

## CONTRIBUTOR

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# ETFs in Insurance General Accounts – 2018

## INTRODUCTION

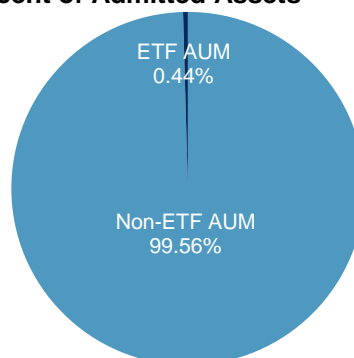
Insurance companies first invested in exchange traded funds (ETFs) in 2004. Since then, companies have continued to increase their investment in ETFs, both in terms of absolute amount and as a proportion of the admitted assets. This third annual analysis of ETF usage in insurance general accounts shows the breadth of the usage of ETFs by insurance companies.

The National Association of Insurance Commissioners (NAIC) requires all U.S. insurance companies to file an annual statement with state regulators. This filing includes a detailed holdings list of all securities held by insurance companies. S&P Global Market Intelligence (SPGMI) compiles this data from the NAIC and makes it available in a usable format. We use this database to extract all insurance ETF holdings, both current and historical. In addition, First Bridge, an ETF data and analytics company, provides a list of U.S. ETFs as well as characteristics of each ETF—such as asset class, stock strategy, bond credit quality, etc. We combine First Bridge classification information with the statutory filing data to gain insight into how insurance companies use ETFs.<sup>1</sup>

## OVERVIEW

As of year-end 2017, U.S. insurance companies had USD 27.2 billion invested in ETFs. This represented a tiny fraction of the USD 3.4 trillion in ETF assets under management (AUM) and less than half of 1% of the admitted assets of U.S. insurance companies (see Exhibit 1).

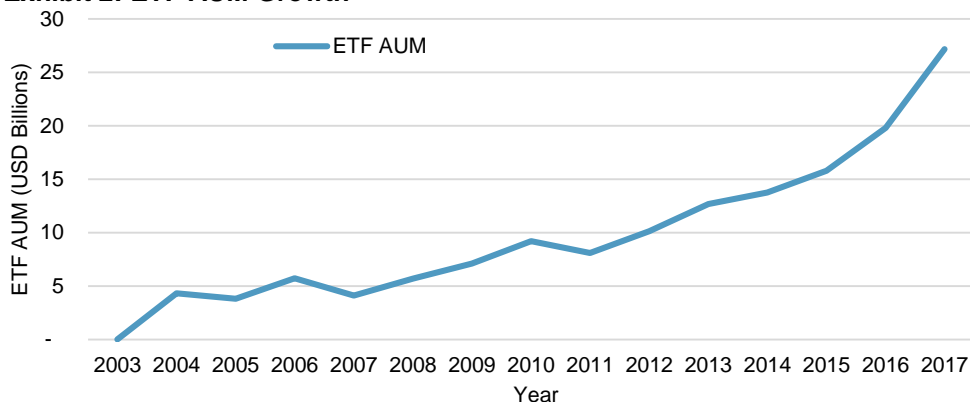
<sup>1</sup> See Appendix 1.

**Exhibit 1: ETFs as a Percent of Admitted Assets**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

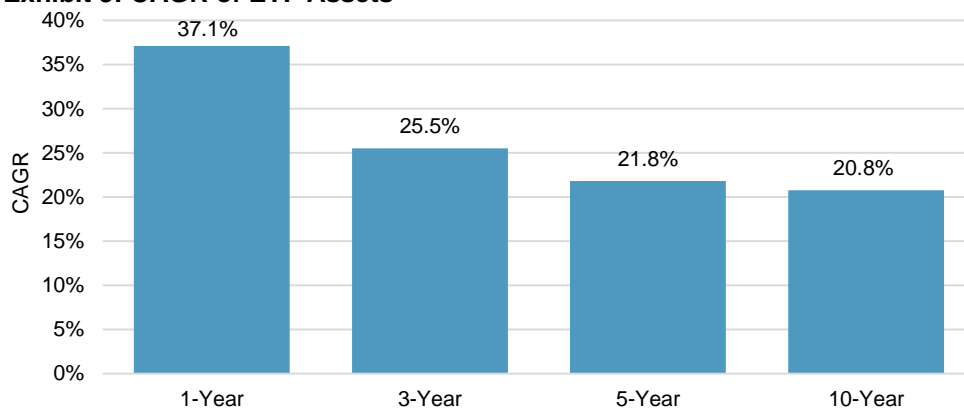
However, the use of ETFs by insurance companies showed consistent growth over the past 14 years (see Exhibit 2).

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**Exhibit 2: ETF AUM Growth**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

In 2017, the amount invested in ETFs by U.S. insurance companies increased by 37% over the amount in 2016. Moreover, ETF usage showed a double-digit compound annual growth rate (CAGR) over the 3-, 5-, and 10-year periods (see Exhibit 3).

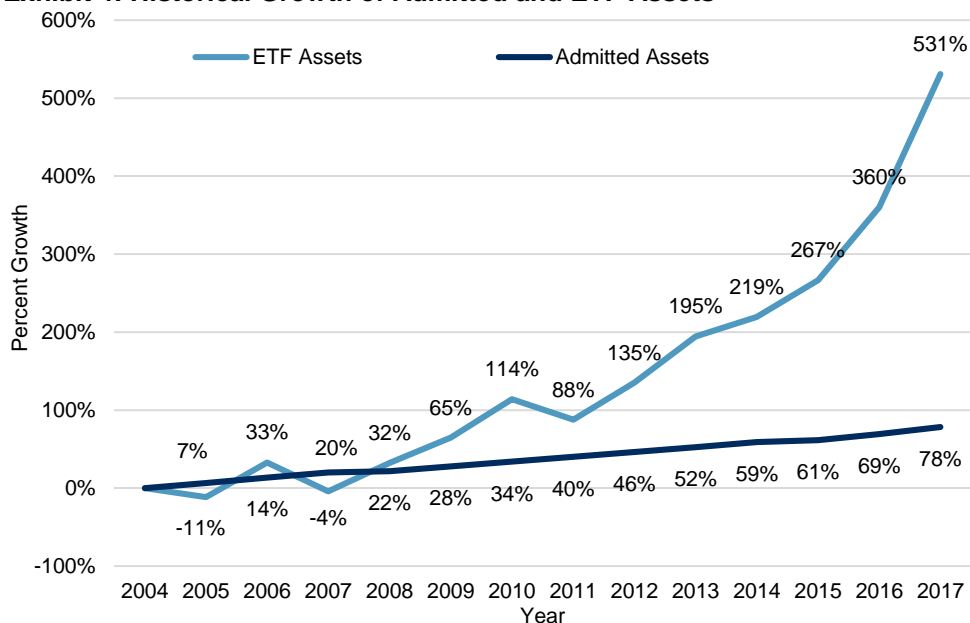
**Exhibit 3: CAGR of ETF Assets**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Since 2004, the growth of ETF usage has greatly exceeded the growth rate of admitted assets (see Exhibit 4).

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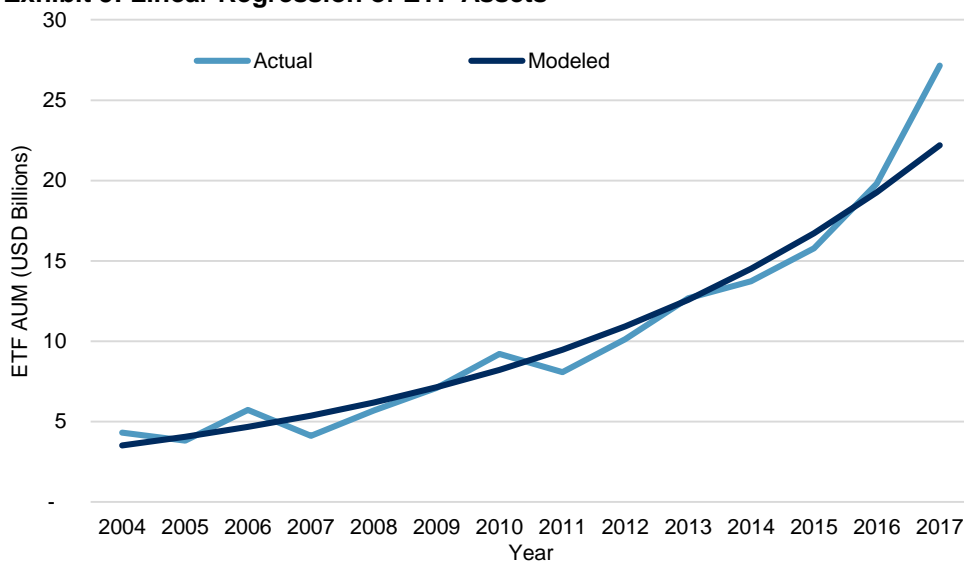
**Exhibit 4: Historical Growth of Admitted and ETF Assets**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

To model the growth of the ETF AUM held by insurance companies, we used a linear regression model to fit  $\ln(\text{ETF AUM})$ .<sup>2</sup> This model accurately fits the historical growth of ETFs in insurance companies (see Exhibit 5).

**Exhibit 5: Linear Regression of ETF Assets**



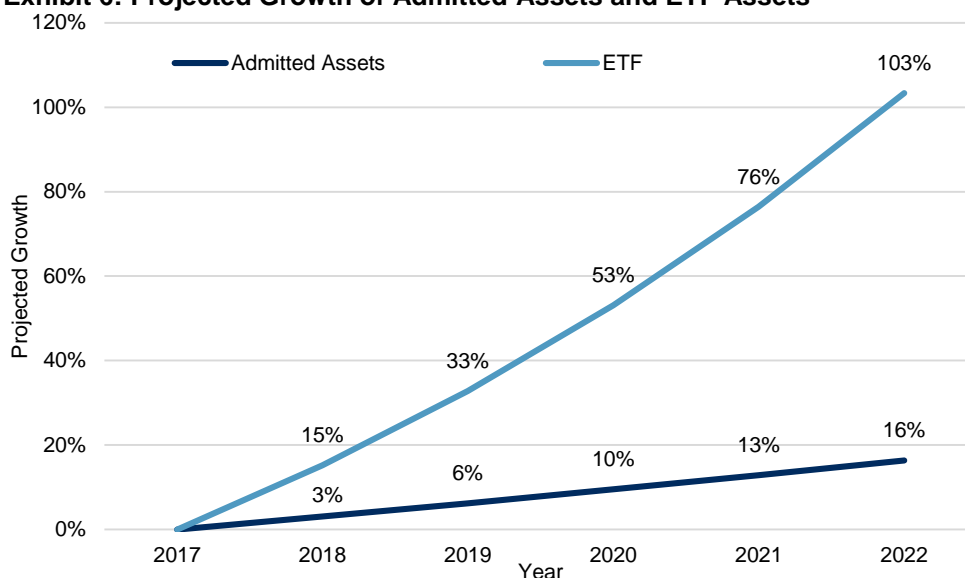
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

<sup>2</sup> See Appendix 2.

We used the regression model to estimate the trended growth of ETFs. If insurance companies continue to increase their use of ETFs according to the trend, the use of ETFs by insurance companies could double in five years. Cerulli Associates, meanwhile, expects admitted assets to only increase by 16% over the same period<sup>3</sup> (see Exhibit 6).

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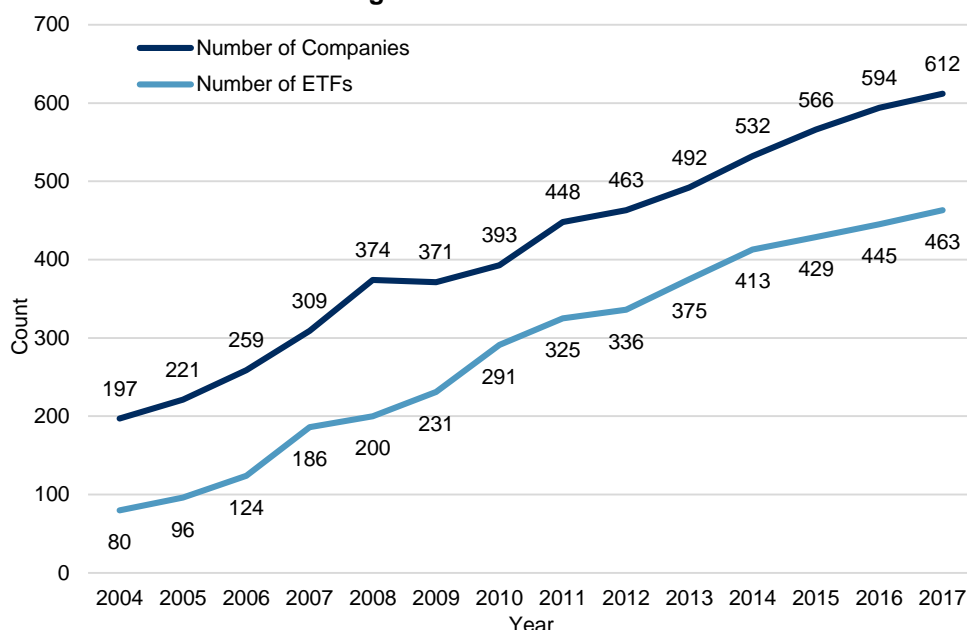
**Exhibit 6: Projected Growth of Admitted Assets and ETF Assets**



Source: NAIC via S&P Global Market Intelligence, Cerulli Associates. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Since 2004, the number of ETFs used by insurance companies and the number of insurance companies using ETFs have steadily risen. As of 2017, 612 insurance companies had invested in 463 different ETFs (see Exhibit 7). Given that the SPGMI database had 1,984 insurance companies listed in 2017, approximately 31% of all insurance companies were invested in ETFs. The consistent increase in the number of ETFs used indicated a surprising diversification in fund selection, even though insurance companies tended to invest in relatively few asset classes.

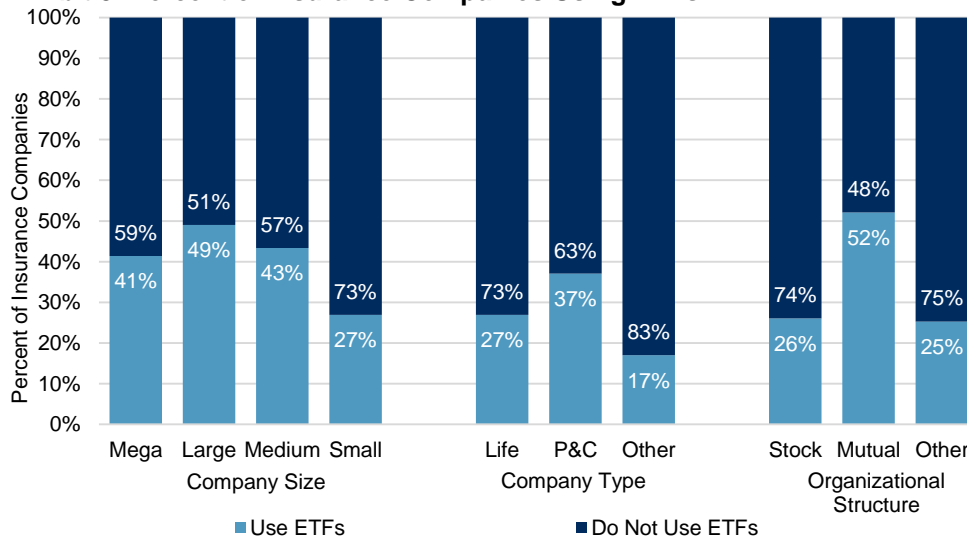
<sup>3</sup> "North American Institutional Markets 2017," Cerulli Associates, Dec. 11, 2017, p. 54.

**Exhibit 7: Growth in ETF Usage**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

In terms of the number of companies using ETFs, proportionally twice as many Mutual insurance companies used ETFs more than Stock and Other companies. Property & Casualty (P&C) companies used ETFs slightly more than Life companies, and Other companies lagged behind Life companies. In terms of size,<sup>4</sup> Small companies lagged Mega, Large, and Medium companies—all of which invested in ETFs in roughly the same proportion (see Exhibit 8).

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**Exhibit 8: Percent of Insurance Companies Using ETFs**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

<sup>4</sup> See Appendix 1 for definitions of Size and Ownership structure.

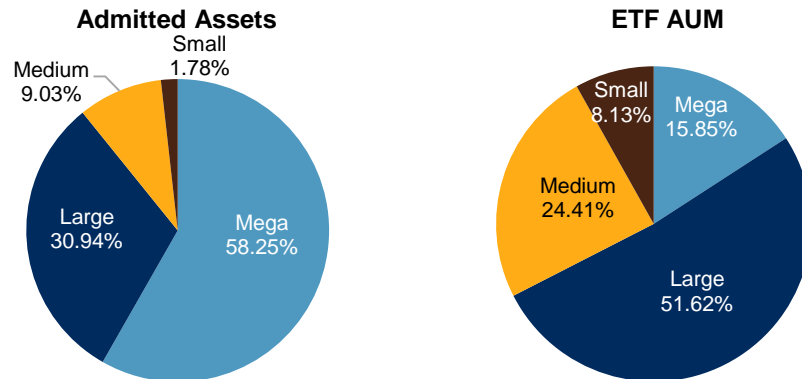
## ANALYSIS BY SIZE, OWNERSHIP STRUCTURE, AND COMPANY TYPE

In addition to analyzing ETF investments by the number of companies, in this section we analyze the usage by U.S. dollars invested in ETFs.

Mega companies owned most of the assets belonging to insurance companies, but they only owned 16% of the ETFs held by insurance companies (see Exhibit 9).

