# Investment strategies of U.S. life insurers in a low interest rate environment

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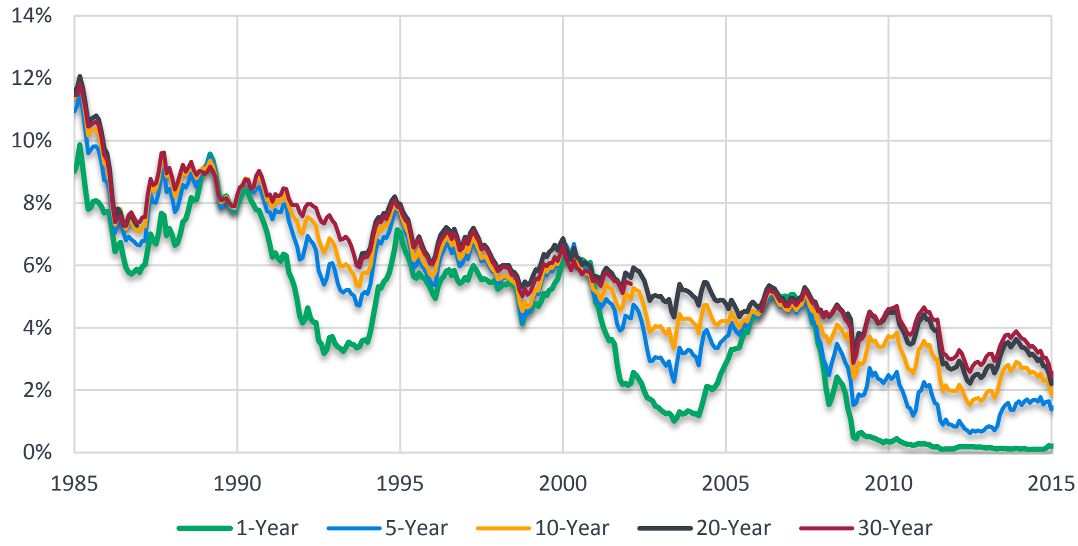
# INTRODUCTION

With earnings under pressure because of persistent low interest rates, 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: Federal Reserve Economic Data*

As shown by graph in Figure 1, Treasury Constant Maturity Rates, the short-term 1-year rate has been near zero since December 2008. Other rates of other maturities are also at their historical lows. The Federal Reserve Board raised rates by 25 basis points (bps) for the first time since 2006 in December 2015. As of April 2016, the target remains at 0.25% to 0.5%.

Our asset analysis was based on year-end (YE) statutory filings from 2007 to 2015 compiled by SNL, 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 companies, large companies, top holders, and life insurance entities owned by private equity parent companies, which we coined as private equity (PE) firms. The PE firms were grouped separately in this analysis, which is due to their unique investment strategies that weighed more heavily toward structured securities and alternative assets.

# EXECUTIVE SUMMARY

The key findings of our analysis are summarized as follows.

- As of December 31, 2015, U.S. life insurers held a carrying value of $6.32 trillion in net total assets, and $3.71 trillion in cash and invested assets. By business focus, 50% of the total invested assets were held by annuity focus insurers, 23% by life and annuity focus insurers, 12% by life focus insurers, and the remaining 15% by insurers with specialty accident and health, group accident and health, and other business focuses. From 2014 to 2015, SNL recategorized the business focus of 42 companies. The largest shift was from annuity focus to life and annuities focus. There was also a decrease in the number of group accident and health focus companies.
- The average net yield of the life companies' invested assets was 4.67% as of December 31, 2015, down by 16 basis points from one year earlier, 19 basis points from two years earlier, and 109 basis points compared with the end of 2007.
- The top four holdings in the life insurers' unaffiliated investments at year-end 2015 are: corporate credits (49%), mortgage loans (11%), residential mortgage-backed securities (RMBS, 7%), and loan-backed and other structured assets (6%).
- There is a small shift from 2013 to 2014 where National Association of Insurance Commissioners (NAIC) 2 bonds decrease and NAIC 1 bonds increase. However, in 2015 the trend reverted back. The average rating has remained level over the past several years.
- Most companies showed little change to the length of their asset portfolios in 2015. Average time to maturity for the life industry remained steady from 2014 to 2015, but there is some variance among the companies.
- A number of large insurers continued to increase their exposures in commercial mortgage loans, a trend since 2011. Small insurers increased exposure in Schedule BA assets during 2015 after a small decrease in 2014.
- Mortgage loans, in particular commercial mortgage loans, have remained an attractive asset class among U.S. life insurers, which is due to the higher yield compared with corporate credits and government bonds. As of December 31, 2015, the total carrying value of mortgage loans held by all the U.S. life insurance companies was approximately $402 billion, and the average gross yield was 5.1%, 46 basis points higher than that of the total invested assets. There has been a slight upward trend in both the holding amount and the allocation as a percentage of the total unaffiliated investments since 2010.
- Private bond investments in the U.S. life sector have been growing over the past several years. The total private bond carrying value climbed from $523 billion at the end of 2007 to $821 billion at the end of 2015, an approximate 57% increase. The allocation of the private bonds in the life insurers' total bond portfolio also rose from 23% at year-end 2007 to 29% at year-end 2015.
- Structured securities include residential mortgage-backed securities (RMBS), asset-backed securities (ABS), and commercial mortgage-backed securities (CMBS), as well as loan-backed and other structured assets, which are mainly collateralized loan obligations (CLOs). As of December 31, 2015, the total carrying value of the structured assets held by all life companies was $655 billion, and the average allocation as a percentage of the total bonds was approximately 23%. Their proportion in the total bond portfolio was still below what was at the end of 2007.
- U.S. life insurers increased their Schedule BA assets investments by approximately $4 billion in 2012, $5 billion in 2013, and $24 billion in 2014. As of December 31, 2015, the life sector held a total carrying value of $159 billion in the Schedule BA assets, showing a decrease of $6 billion, the first decrease since 2009. The average allocation as a percentage of the total unaffiliated assets was 4%, and the average gross yield was 7.41%, 274 basis points higher than that of the total invested assets.
- Small and medium companies, because of their limited capacities to invest in riskier, less liquid 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. As of December 31, 2015, the average net asset yield of small and medium life insurers was 3.5%, approximately 114 basis points lower than that of large life insurers. Small and medium writers only allocated about 2.9% of the unaffiliated assets to mortgage loans, compared with 11.5% for the large insurers.
- Private equity entities' investment strategies weighted heavily toward non-agency mortgage-backed assets, other loan-backed securities, and alternative assets, including private equity and hedge funds. As of December 31, 2015, the combined invested assets of the four private equity entities were $62.3 billion, about $11 billion higher compared with a year ago. The average allocation of the total bonds to the structured securities was 42%, including RMBS, CMBS, ABS, and other loan-backed assets, which were predominantly CLOs. This compared with 23% for the life industry average.

Note that the investment strategies of any individual company may differ from what's summarized above.

# OVERVIEW OF U.S. LIFE INSURERS' INVESTMENT PORTFOLIOS

## INVESTED ASSETS BY BUSINESS FOCUS

According to the December 31, 2015, statutory filings compiled by SNL, U.S. life insurers held a carrying value of $6.32 trillion in net total assets, and $3.71 trillion in cash and invested assets. By business focus, 50% of the total invested assets were held by annuity focus insurers, 12% by life focus insurers, 22% by life and annuity focus insurers, and the remaining 5% by insurers with specialty accident and health, group accident and health, and other business focuses.

A business focus is assigned by SNL 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 2015.

### Figure 2: U.S. Life Industry: Carrying Value of Cash and Invested Assets by Business Focus (in $ billions)

| Business Focus | Y2007 | Y2008 | Y2009 | Y2010 | Y2011 | Y2012 | Y2013 | Y2014 | Y2015 |
|---|---|---|---|---|---|---|---|---|---|
| Annuity | 1,881 | 1,917 | 1,916 | 1,984 | 2,091 | 2,074 | 2,105 | 2,214 | 1,867 |
| Life | 327 | 334 | 357 | 370 | 380 | 402 | 419 | 442 | 450 |
| Life and Annuities | 368 | 379 | 395 | 415 | 442 | 463 | 499 | 526 | 830 |
| Specialty Accident & Health | 129 | 145 | 150 | 168 | 184 | 198 | 193 | 187 | 191 |
| Group Accident & Health | 107 | 108 | 112 | 117 | 121 | 121 | 121 | 123 | 131 |
| Other | 140 | 136 | 143 | 144 | 146 | 149 | 151 | 144 | 237 |
| **Total** | **2,953** | **3,020** | **3,074** | **3,197** | **3,362** | **3,407** | **3,487** | **3,636** | **3,705** |

## NET YIELD BY BUSINESS FOCUS

U.S. life insurers saw a general downward trend in the yields of their asset portfolios from 2007 to 2015, as a result of the economic downturn and the overall decline of interest rates in the United States since 2007. The average net yield of the life and health industry's invested assets was 4.67% as of December 31, 2015, down by 16 basis points from one year earlier, 19 basis points from two years earlier, and 109 basis points compared with 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 2015.

