 30-year maturities, from year-end 2007 to year-end 2019. The Treasury rate comparison in Figure 6 shows each maturity tenor between year-end 2018 and year-end 2019; the short end of the curve decreased by 90 basis points to 104 basis points, while the longer-term maturities decreased by around 60 basis points to 80 basis points.

FIGURE 5: TREASURY RATES/NET ASSET YIELD/RBC RATIO (2007-2019)

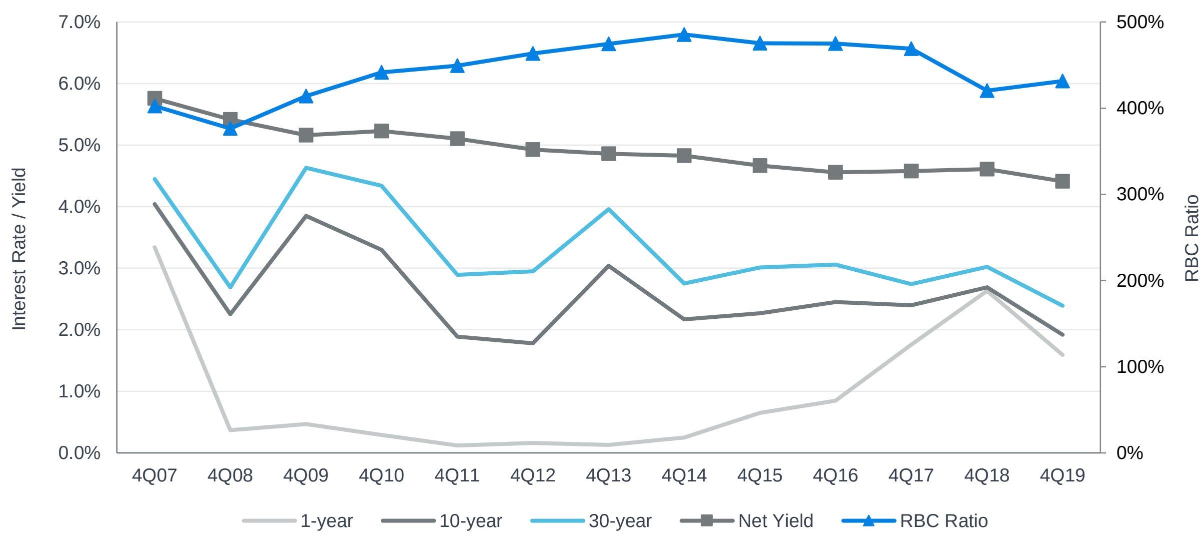


FIGURE 6: TREASURY RATES, 2018-2019

Maturity (years)	Constant Maturity Treasury Rates 12/31/2018	Constant Maturity Treasury Rates 12/31/2019	Change From Year 2018
0.25	2.45%	1.55%	-0.90%
0.5	2.56%	1.60%	-0.96%
1	2.63%	1.59%	-1.04%
2	2.48%	1.58%	-0.90%
3	2.46%	1.62%	-0.84%
5	2.51%	1.69%	-0.82%
7	2.59%	1.83%	-0.76%
10	2.69%	1.92%	-0.77%
20	2.87%	2.25%	-0.62%
30	3.02%	2.39%	-0.63%

ASSET COMPOSITION

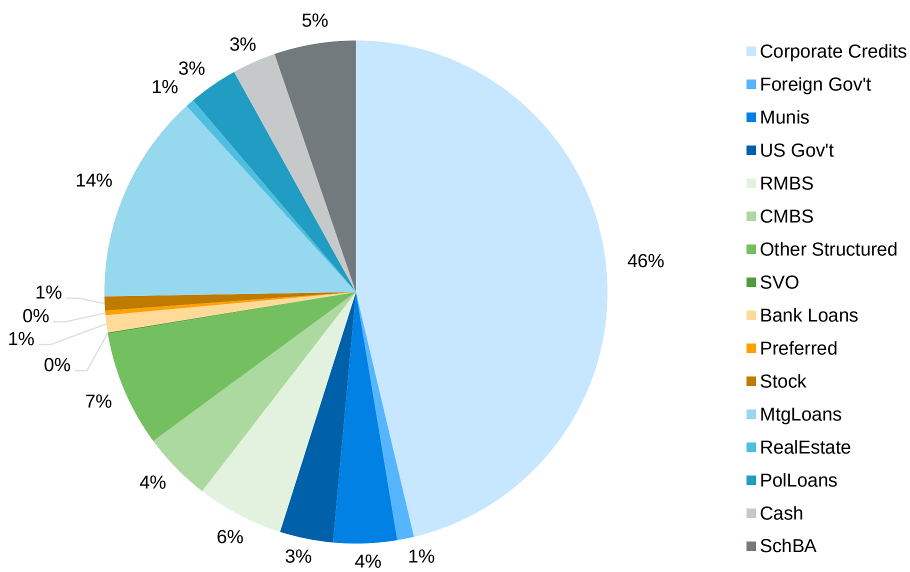
The total carrying value of unaffiliated investments held by U.S. life insurance companies was $4.16 trillion as of December 31, 2019. Figure 7 shows an overview of asset allocation by asset class for 2007 to 2019. Overall allocations have remained level, but bonds show a trend of slight decrease since 2011. Schedule BA assets and mortgage loans show a trend of increase over recent years as companies look for higher returns.

FIGURE 7: U.S. LIFE INDUSTRY - ASSET ALLOCATION SUMMARY

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bonds	75.0%	72.7%	76.6%	77.9%	77.5%	76.9%	76.9%	76.2%	76.1%	75.9%	75.5%	74.8%	73.5%
Preferred Stocks	2.2%	2.1%	0.3%	0.3%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%	0.3%	0.3%	0.3%
Common Stocks	1.4%	0.8%	0.8%	0.9%	0.9%	0.9%	0.9%	1.0%	0.8%	0.9%	1.0%	0.9%	0.9%
Mortgage Loans	11.0%	11.2%	10.6%	9.9%	9.9%	10.1%	10.5%	10.7%	11.3%	11.7%	12.2%	13.1%	13.5%
Real Estate	0.7%	0.7%	0.7%	0.6%	0.6%	0.7%	0.7%	0.6%	0.7%	0.7%	0.6%	0.5%	0.6%
Policy Loans	4.0%	4.1%	4.1%	4.0%	3.9%	3.9%	3.8%	3.7%	3.6%	3.4%	3.3%	3.3%	3.2%
Cash/Short-Term	2.7%	4.9%	4.0%	3.0%	2.9%	3.2%	2.7%	2.8%	2.8%	2.6%	2.6%	2.6%	2.8%
Schedule BA	3.1%	3.6%	3.0%	3.4%	4.1%	4.2%	4.2%	4.8%	4.5%	4.7%	4.6%	4.6%	5.2%
Total Assets	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Figure 8 shows a breakdown of the composition of the total unaffiliated investments. The top four holdings are: corporate credits (46%), mortgage loans (14%), loan-backed and other structured assets (7%), and residential mortgage-backed securities (6%).

FIGURE 8: U.S. LIFE INDUSTRY - ASSET MIX OF UNAFFILIATED INVESTMENTS AS OF DECEMBER 31, 2019



To reflect how the asset types perform relative to one another, Figure 9 shows the year-end gross yield of the unaffiliated investments by asset class for the U.S. life insurers from year-end 2007 to year-end 2019. The gross yield of the total invested assets continuously decreased from 6.22% in 2007 to 4.63% in 2019.

FIGURE 9: U.S. LIFE INDUSTRY - SUMMARY OF UNAFFILIATED GROSS YIELD BY ASSET CLASS (%)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bonds	5.98	5.86	5.80	5.64	5.41	5.20	5.01	4.90	4.72	4.65	4.50	4.50	4.47
Preferred Stock	6.64	6.62	3.83	5.62	6.36	6.25	6.29	6.24	5.97	5.85	5.78	5.82	5.79
Common Stock	4.68	2.99	2.64	2.32	2.70	2.96	2.90	2.86	2.91	3.71	2.82	3.21	3.23
Mortgage Loans	6.62	6.22	6.02	6.04	5.98	5.93	5.63	5.38	5.13	4.89	4.68	4.57	4.64
Real Estate	17.15	16.77	15.46	15.00	14.89	14.71	14.31	14.34	15.30	14.35	14.34	15.00	14.23
Contract Loans	6.52	6.55	6.63	6.43	6.27	6.09	6.01	6.01	5.88	5.97	5.98	5.96	6.00
Cash & ST Investments	5.37	2.44	0.51	0.30	0.28	0.35	0.50	0.44	0.42	0.78	1.22	2.03	2.51
All Other Inv. Assets	8.94	4.23	1.44	6.10	5.93	5.61	7.83	8.46	7.41	6.94	9.53	8.59	6.36
Total Invested Assets	6.22%	5.77%	5.54%	5.59%	5.41%	5.22%	5.15%	5.08%	4.87%	4.79%	4.77%	4.73%	4.63%

Strategies deployed in the low interest rate environment

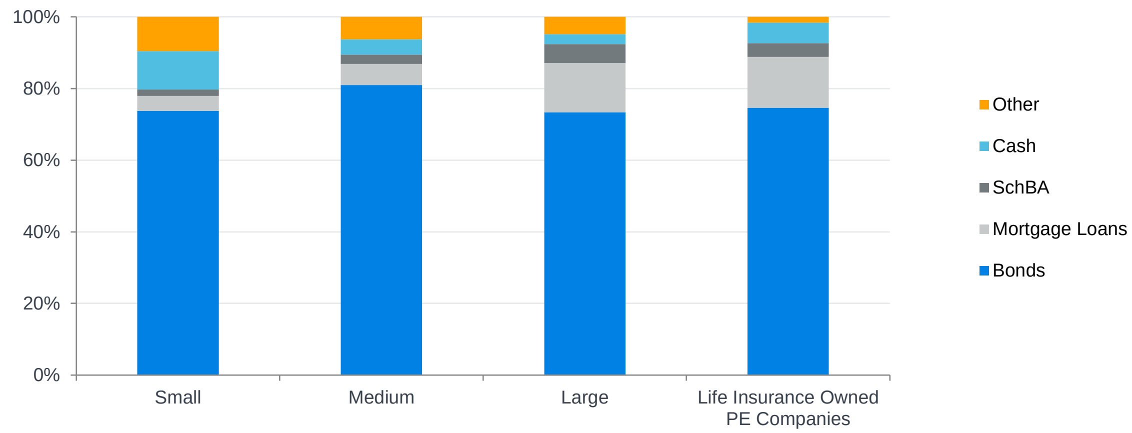
LIFE INDUSTRY OVERVIEW

Our analysis of the asset portfolios in the U.S. life insurers' year-end statutory filings showed that the following investment strategies were generally deployed by the life insurers as they focused on boosting investment returns and managing risks in a low interest rate environment.