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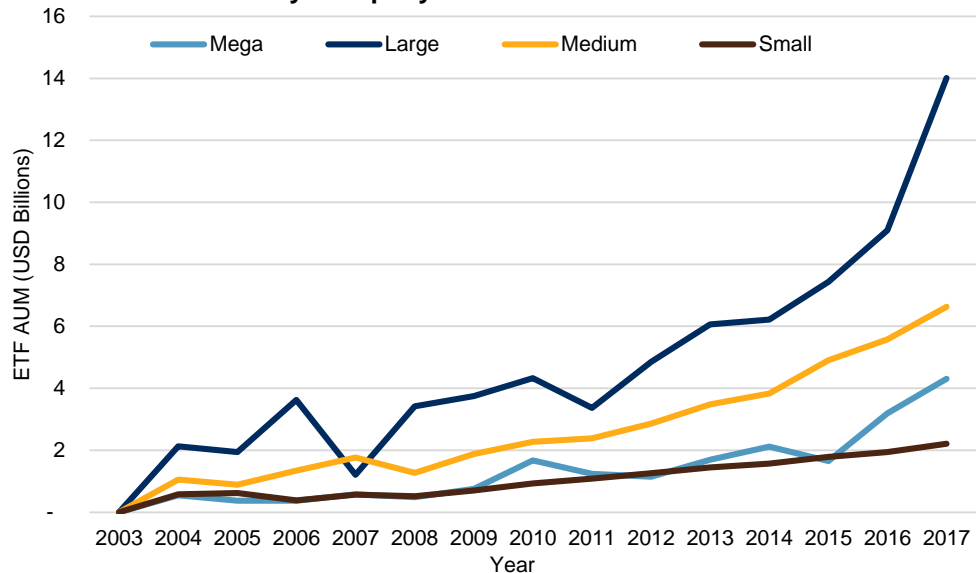
**Exhibit 9: Admitted Assets and ETF Assets by Company Size**



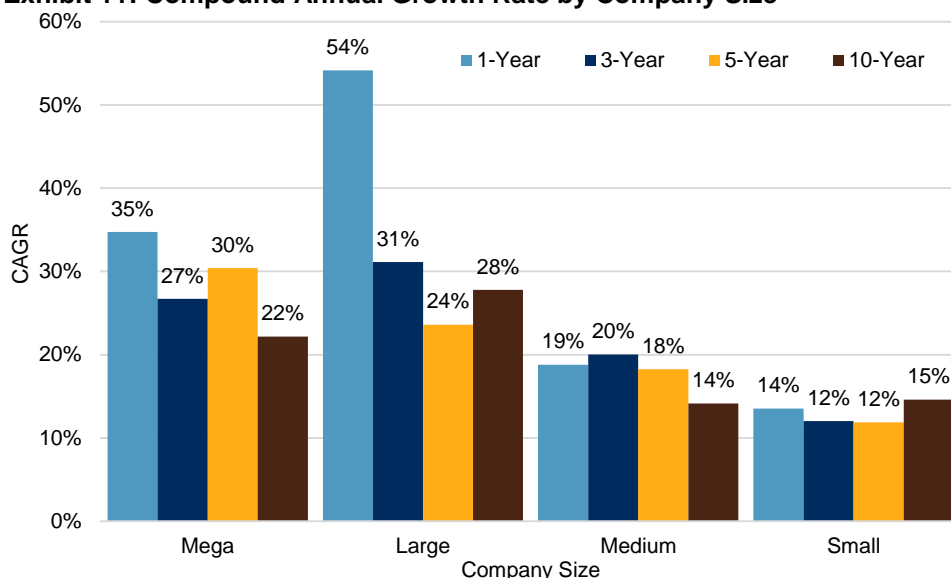
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

An increase in ETF usage by Mega companies continued in 2017; however, the usage by Large companies grew at a faster rate. Large companies increased their ETF allocation by more than 50% in the past year (see Exhibit 10 and 11).

**Exhibit 10: ETF AUM by Company Size**



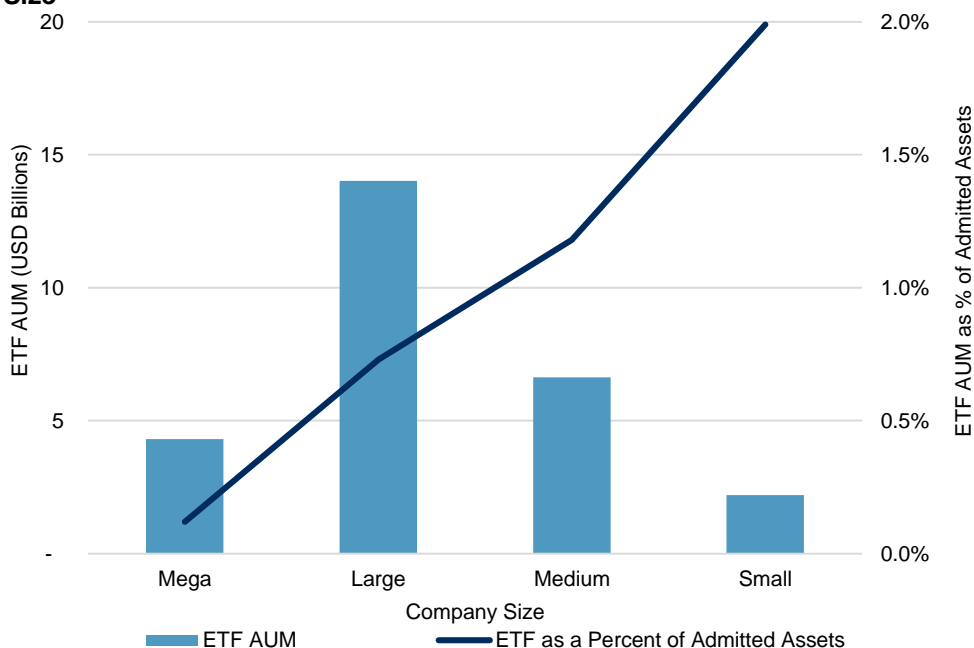
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 11: Compound Annual Growth Rate by Company Size**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

While Large insurance companies continued to hold the majority of insurance ETF assets, Small companies had the most invested in ETFs, as a proportion of ETFs to admitted assets. Indeed, the proportion of ETF assets in the portfolio decreased as the size of the company increased (see Exhibit 12).

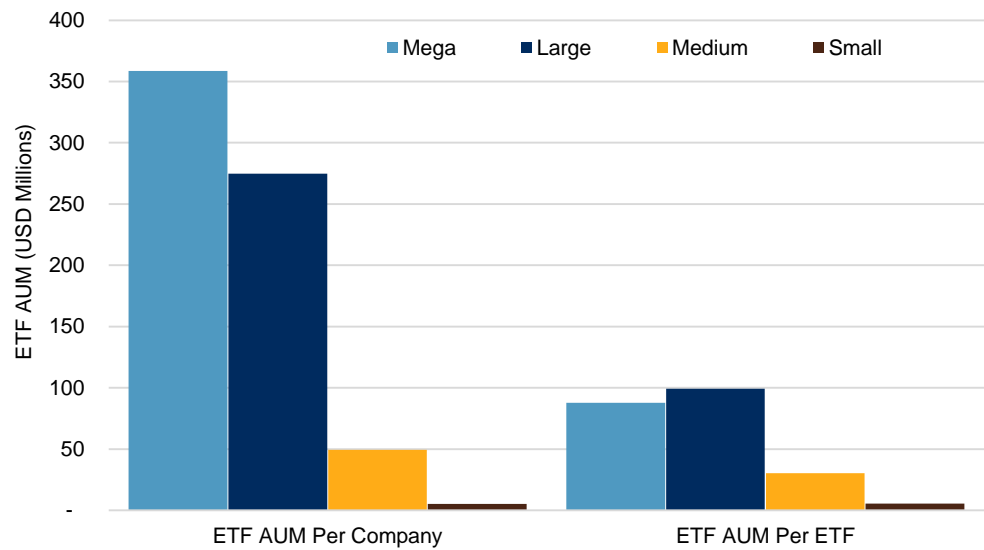
While Large insurance companies continued to hold the majority of insurance ETF assets, as a proportion of ETFs to admitted assets, Small companies had the most invested in ETFs.

**Exhibit 12: ETF AUM and ETFs as a Percent of Admitted Assets by Company Size**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

As a group, Medium and Large companies had more invested in ETFs than Mega companies. However, if we look only at companies that invested in ETFs, an individual Mega company had more invested in ETFs than an individual Large company. Interestingly, Large and Mega companies invested roughly the same amount in an individual ETF name (see Exhibit 13).

**Exhibit 13: ETF Investment per Company and per ETF by Company Size**

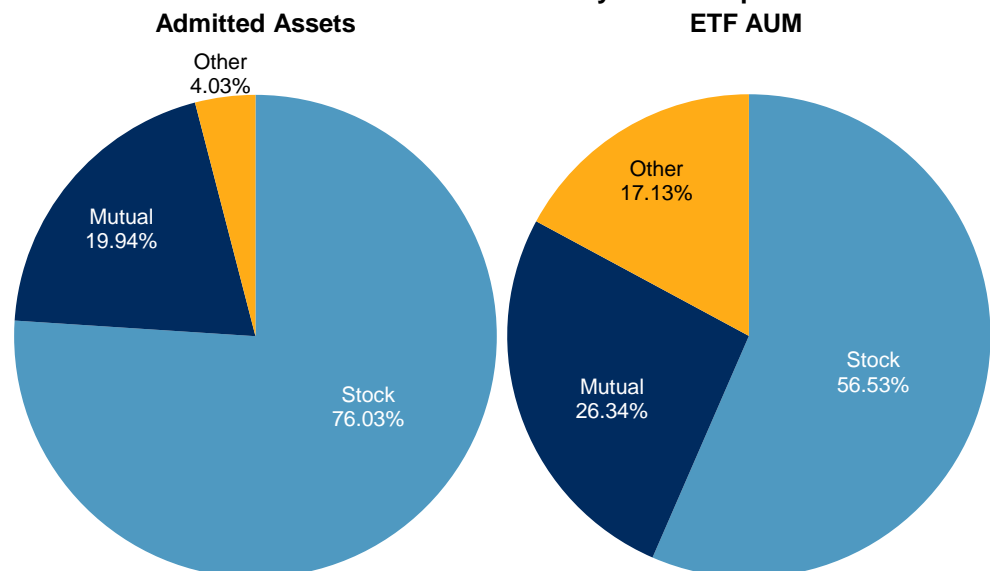


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Stock companies had the most admitted assets and the most invested in ETFs.

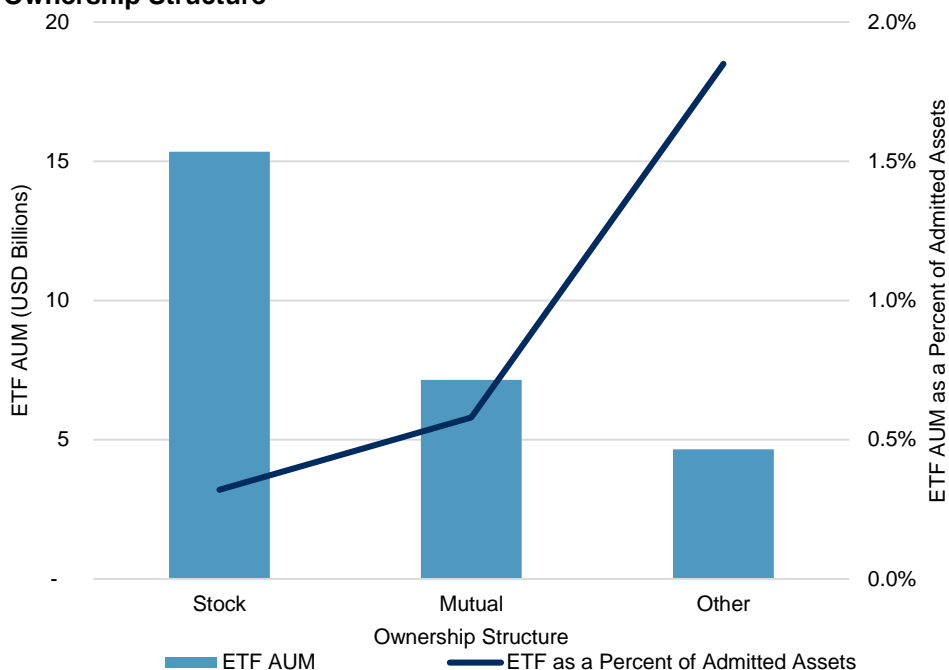
In terms of ownership structure, Stock companies had the most admitted assets and the most invested in ETFs. However, proportionally, Stock companies had the smallest allocation to ETFs (see Exhibits 14 and 15).

**Exhibit 14: Admitted Assets and ETF Assets by Ownership Structure**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

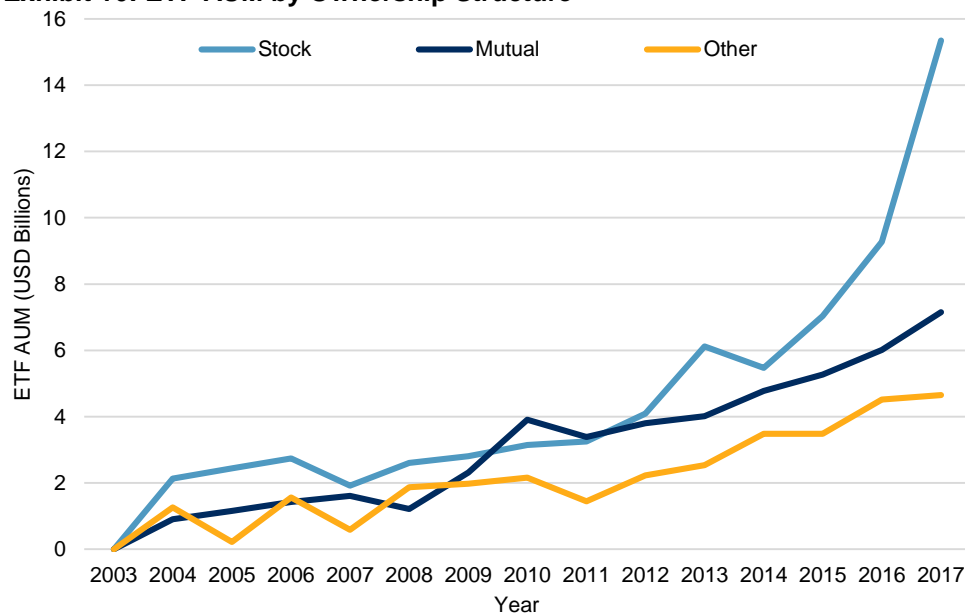


**Exhibit 15: ETF AUM and ETFs as a Percent of Admitted Assets by Ownership Structure**

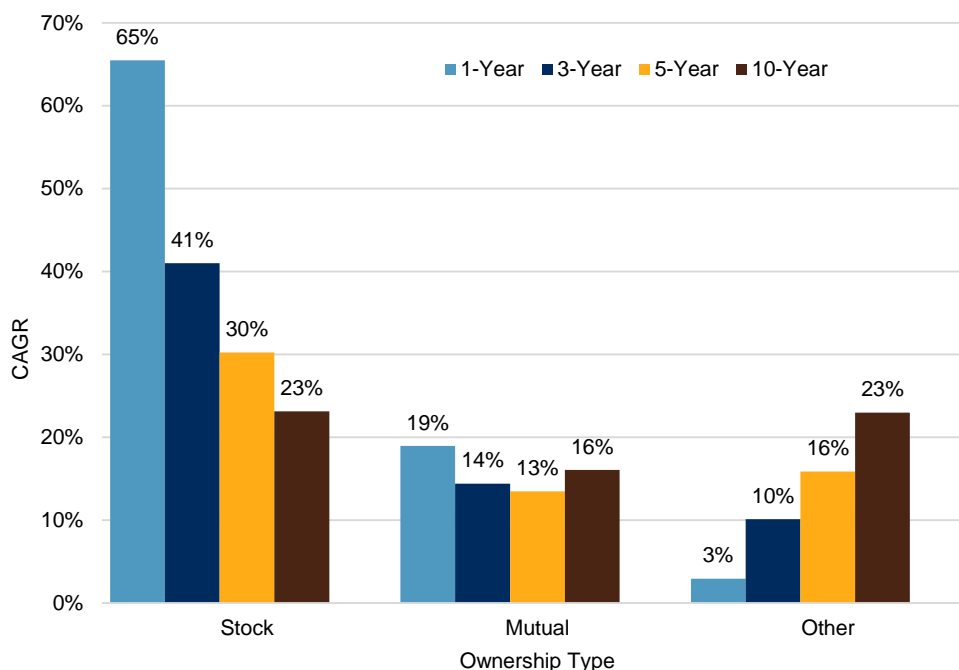
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

However, Stock companies increased their ETF allocation at a much higher rate than Mutual or Other companies. In 2017, Stock companies increased their ETF allocation by 65% from 2016 (see Exhibits 16 and 17).

Stock companies increased their ETF allocation at a much higher rate than Mutual or Other companies.