### Figure 3: U.S. Life and Health Industry: Summary of Net Yield on Invested Assets (%)

| **Business Focus** | Y2007 | Y2008 | Y2009 | Y2010 | Y2011 | Y2012 | Y2013 | Y2014 | Y2015 |
|---|---|---|---|---|---|---|---|---|---|
| Annuity | 5.74 | 5.38 | 5.08 | 5.20 | 5.14 | 4.98 | 5.02 | 4.92 | 4.85 |
| Life | 5.72 | 5.60 | 5.35 | 5.33 | 5.20 | 4.85 | 4.57 | 4.59 | 4.59 |
| Life and Annuities | 5.91 | 5.61 | 5.42 | 5.26 | 5.17 | 5.03 | 4.73 | 4.85 | 4.41 |
| Specialty Accident & Health | 5.37 | 4.81 | 4.74 | 4.54 | 4.27 | 4.10 | 4.06 | 4.11 | 4.06 |
| Group Accident & Health | 6.11 | 5.75 | 5.45 | 5.95 | 5.24 | 5.18 | 4.82 | 5.10 | 4.92 |
| Other | 5.75 | 5.32 | 5.13 | 5.48 | 5.06 | 4.94 | 4.92 | 4.76 | 4.57 |
| **Total** | **5.76%** | **5.41%** | **5.16%** | **5.23%** | **5.10%** | **4.93%** | **4.86%** | **4.83%** | **4.67%** |

## RISK-BASED CAPITAL (RBC) RATIO

The U.S. life insurers have been rebuilding their surplus position since the 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 for year 2015 is 475%, which is 10% lower than the 2014 ratio.

Figure 4 shows the RBC ratio trend from 2007 to 2015 by business focus.

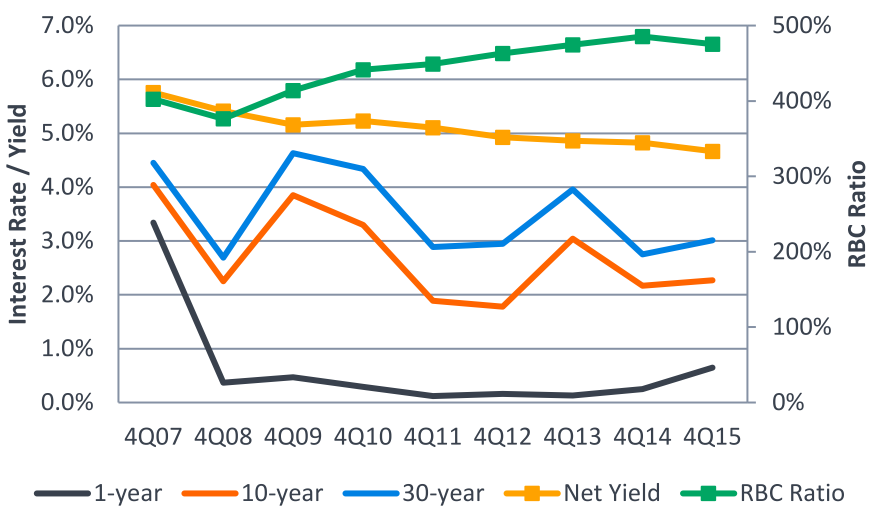
### Figure 4: U.S. Life and Health Insurers: RBC Ratio by Business Focus

| Business Focus | Y2007 | Y2008 | Y2009 | Y2010 | Y2011 | Y2012 | Y2013 | Y2014 | Y2015 |
|---|---|---|---|---|---|---|---|---|---|
| Annuity | 395% | 377% | 423% | 454% | 461% | 472% | 480% | 497% | 477% |
| Life | 402% | 376% | 414% | 441% | 449% | 463% | 475% | 485% | 475% |
| Life and Annuities | 423% | 406% | 426% | 457% | 484% | 496% | 502% | 515% | 514% |
| Specialty Accident & Health | 422% | 341% | 386% | 432% | 398% | 464% | 552% | 592% | 582% |
| Group Accident & Health | 311% | 286% | 309% | 330% | 337% | 327% | 313% | 315% | 317% |
| Other | 404% | 393% | 409% | 420% | 430% | 436% | 445% | 461% | 415% |
| **Total** | **402%** | **376%** | **414%** | **441%** | **449%** | **463%** | **475%** | **485%** | **475%** |

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, 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. On the other hand, with the increasingly stronger capital positions after the global financial crisis, companies now have more capacity to take on risk and invest in assets that have high yield potential and high capital charges.

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 2015. The Treasury yields across all maturities increased between year-end 2014 and year-end 2015, shown in Figure 6 below. The short end of the curve increased by 10 bps to 40 bps, and the longer-term maturities increased by 20 bps to 30 bps.

### Figure 5: Treasury Rates/Net Asset Yield/RBC Ratio (2007-2015)



## Figure 6: Treasury Rates, 2014-2015

| Maturity (years) | Constant Maturity Treasury Rates | | Change From Year 2014 |
|---|---|---|---|
| | 12/31/2014 | 12/31/2015 | |
| **0.25** | 0.04% | 0.16% | 0.12% |
| **0.5** | 0.12% | 0.49% | 0.37% |
| **1** | 0.25% | 0.65% | 0.40% |
| **2** | 0.67% | 1.06% | 0.39% |
| **3** | 1.10% | 1.31% | 0.21% |
| **5** | 1.65% | 1.76% | 0.11% |
| **7** | 1.97% | 2.09% | 0.12% |
| **10** | 2.17% | 2.27% | 0.10% |
| **20** | 2.47% | 2.67% | 0.20% |
| **30** | 2.75% | 3.01% | 0.26% |

## ASSET COMPOSITION

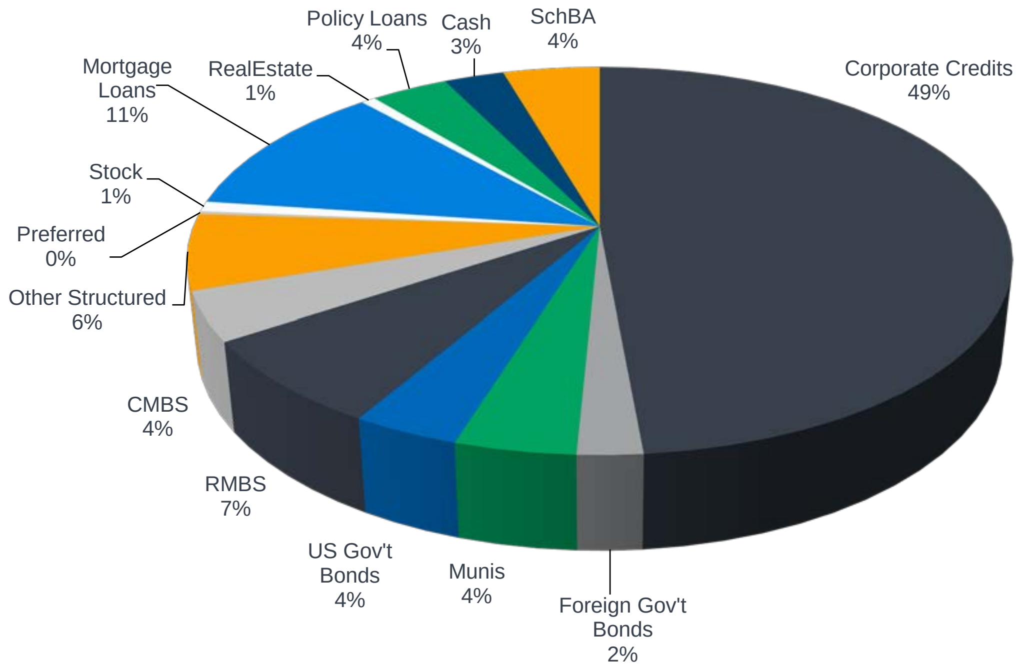
The total carrying value of unaffiliated investments held by U.S. life insurance companies was $3.6 trillion as of December 31, 2015. Figure 7 shows an overview of asset allocation by class for 2007 to 2015. Overall allocations have remained level, but bonds show a trend of slight decrease since 2011. Schedule BA assets and mortgage loans show a trend of slight increase over recent years.