- Most companies showed little change in the length of their asset portfolios in 2019. Average time to maturity for the life industry remained steady from 2017 to 2019 at 14.8. However, there is some variance among the companies.
- Most large insurers increased their exposures in high-quality commercial mortgage loans.
- Smaller insurers' asset portfolios consisted of a greater amount of government bonds and public corporate credits compared to large insurers.

Figure 10 shows a comparison of the unaffiliated assets composition at year-end 2019 for small insurers, medium insurers, large insurers, and life insurance-owned PE companies. All insurer groups invested at least 73% in bonds (including structured assets), with medium companies having the largest bond allocation at 80.9%. Small companies tend to have relatively more holdings in cash (10.7%), while large and life insurance-owned PE companies have a larger allocation to mortgage loans.

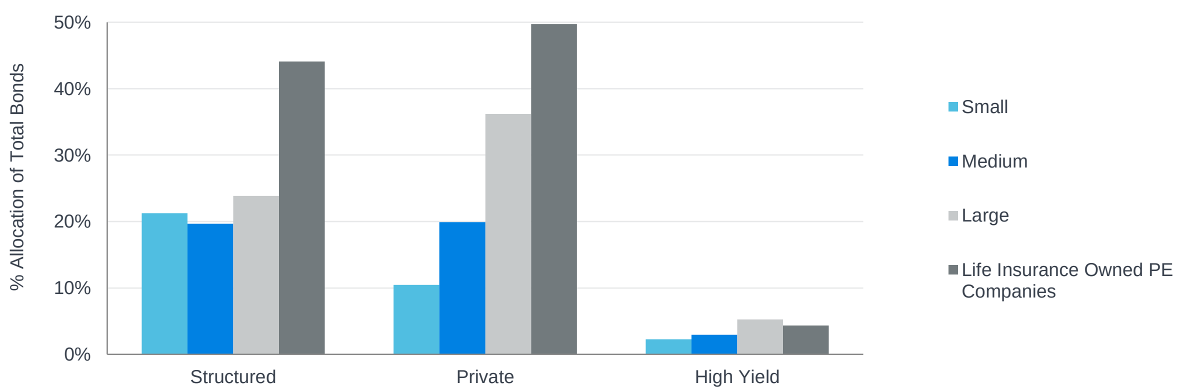
FIGURE 10: UNAFFILIATED ASSETS MIX AS OF DECEMBER 31, 2019 - COMPARISON OF SMALL, MEDIUM, LARGE, AND LIFE INSURANCE-OWNED PE COMPANIES



The “Other” category in Figure 10 includes: preferred stocks, common stocks, real estate, and contract loans.

Figure 11 contains a comparison of the percentage allocation of the total bonds in structured assets, private assets, and high-yield investments as of December 31, 2019, for small insurers, medium insurers, large insurers, and life insurance-owned PE companies. Small, medium, and large companies in Figures 10 and 11 were defined as having net total assets of less than $500 million, between $500 million and $3 billion, and above $3 billion, respectively. Life insurance-owned PE companies stand out in Figure 11 by having a large allocation to structured and private assets, 44% and 50%, respectively.

FIGURE 11: ASSET ALLOCATION IN SELECTED CLASSES AS OF DECEMBER 31, 2019 - COMPARISON OF SMALL, MEDIUM, LARGE, AND LIFE INSURANCE-OWNED PE COMPANIES



SMALL AND MEDIUM COMPANIES

In our analysis, small and medium companies were defined as having net total assets of $3.0 billion or less.

As of December 31, 2019, the average net asset yield of small and medium life insurers was 4.2%, approximately 21 basis points lower than that of large life insurers. As shown in Figures 10 and 11 above, these insurers only allocated about 5.6% of the unaffiliated assets to mortgage loans, as opposed to 13.7% observed in large insurers’ portfolios. The allocation of the total bonds in the private placements was only 18.7%, compared with 36.2% for the large companies.

FIGURE 12: SUMMARY OF NET ASSET YIELD

	2019	2018
Small/ Medium	4.20%	4.20%
Large	4.42%	4.62%
Total	4.41%	4.61%

In general, small and medium companies rely more on investment grade public bonds to generate yields because of their limited capacities to invest in complex, less liquid assets and/or alternative assets. These companies have less exposure in mortgage loans, private placements, below investment-grade bonds, structured securities, and alternative assets.

LIFE INSURANCE-OWNED PRIVATE EQUITY COMPANIES

This study includes five life insurers owned by PE parent companies. Their combined invested assets as of December 31, 2019, were $176.8 billion, about $18.8 billion higher compared to a year ago. Compared with traditional insurance companies, these life insurance-owned PE companies allocate a heavy portion of their portfolios to structured assets and alternative assets such as PE, hedge funds, and real estate.

FIGURE 13: STRUCTURED ASSET INVESTMENTS 2007-2019 BY LIFE INSURANCE-OWNED PRIVATE EQUITY COMPANIES

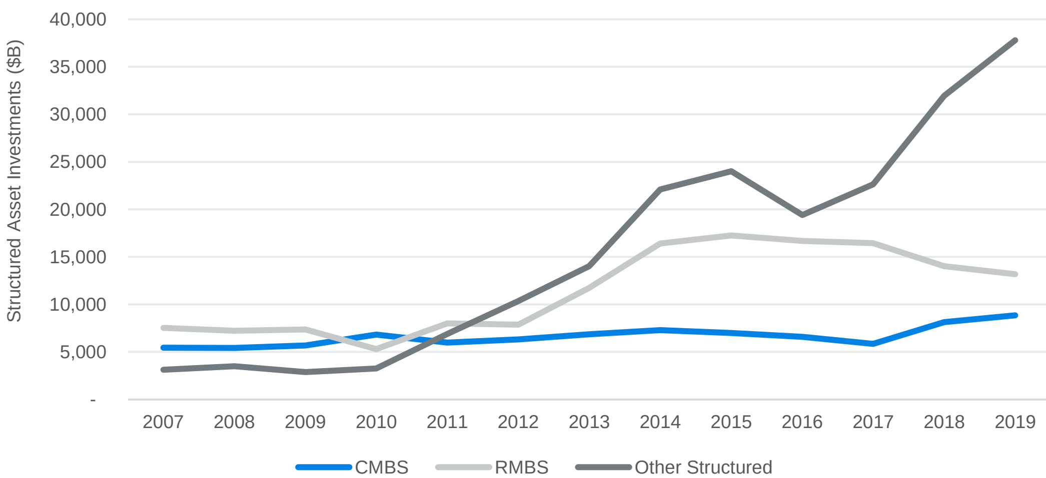


Figure 13 above shows the structured asset investment trend by the five life insurance-owned PE companies we included in the study from 2007 to 2019, specifically the investment trend in CMBS, RMBS, and other structured assets.

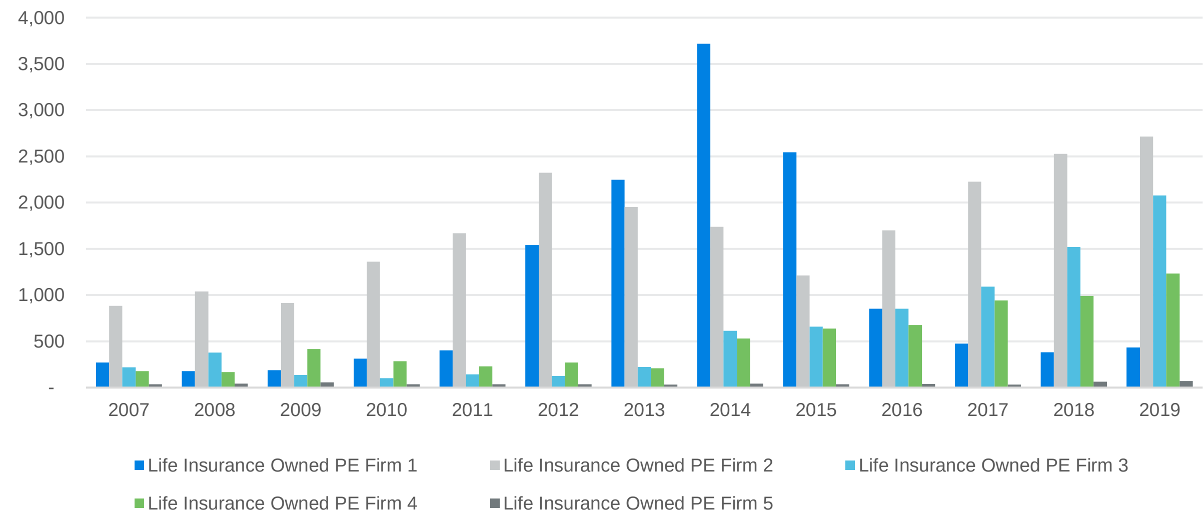
At the end of 2019, these life insurance-owned PE companies allocated an average of 43.9% of their total bonds to structured securities, including RMBS, CMBS, ABS, and other loan-backed assets, which were predominantly collateralized loan obligations (CLOs). This figure is a stark contrast to the life industry average of 23.8%. Among the five life insurance-owned PE companies, one company allocated about 56% of their total bonds to structured assets, while the exposure was smaller for the other four, which allocated 36%, 43%, 44%, and 31%, respectively.