**Exhibit 16: ETF AUM by Ownership Structure**

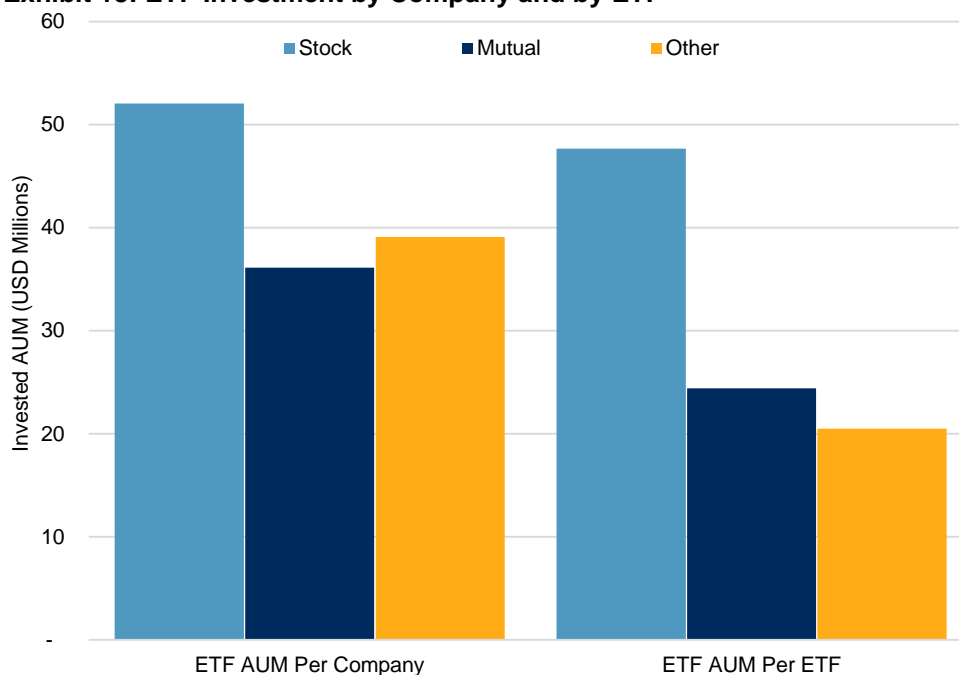
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 17: Compound Annual Growth Rate by Ownership Structure**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Of the companies that invested in ETFs, an individual Stock company had roughly 25% more invested in ETFs than a Mutual or Other company. Likewise, an individual Stock company had more than twice the amount invested in an individual ETF than other types (see Exhibit 18).

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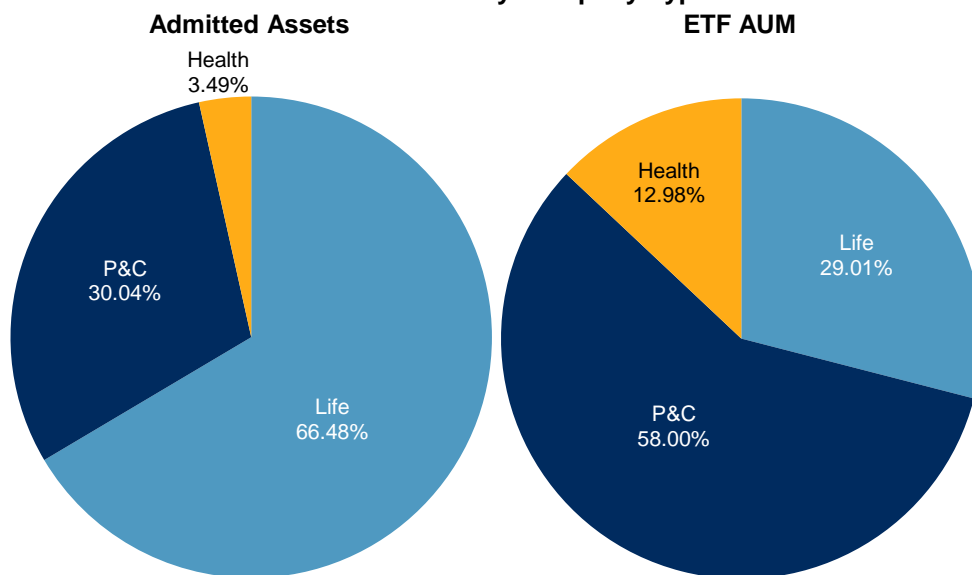
**Exhibit 18: ETF Investment by Company and by ETF**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

In terms of company type, Life companies had the most admitted assets, but P&C companies had the most invested in ETFs. However, proportionally, Health companies had the most invested in ETFs, as a proportion of ETFs to admitted assets (see Exhibits 19 and 20).

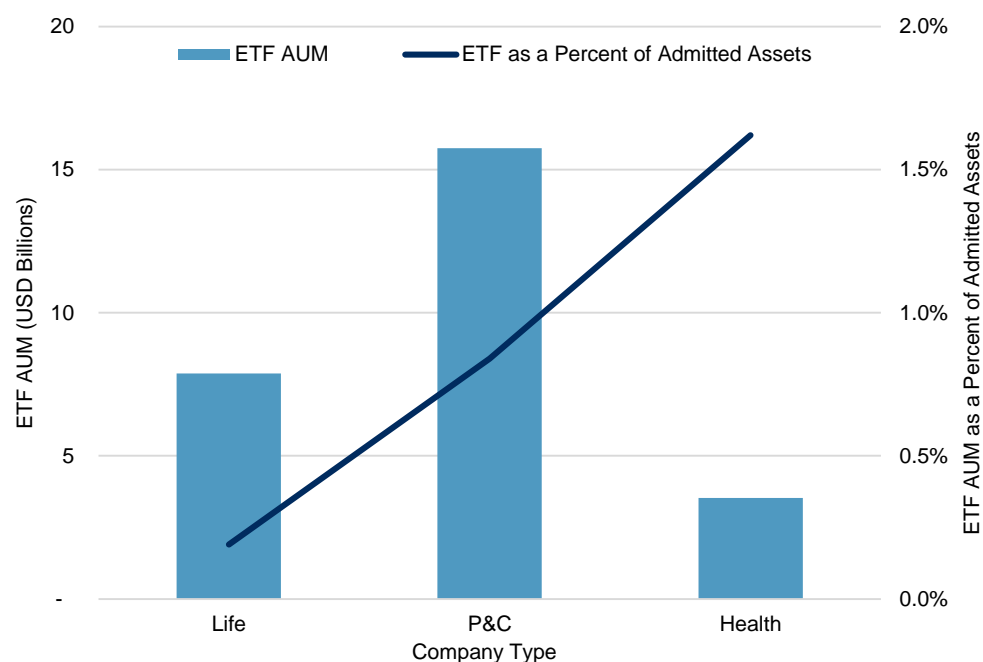
Although Life companies had the most admitted assets, P&C companies had the most invested in ETFs.

**Exhibit 19: Admitted and ETF Assets by Company Type**



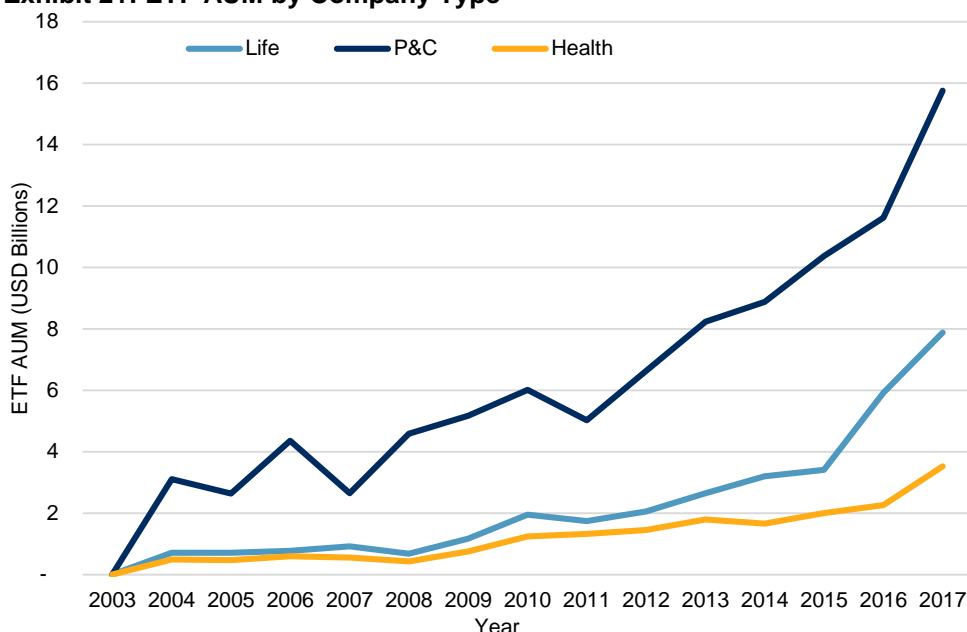
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

**Exhibit 20: ETF AUM and ETFs as a Percentage of Admitted Assets**



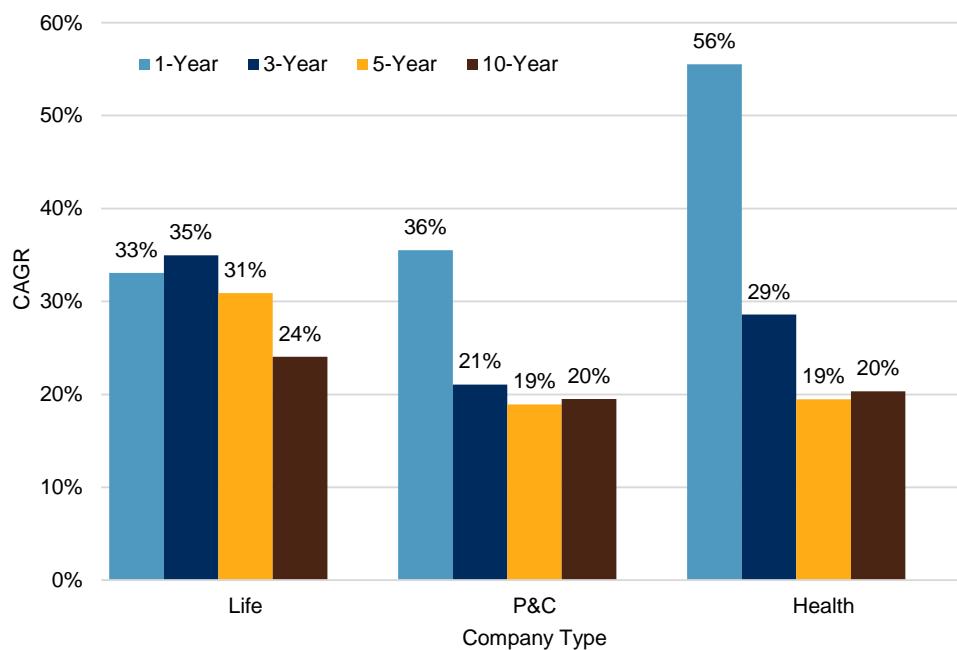
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

All three types of insurance companies continued to increase their allocation to ETFs (see Exhibits 21 and 22).

**Exhibit 21: ETF AUM by Company Type**

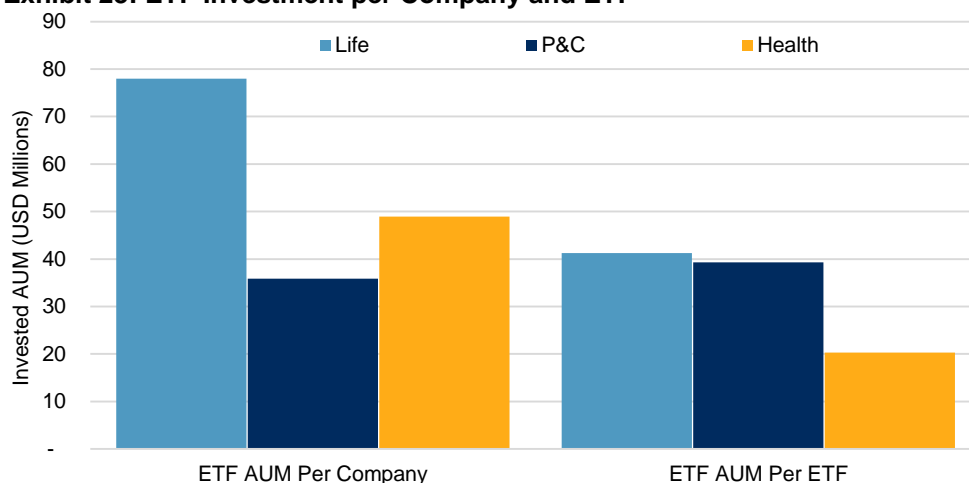
All three types of insurance companies increased their ETF holdings by at least 33% in 2017.

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 22: CAGR by Company Type**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Although P&C companies had the most invested in ETFs as a group, an individual P&C company that invested in ETFs was likely to have less invested in ETFs than a Life or Health company. However, Life and P&C companies had similar amounts invested in an individual ETF, but Health companies had one-half that amount invested in an individual ETF (see Exhibit 23).

**Exhibit 23: ETF Investment per Company and ETF**

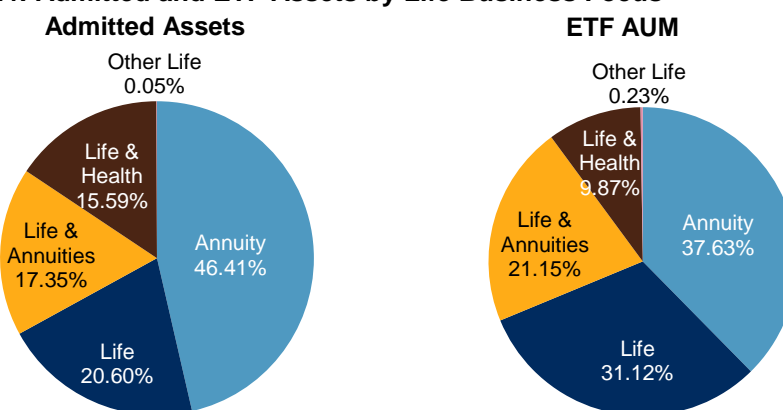
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## ANALYSIS BY BUSINESS FOCUS

To see if the ETF investments varied within a type of insurance company, we analyzed ETF investments by business focus.<sup>5</sup>

As of 2017, 101 different Life companies had USD 7.9 billion invested in ETFs. These companies invested in ETFs roughly in proportion to their admitted assets (see Exhibit 24). Annuity and Life & Health companies invested slightly less in proportion, and Life & Annuities and Life companies invested slightly more.

Life companies invested in ETFs roughly in proportion to their admitted assets.

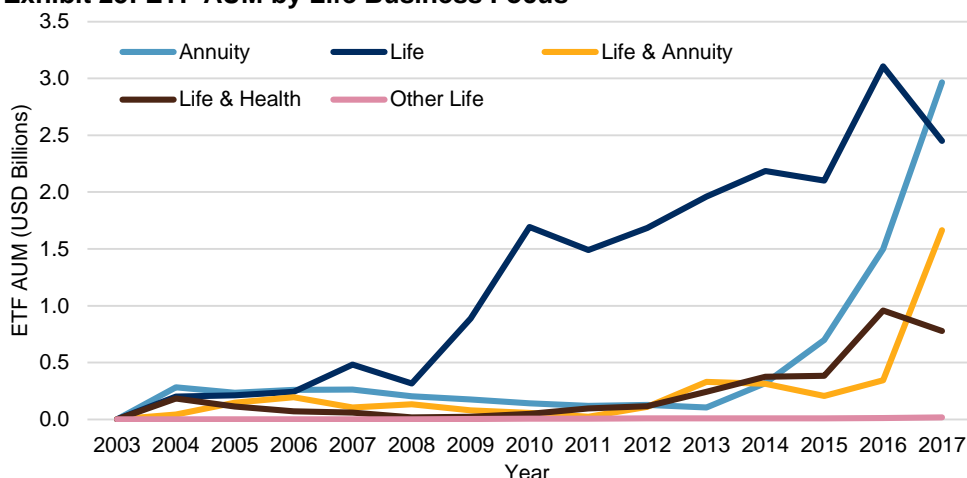
**Exhibit 24: Admitted and ETF Assets by Life Business Focus**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

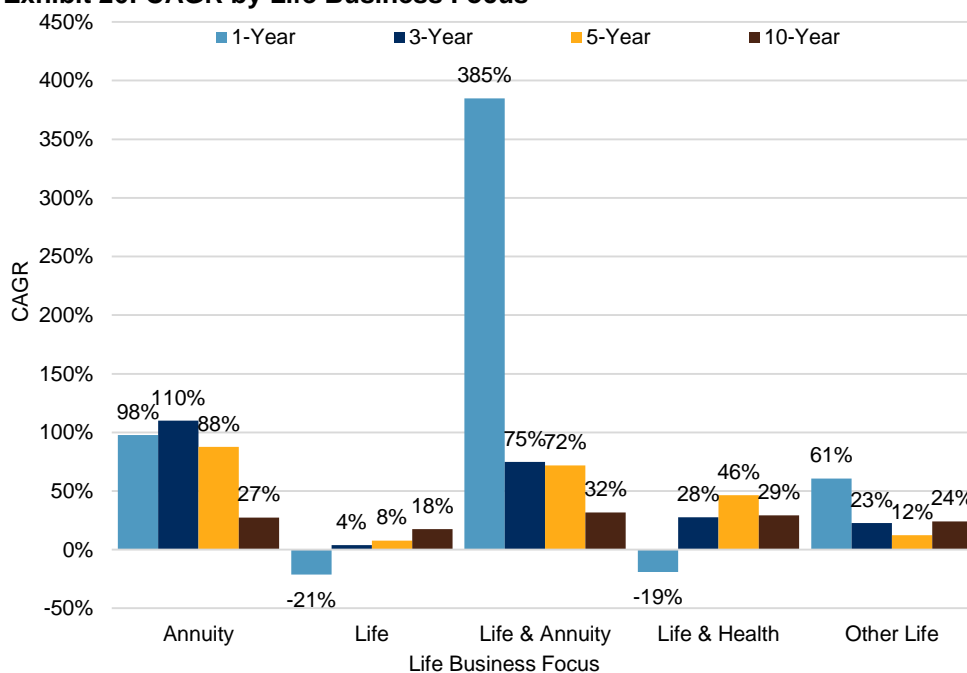
However, in the past two years, Annuity companies greatly increased their ETF investments, while Life companies stabilized their allocation. Life & Annuities companies saw the largest increase in ETF usage (see Exhibits 25 and 26).

<sup>5</sup> See Appendix 1 for definitions of business focus.

In the past two years, Annuity companies have greatly increased their ETF investments.