## Figure 7: U.S. Life Industry: Asset Allocation Summary

| | Y2007 | Y2008 | Y2009 | Y2010 | Y2011 | Y2012 | Y2013 | Y2014 | Y2015 |
|---|---|---|---|---|---|---|---|---|---|
| Bonds | 75.0% | 72.7% | 76.6% | 77.9% | 77.5% | 76.9% | 76.9% | 76.2% | 76.1% |
| Preferred Stocks | 2.2% | 2.1% | 0.3% | 0.3% | 0.2% | 0.2% | 0.2% | 0.2% | 0.3% |
| Common Stocks | 1.4% | 0.8% | 0.8% | 0.9% | 0.9% | 0.9% | 0.9% | 1.0% | 0.8% |
| Mortgage Loans | 11.0% | 11.2% | 10.6% | 9.9% | 9.9% | 10.1% | 10.5% | 10.7% | 11.3% |
| Real Estate | 0.7% | 0.7% | 0.7% | 0.6% | 0.6% | 0.7% | 0.7% | 0.6% | 0.7% |
| Policy Loans | 4.0% | 4.1% | 4.1% | 4.0% | 3.9% | 3.9% | 3.8% | 3.7% | 3.6% |
| Cash/Short-Term | 2.7% | 4.9% | 4.0% | 3.0% | 2.9% | 3.2% | 2.7% | 2.8% | 2.8% |
| Schedule BA | 3.1% | 3.6% | 3.0% | 3.4% | 4.1% | 4.2% | 4.2% | 4.8% | 4.5% |
| **Total Assets** | **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 (49%), mortgage loans (11%), residential mortgage-backed securities (RMBS, 7%), and loan-backed and other structured assets (6%).

## Figure 8: U.S. Life Industry – Asset Mix of Unaffiliated Investments as of December 31, 2015




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 2015. The gross yield of the total invested assets continuously decreased from 6.22% in 2007 to 4.87% in 2015.

## Figure 9: U.S. Life Industry: Summary of Unaffiliated Gross Yield by Asset Class (%)

| | Y2007 | Y2008 | Y2009 | Y2010 | Y2011 | Y2012 | Y2013 | Y2014 | Y2015 |
|---|---|---|---|---|---|---|---|---|---|
| **Bonds** | 5.98 | 5.86 | 5.80 | 5.64 | 5.41 | 5.20 | 5.01 | 4.90 | 4.72 |
| **Preferred Stock** | 6.64 | 6.62 | 3.83 | 5.62 | 6.36 | 6.25 | 6.29 | 6.24 | 5.97 |
| **Common Stock** | 4.68 | 2.99 | 2.64 | 2.32 | 2.70 | 2.96 | 2.90 | 2.86 | 2.91 |
| **Mortgage Loans** | 6.62 | 6.22 | 6.02 | 6.04 | 5.98 | 5.93 | 5.63 | 5.38 | 5.13 |
| **Real Estate** | 17.15 | 16.77 | 15.46 | 15.00 | 14.89 | 14.71 | 14.31 | 14.34 | 15.30 |
| **Contract Loans** | 6.52 | 6.55 | 6.63 | 6.43 | 6.27 | 6.09 | 6.01 | 6.01 | 5.88 |
| **Cash & ST Investments** | 5.37 | 2.44 | 0.51 | 0.30 | 0.28 | 0.35 | 0.50 | 0.44 | 0.42 |
| **All Other Inv. Assets** | 8.94 | 4.23 | 1.44 | 6.10 | 5.93 | 5.61 | 7.83 | 8.46 | 7.41 |
| **Total Invested Assets** | 6.22% | 5.77% | 5.54% | 5.59% | 5.41% | 5.22% | 5.15% | 5.08% | 4.87% |

# INVESTMENT STRATEGIES IN A LOW INTEREST RATE ENVIRONMENT

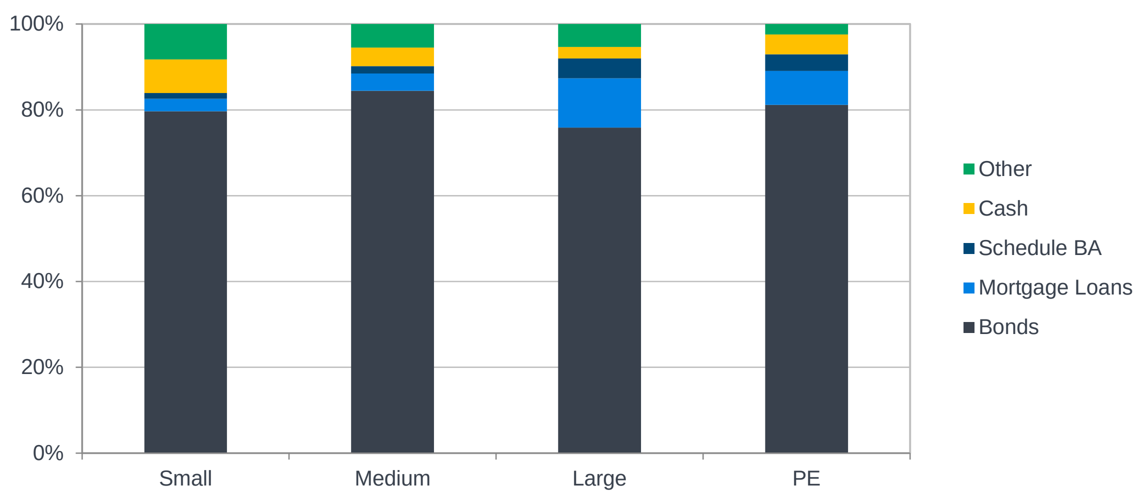
## LIFE INDUSTRY OVERVIEW

Our analysis of the asset portfolios in the U.S. life insurers' year-end statutory filings showed that the following investment strategies were generally employed 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 to the length of their asset portfolios in 2015. Average time to maturity for the life industry remained steady from 2014 to 2015. However, there is some variance among the companies.
- There is a small shift from 2013 to 2014 where NAIC 2 bonds decrease and NAIC 1 bonds increase, but in 2015 the trend reverted back. The average rating has remained level over the past several years.
- Most large insurers increased their exposures in commercial mortgage loans.
- Smaller insurers' asset portfolios consisted of a greater amount of government bonds and public corporate credits compared with large insurers.

Figure 10 shows a comparison of the unaffiliated assets composition at year-end 2015 for small insurers, medium insurers, large insurers, and private equity entities.

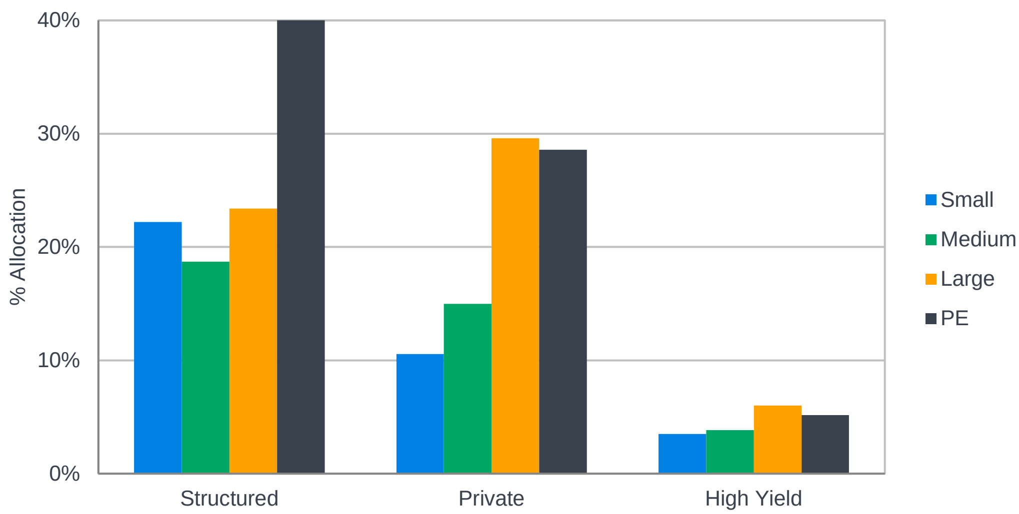
### Figure 10: Unaffiliated Assets Mix as of December 31, 2015: Comparison of Small, Medium, Large, and PE Companies




Other categories in Figure 10 include: 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, mortgage loans, and high-yield investments as of December 31, 2015, for small insurers, medium insurers, large insurers, and private equity entities. Small, medium, and large companies in Figures 10 and 11 were defined as having net total assets less than $500 million, between $500 million and $3 billion, and above $3 billion, respectively.

## Figure 11: Asset Allocation in Selected Classes as of December 31, 2015: Comparison of Small, Medium, Large, and 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, 2015.