Life insurance-owned PE companies more than doubled their RMBS-structured asset investments in dollar amounts from 2012 to 2015 reaching a year-end balance of $17 billion. RMBS has decreased by about $4 billion since then, totaling $13 billion at 2019 year-end. After decreasing for several years (2014 to 2017), CMBS holdings, on the other hand, have reached their peak at $8.9 billion, a 51% increase compared to 2017. ABS and other loan-backed assets had a large increase of over 18% since 2018 and 67% since 2017, reaching a year-end balance of $38 billion.

Compared with the life insurance-owned PE companies, the life insurance industry as a whole increased its structured asset holdings slightly, by approximately 0.2% in 2019.

Alternative assets, in particular hedge fund and private equity investments, also served as an investment strategy deployed by some life insurance-owned PE companies. According to the statutory filings, since 2013 some of the life insurance-owned PE companies have doubled or even quadrupled their Schedule BA asset investments. On the other hand, the others decreased their Schedule BA asset investments. Details of Schedule BA holdings for each PE can be seen in Figure 14 below.

FIGURE 14: SCHEDULE BA ASSETS HOLDINGS 2007-2019 BY LIFE INSURANCE-OWNED PRIVATE EQUITY COMPANIES



All of the five life insurance-owned PE companies have increased their unaffiliated assets in year 2019.

INVESTMENT PORTFOLIO DETAILED ANALYSIS

Our analysis was based on asset data in the U.S. life insurers' year-end statutory filings from 2007 to 2019, and was focused on the changes in bond quality rating, bond maturity, and exposure in various asset groups, including mortgage loans, municipal bonds, private placements, Treasury inflation-protected bonds, structured assets, and Schedule BA assets. Asset mix and investment strategies were further compared among the top holders, life insurance-owned PE companies, and the life industry average.

Bond Quality Rating

The overall bond quality rating of invested assets has remained relatively steady. In both years 2018 and 2019, investment grade bonds account for more than 94% of total bond investment, with about 60% in NAIC 1.

Figure 15 shows the life sector's total high-yield bond holdings, which are defined as any bonds rated NAIC 3 or lower and would be classified as below investment grade (BIG), and the average allocation as a percentage of the total bond investments from year-end 2007 to year-end 2019. As of December 31, 2019, the total life industry high-yield holdings were $164 billion, or 5.2% of the total bonds.

FIGURE 15: U.S. LIFE INDUSTRY HIGH-YIELD BOND HOLDINGS, 2007-2019

Figure 16 shows the top 10 high-yield bond holders and the allocation as a percentage of the total bonds as of December 31, 2019. Changes since year-end 2018 are also included.

Among the top 10 holders, half show a slight decrease of high-yield allocation in 2019. Company 7 shows the largest allocation increase of 3.2%. Company 3 and Company 2 have the largest decrease of 1.6% and 1.1%, respectively. The five life insurance-owned PE companies showed a slight increase in the high-yield space; their combined high-yield investment was approximately $5.9 billion, or 4.3% of the total bond portfolio.

FIGURE 16: TOP TEN U.S. LIFE INDUSTRY HIGH-YIELD BOND HOLDINGS AS OF DECEMBER 31, 2019

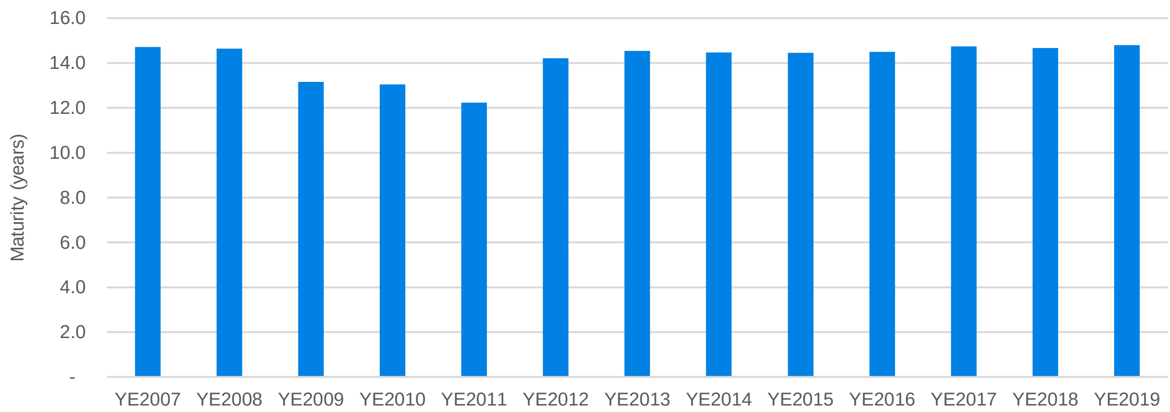
	12/31/2019			Change Since 12/31/2018		
Entity	**Total Bonds ($B)**	**High Yield ($B)**	**High Yield Allocation (%)**	**Total Bonds ($B)**	**High Yield ($B)**	**High Yield Allocation (%)**
Company 3	198.5	15.8	8.0%	2.6	(3.0)	-1.6%
Company 4	161.5	15.3	9.5%	6.3	1.3	0.5%
Company 2	166.7	12.0	7.2%	2.6	(1.6)	-1.1%
Company 1	205.0	11.2	5.5%	9.1	0.7	0.1%
Company 7	109.8	10.9	9.9%	4.1	3.7	3.2%
Company 5	155.2	10.6	6.8%	5.6	(0.5)	-0.6%
Company 6	134.4	6.7	5.0%	7.2	(0.3)	-0.5%
Company 16	61.0	3.6	5.9%	4.8	0.5	0.5%
Company 29	35.7	3.2	8.9%	0.5	(0.1)	-0.5%
Company 10	59.5	3.0	5.0%	3.6	0.8	1.1%
Top 10	1,287.3	92.4	7.2%	46.4	1.6	-0.1%
Life Industry	3,151.8	163.7	5.2%	104.6	1.1	-0.1%
Life Insurance-Owned PE Company Total	136.3	5.9	4.3%	10.7	1.1	0.5%

*Based on bonds reported with NAIC 3-6 ratings on Schedule D filings as of December 31, 2018, and December 31, 2019. Allocation is expressed as a percentage of total bonds.

Bond Maturity

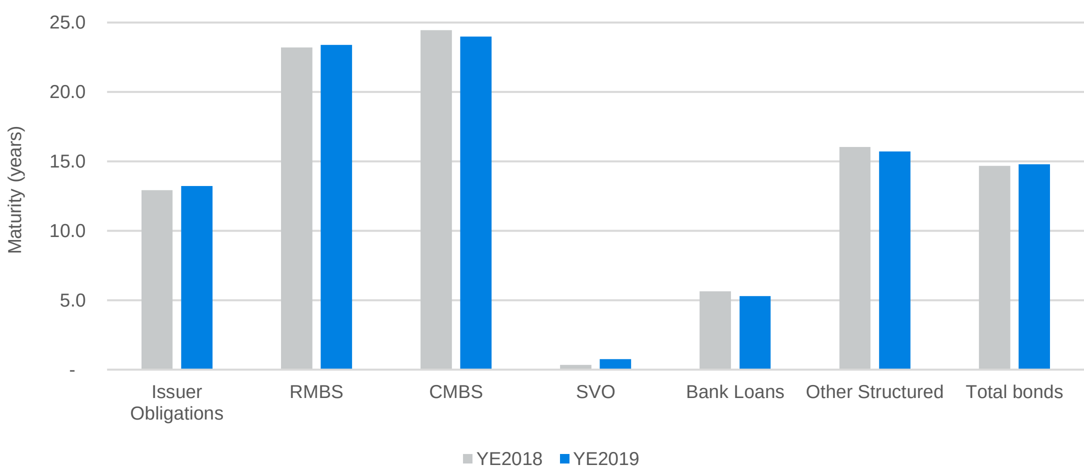
As shown in Figure 17, the average maturity of the life insurers' bond portfolios has stayed level since 2013. The slight dip in bond maturities from 2009 to 2011 is most likely an after effect of the 2007 global financial crisis. The increase in longer maturities in recent years is most likely driven by insurers' search for higher yielding assets. Corporations have also been taking advantage of the low interest rate environment and issuing new debt to lock in low rates for longer periods.

FIGURE 17: TOTAL BOND MATURITY 2007-2019



As shown in Figure 18, the largest movement was in the CMBS maturity, which was slightly shortened over 2019 from 24.5 years to 24.0 years. Bank loans and other structured assets' maturity profiles also slightly decreased over 2019 while issuer obligation, RMBS, and Securities Valuations Office (SVO) maturity slightly increased from 2018 to 2019.

FIGURE 18: U.S. LIFE INSURERS' BOND PORTFOLIO MATURITY, 2018-2019



Mortgage Loans

Mortgage loans, in particular commercial mortgage loans, have remained an attractive asset class among U.S. life insurers due to higher yields compared with more traditional fixed-income investments, such as corporate credits and government bonds. The gross yields on mortgage loan investments exceeded those on bond investments by as much as 73 basis points in 2012, but the spread has narrowed consistently since the 2012 peak. The spread decreased to 17 basis points in 2019, with gross yields on mortgages averaging 4.64% compared to unaffiliated bonds with average gross yields of 4.47%.