**Exhibit 25: ETF AUM by Life Business Focus**

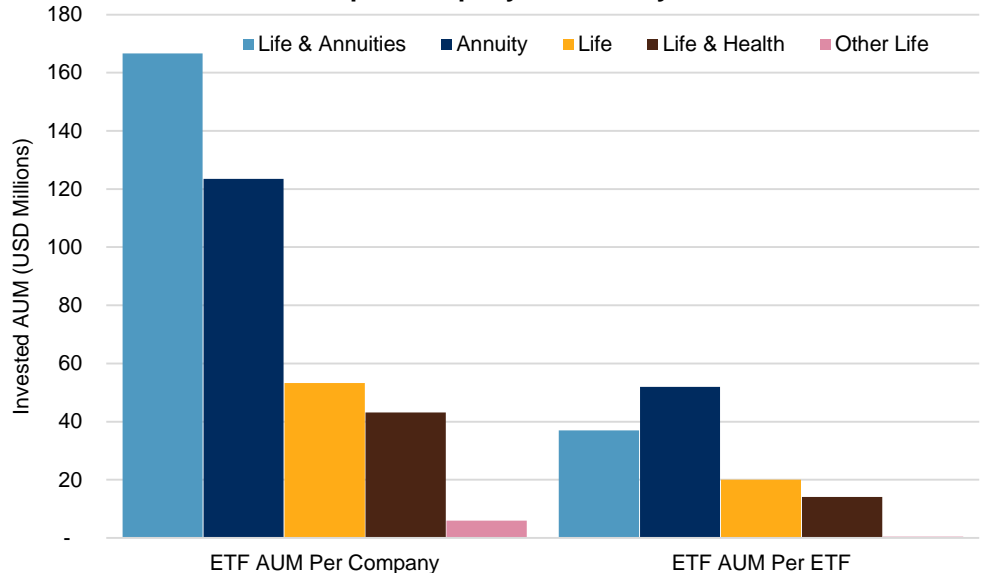
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 26: CAGR by Life Business Focus**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Of Life companies that invested in ETFs, a Life- and a Life & Annuities-focused company had more invested, per company, than companies with other focuses. For these companies, the amount invested in any one particular ETF varied considerably by business focus (see Exhibit 27).

**Exhibit 27: ETF Investment per Company and ETF by Life Business Focus**

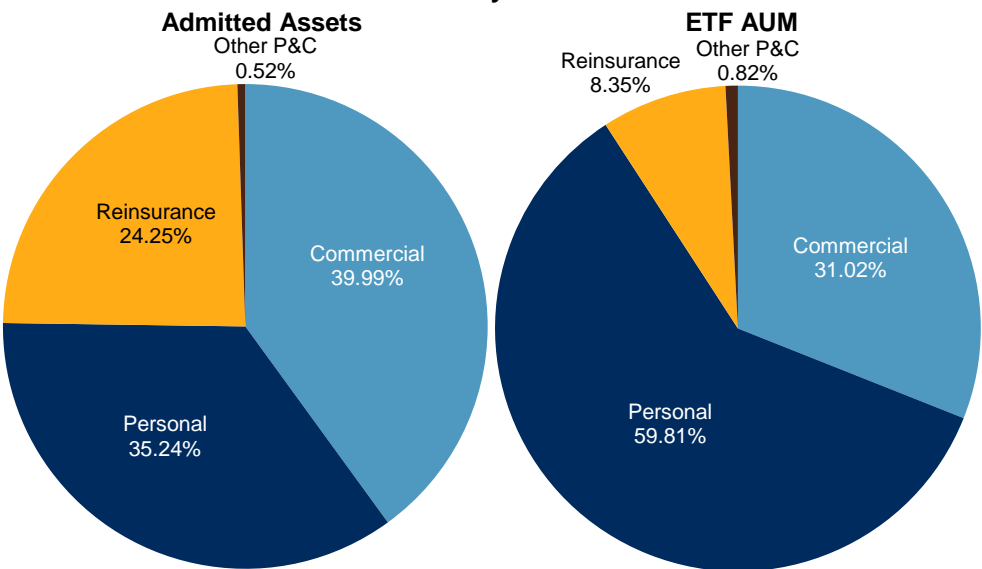


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

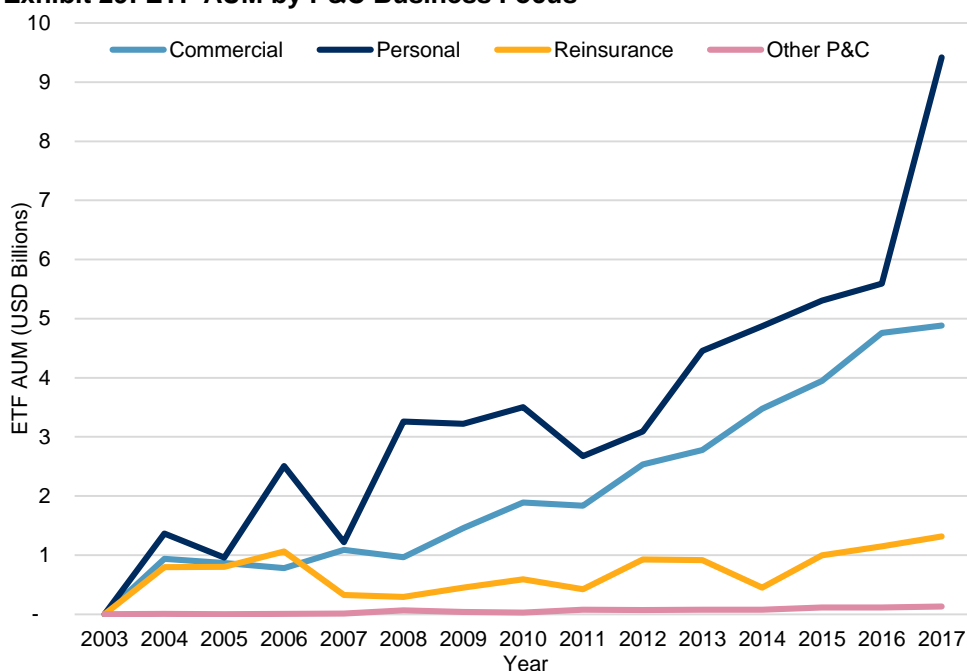
In terms of P&C businesses, Personal companies led in terms of ETF usage and growth (see Exhibits 28, 29, and 30).

In terms of P&C businesses, Personal companies led in terms of ETF usage and growth.

**Exhibit 28: Admitted and ETF Assets by P&C Business Focus**

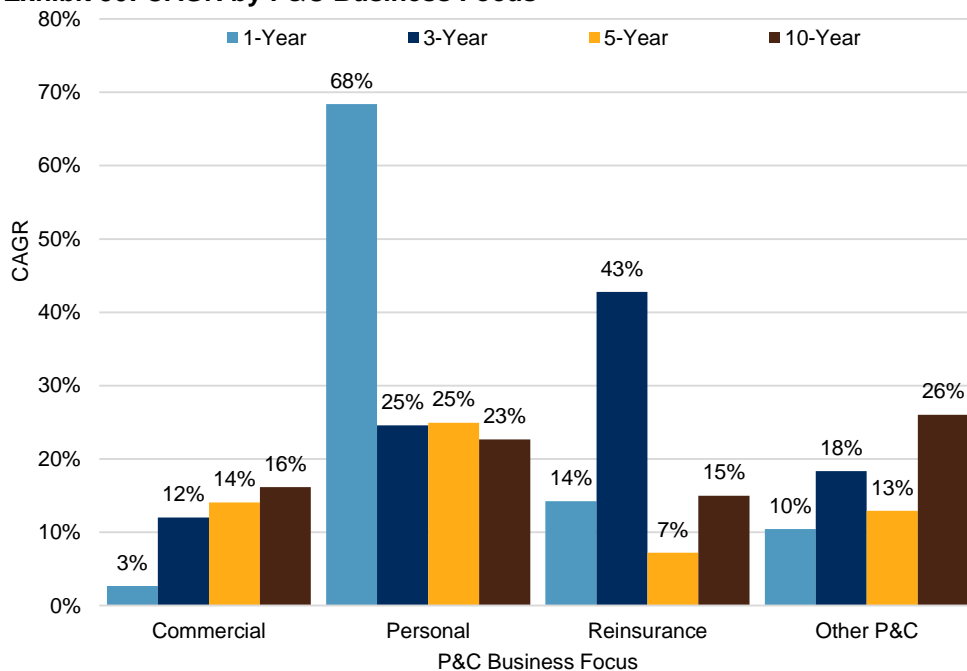


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

**Exhibit 29: ETF AUM by P&C Business Focus**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Personal Lines companies had the highest growth in ETF usage in 2017.

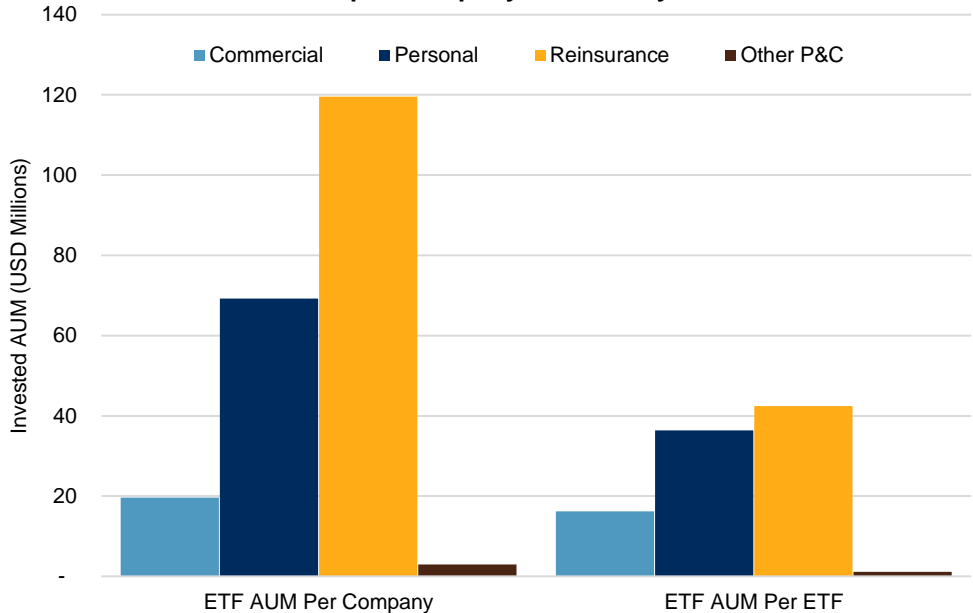
**Exhibit 30: CAGR by P&C Business Focus**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

However, for companies that did invest in ETFs, Reinsurance companies had a higher investment per company and per ETF (see Exhibit 31).



**Exhibit 31: ETF Investment per Company and ETF by P&C Business Focus**

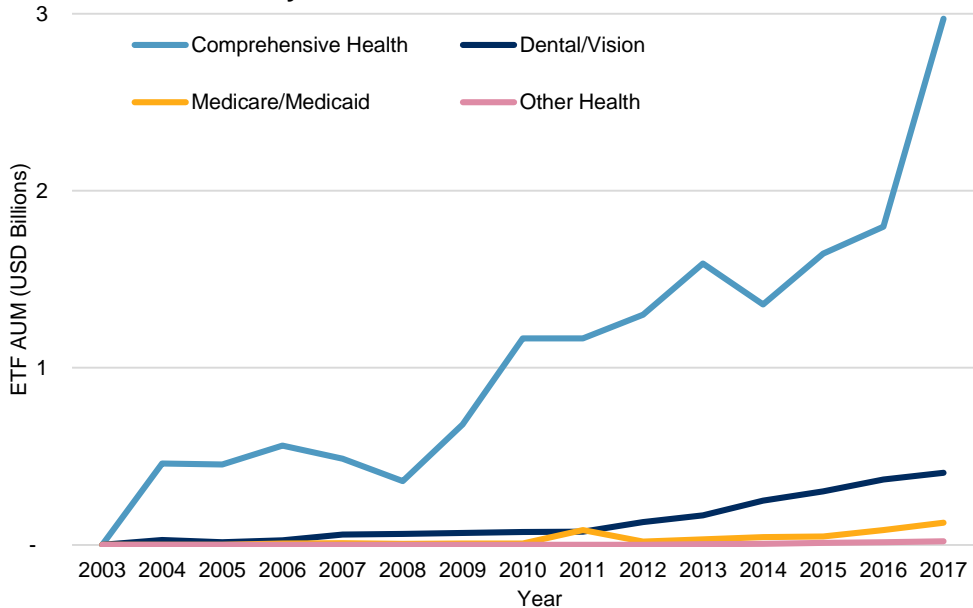


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Comprehensive Health companies dominated ETF investments by Health insurers—historically and in 2017 (see Exhibit 32).

Comprehensive Health companies dominated ETF investments by Health insurers—historically and in 2017.

**Exhibit 32: ETF AUM by Health Business Focus**

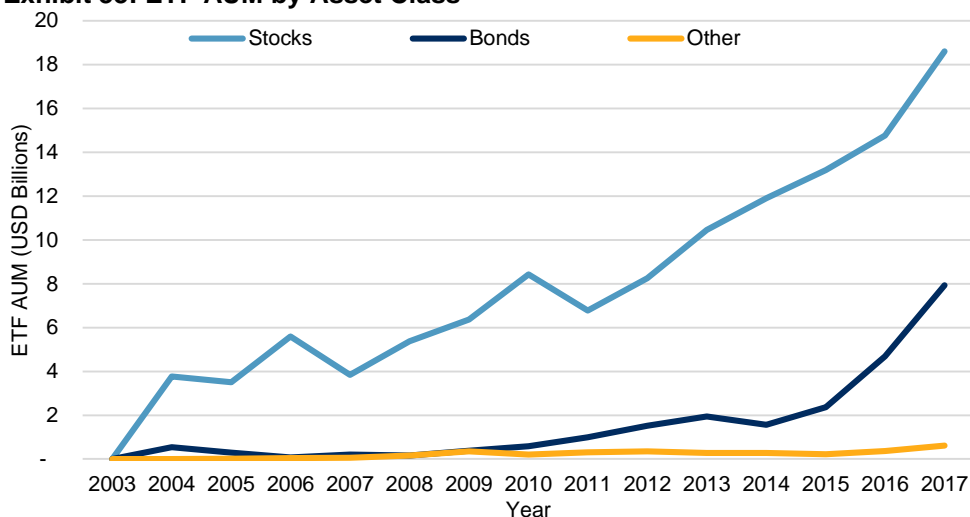


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## ANALYSIS BY ASSET CLASS

The increase in Bond ETF investments by insurance companies witnessed in 2016 continued into 2017 (see Exhibit 33). Year-over-year, Bond ETFs showed a significant increase of 69%, while Stock ETFs showed a healthy increase of 26% (see Exhibit 34). As of year-end 2017, Bond ETFs constituted 29% of insurance ETF investments—compared to 16% in the general U.S. ETF market.

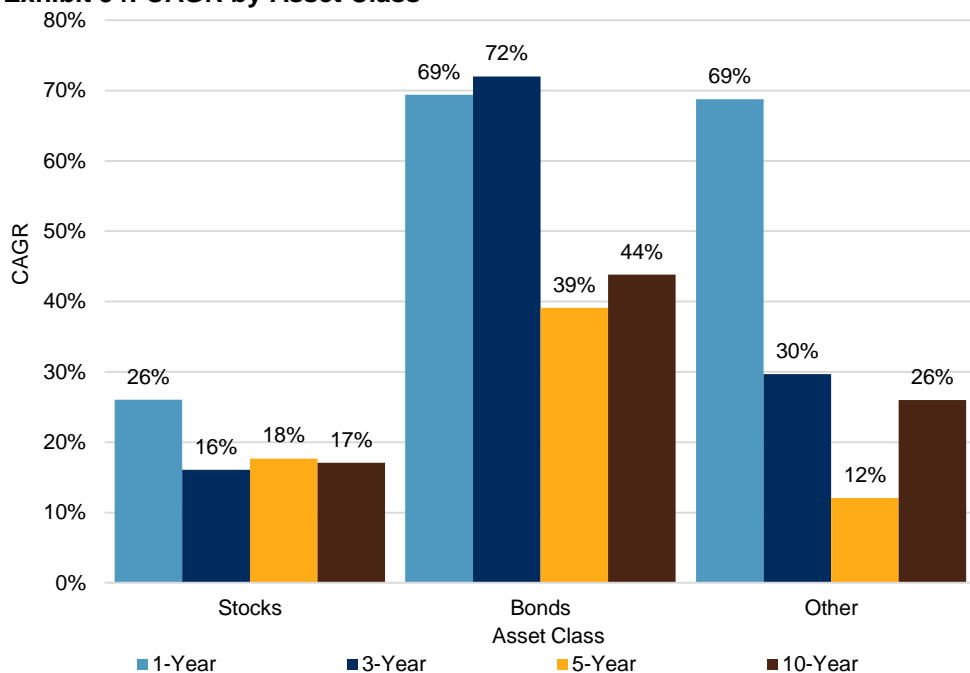
**Exhibit 33: ETF AUM by Asset Class**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Year-over-year, Bond ETFs showed an increase of 69%, while Stock ETFs showed a healthy increase of 26%.