As of December 31, 2015, the average net asset yield of small and medium life insurers was 4.39%, approximately 28 basis points lower than that of large life insurers. As shown in Figures 10 and 11 above, these insurers only allocated about 3.8% of the unaffiliated assets to mortgage loans, as opposed to 11.5% observed in large insurers' portfolios. The allocation of the total bonds in the private placements was only 14.34%, compared with 29.6% for the large companies.

## Figure 12: Summary of Net Asset Yield

| | 2015 | 2014 |
|---|---|---|
| Small/ Medium | 4.39% | 4.42% |
| Large | 4.67% | 4.84% |
| **Total** | **4.67%** | **4.83%** |

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

## PRIVATE EQUITY ENTITIES

This study included four life insurers owned by private equity (PE) parent companies. Their combined invested assets as of December 31, 2015, were $139 billion, about $1.8 billion lower compared with a year ago. All four companies were classified as annuity focus by SNL in 2015. Compared with traditional insurance companies, theses private equity insurance entities allocate a heavy portion of their portfolios to structured assets and alternative assets such as private equity, hedge funds, and real estate.

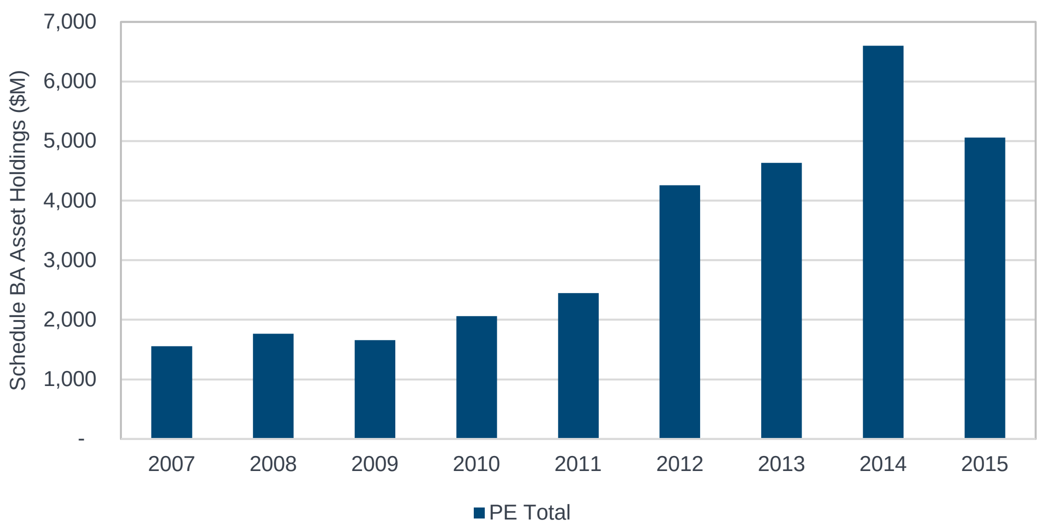
At the end of 2015, these PE firms allocated an average of 42.4% of their total bonds to structured securities, including RMBS, CMBS, ABS, and other loan-backed assets, which were predominantly CLOs. This figure is a stark contrast to the life industry average of 23%. Among the four PE firms, two of them allocated about 53% of their total bonds to structured assets, while the exposure was smaller for the other two, which allocated 37% and 26%, respectively.

PE entities more than doubled their RMBS structured asset investments in dollars from 2012 to 2015, reaching a year-end balance of $17 billion. CMBS holdings had a slight decrease from 2014 of approximately $206 million. ABS and other loan-backed assets reached $23.8 billion, a 9.05% increase from 2014 and a 73% increase from 2013. The overall structured investments grew by about 5.9% during 2015.

Compared with the PE firms, the life insurance industry as a whole reduced its structured asset holdings slightly, by approximately 2.4% in 2015, mainly through RMBS, which decreased by $17 billion. The length of the overall portfolio showed no change from 2014 to 2015. The maturities of CMBS, RMBS, ABS, corporate credits, and government bonds all had a slight decrease.

Alternative assets, in particular hedge fund and private equity investments, also served as an investment strategy employed by some PE firms. According to the statutory filings, since 2013 some PE firms tripled their Schedule BA assets investments, while others have decreased Schedule BA assets amounts by 32% compared with year 2014.

### Figure 13: Schedule BA Assets Holdings 2007-2015 for Private Equity Firms




Of the four PE firms, some of them increased their unaffiliated assets while the others decreased theirs. Although one studied PE firm decreased its unaffiliated investments, it still accounted for nearly 40% of the total unaffiliated investments held by the four PE firms.

## INVESTMENT PORTFOLIO DETAILED ANALYSIS

Our analysis was based on asset data in the U.S. life insurers' year-end statutory filings from 2007 to 2015, 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, PE firms, and the life industry average.

### Bond quality rating

In 2014, there was a 0.9% shift in asset allocation from NAIC 2 bonds to NAIC 1 bonds. However, during 2015 this shift was reversed. In the last three years, the overall bond quality rating of invested assets has remained relatively steady.

Figure 14 shows the life sector's total high-yield bond holdings, which are defined as any bonds rated NAIC 3 or lower, and the average allocation as a percentage of the total bond investments from year-end 2007 to year-end 2015. As of December 31, 2015, the total life industry high-yield holdings were $167 billion, or 5.9% of the total bonds.

### Figure 14: U.S. Life Industry High-Yield Bond Holdings, 2007-2015

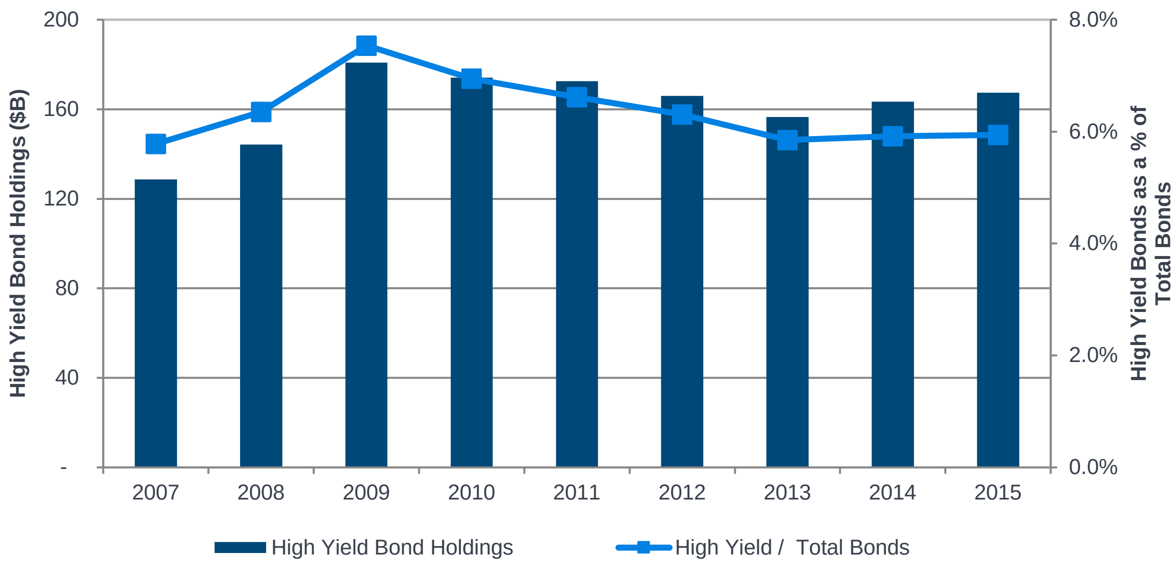


Figure 15 shows the top 10 high-yield bond holders and the allocation as a percentage of the total bonds as of December 31, 2015. Changes since year-end 2014 are also included.

Among the top 10 holders, more than half show a slight increase of high-yield allocation in 2015. Company 2 showed the largest increase of 0.8% while Company 1 had the largest decrease of 1.5%. The four PE firms showed an increased interest in the high-yield space, and their combined high-yield investment was approximately $5.8 billion, or 5.2% of the total bond portfolio.