In addition to potential yield pick-up, mortgage loans have also shown a low level of defaults presumably due to life insurers' strong underwriting standards; 99.6% of U.S. life insurers' mortgages are in good standing and have extremely low risk of foreclosure or restructuring.

The mortgage loan allocation of the life sector has shown a slight upward trend in both the holding amount and the allocation as a percentage of the total unaffiliated investments since 2010, as shown in Figure 19. As of December 31, 2019, the total carrying value of mortgage loans held by all the U.S. life insurance companies was approximately $562 billion, and the average allocation as a percentage of the total affiliated investments was 13.5%.

FIGURE 19: U.S. LIFE INDUSTRY MORTGAGE LOAN HOLDINGS, 2007-2019

Figure 20 shows the top eight mortgage loan holders among the life companies, their respective allocations as a percentage of the unaffiliated investments, and gross yields as of December 31, 2019. Unaffiliated assets are investment holdings in companies not owned wholly or jointly by the insurer. Changes observed in mortgage loan holdings since December 31, 2018, are also included. The average mortgage loan allocation of the top eight holders was approximately 16.3% at the end of 2019. This is 2.8% higher than the life industry average of 13.5%.

FIGURE 20: TOP EIGHT U.S. LIFE INDUSTRY MORTGAGE LOAN HOLDINGS

	12/31/2019				Change from 12/31/2018			
Entity	Unaffiliated Investments ($B)	Mortgage Loan ($B)	Mortgage Loan Allocation (%)	Mortgage Loan Gross Yield (%)	Unaffiliated Investments ($B)	Mortgage Loan ($B)	Mortgage Loan Allocation (%)	Mortgage Loan Gross Yield (%)
Company 2	255.9	60.9	23.8%	4.8%	5.4	2.6	0.5%	0.2%
Company 4	235.0	39.6	16.8%	4.4%	9.5	3.0	0.6%	0.0%
Company 1	257.6	33.0	12.8%	4.7%	11.3	1.3	-0.1%	0.4%
Company 3	246.1	32.4	13.2%	4.5%	7.0	2.5	0.7%	0.0%
Company 5	198.1	31.8	16.1%	4.4%	8.9	3.4	1.0%	-0.3%
Company 6	184.0	29.4	16.0%	4.3%	15.0	2.7	0.2%	0.1%
Company 7	167.9	28.4	16.9%	4.2%	15.4	3.9	0.8%	-0.1%
Company 9	115.6	15.2	13.1%	4.5%	6.9	2.5	1.5%	0.5%
Top 8	1,660.2	270.8	16.3%	4.5%	79.5	21.7	0.6%	0.1%
Life Industry	4,155.3	561.8	13.5%	4.6%	199.7	42.8	0.4%	0.1%
Life Insurance-Owned PE companies	168.4	23.5	14.0%	4.9%	16.8	5.1	1.8%	-0.1%

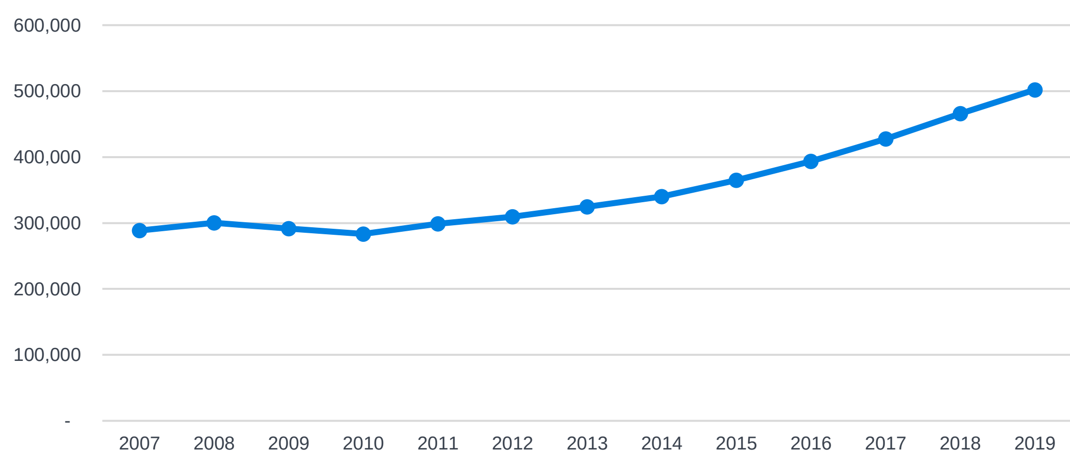
Based on Schedule B filings as of December 31, 2019, and December 31, 2018. Allocation is expressed as a percentage of unaffiliated investments.

Although mortgage loans only accounted for approximately 14% of the life insurance-owned PE companies' total unaffiliated investments at the end of 2019, the mix increased by 1.8% compared to a year prior. This was driven by two of the studied life insurance-owned PE companies, each increasing mortgage holdings by almost 30%.

The demand for residential and commercial mortgages remained strong in 2019 because of the continued low interest rates and a recovering housing market, particularly in the commercial housing sector. Commercial mortgage loans have been taking the majority allocation among all mortgage loans from 2007 to 2019, ranging from 89 to 92% of all mortgage loans. This is primarily due to the current low interest rate environment since the 2008 global financial crisis, when life insurers started branching out into other lending vehicles, recently residential mortgages.

As shown in Figure 21, even though the percentage of commercial mortgage loans has shown a decrease trend, the life insurance industry still has strong presence in commercial mortgage loans with gross investment holdings increasing from $289 billion in 2007 to $502 billion in 2019.

FIGURE 21: INDUSTRY GROSS INVESTMENT - COMMERCIAL MORTGAGE LOANS, 2007-2019



U.S. life insurers also expanded their exposures in non-commercial mortgage loans. Figure 22 displays a decade-long pattern of investments in non-commercial mortgage loans, specifically the rising interest in the residential sector. Visibly, residential mortgages have displayed the most dramatic growth, especially since 2013. Mezzanine loans have remained rather steady since 2017 after an upward trend since 2011 with the lowest interest, while farm mortgage loans remained steady until 2017, where there has been an increasing trend afterwards.

FIGURE 22: INDUSTRY GROSS INVESTMENT - NON-COMMERCIAL MORTGAGE LOANS, 2007-2019

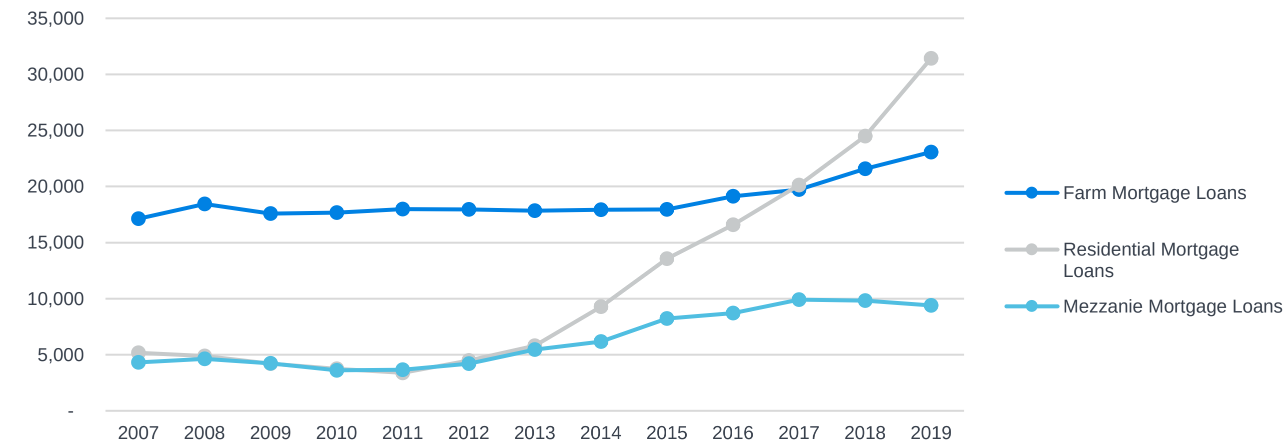
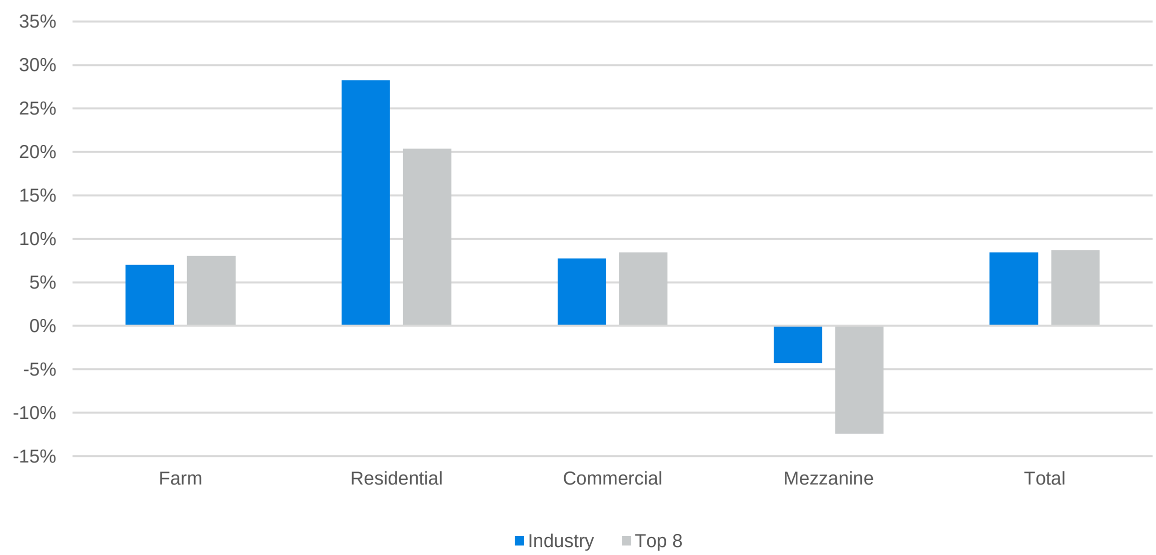


Figure 23 considers the life insurance industry as a whole alongside the top eight mortgage loan holders among the life companies (mentioned in Figure 19) and shows the year-over-year ratio of book value change from 2018 to 2019 of mortgage loans by type. The residential sector continued to have the greatest proportional increase of mortgage loan investment types in the life industry. Both the industry and top eight mortgage loan holders have decreased their investment in the mezzanine sector.