**Exhibit 34: CAGR by Asset Class**

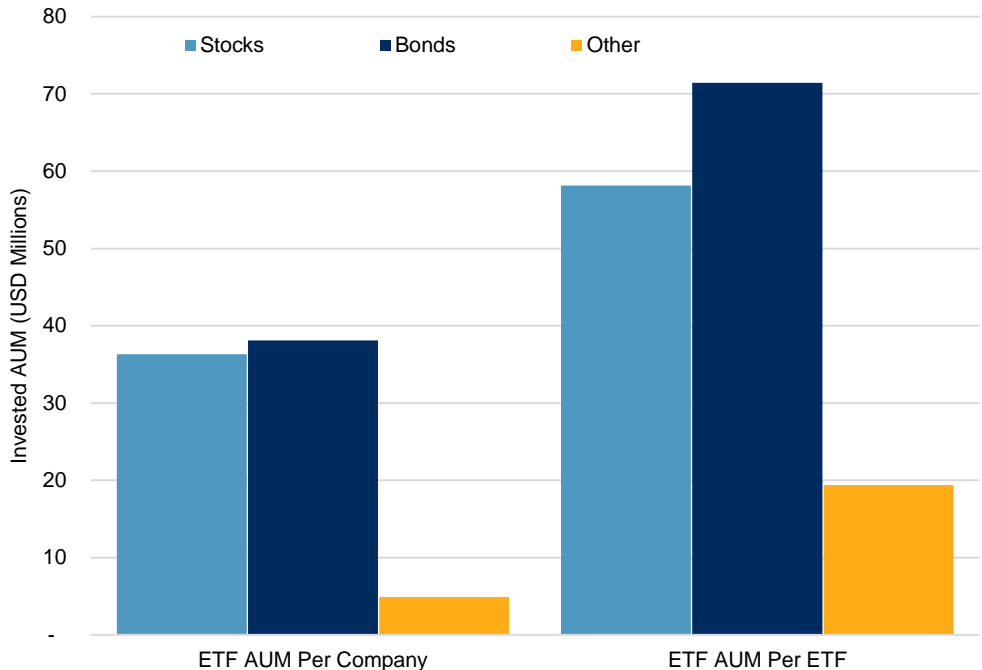


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Companies that invested in ETFs invested roughly the same amount in Stock ETFs as in Bond ETFs. However, companies invested in individual Bond ETFs at a higher level than Stock ETFs (see Exhibit 35).

Companies that invested in ETFs invested roughly the same amount in Stock ETFs and Bond ETFs.

**Exhibit 35: ETFs as a Percent of Admitted Assets**

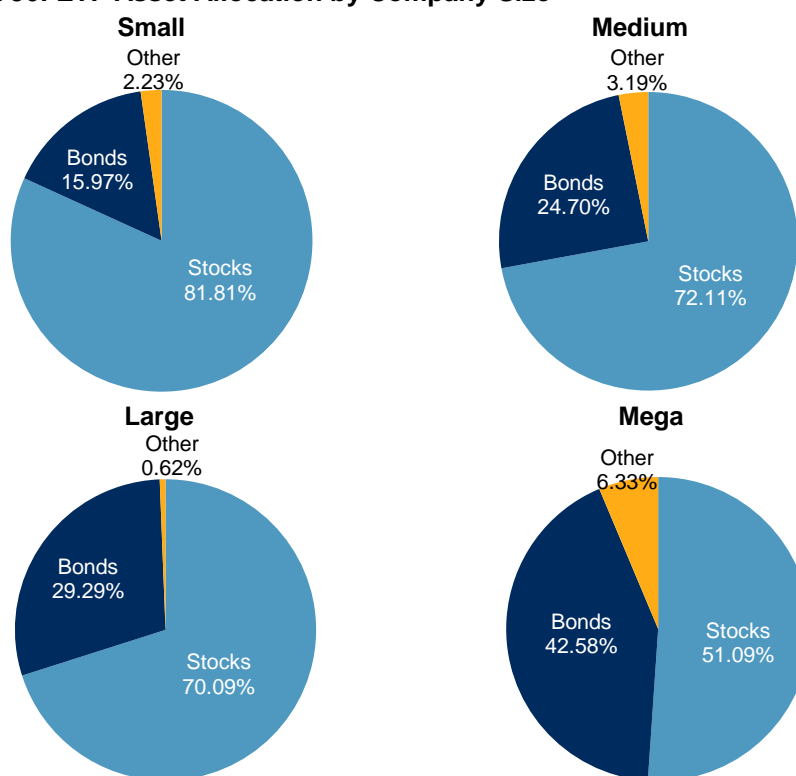


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

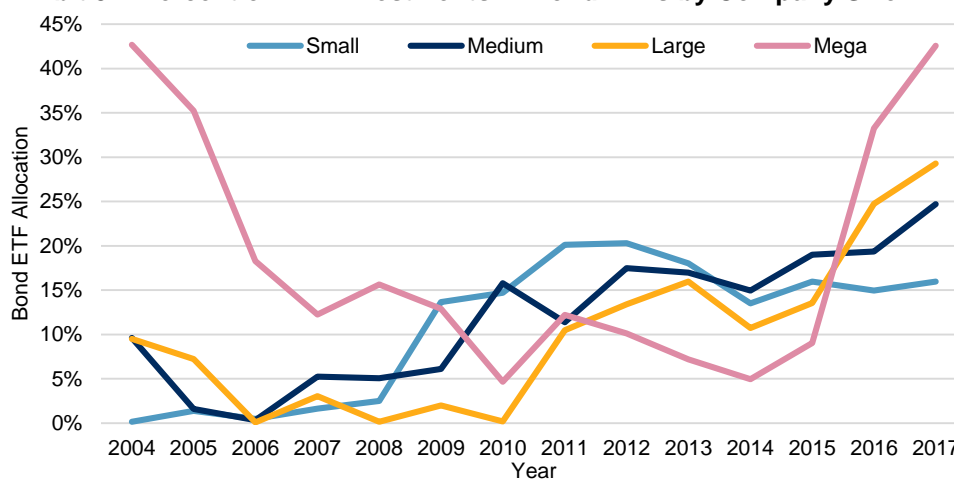
The amount allocated to Bond ETFs increased by company size. Bond ETF investments constituted almost one-half of ETF investments by Mega insurance companies (see Exhibit 36). The substantial increase in Bond ETF investments by Mega companies dominated recent changes. Indeed, all sizes increased Bond ETF investments over the past three years, except Small companies (see Exhibit 37).

**Exhibit 36: ETF Asset Allocation by Company Size**

Allocation to Bond ETFs increased as size of the company increased.

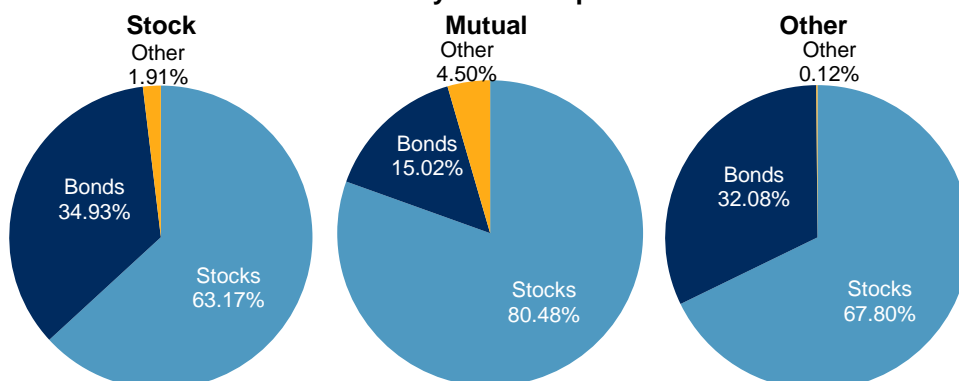


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

**Exhibit 37: Percent of ETF Investments in Bond ETFs by Company Size**

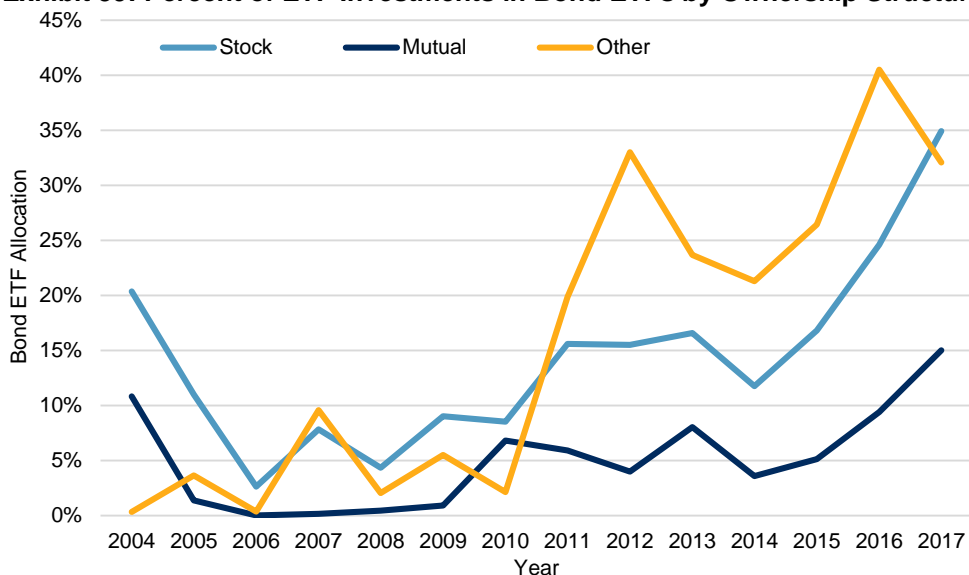
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

In terms of ownership structure, Stock and Other insurance companies had roughly one-third of their ETF investments in Bond ETFs. Mutual insurance companies had one-half that amount allocated to Bond ETFs, but had a slightly higher allocation to Other insurance companies (see Exhibit 38). Other insurance companies invested in Bond ETFs early on, but Stock companies drove recent growth (see Exhibit 39).

**Exhibit 38: ETF Asset Allocation by Ownership Structure**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

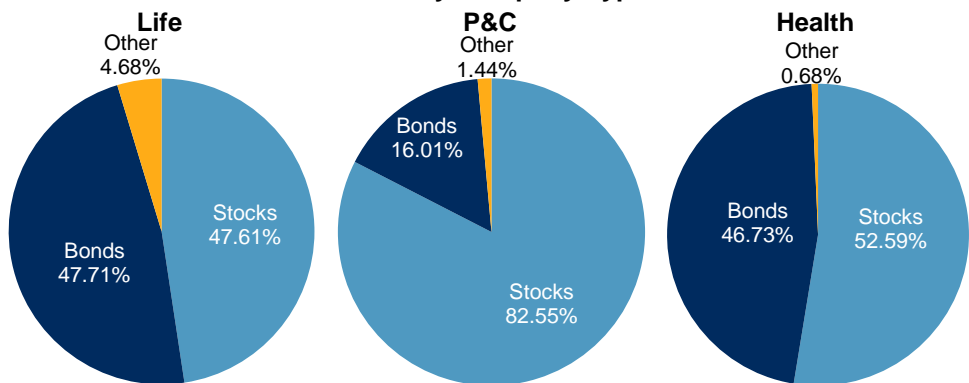
Stock companies drove the recent growth in Bond ETF usage.

**Exhibit 39: Percent of ETF Investments in Bond ETFs by Ownership Structure**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

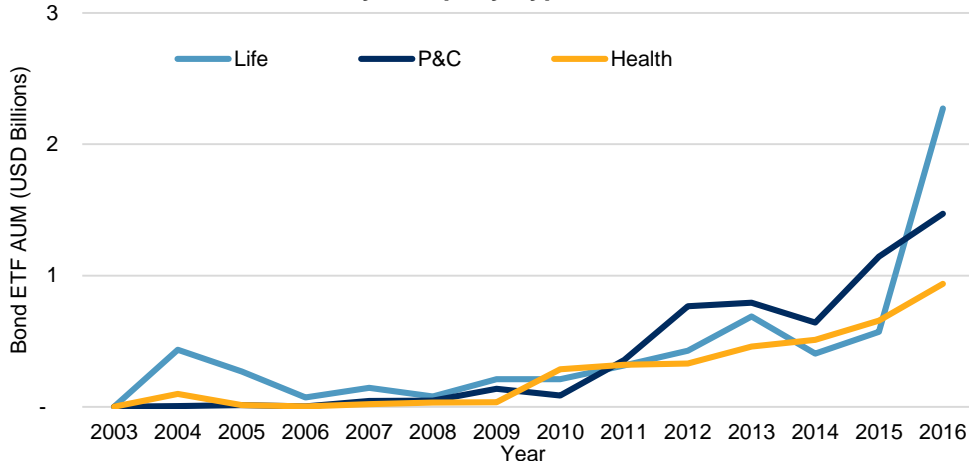
In terms of company type, Life and Health companies had roughly 50% invested in Bonds ETFs, while P&C companies had less than 20% invested in Bond ETFs (see Exhibit 40). While all company types increased their Bond ETF allocation, in the past two years, Life companies primarily drove this growth (see Exhibit 41).

**Exhibit 40: ETF Asset Allocation by Company Type**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

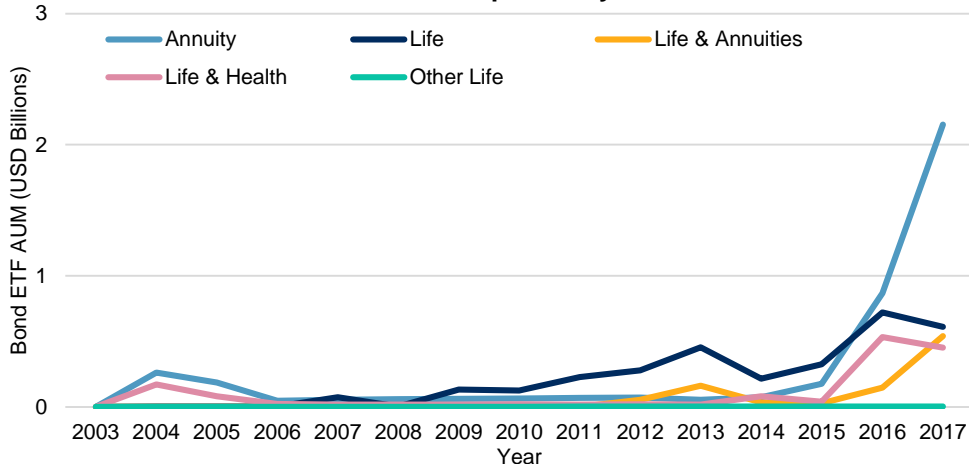
**Exhibit 41: Bond ETF AUM by Company Type**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Annuity companies drove most of the growth in Bond ETF usage by Life companies (see Exhibit 42).

**Exhibit 42: Bond ETF AUM in Life Companies by Business Focus**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

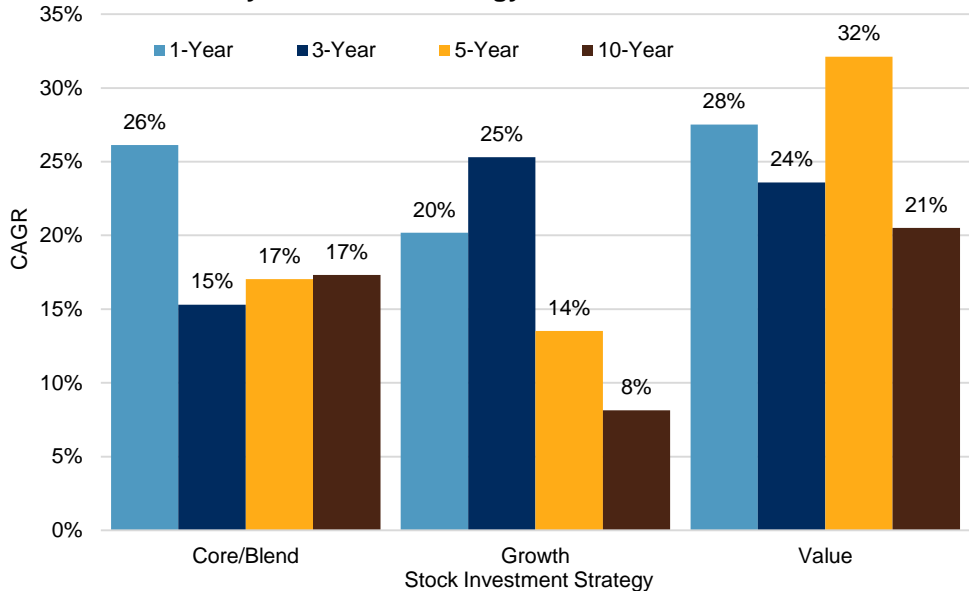
Annuity companies drove most of the growth in Bond ETF usage by Life companies.

Analysis of Stock ETFs

All stock investment strategies showed double-digit growth for the one-, three-, and five-year periods (see Exhibit 43). Most insurance companies allocated a majority of their Stock ETFs to a Core/Blend strategy (see Exhibit 44). This allocation did not materially vary by company size, type, or organizational structure.

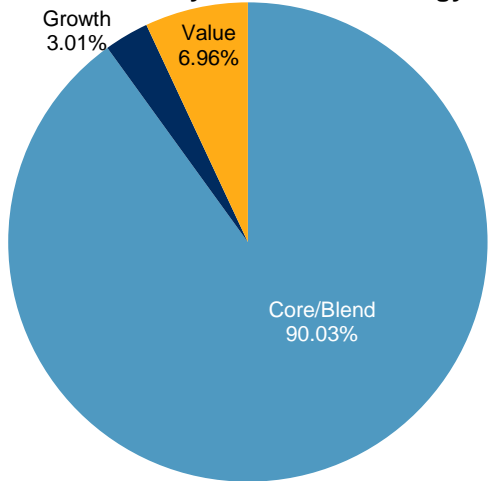
All stock investment strategies showed double-digit growth for the one-, three-, and five-year periods.