## Figure 15: Top Ten U.S. Life Industry High-Yield Bond Holdings as of December 31, 2015

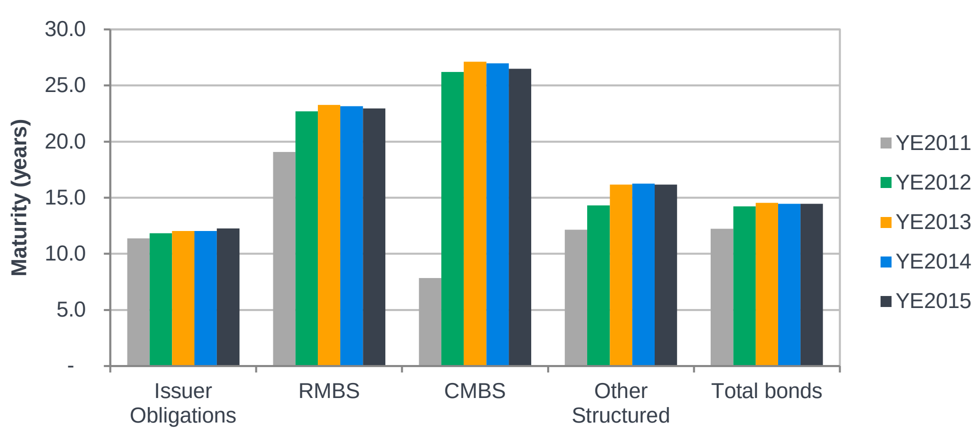
| | 12/31/2015 | | Change Since 12/31/2014 | |
|---|---|---|---|---|
| **Entity** | **High Yield ($B)** | **High Yield Allocation (%)** | **High Yield ($B)** | **High Yield Allocation (%)** |
| Company 1 | 19.8 | 8.8% | (3.2) | -1.5% |
| Company 2 | 13.8 | 7.4% | 1.5 | 0.8% |
| Company 3 | 13.6 | 10.1% | 0.4 | 0.0% |
| Company 4 | 12.0 | 7.3% | 1.7 | 0.1% |
| Company 5 | 9.1 | 6.0% | 0.6 | 0.4% |
| Company 6 | 7.2 | 8.3% | 0.7 | 0.2% |
| Company 7 | 6.8 | 6.6% | (2.9) | -0.4% |
| Company 8 | 3.8 | 6.3% | (0.3) | -0.2% |
| Company 9 | 3.6 | 3.7% | 0.3 | 0.3% |
| Company 10 | 3.5 | 8.2% | 0.1 | -0.2% |
| **Top 10** | **93.3** | **7.4%** | **(1.1)** | **-0.1%** |
| **Life Industry** | **167.4** | **5.9%** | **3.9** | **0.0%** |
| **PE Total** | **5.8** | **5.2%** | **1.1** | **0.9%** |

Based on bonds reported with NAIC 3-6 ratings on Schedule D filings as of December 31, 2014, and December 31, 2015. Allocation is expressed as a percentage of total bonds.

### Bond maturity

As shown in Figure 16, the average maturity of the life insurers' bond portfolios has stayed level since 2014. The largest movement was in the CMBS maturity, which was slightly shortened over 2015 from 27 years to 26.5 years. Issuer obligations and RMBS maturities also showed slight movements of a 0.3-year increase and a 0.1-year decrease respectively.

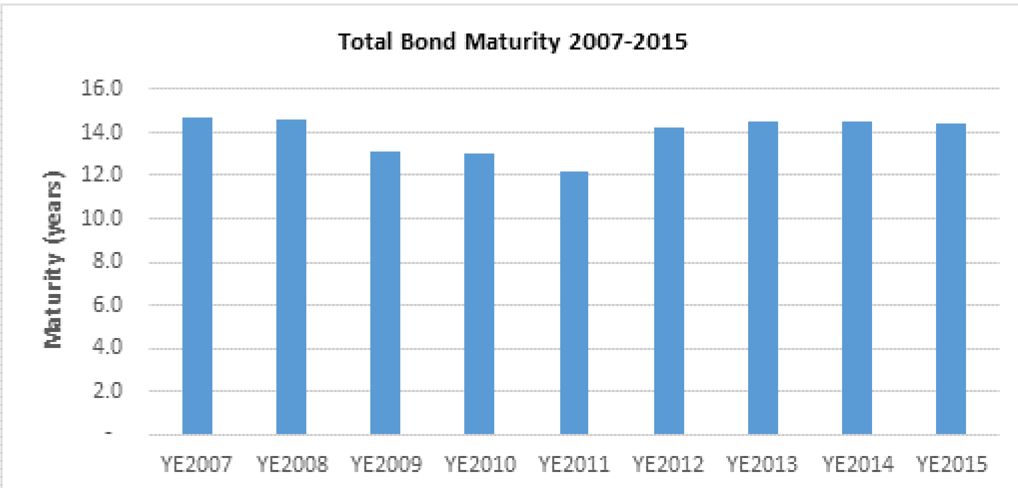
## Figure 16: U.S. Life Insurers' Bond Portfolio Maturity, 2011-2015



The slight dip in bond maturities from 2009 to 2011 is most likely an aftereffect of the 2007 Financial Crisis. As shown in Figure 17, during the same period, insurers moved away from in investing in higher risk stocks (shorter-term) and mortgages, and invested more heavily in bonds.

The increase in longer maturities in the recent years is most likely driven by insurer's 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, 2007-2015




## Mortgage loans

Mortgage loans, in particular commercial mortgage loans, have remained an attractive asset class among U.S. life insurers, which is due to the higher yield compared with corporate credits and government bonds. As of December 31, 2015, the average gross yield of mortgage loans held by all life companies has continued to slightly decrease, down to 5.1%, which is still 40 basis points higher than that of the total invested assets yield.

The mortgage loan allocation of the life sector has been relatively stable over the past five years, although there has been 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 18. As of December 31, 2015, the total carrying value of mortgage loans held by all the U.S. life insurance companies was approximately $402 billion, and the average allocation as a percentage of the total affiliated investments was 11.3%.

## Figure 18: U.S. Life Industry Mortgage Loan Holdings, 2007-2015

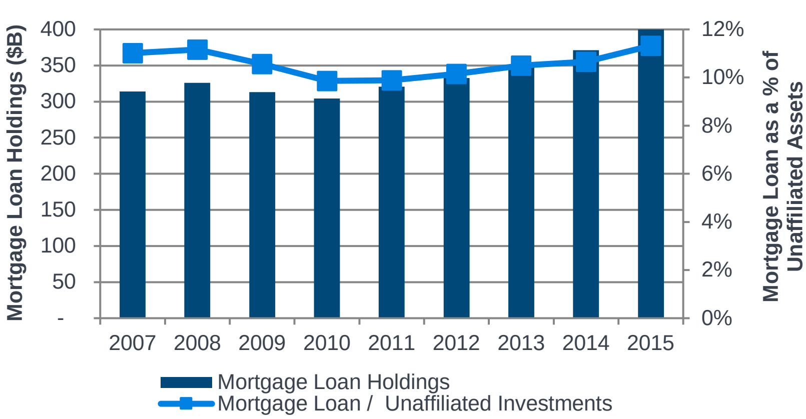


Figure 19 shows the top eight mortgage loan holders among the life companies, their respective allocations as a percentage of the unaffiliated investments, and gross yields as of December 31, 2015. Unaffiliated assets are investment holdings in companies not owned wholly or jointly by the insurer. Changes observed in mortgage loan holdings since December 31, 2014, are also included. The top eight companies hold over half of all the mortgage loan investments in the life insurance industry. The average mortgage loan allocation of the top eight holders was approximately 14.3% at the end of 2015. This is 3.0% higher than the life industry average of 11.3%.

## Figure 19: Top Eight U.S. Life Industry Mortgage Loan Holdings

| | 12/31/2015 | | | Change from 12/31/2014 | | |
|---|---|---|---|---|---|---|
| **Entity** | **Mortgage Loan ($B)** | **Mortgage Loan Allocation (%)** | **Mortgage Loan Gross Yield (%)** | **Mortgage Loan ($B)** | **Mortgage Loan Allocation (%)** | **Mortgage Loan Gross Yield (%)** |
| Company 1 | 58.1 | 18.2% | 5.0% | 6.3 | 1.8% | 0.0% |
| Company 3 | 32.1 | 16.4% | 5.0% | 2.9 | 0.8% | -0.2% |
| Company 4 | 26.7 | 12.8% | 4.8% | 4.5 | 0.8% | -0.1% |
| Company 7 | 25.0 | 18.4% | 4.1% | (7.1) | 1.5% | -1.1% |
| Company 6 | 23.0 | 17.4% | 4.7% | 2.7 | 0.8% | -0.2% |
| Company 2 | 19.0 | 8.7% | 4.9% | 3.4 | 1.4% | -0.4% |
| Company 5 | 16.4 | 9.5% | 5.2% | 2.5 | 1.4% | -0.7% |
| Company 11 | 11.6 | 11.8% | 6.0% | (1.3) | -0.2% | -0.1% |
| **Top 8** | **211.9** | **14.3%** | **4.9%** | **13.9** | **1.0%** | **-0.3%** |
| **Life Industry** | **401.8** | **11.3%** | **5.1%** | **30.8** | **0.7%** | **-0.2%** |
| **PE Firms** | **10.4** | **7.9%** | **5.3%** | **0.8** | **0.7%** | **-0.5%** |

*Based on Schedule B filings as of December 31, 2015, and December 31, 2014. Allocation is expressed as a percentage of unaffiliated investments.*

Although mortgage loans only accounted for approximately 8% of the PE firms' total unaffiliated investments at the end of 2015, the mix increased by $781 million compared with one year ago. This was driven by one of the studied PE firms, which added a total of approximately $1.4 billion of mortgage loans to its portfolios during 2015.