FIGURE 23: PERCENTAGE OF CHANGE IN MORTGAGE LOAN BOOK VALUE, 2019-2018



Municipal Bonds

Companies typically invest in municipal bonds for the purposes of tax benefits, diversification, and the ability to back longer-duration liabilities. Figure 24 shows an upward trend of municipal bond holdings since 2007. The largest year-over-year increase in municipal bond investment was seen in 2012, approximately $32 billion, or 37%. The upward trend has slowed in recent years. The total municipal bond holdings of the life industry were $170 billion at the end of 2019, a 1% increase from one year ago.

FIGURE 24: U.S. LIFE INDUSTRY MUNICIPAL BOND HOLDINGS, 2007-2019

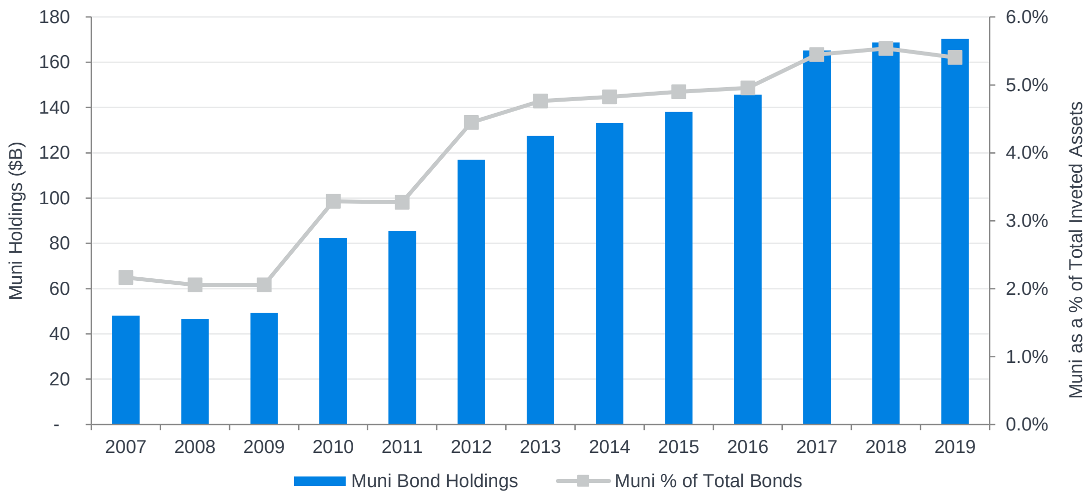


Figure 25 shows the top eight municipal bond holdings among the life companies and the allocations as a percentage of the total bonds as of December 31, 2019.

The life sector's average municipal bond allocation as a percentage of the total bonds was 5.4 % at the end of 2019. Among the top eight holdings, Company 12 and Company 15 both had double-digit percentage allocations to municipal bonds, substantially higher than the industry average.

FIGURE 25: TOP EIGHT MUNICIPAL BOND HOLDINGS OF U.S. LIFE COMPANIES AS OF DECEMBER 31, 2019

Entity	Total Bonds ($B)	Muni Bonds ($B)	Muni %
Company 1	205.0	17.7	8.6%
Company 2	166.7	10.4	6.2%
Company 8	99.4	9.2	9.2%
Company 12	69.4	8.9	12.8%
Company 3	198.5	7.3	3.7%
Company 15	56.8	6.4	11.3%
Company 7	109.8	6.0	5.4%
Company 5	155.2	5.9	3.8%
Total Top 8	1,060.8	71.7	6.8%
Total Life Industry	3,151.8	170.3	5.4%

Allocation is expressed as a percentage of total bonds.

Private Placements

Private placements have provided institutional investors, especially life insurance companies, with incremental yield, favorable structural protections, and enhanced credit diversification.

Private bond investments in the U.S. life sector have been growing over the past several years. As shown in Figure 26, the total private bond carrying value more than doubled, climbing from $523 billion at the end of 2007 to $1.13 trillion at the end of 2019. The allocation of the private bonds in the life insurers' total bond portfolio also rose from 23% at year-end 2007 to 36% at year-end 2019.

FIGURE 26: U.S. LIFE INDUSTRY PRIVATE BOND HOLDINGS, 2007-2019

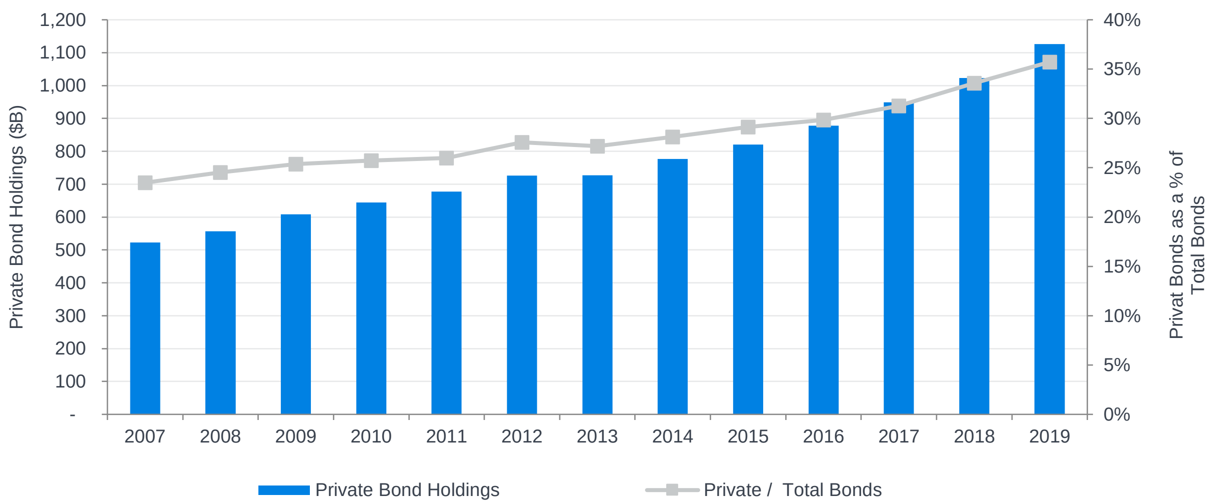


FIGURE 27: TOP TEN U.S. LIFE INDUSTRY PRIVATE BOND HOLDINGS AS OF DECEMBER 31, 2019

	12/31/2019			Change from 12/31/2018		
Entity	**Total Bonds ($B)**	**Private Bonds ($B)**	**Private Bonds Allocation (%)**	**Total Bonds ($B)**	**Private Bonds ($B)**	**Private Bonds Allocation (%)**
Company 1	205.0	78.2	38.2%	9.1	6.1	1.3%
Company 7	109.8	69.2	63.0%	4.1	6.3	3.5%
Company 3	198.5	66.4	33.4%	2.6	4.3	1.7%
Company 2	166.7	65.6	39.3%	2.6	6.3	3.2%
Company 4	161.5	61.6	38.1%	6.3	7.5	3.3%
Company 5	155.2	60.1	38.7%	5.6	2.2	0.0%
Company 6	134.4	37.9	28.2%	7.2	2.5	0.4%
Company 9	92.4	32.9	35.6%	3.2	3.4	2.6%
Company 16	61.0	32.5	53.3%	4.8	5.2	4.7%
Company 8	99.4	25.6	25.8%	0.8	2.8	2.6%
Top 10	1,384.0	530.0	38.3%	46.2	46.5	2.2%
Life Industry	3,151.8	1,125.7	35.7%	104.6	102.9	2.2%
Life Insurance- Owned PE Companies	136.3	67.3	49.4%	10.7	9.4	3.3%

Allocation is expressed as a percentage of total bonds.

Figure 27 shows the top 10 private bond holdings among the life companies and their allocations as a percentage of the total bond assets as of December 31, 2019. Changes from year-end 2018 are also included. All of the top 10 increased since 2018, with four having over a 3% increase since 2018. Among these, Company 16 had the largest one-year increase of 4.7%.

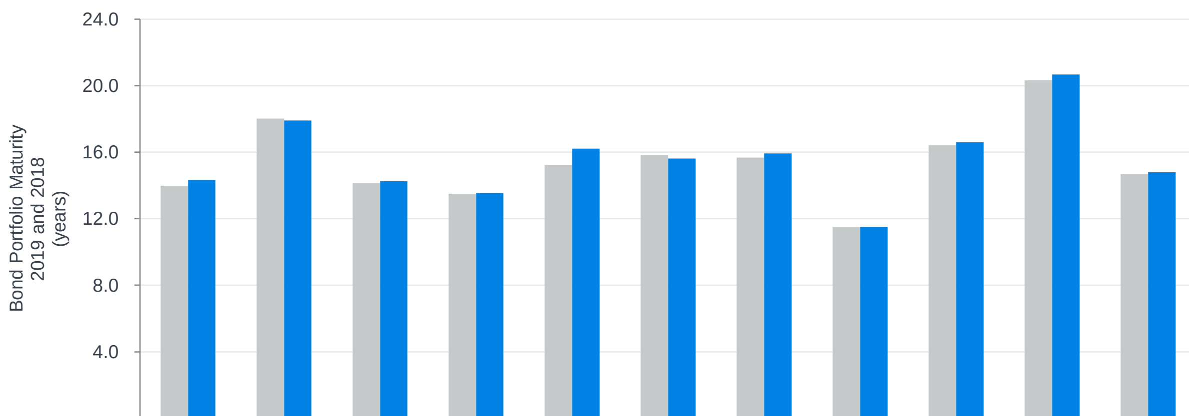
Life insurance-owned PE companies held 49% of the total bonds in private placements as of December 31, 2019, an increase of 3.3% since 2018, and 21% since 2015. This, compared with an average of 36% for the life industry.