Exhibit 43: CAGR by Investment Strategy



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Exhibit 44: Stock ETF Allocation by Investment Strategy

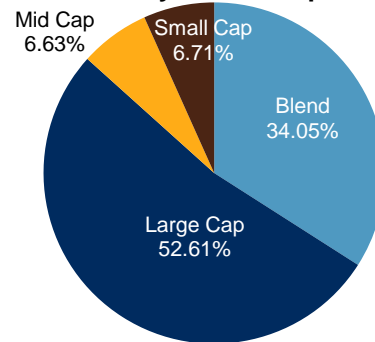


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Investments in Large Cap Stock ETFs dominated the insurance market (see Exhibit 45). Insurance companies allocated roughly one-half their Stock ETFs to Large Cap ETFs, about one-third to Blend, and the remainder split between Mid Cap and Small Cap. The allocation did not

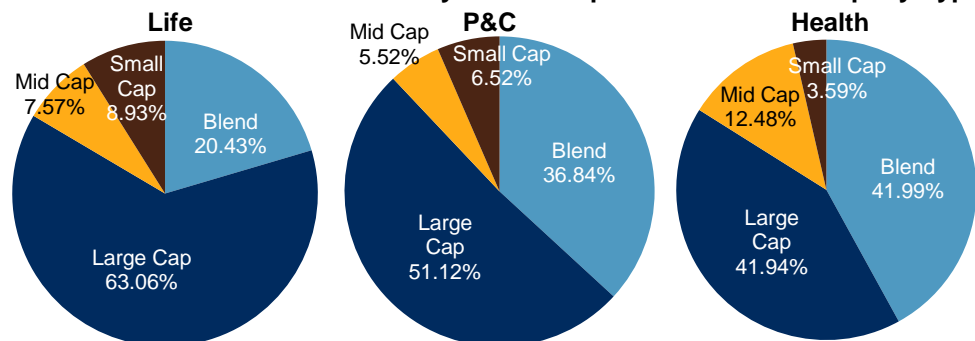
vary by organization structure or size, but did vary by company type (see Exhibit 46). Beginning in 2011, Life companies heavily invested in Large Cap ETFs (see Exhibit 47). Even though that allocation was reduced in 2017, Life companies had a higher allocation to Large Cap ETFs than their peers. Between 2016 and 2017, allocation to Blend ETFs increased markedly (see Exhibit 48).

**Exhibit 45: Stock ETF Allocation by Market Capitalization**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

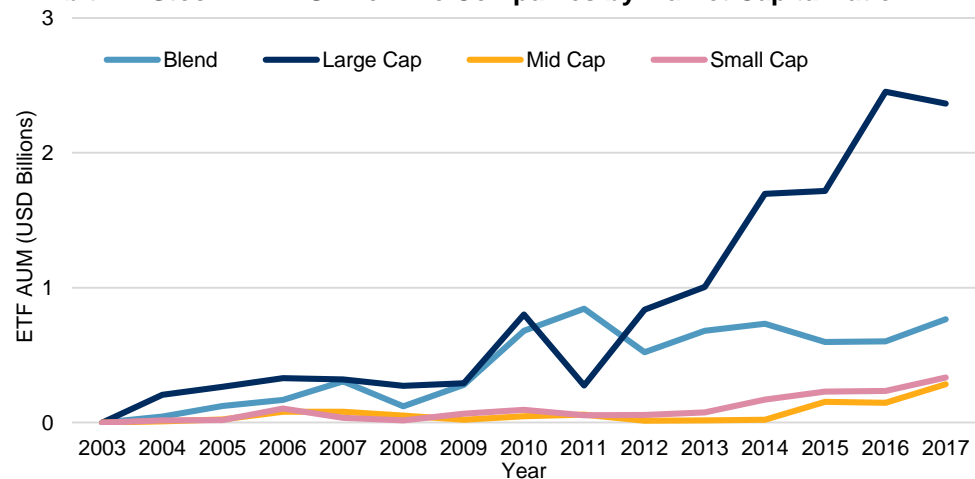
**Exhibit 46: Stock ETF Allocation by Market Capitalization and Company Type**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

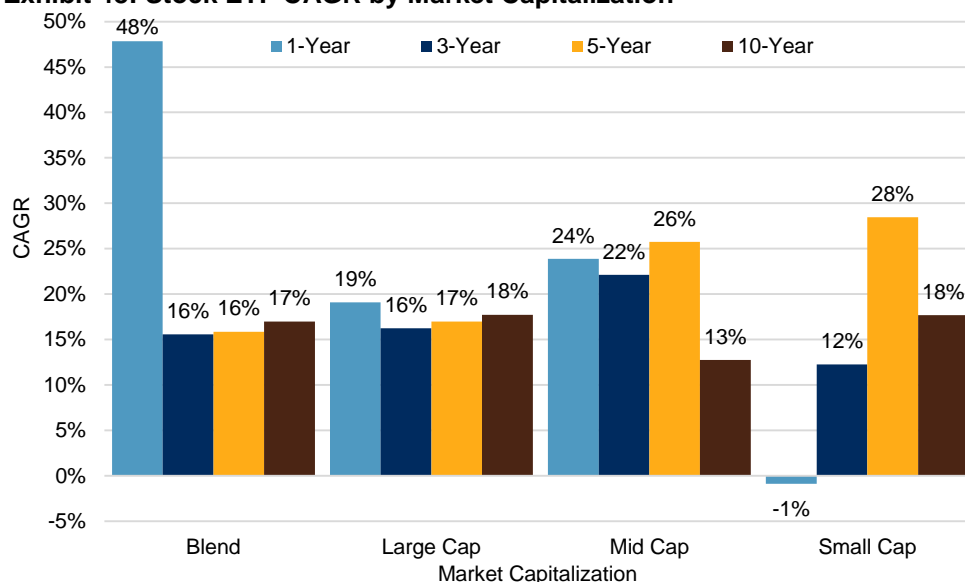
Beginning in 2011, Life companies heavily invested in Large Cap ETFs.

**Exhibit 47: Stock ETF AUM for Life Companies by Market Capitalization**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

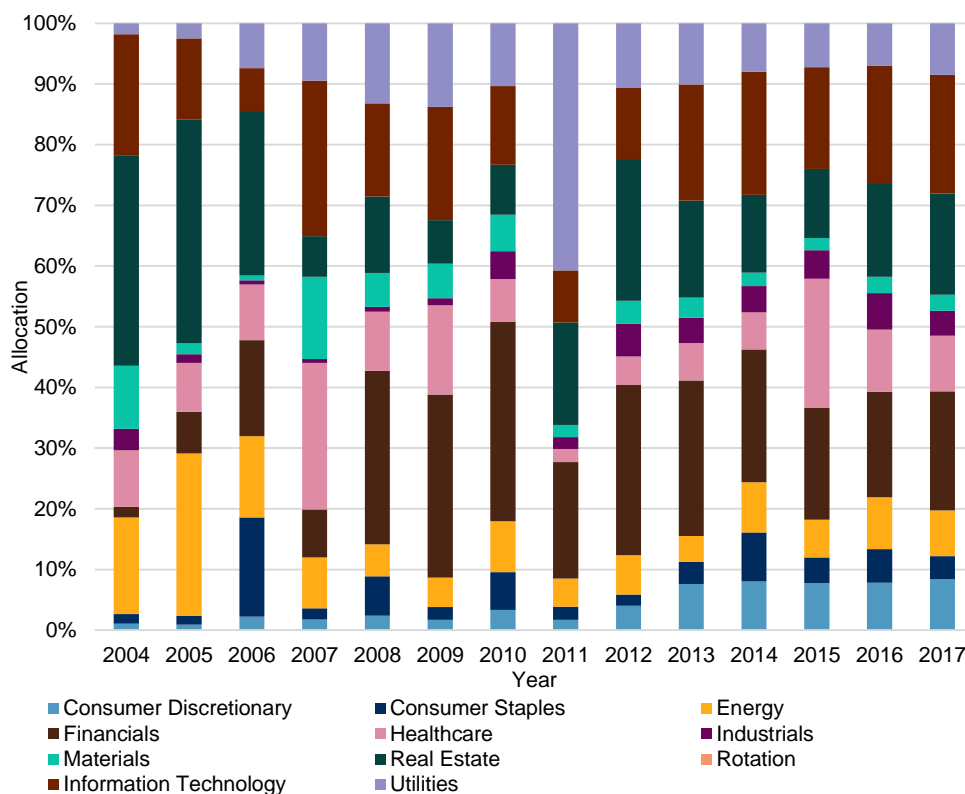


**Exhibit 48: Stock ETF CAGR by Market Capitalization**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Overall, the allocation to stock sectors remained fairly constant over the past three years, but, more importantly, the allocation between sectors changed quite rapidly over the past 14 years.

The allocation between sectors changed quite rapidly over the past 14 years.

**Exhibit 49: Stock Sector ETF Allocation**

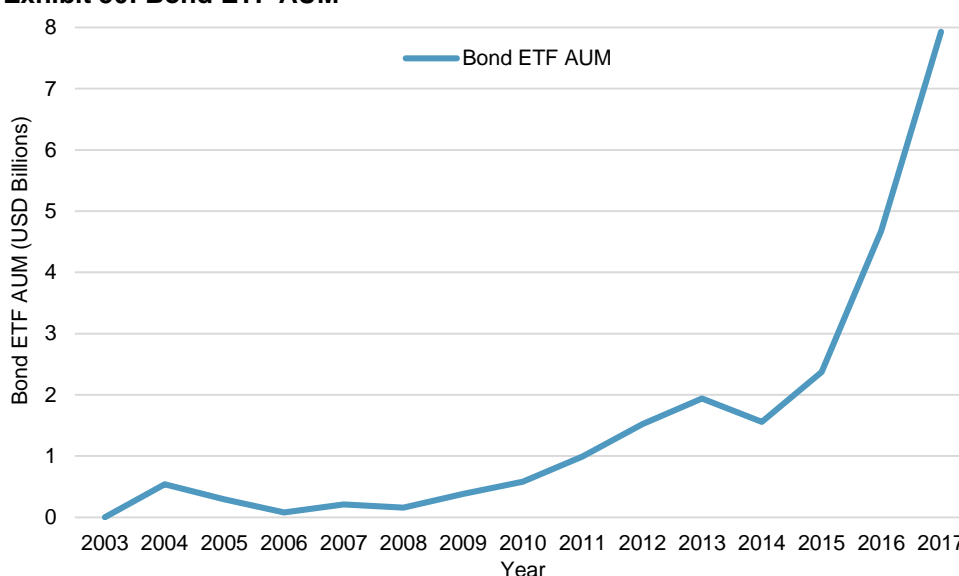
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## Analysis of Bond ETFs

As noted earlier, investments in Bond ETFs by insurance companies increased substantially to almost USD 8 billion in the past few years. Since 2014, the amount invested in Bond ETFs by insurance companies increased fivefold. As of Dec. 31, 2017, insurance companies allocated 60% of their Bond ETFs to Corporate ETFs and 26% to Broad Market ETFs. Insurance companies allocated to Bond ETFs markedly differently from the overall U.S. Bond ETF market. Insurance companies had a greater use for Corporate ETFs and less for other types of Bond ETFs. Corporate and Broad Market ETFs showed consistent growth over the 1-, 3-, 5-, and 10-year periods (see Exhibits 50, 51, and 52).

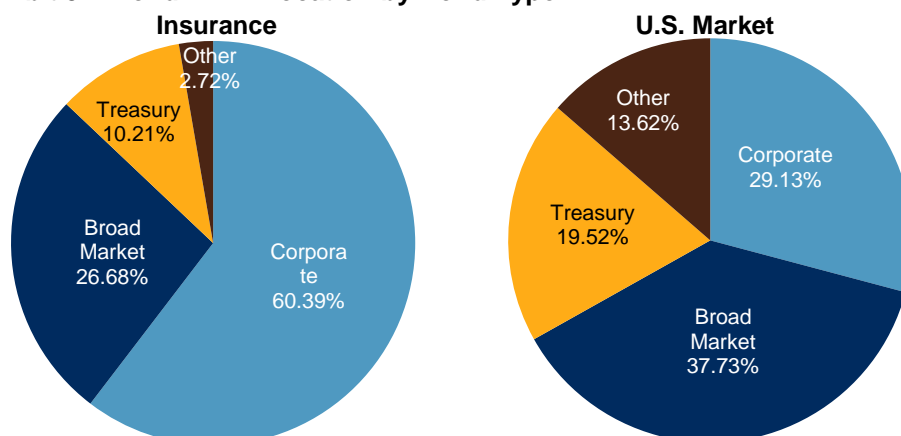
Since 2014, the amount invested in Bond ETFs by insurance companies increased fivefold.

**Exhibit 50: Bond ETF AUM**

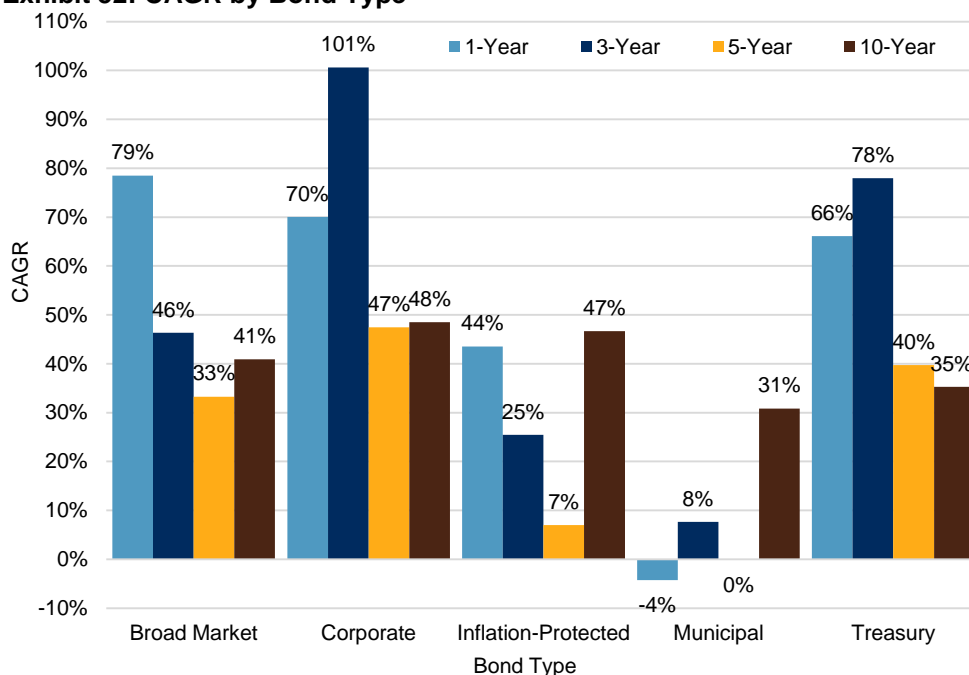


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 51: Bond ETF Allocation by Bond Type**

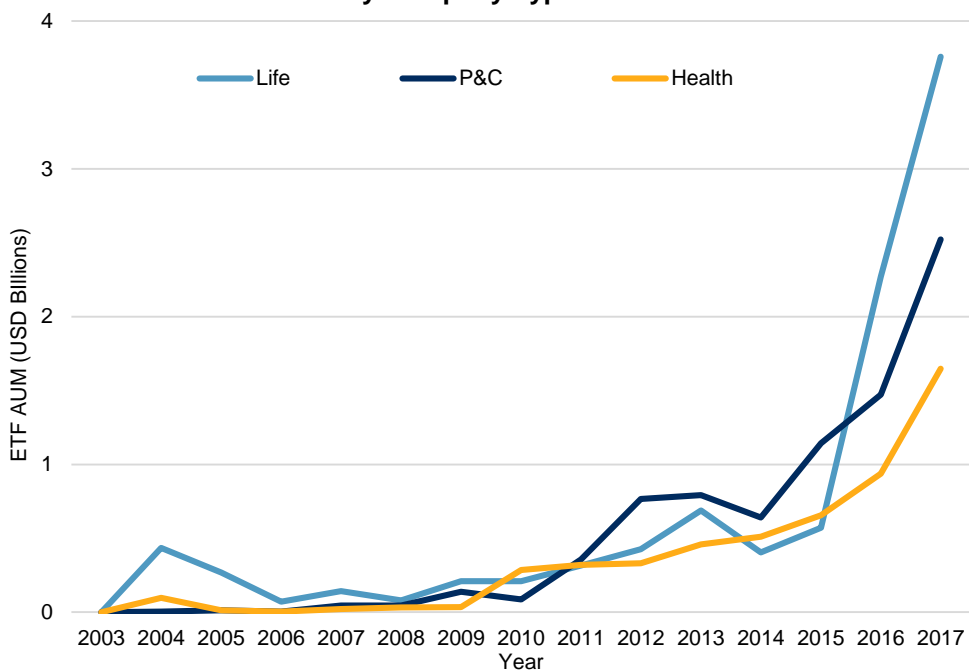


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Charts are provided for illustrative purposes.

**Exhibit 52: CAGR by Bond Type**

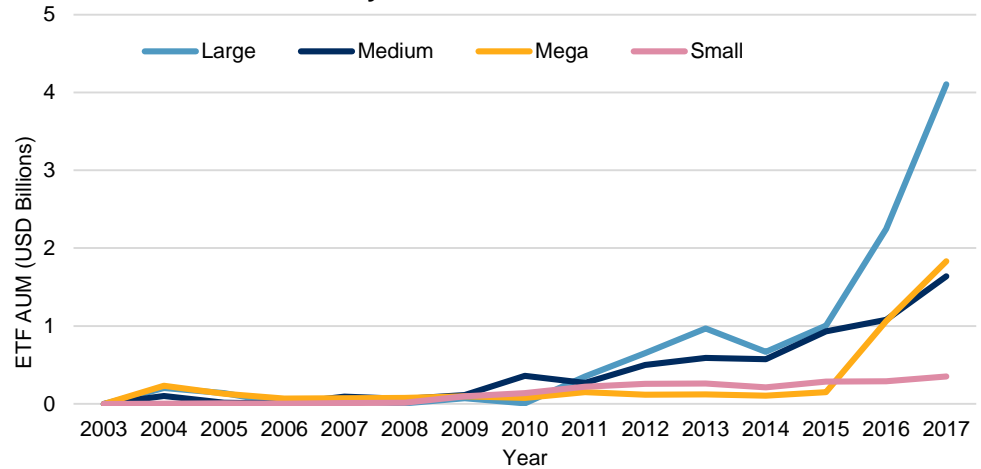
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

While all types of insurance companies increased their Bond ETF investments (see Exhibit 53), the bulk of the growth was in Large, Stock, and Annuity companies (see Exhibits 54, 55, and 56).