The demand for residential and commercial mortgages remained strong in 2014 and 2015 because of the continued low interest rates and a recovering housing market, particularly in the commercial housing sector.

## Municipal bonds

Companies typically invest in municipal bonds for the purposes of tax benefits, diversification, and abilities to back longer-duration liabilities. Figure 20 shows an upward trend of the 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 total municipal bond holdings of the life industry were $138 billion at the end of 2015, a 4% increase from one year ago.

### Figure 20: U.S. Life Industry Municipal Bond Holdings, 2007-2015

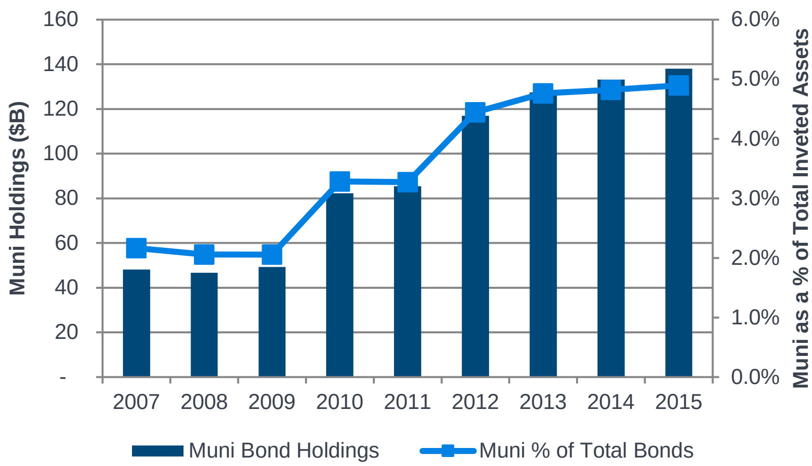



Figure 21 shows the top eight municipal bond holdings among the life companies and the allocations as a percentage of the total bonds as of December 31, 2015.

The life sector's average municipal bond allocation as a percentage of the total bonds was 4.9% at the end of 2015. Among the top eight holdings, Company 12 had both a double-digit percentage allocation to municipal bonds and one substantially higher than the industry average.

### Figure 21: Top Eight Municipal Bond Holdings of U.S. Life Companies as of December 31, 2015

| Entity | Muni Bonds ($B) | Muni % |
|---|---|---|
| Company 1 | 12.6 | 5.60% |
| Company 4 | 9.6 | 5.80% |
| Company 13 | 7.3 | 9.30% |
| Company 12 | 5.2 | 10.80% |
| Company 2 | 4.8 | 2.50% |
| Company 10 | 4.6 | 10.50% |
| Company 6 | 4.5 | 5.20% |
| Company 14 | 4 | 5.00% |
| **Total Top 8** | **52.7** | **5.70%** |
| **Total Life Industry** | **138** | **4.90%** |

*Allocation is expressed as a percentage of total bonds.*

## Private placements

Private bond investments in the U.S. life sector have been growing over the past several years. As shown in Figure 22, the total private bond carrying value climbed from $523 billion at the end of 2007 to $821 billion at the end of 2015, an approximately 54% increase. The allocation of the private bonds in the life insurers' total bond portfolio also rose from 23% at year-end 2007 to 29% at year-end 2015.

### Figure 22: U.S. Life Industry Private Bond Holdings, 2007-2015

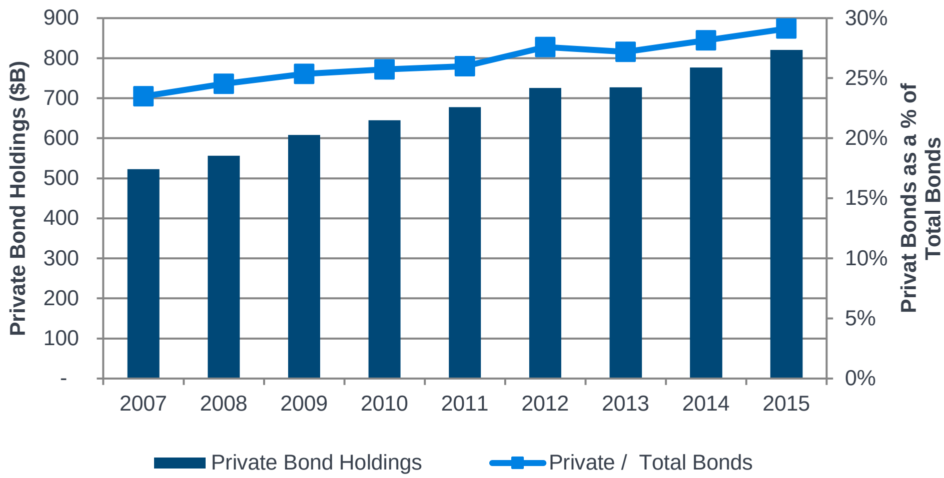



Figure 23 shows the top 10 private bond holdings among the life companies and their allocations as a percentage of the total bond assets as of December 31, 2015. Changes from year-end 2014 are also included. Among these, Company 6 had the largest one-year increase of the private bond allocation, from 52.7% to 56.5% at the end of 2015.

### Figure 23: Top Ten U.S. Life Industry Private Bond Holdings as of December 31, 2015

| | 12/31/2015 | | Change from 12/31/2014 | |
|---|---|---|---|---|
| **Entity** | **Private Bonds ($B)** | **Private Bonds Allocation (%)** | **Private Bonds ($B)** | **Private Bonds Allocation (%)** |
| Company 1 | 66.4 | 29.40% | -0.2 | -0.30% |
| Company 4 | 63 | 38.20% | 13.1 | 3.60% |
| Company 6 | 49.3 | 56.50% | 6.5 | 3.80% |
| Company 2 | 47.2 | 25.30% | 2.4 | 1.10% |
| Company 5 | 42.8 | 28.30% | 0.6 | 0.60% |
| Company 3 | 41.4 | 30.70% | 3.3 | 1.50% |
| Company 7 | 30.3 | 29.40% | -12.5 | -1.60% |
| Company 9 | 29.7 | 30.60% | -1.9 | -1.70% |
| Company 14 | 25 | 31.00% | 0.2 | -0.40% |
| Company 11 | 23.1 | 40.40% | -1.8 | 1.20% |
| **Top 10** | **418.1** | **32.40%** | **9.7** | **1.00%** |
| **Life Industry** | **820.8** | **29.10%** | **43.7** | **1.00%** |
| **PE Firms** | **32.1** | **28.60%** | **1.9** | **1.60%** |

*Allocation is expressed as a percentage of total bonds.*

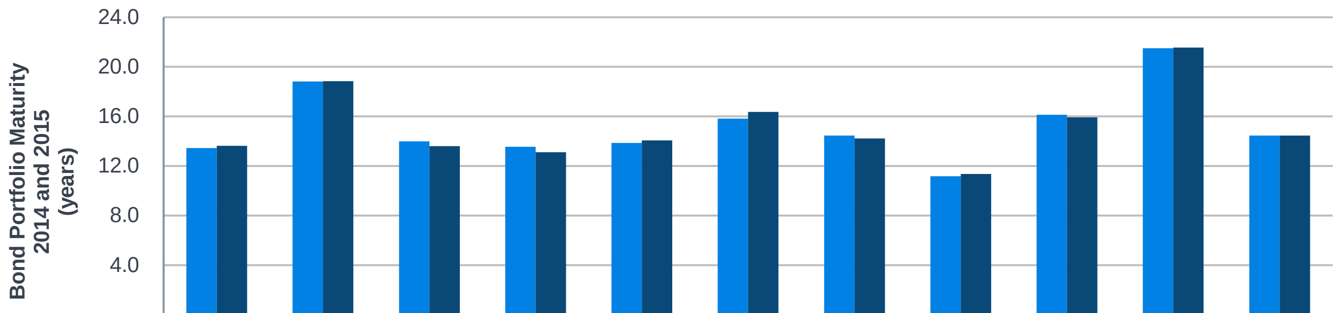
PE firms held 28.6% of the total bonds in private placements as of December 31, 2015. This compared with an average of 29.1% for the life industry. However, note that one of the studied PE firm increased its private bond investment by 56% in 2015, and the allocation as a percentage of the total bond portfolio rose to 29%, a 6% increase from 2014.