Bond Portfolio Remaining Term to Maturity

Term to maturity (TTM) is the time between when the bond is issued and when it matures (its maturity date), at which time the issuer must redeem the bond by paying the principal (or face value). There has not been a large change in TTM, which appears to imply that there is little to no change in the durations used in investment strategies or the durations of the underlying liabilities.

Figure 28 shows the remaining TTM and duration of 10 selected life insurers as of December 31, 2019, accordingly to data compiled by S&P Global Market Intelligence. The average TTMs for the life industry are also included at the end. As of December 31, 2019, the TTM of the average life industry was 14.8. There is some variance in TTM among the companies.

FIGURE 28: BOND PORTFOLIO REMAINING TERM TO MATURITY, YE 2019 AND YE 2018



	Company 2	Company 5	Company 6	Company 1	Company 9	Company 20	Company 23	Company 17	Company 8	Company 24	Life Industry
TTM 2018	14.0	18.0	14.1	13.5	15.2	15.8	15.7	11.5	16.4	20.3	14.7
TTM 2019	14.3	17.9	14.3	13.5	16.2	15.6	15.9	11.5	16.6	20.7	14.8

Structured Securities

Structured securities include RMBS, ABS, and CMBS, as well as loan-backed and other structured assets that are mainly CLOs. As of December 31, 2019, the total carrying value of the structured assets held by all life companies was $749 billion, and the average allocation as a percentage of the total bonds was approximately 23.8%.

Although structured asset holdings at the end of 2019 had surpassed levels seen before the global financial crisis, their proportion in the total bond portfolio was still below those at the end of 2007. In 2019, the carrying value of the structured assets in the life sector increased by about $30 billion, driven by the increased exposure in CMBS and other structured assets. As Figure 29 shows, the average allocation as a percentage of total bonds has shown a trend of slight decline since 2011, with the first increase in 2018 and continued to increase throughout 2019.

Figure 29 shows the structured asset holdings and the allocation as a percentage of the total bonds of all U.S. life companies from year-end 2007 to year-end 2019.

FIGURE 29: U.S. LIFE INDUSTRY STRUCTURED BOND HOLDINGS, 2007-2019

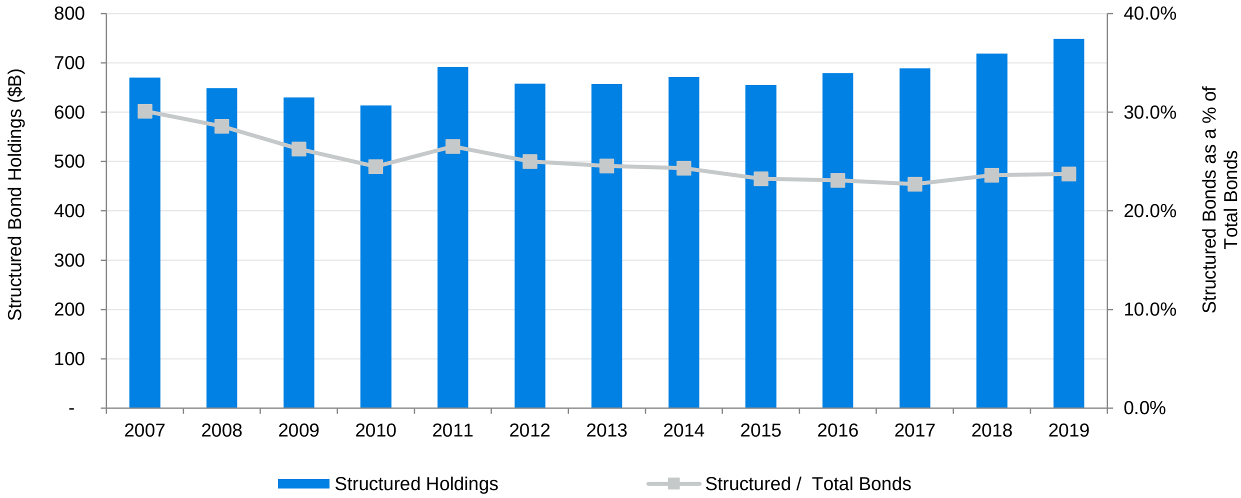
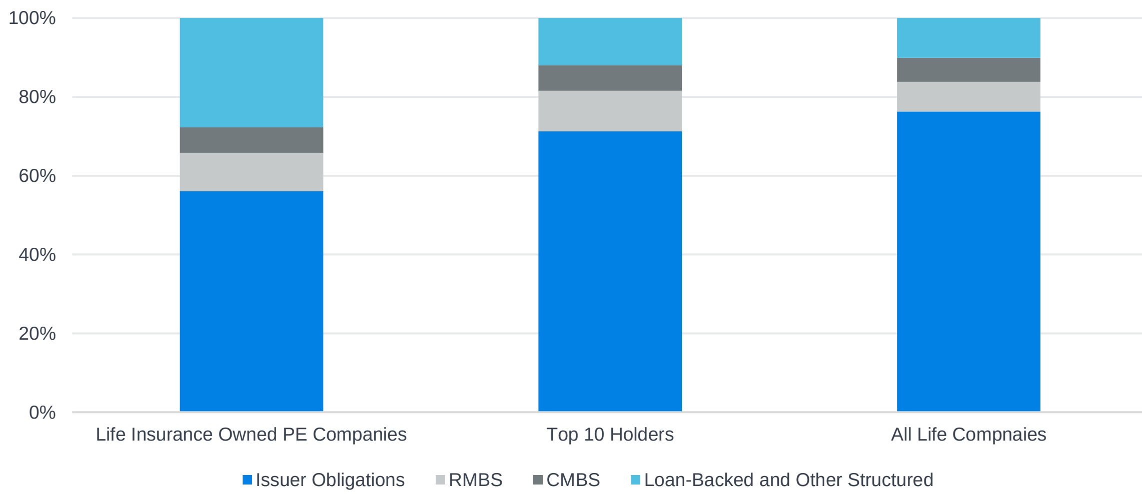


Figure 30 shows a comparison of the bond portfolio composition as of December 31, 2019, for the life insurance-owned PE companies, the top 10 structured assets holders, and the life industry average.

FIGURE 30: COMPARISON OF BOND PORTFOLIO COMPOSITION AS OF DECEMBER 31, 2019 - LIFE INSURANCE-OWNED PE COMPANIES, TOP 10, AND ALL LIFE COMPANIES



The five life insurance-owned PE companies on average allocated 44% of the total bonds to structured assets, compared with 29% for the top 10 structured assets holders, and 23.8% for all the life companies combined. Life insurance-owned PE companies' greater exposures in the structured securities compared with their life industry peers was driven by the loan-backed and other structured securities, primarily ABS and CLOs.

All of the five life insurance-owned PE companies' investments in structured assets were above the industry average. One company increased in structured asset investment at 15%, bringing its overall allocation to 31%. Another company continued to invest more than half of its bond portfolio in structured assets while maintaining a relatively balanced portfolio with the largest allocation in ABS at 34%, followed by RMBS and CMBS at 14% and 8%, respectively.

Appendix A contains a detailed comparison of the structured asset investments for the top 10 holders and the five life insurance-owned PE companies as of December 31, 2019. Changes since December 31, 2018, are also included. Structured assets are broken into RMBS, CMBS, and loan-backed/other structured securities categories.

Schedule BA Assets

Schedule BA assets, such as hedge funds, and private equities investments, can potentially generate higher investment returns compared with traditional assets. Joint ventures, partnerships, or limited liability companies (LLCs) that have characteristics of a real estate investment also belong to this category. These assets are typically riskier, less liquid, and require specialized expertise in risk assessment and valuation.

U.S. life insurers continued to increase their Schedule BA assets investments from 2009 to 2014, reaching a high point of Schedule BA holdings of $166 billion in 2014. In 2015, the life sector showed its first decrease since 2009 of $6 billion dollars. As of December 31, 2019, the life sector held a total carrying value of $218 billion in Schedule BA assets, showing an increase of $36 billion since 2018. The average allocation as a percentage of the total unaffiliated assets was 5.2%, and the average gross yield was 6.4%.

Figure 31 shows the life sector's Schedule BA assets holdings and the average allocation as a percentage of the unaffiliated investments from year-end 2007 to year-end 2019.