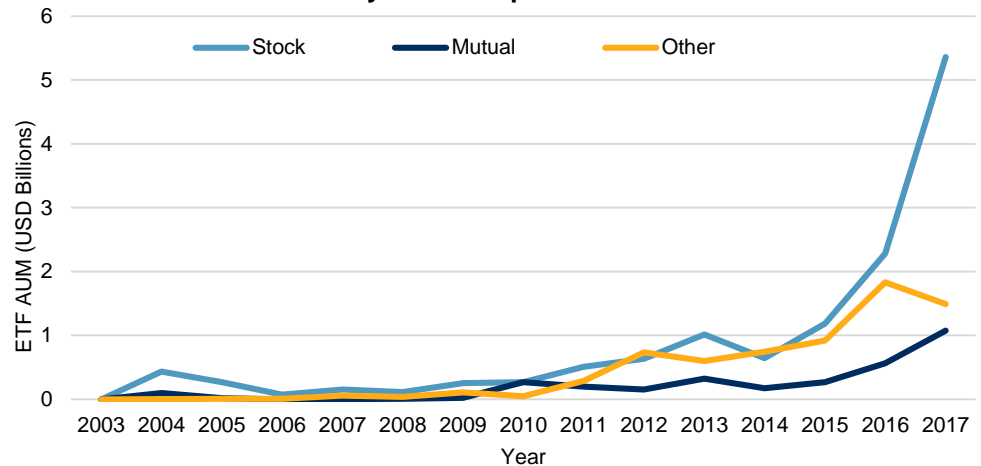
**Exhibit 53: Bond ETF AUM by Company Type**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart provided for illustrative purposes.

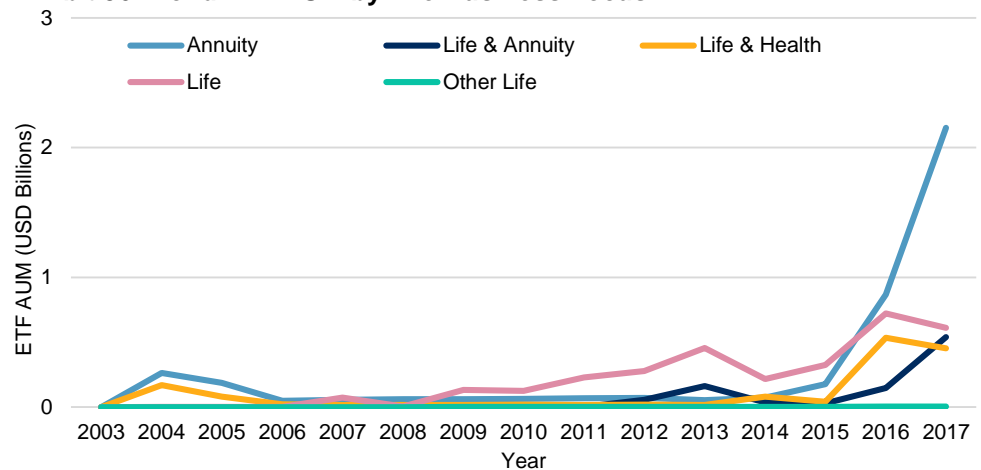
While all types of insurance companies increased their Bond ETF investments, the bulk of the growth was in Large, Stock, and Annuity companies.

**Exhibit 54: Bond ETF AUM by Size**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 55: Bond ETF AUM by Ownership Structure**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

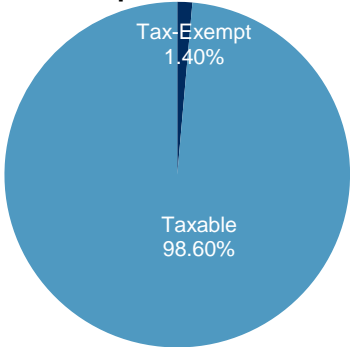
**Exhibit 56: Bond ETF AUM by Life Business Focus**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Insurance companies only invested a tiny portion of their Bond ETF investments in Tax-Exempt Bond ETFs (see Exhibit 57). The amount invested in Tax-Exempt Bond ETFs remained fairly consistent over the past five years, with P&C companies making up more than one-half of this amount (see Exhibit 58).

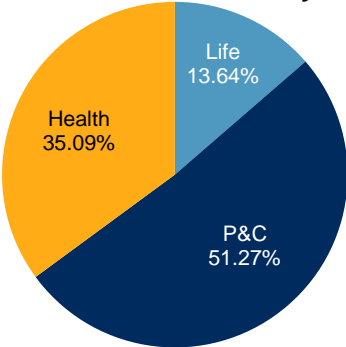
Insurance companies only invested a tiny portion of their Bond ETF investments in Tax-Exempt Bond ETFs.

**Exhibit 57: Taxable and Tax-Exempt Bond ETF Investments**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

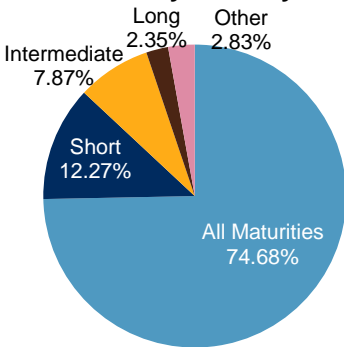
**Exhibit 58: Tax-Exempt Bond ETF Investments by Company Type**



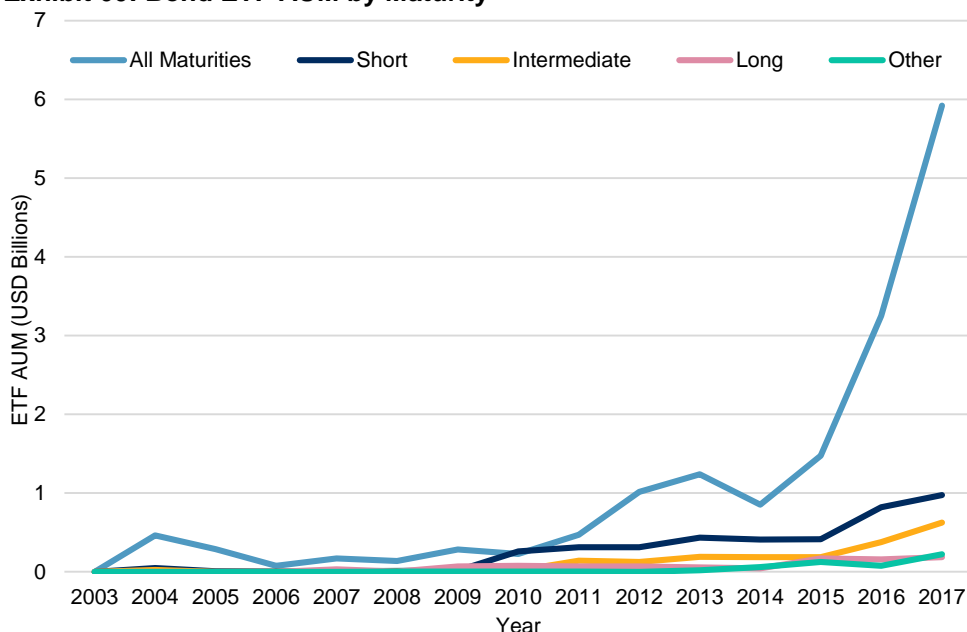
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Most of the Bond ETF investments were in All Maturities ETFs. As this sleeve represented almost all the growth in Bond ETF investments, the allocation percentage has only increased over the years (see Exhibits 59 and 60).

**Exhibit 59: Bond ETF Investments by Maturity**



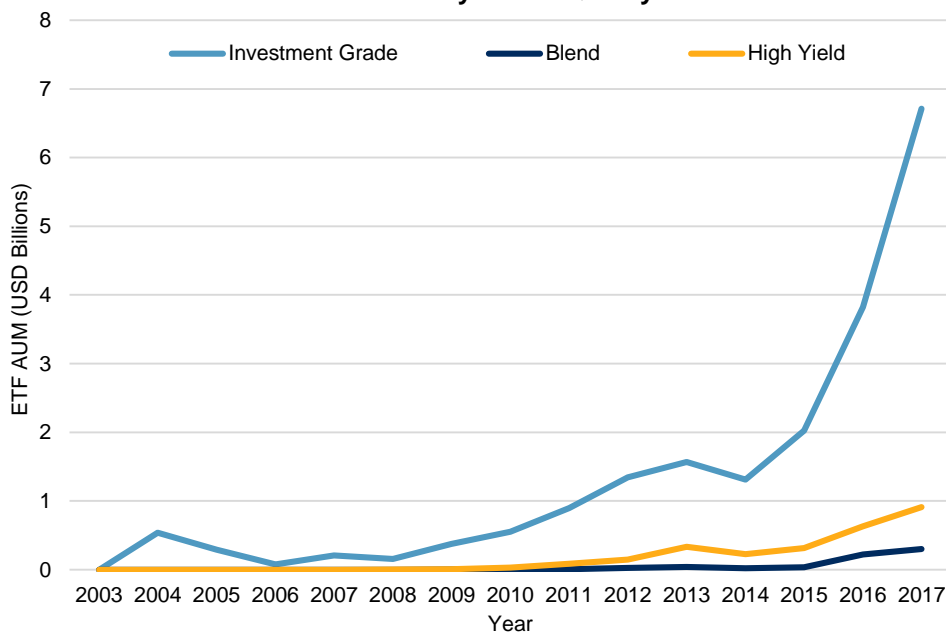
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**Exhibit 60: Bond ETF AUM by Maturity**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Insurance companies invested mostly in Investment Grade Bond ETFs and the trend has only increased in the past several years (see Exhibit 61).

Insurance companies invested mostly in Investment Grade Bond ETFs and the trend has only increased in the past several years.

**Exhibit 61: Bond ETF Investments by Credit Quality**

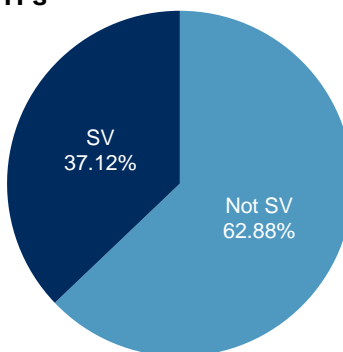
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## ANALYSIS OF SYSTEMATIC VALUATION

Systematic Valuation (SV) is a “bond” like accounting treatment that has the potential to reduce volatility in statutory financials. The adoption of SV in 2017 represented a significant regulatory change for the insurance industry and in the use of Bond ETFs by insurance companies. In the first year, 37% of insurance companies chose to adopt SV for their Bond ETF investments (see Exhibit 62).

In 2017, 37% of insurance companies chose to adopt SV for their Bond ETF investments.

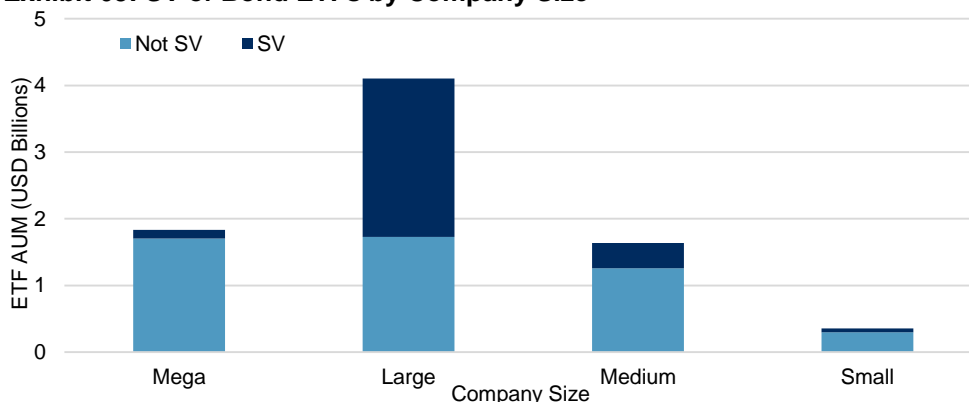
**Exhibit 62: SV of Bond ETFs**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

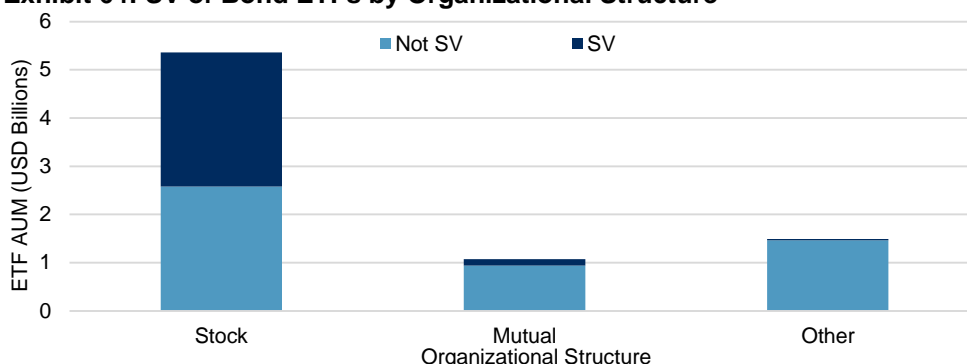
Approximately 81% of Bond ETFs classified as SV belonged to Large insurance companies. Large insurance companies had most of the Bond ETF investments and Large companies classified 58% of their Bond ETF investments as SV (see Exhibit 63).

**Exhibit 63: SV of Bond ETFs by Company Size**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

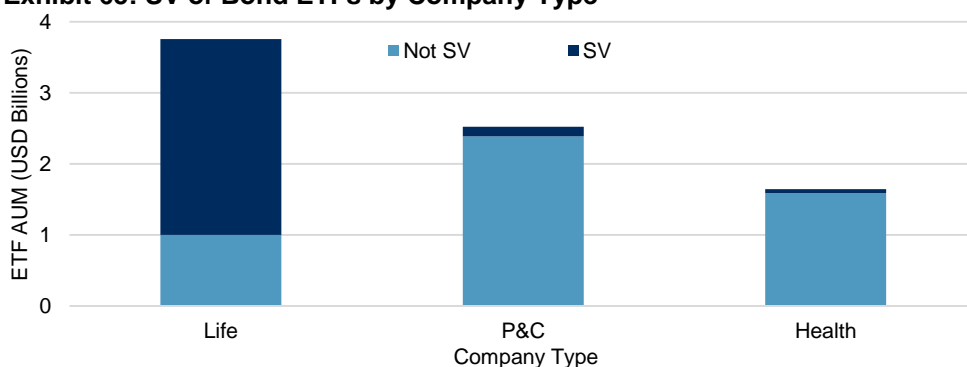
In terms of company organizational structure, Stock companies dominated the use of Bond ETFs and the classification as SV (see Exhibit 64).

**Exhibit 64: SV of Bond ETFs by Organizational Structure**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

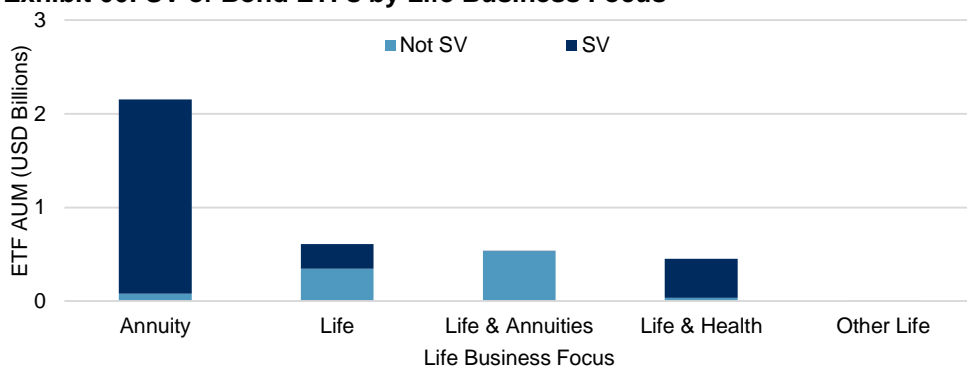
Surprisingly, even though the amount of Bond ETF investments by Life and P&C companies did not vary by much, 73% of Life companies chose SV, while only 5% of P&C companies chose SV. Of the Bond ETFs classified as SV, 90% belonged to Life companies (see Exhibit 65).

Even though the amount of Bond ETF investments by Life and P&C companies did not vary by much, 73% of Life companies chose SV, while only 5% of P&C companies chose SV.

**Exhibit 65: SV of Bond ETFs by Company Type**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

The high use of SV by Life companies resulted from their largest user of Bond ETFs—Annuity companies—classifying 96% of their holdings as SV (see Exhibit 66).

**Exhibit 66: SV of Bond ETFs by Life Business Focus**

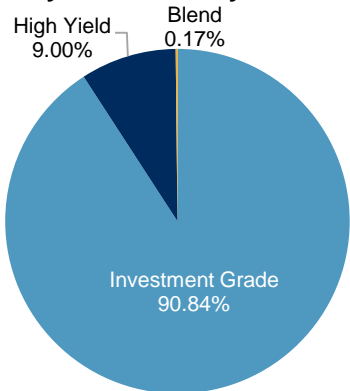
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.



High Yield and Investment Grade Bond ETFs had nearly identical percentages designated as SV, but insurance companies almost never designated Blend Bond ETFs as SV. Thus, the SV designation broadly reflected the High Yield/Investment Grade distribution in insurance portfolios (see Exhibit 67).

High Yield and Investment Grade Bond ETFs had nearly identical percentages designated as SV, but insurance companies almost never designated Blend Bond ETFs as SV.