## Bond portfolio remaining term to maturity (TTM)

Term to maturity 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 24 shows the remaining term to maturity and duration of 10 selected life insurers as of December 31, 2015, according to data compiled by SNL. The average TTMs for the life industry and private equity are also included at the end. As of December 31, 2015, the term to maturity of the average life industry was 14.5, showing a steady TTM from 2014. There is some variance in TTM among the companies.

### Figure 24: Bond Portfolio Remaining Term to Maturity, YE 2015 and YE 2014




| | Company 1 | Company 5 | Company 7 | Company 4 | Company 14 | Company 8 | Company 15 | Company 16 | Company 13 | PE Firm1 | Life Industry |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TTM 2014 | 13.5 | 18.8 | 14.0 | 13.5 | 13.9 | 15.8 | 14.5 | 11.2 | 16.1 | 21.5 | 14.5 |
| TTM 2015 | 13.6 | 18.9 | 13.6 | 13.1 | 14.1 | 16.4 | 14.2 | 11.4 | 15.9 | 21.6 | 14.5 |

## Structured securities

Structured securities include residential mortgage-backed securities (RMBS), asset-backed securities (ABS), and commercial mortgage-backed securities (CMBS), as well as loan-backed and other structured assets that are mainly collateralized loan obligations (CLOs). As of December 31, 2015, the total carrying value of the structured assets held by all life companies was $655 billion, and the average allocation as a percentage of the total bonds was approximately 23%.

Although structured asset holdings at the end of 2015 had returned to levels seen before the global financial crisis, their proportion in the total bond portfolio was still below those at the end of 2007. In 2015, the carrying value of the structured assets in the life sector decreased by about $16.4 billion, driven by the reduced exposure in RMBS and CMBS. As Figure 25 shows, the average allocation as a percentage of total bonds has shown a trend of slight decline since 2011.

Figure 25 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 2015.

## Figure 25: U.S. Life Industry Structured Bond Holdings, 2007-2015

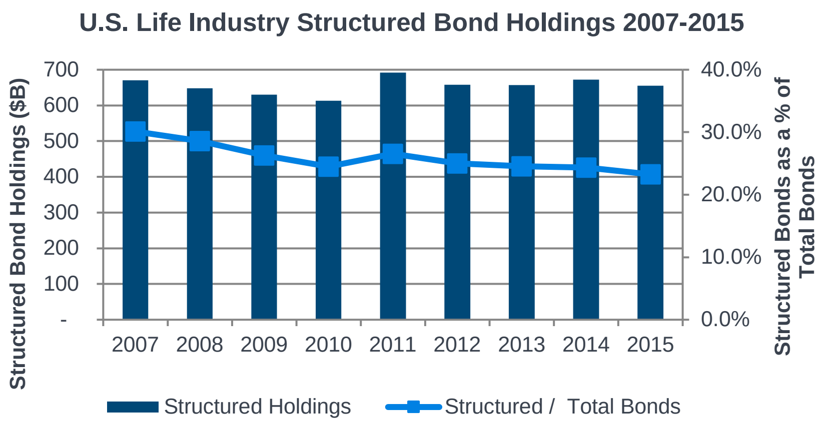
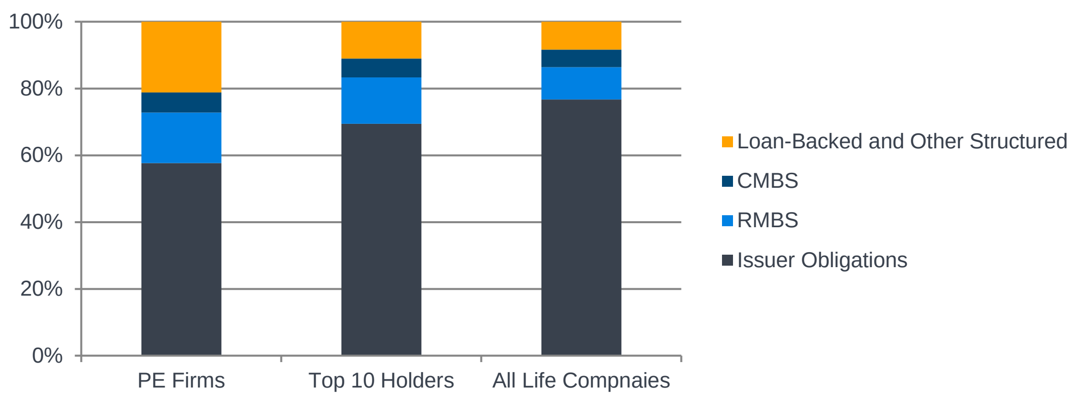



Figure 26 shows a comparison of the bond portfolio composition as of December 31, 2015, for the PE firms, the top 10 structured assets holders, and the life industry average.

## Figure 26: Comparison of Bond Portfolio Composition as of December 31, 2015: PE, Top 10, and All Life Companies




The four PE firms on average allocated 42% of the total bonds to the structured assets, compared with 31% for the top 10 structured assets holders, and 23% for all the life companies combined. PE firms' 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 four PE firms' investments in structured assets was above the industry average. Some PE firms invested about half of the bond portfolio in structured assets. One PE firm appeared to employ an investment strategy that weighed more heavily toward ABS, CLOs, and non-agency RMBS/CMBS, with loan-backed and non-mortgage-backed securities accounting for 42% of the total bonds at year-end 2015. Another PE firm had a more balanced portfolio, with RMBS having the largest allocation at 26%, followed by ABS and CMBS with 16% and 10%, respectively.

Appendix A contains a detailed comparison of the structured asset investments for the top 10 holders and the four PE firms as of December 31, 2015. Changes since December 31, 2014, 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, private equity investments, and housing tax credits, 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 increased their Schedule BA assets investments by approximately $4 billion in 2012, $5 billion in 2013, and $24 billion in 2014. As of December 31, 2015, the life sector held a total carrying value of $159 billion in the Schedule BA assets, showing a decrease of $6 billion, the first decrease since 2009. The average allocation as a percentage of the total unaffiliated assets was 4%, and the average gross yield was 7.41%, 274 basis points higher than that of the total invested assets.

Figure 27 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 2015.

### Figure 27: U.S. Life Industry Schedule BA Assets Holdings, 2007-2015

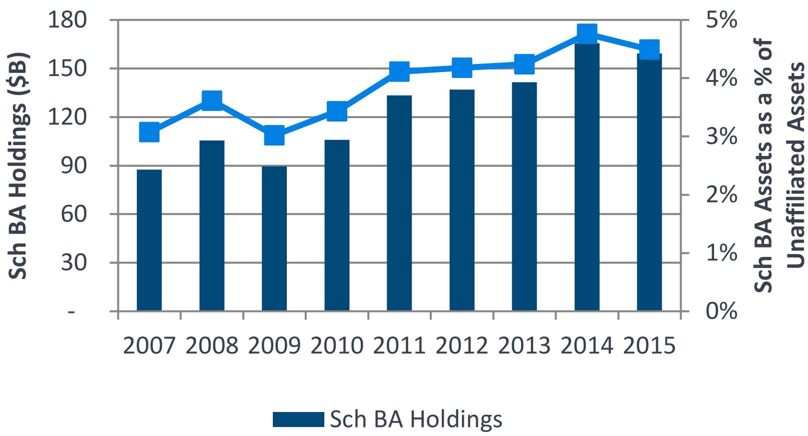


Figure 28 shows the top ten Schedule BA assets holders among the life companies and the allocation as a percentage of the unaffiliated investments as of December 31, 2015. Changes from year-end 2014 are also included.

## Figure 28: Top Ten U.S. Life Industry Schedule BA Assets Holdings as of December 31, 2015 (in $ billions)

| | 12/31/2015 | | | Change Since 12/31/2014 | | |
|---|---|---|---|---|---|---|
| Entity | Sch. BA Assets ($B) | Sch. BA Allocation (%) | Sch. BA Gross Yield (%) | Sch. BA Assets ($B) | Sch. BA Allocation (%) | Sch. BA Gross Yield (%) |
| Company 1 | 21.4 | 6.7% | 10.0% | -1 | -0.4% | 2.5% |
| Company 11 | 17.8 | 18.2% | 6.1% | 0.6 | 2.2% | -0.6% |
| Company 6 | 13.5 | 10.2% | 5.9% | 1.3 | 0.2% | -4.3% |
| Company 5 | 12.2 | 7.1% | 8.2% | 0 | -0.1% | 2.0% |
| Company 2 | 8 | 3.7% | 6.3% | -0.3 | -0.2% | 0.1% |
| Company 4 | 6.9 | 3.3% | 8.2% | 0.1 | -0.3% | 2.0% |
| Company 8 | 6.3 | 8.2% | 4.8% | -0.1 | 0.1% | 1.1% |
| Company 7 | 5.9 | 4.4% | 7.3% | -3.4 | -0.6% | -1.6% |
| Company 3 | 5.4 | 2.8% | 8.1% | 0.4 | 0.1% | 1.4% |
| Company 13 | 3.6 | 3.9% | 4.4% | 0.5 | 0.2% | -2.1% |
| **Top 10** | **101.2** | **6.1%** | **7.4%** | **-1.9** | **-0.1%** | **0.2%** |
| **Life Industry** | **159.3** | **4.5%** | **7.4%** | **-6.3** | **-0.3%** | **-1.0%** |
| **PE Total** | **5.1** | **3.9%** | **6.6%** | **-1.5** | **-1.1%** | **-13.9%** |

Among the top 10 holders, Company 7 decreased its Schedule BA assets holdings by $3.4 billion, bringing its allocation percentage down to 4.4%, and Company 11 increased its investment by $0.6 billion, a 2.2% increase up to 18.2%.