FIGURE 31: U.S. LIFE INDUSTRY SCHEDULE BA ASSETS HOLDINGS, 2007-2019

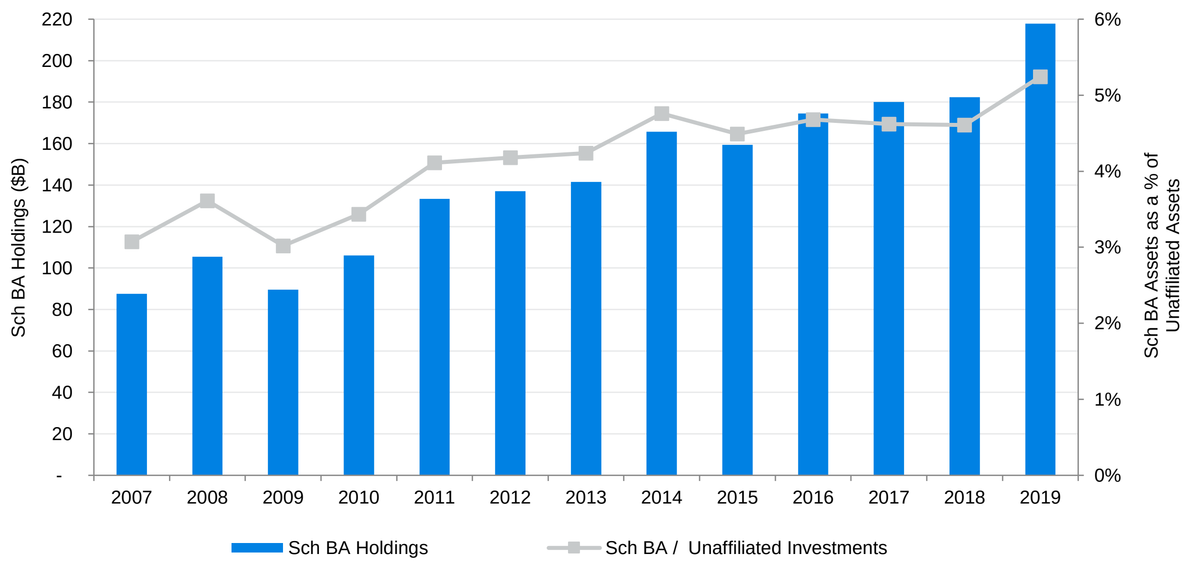


Figure 32 shows the top 10 Schedule BA assets holders among the life companies and the allocation as a percentage of the unaffiliated investments as of December 31, 2019. Changes from year-end 2018 are also included.

FIGURE 32: TOP TEN U.S. LIFE INDUSTRY SCHEDULE BA ASSETS HOLDINGS AS OF DECEMBER 31, 2019 (IN $ BILLIONS)

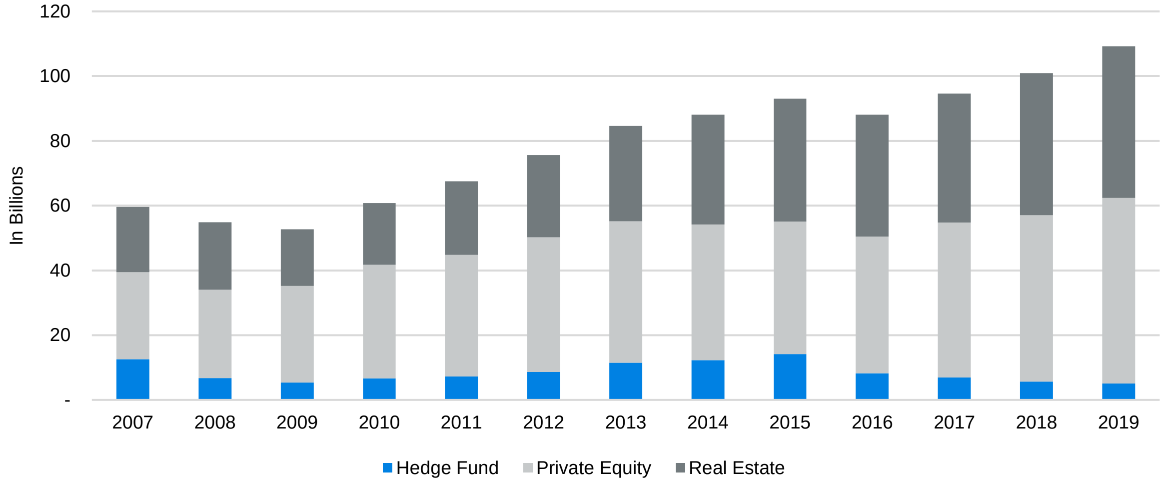
	12/31/2019				Change Since 12/31/2018			
Entity	Unaffiliated Assets ($B)	Sch. BA Assets ($B)	Sch. BA Allocation (%)	Sch. BA Gross Yield (%)	Unaffiliated Assets ($B)	Sch. BA Assets ($B)	Sch. BA Allocation (%)	Sch. BA Gross Yield (%)
Company 10	103.7	22.9	22.1%	7.1%	7.9	4.3	2.7%	-0.8%
Company 7	167.9	18.3	10.9%	6.1%	15.4	5.1	2.2%	-1.6%
Company 2	255.9	16.1	6.3%	6.4%	5.4	(0.4)	-0.3%	0.2%
Company 6	184.0	15.1	8.2%	6.5%	15.0	3.8	1.5%	-1.5%
Company 3	246.1	8.7	3.5%	7.3%	7.0	0.1	-0.1%	-1.5%
Company 5	198.1	8.2	4.1%	4.6%	8.9	1.5	0.6%	-2.8%
Company 4	235.0	8.1	3.4%	5.9%	9.5	0.5	0.1%	-1.2%
Company 1	257.6	7.3	2.8%	10.5%	11.3	0.4	0.0%	0.8%
Company 8	121.0	6.6	5.4%	-1.1%	4.6	2.7	2.1%	-0.1%
Company 20	69.0	5.8	8.4%	1.6%	(2.0)	(0.6)	-0.7%	-0.5%
Top 10	1,838.3	117.0	6.4%	6.0%	83.1	17.2	0.7%	-1.0%
Life Industry	4,155.3	217.9	5.2%	6.4%	199.7	35.6	0.6%	-2.2%
Life Insurance Owned PE Firm 1	9.0	0.4	4.8%	24.7%	0.0	0.1	0.6%	-4.1%
Life Insurance Owned PE Firm 2	73.2	2.7	3.7%	11.9%	5.5	0.2	0.0%	-19.2%
Life Insurance Owned PE Firm 3	60.8	2.1	3.4%	22.7%	9.4	0.6	0.5%	17.8%
Life Insurance Owned PE Firm 4	22.8	1.2	5.4%	2.1%	1.7	0.2	0.7%	-15.4%
Life Insurance Owned PE Firm 5	2.7	0.1	2.7%	2.3%	0.2	0.0	0.1%	-0.2%
Life Insurance-Owned PE Company Total	168.4	6.5	3.9%	14.2%	16.8	1.0	0.3%	-6.7%

Among the top 10 holders, Company 20 and Company 2 decreased their investments in Schedule BA by $0.6 billion and $0.4 billion, respectively. Company 10 had the highest allocation in Schedule BA assets at 22.1%, 16.8% above the industry average.

All of the life insurance-owned PE companies increased their investment in Schedule BA assets. Life Insurance-Owned PE Firm 3 had the largest increase of $0.6 billion.

Among all Schedule BA assets, hedge funds, PEs, and real estates are the most popular asset classes. Figure 33 below shows how U.S life insurers have been changing their investment allocations among these three asset classes. Overall the aggregate holding shows an increasing trend since 2009, with a slight dip in 2016. U.S. life insurers have increased their allocation percentage in real estate and PEs. In 2019, the industry-level allocation to private equities and real estate total Schedule BA assets was 26% and 21%, respectively. In contrast, the hedge fund allocation has been decreasing since 2015 and had only $5.08 billion at the end of 2019.

FIGURE 33: MAIN SCHEDULE BA COMPOSITION (IN $ BILLIONS)

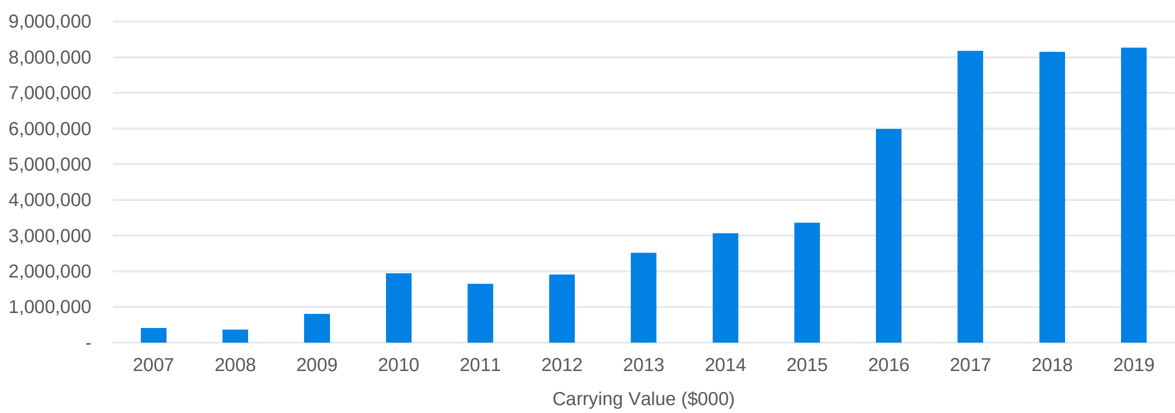


Exchange Traded Funds

Exchange traded funds (ETFs) have become an increasingly attractive asset to life insurers since 2007. Like mutual funds, ETFs provide diminished risk through diversification; one fund (managed and sold by brokerage firms) can invest in hundreds, or even thousands, of stocks, bonds, and other tradeable assets. Unlike mutual funds, ETFs trade at a market price on major exchanges. Mutual funds are in contrast less liquid than ETFs, and priced once a day after the markets close.