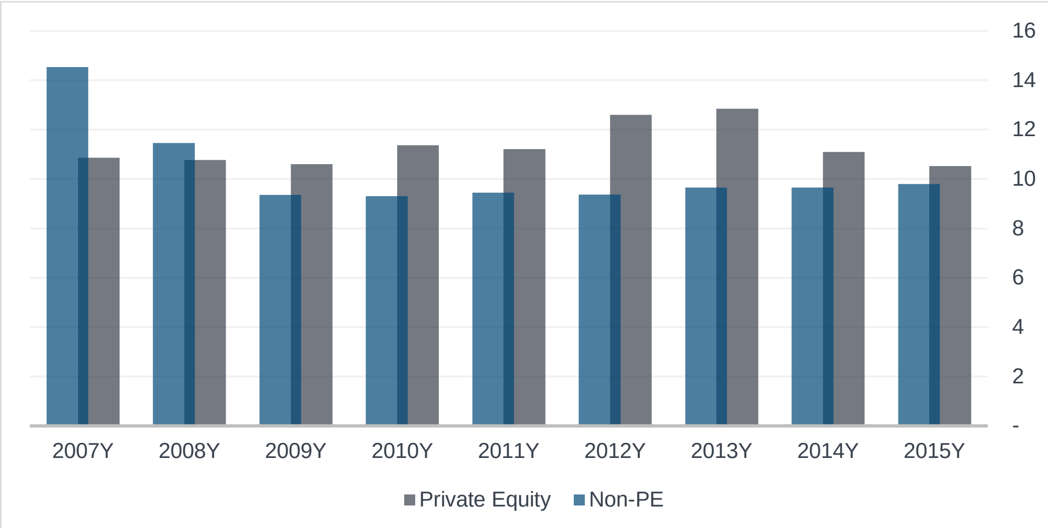
Three of the PE firms decreased their investments in Schedule BA assets. The largest decrease of $1.2 billion resulted in a 1.3% decrease in allocation percentage, but that firm still had the largest allocation percentage at the end of 2015, with 9.2%.

### Investment expense analysis

The investment expense dollar amount has continued to increase, reaching $7.2 billion at the end of 2015. The industry average has remained at 10 bps for 2013 to 2015. Breaking down investment expense by business focus shows that annuity and accident and health (A&H) focus companies continue to have a much higher investment expense at 22 bps, 12 bps higher than the average.

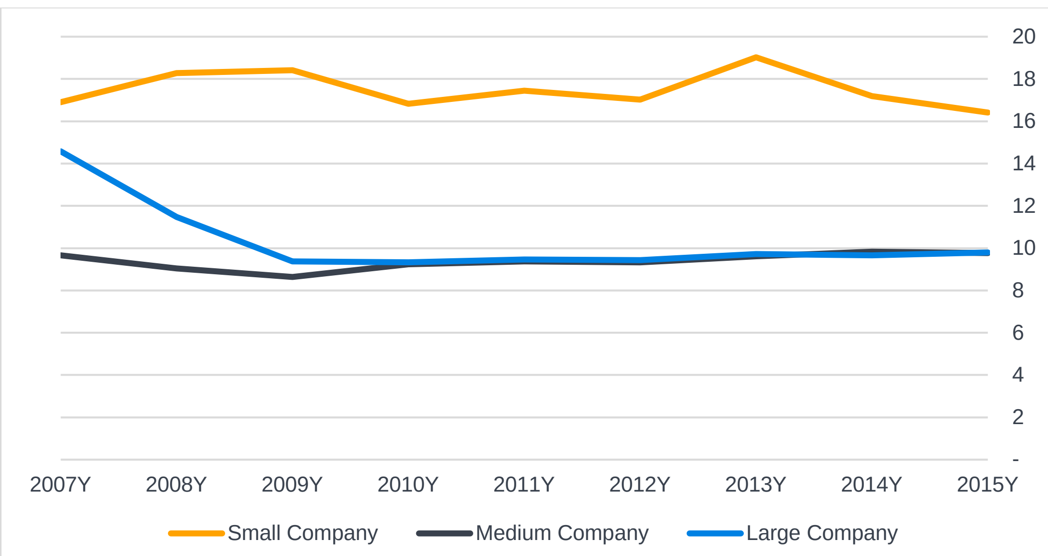
Figure 29 shows that private equity firms have a slightly higher investment expense. However, there has been a decrease of 2 bps since 2013.

## Figure 29: Investment Expense for PE vs. Non-PE Firms




Small companies have an average investment expense of 16 bps, 6 bps higher than medium and large companies. Although small companies have the highest investment expense, the average investment expense for small companies has continued to decrease since reaching a high in 2013 of 19 bps. Since 2013, medium and large companies have held a steady investment expense of 10 bps.

## Figure 30: Investment Expense by Company Size



# APPENDIX A: 'COMPARISON OF STRUCTURED INVESTMENTS FOR THE TOP 10 LIFE HOLDERS AND PRIVATE EQUITY ENTITIES AS OF DECEMBER 31, 2015

## Figure 31: Top 10 U.S. Life Industry Structured Holdings as of December 31, 2015 (in $ billions)

| | As of 12/31/2015 | | | | | | | | Change Since 12/31/2014 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Total Structured** | | **RMBS** | | **CMBS** | | **ABS** | | **Total Structured** | | **RMBS** | | **CMBS** | | **ABS** | |
| | 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 2 | 68 | 36 | 40 | 21 | 11 | 6 | 17 | 9 | (5) | -3 | (4) | -3 | (0) | 0 | 0 | 0 |
| Company 5 | 59 | 39 | 22 | 15 | 11 | 8 | 26 | 17 | (1) | 0 | 0 | 0 | 0 | 0 | (1) | -1 |
| Company 1 | 58 | 26 | 32 | 14 | 9 | 4 | 17 | 7 | (4) | -2 | (2) | -1 | (1) | 0 | (2) | -1 |
| Company 4 | 45 | 27 | 15 | 9 | 16 | 10 | 13 | 8 | 1 | -4 | (2) | -2 | (1) | -2 | 3 | 1 |
| Company 3 | 37 | 27 | 29 | 21 | 3 | 2 | 5 | 4 | 2 | 1 | 1 | 0 | (0) | 0 | 0 | 0 |
| Company 7 | 26 | 25 | 4 | 4 | 8 | 8 | 13 | 13 | (13) | -3 | (3) | -1 | (6) | -2 | (4) | 1 |
| Company 12 | 20 | 42 | 3 | 7 | 2 | 4 | 15 | 31 | 1 | -2 | (1) | -2 | 0 | 1 | 1 | -1 |
| PE Firm 3 | 16 | 37 | 7 | 16 | 2 | 4 | 8 | 17 | 2 | 4 | 1 | 3 | (1) | -3 | 2 | 3 |
| Company 6 | 15 | 18 | 2 | 2 | 2 | 3 | 11 | 13 | (0) | -2 | (0) | -1 | (1) | -1 | 1 | 0 |
| PE Firm 1 | 14 | 51 | 7 | 26 | 3 | 10 | 4 | 16 | 2 | -2 | 1 | -4 | 1 | 2 | 1 | 0 |
| Top 10 | **359** | **31%** | **162** | **14%** | **67** | **6%** | **129** | **11%** | **(15)** | **-1%** | **(8)** | **-1%** | **(7)** | **-1%** | **0** | **0%** |
| Life Industry | **655** | **23%** | **270** | **10%** | **151** | **5%** | **234** | **8%** | **(16)** | **-1%** | **(17)** | **-1%** | **(7)** | **0%** | **7** | **0%** |
| PE Total | **48** | **42%** | **17** | **15%** | **7** | **6%** | **24** | **21%** | **3** | **2%** | **1** | **1%** | **(0)** | **0%** | **2** | **2%** |

**This Executive Summary is an extract of a report titled "Investment strategies of U.S. life insurers in a low Interest rate environment."**

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