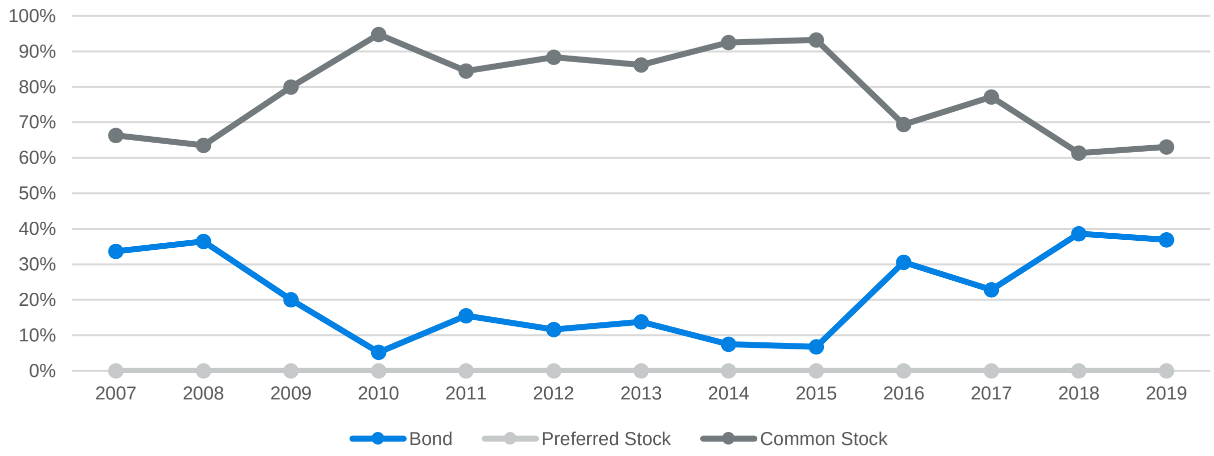
According to S&P Global Market Intelligence group reporting data, life insurers have increased their exposure in ETFs in the last 10 years from approximately $2 billion at 2010 year-end to $8.3 billion by December 31, 2019. The industry's ETF exposure increased in 2019 slightly by $116.5 million since 2018, as shown in Figure 34 below.

FIGURE 34: U.S. LIFE INDUSTRY ETF HOLDINGS, 2007-2019



According to the NAIC, statutory accounting principles require ETFs to be reported as shares of common stock under Schedule D unless an ETF holds only bonds or only preferred stock and meets the criteria specified by the NAIC Investment Analysis Office. The NAIC SVO has produced lists for ETFs that meet this criteria: the "ETF Bond List" (163 as of 2019) and the "ETF Preferred-Stock List" (0 as of 2019). If an insurer owns shares of a fixed-income ETF, it must appeal to the NAIC to add it to the bond list. Figure 35 shows how the top 30 life insurers identified by total unaffiliated investments invested in ETFs over the last 12 years.

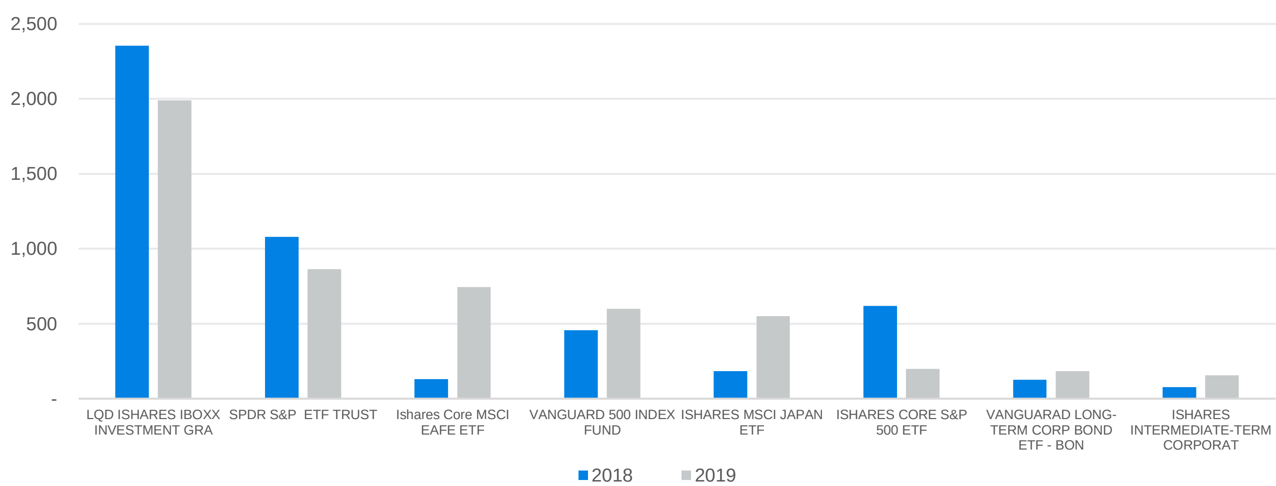
FIGURE 35: TOP 30 LIFE INSURERS – EXPOSURE TO ETFS – SCHEDULE D REPORTING, 2007-2019



According to the NAIC website, an NAIC working group is exploring more changes to the accounting rules to provide more detailed guidance on the treatment of ETFs. This will prevent companies from incorrectly reporting ETF shares and the graph above may indicate a more meaningful trend in the future.

As of 2019, the eight most invested ETFs in the life insurance industry can be seen in Figure 36. The highest (LQD iShares IBOXX Investment Grade), 7th highest (Vanguard Long-Term Corporate), and 8th highest invested ETFs (iShares Intermediate-Term Corporate) are on the NAIC bond list. The remaining in the top eight are reported as common stock shares under NAIC guidance.

FIGURE 36: MOST POPULAR ETFS HELD IN U.S. LIFE INDUSTRY, YE2019



ETFs are still a relatively new investment vehicle for insurance companies. Only 15 of the top 30 life insurers (based on net total admitted assets) are exposed to ETFs as of December 31, 2019. Figure 37 shows the top eight companies with ETF exposure in the life insurance industry, using S&P Global Market Intelligence group reporting data. Company 118 the life insurer with the 8th largest exposure to ETFs in 2019, has grown their ETF portfolio to be 20.71% of their total reported Schedule D assets.

FIGURE 37: TOP EIGHT U.S. LIFE INSURERS WITH ETF HOLDINGS, YE2019

Life Insurers With Highest ETF Exposure	12/31/2019 Carrying Value (Millions)	Change from 12/31/2018 (Millions)	% ETF Exposure in Co.'s Annual Statement - Schedule D
Company 4	1,414	264	0.86%
Company 1	1,367	270	0.67%
Company 3	1,166	286	0.57%
Company 38	793	(125)	0.80%
Company 32	574	28	2.43%
Company 59	415	109	3.82%
Company 22	344	(175)	0.68%
Company 118	260	65	20.71%

Although ETFs still represent only a small allocation of life insurers' portfolios, there is certainly an increasing trend of ETF exposure in the industry that should be monitored moving forward, especially ETFs on the NAIC bond list during this low interest rate environment. The growing attractiveness of these funds arises from their usefulness to insurance companies to add income to portfolios when newly issuing bonds, or the existing funds becoming less attractive. Fixed Income ETFs, and the widely held ETFs in particular, can provide efficient access to diversified pools of fixed income assets aligned with benchmark indices. Furthermore, they are often cheaper and easier to trade than the individual underlying bonds and fixed income assets, which may be less liquid. P&C companies have been the most frequent adopters of ETFs, but life insurers appear to be following suit.

Appendix A: Comparison of structured investments for the top 10 life holders and life insurance-owned private equity companies as of December 31, 2019

FIGURE 38: TOP 10 U.S. LIFE INDUSTRY STRUCTURED HOLDINGS AS OF DECEMBER 31, 2019 (IN $ BILLIONS)

	As of 12/31/2019								Change Since 12/31/2018							
	Total Structured		RMBS		CMBS		ABS		Total Structured		RMBS		CMBS		ABS	
Entity	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)	Amt ($B)	Mix (%)
Company 1	61	30%	19	9%	26	13%	15	8%	3	0%	0	0%	2	0%	1	0%
Company 3	60	30%	29	15%	11	5%	21	10%	0	0%	(1)	-1%	(0)	0%	2	1%
Company 5	46	29%	17	11%	10	7%	18	12%	(4)	-4%	(4)	-3%	1	0%	(1)	-1%
Company 2	43	26%	23	14%	6	4%	15	9%	1	0%	(1)	-1%	0	0%	2	1%
Company 4	37	23%	26	16%	3	2%	9	5%	(5)	-4%	(7)	-5%	1	1%	1	0%
Company 12	32	47%	6	8%	9	13%	17	25%	(1)	-3%	0	0%	1	2%	(2)	-4%
Company 6	32	24%	3	2%	11	8%	18	13%	1	0%	0	0%	0	0%	0	-1%
Company 24	25	56%	6	14%	4	8%	15	34%	2	0%	0	-1%	1	1%	2	1%
Company 16	22	36%	6	9%	2	3%	14	23%	2	1%	(1)	-2%	(0)	-1%	3	4%
Company 7	19	17%	2	2%	3	3%	14	12%	3	2%	0	0%	1	0%	2	1%
Top 10	376	28.8%	135	10%	85	7%	156	12%	3	-1%	(13)	-1%	6	0%	9	0%
Life Industry	749	23.8%	240	8%	191	6%	319	10%	30	0%	(11)	-1%	12	0%	28	1%
Life Insurance-Owned PE Firm 1	3	43%	0	2%	1	8%	2	32%	(0)	-6%	(0)	-1%	(0)	-1%	(0)	-6%
Life Insurance-Owned PE Firm 2	22	36%	6	9%	2	3%	14	23%	2	1%	(1)	-2%	(0)	-1%	2	1%
Life Insurance-Owned PE Firm 3	25	56%	6	14%	4	8%	15	34%	2	0%	0	-1%	1	1%	2	0%
Life Insurance-Owned PE Firm 4	9	44%	1	4%	3	13%	6	28%	1	3%	(0)	0%	0	1%	1	3%
Life Insurance-Owned PE Firm 5	1	31%	0	12%	0	3%	0	17%	0	15%	0	5%	(0)	-1%	0	15%
Life Insurance-Owned PE Company Total	60	43.9%	13	10%	9	6%	38	28%	6	1%	(1)	-1%	1	0%	6	1%

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