**Exhibit 67: SV Designation by Credit Quality**

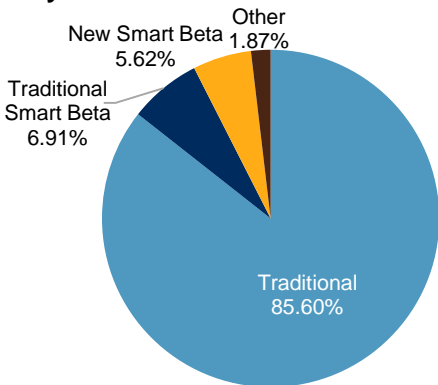


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**ANALYSIS OF SMART BETA ETFS**

The majority of ETF investments by insurance companies were Traditional Market Weighted<sup>6</sup> (see Exhibit 68). There was little variation by company size. Other insurance companies had a slightly larger allocation to New Smart Beta ETFs, and Stock companies had less overall allocation to either type of Smart Beta ETF. P&C companies had a larger allocation to Smart Beta ETFs (see Exhibit 69).

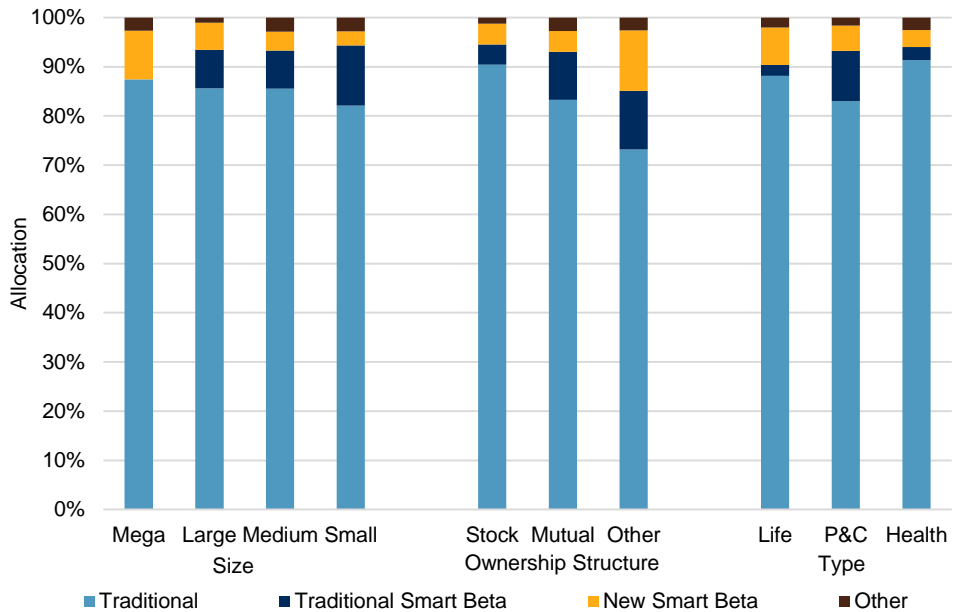
**Exhibit 68: ETF AUM by Smart Beta**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

<sup>6</sup> See Appendix 1 for definition of Smart Beta.

**Exhibit 69: ETF AUM by Smart Beta, Company Size, Organizational Structure, and Type**

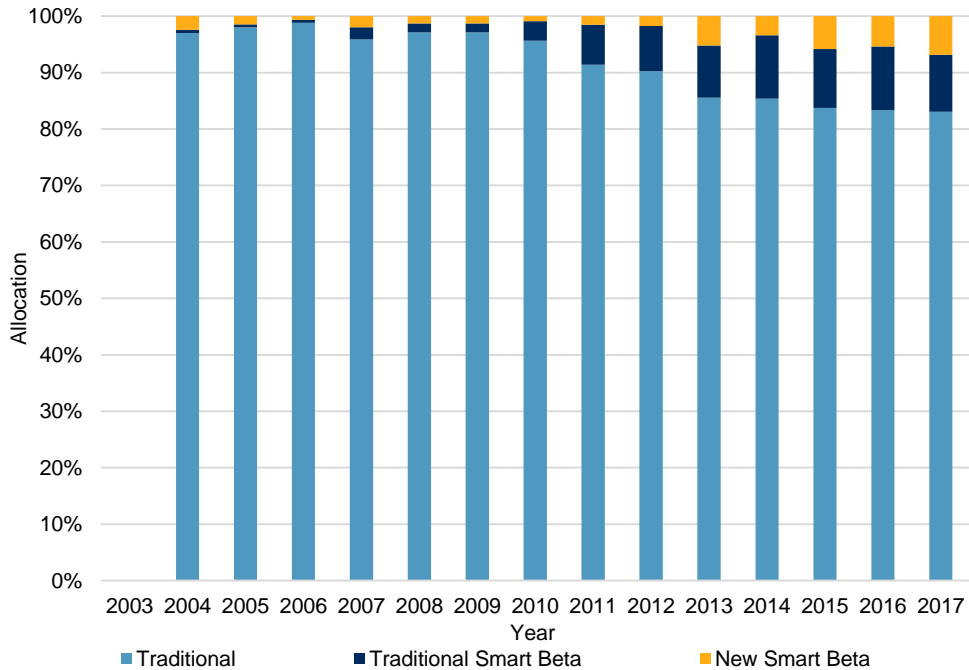


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Over time, insurance companies increased their allocation to Stock Smart Beta ETFs (see Exhibit 70), but they used few Bond Smart Beta ETFs.

Over time, insurance companies increased their allocation to Stock Smart Beta ETFs.

**Exhibit 70: Allocation to Stock Smart Beta ETFs**

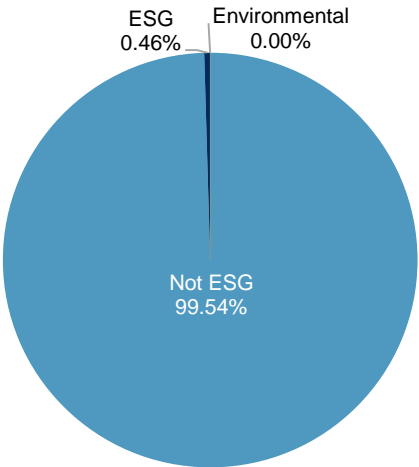


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

**MISCELLANEOUS ANALYSIS**

U.S. insurance companies barely invested any ETF assets in ESG ETFs (see Exhibit 71).

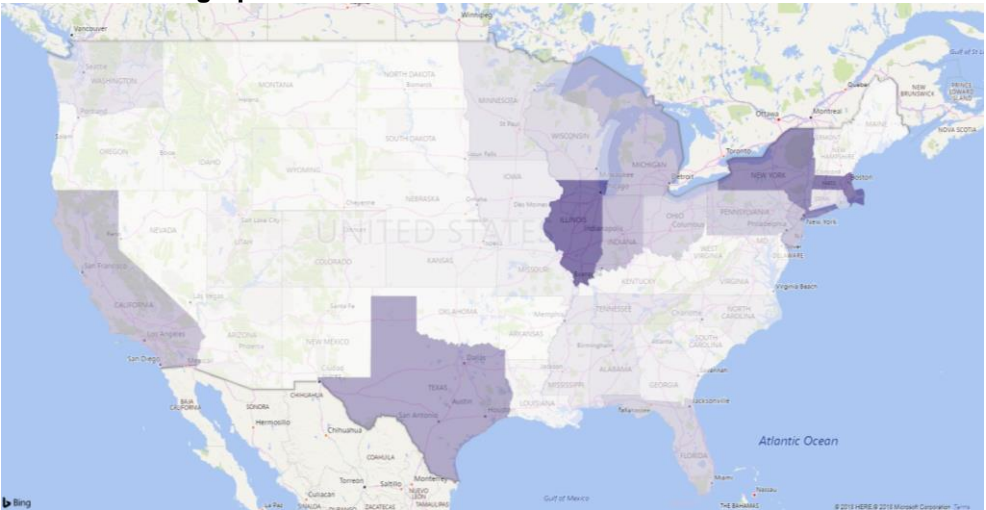
**Exhibit 71: ESG ETF Investments**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Overall, insurance companies concentrated in states adjoining the Great Lakes had the largest amount invested in ETFs, with additional concentrations in Texas and California (see Exhibit 72).

**Exhibit 72: Geographic Distribution of ETF Investments**

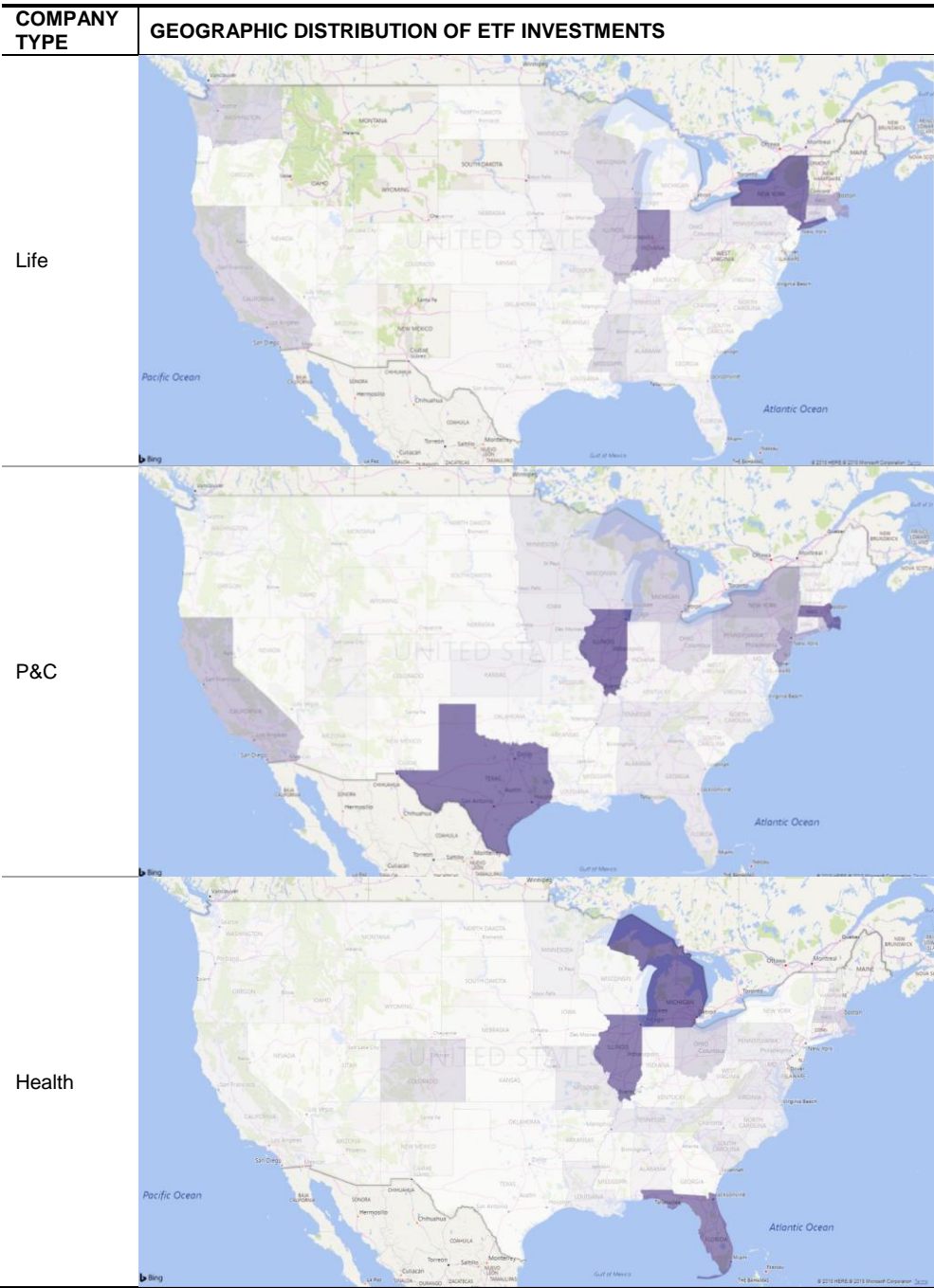


Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Interestingly, geographic distribution of ETF investments also varied by type of insurance company and by asset class (see Exhibits 73 and 74).

Overall, insurance companies concentrated in states adjoining the Great Lakes had the largest amount invested in ETFs.

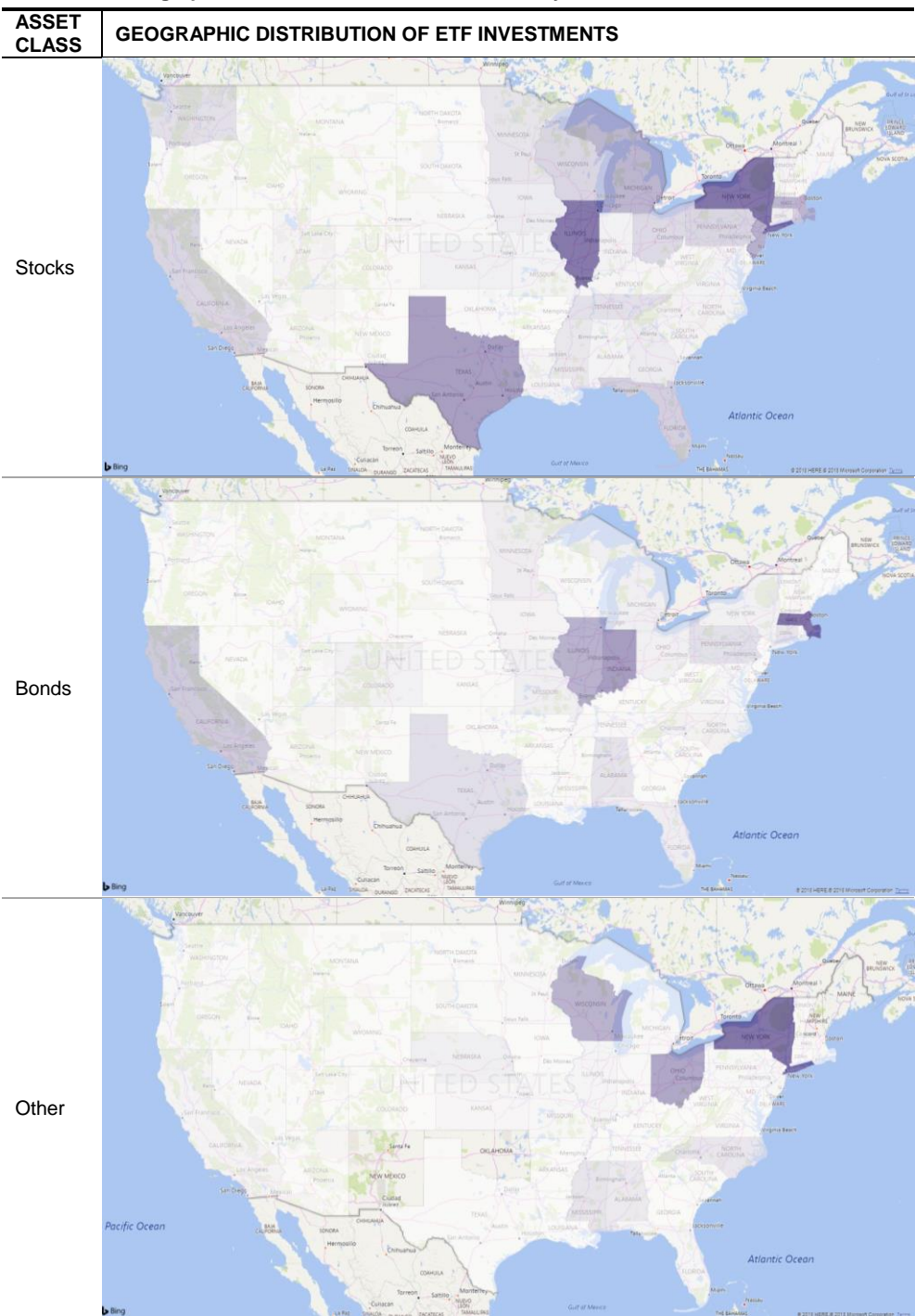
Exhibit 73: Geographic Distribution of ETF Investments by Insurance Company Type



Geographic distribution of ETF investments also varied by company type.

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Exhibit 74: Geographic Distribution of ETF Investments by Asset Class



Geographic distribution also varied by asset class.

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## APPENDIX 1: METHODOLOGY

### Appendix 1.1: S&P Global Market Intelligence Data

For all U.S. insurance companies holding data, we used NAIC data as compiled by SPGMI. U.S. insurance companies filed the data with the NAIC at the end of February 2018. SPGMI retrieved the data and loaded it into its database. The completeness of the database depended on the timeliness of receiving the data from the NAIC and the amount of data checking involved. To get timely yet complete information, we retrieved the data for this analysis on April 10, 2018.

The SPGMI database contained 4,483 individual companies. Most of these companies were part of a larger group, but 1,365 (or 30%) of these were stand-alone companies. The remaining 3,118 companies belonged to one of 619 groups. On average, there were five individual companies in each group, but the number of companies was as high as 78 in one group. For the purpose of this analysis, we referred to “companies” as the combination of stand-alone companies and the groups. This provided a universe of 1,984 companies (see Exhibit 75).

Exhibit 75: Companies and Groups					
TYPE OF COMPANY	INDIVIDUAL COMPANIES	STAND-ALONE COMPANIES	COMPANIES PART OF GROUP	GROUPS OF COMPANIES	AVERAGE COMPANIES PER GROUP
Health	1,119	277	842	147	5.7
Life	716	230	486	145	3.4
P&C	2,648	858	1,790	327	5.5
<b>Total</b>	<b>4,483</b>	<b>1,365</b>	<b>3,118</b>	<b>619</b>	<b>5.0</b>
<b>Total Stand-Alone Companies Plus Groups</b>					<b>1,984</b>

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Table is provided for illustrative purposes.

In some cases, companies might not have completed their filing process, or the NAIC might not have sent the data to SPGMI, or SPGMI might not have reviewed and loaded the data by the date of the analysis. Of the 4,483 companies in the database, 77 reported assets in 2016 but did not in 2017. These companies represented only 0.09% of the 2016 admitted assets (see Exhibit 76). Thus, we felt the amount of data used in this analysis covered the insurance industry.

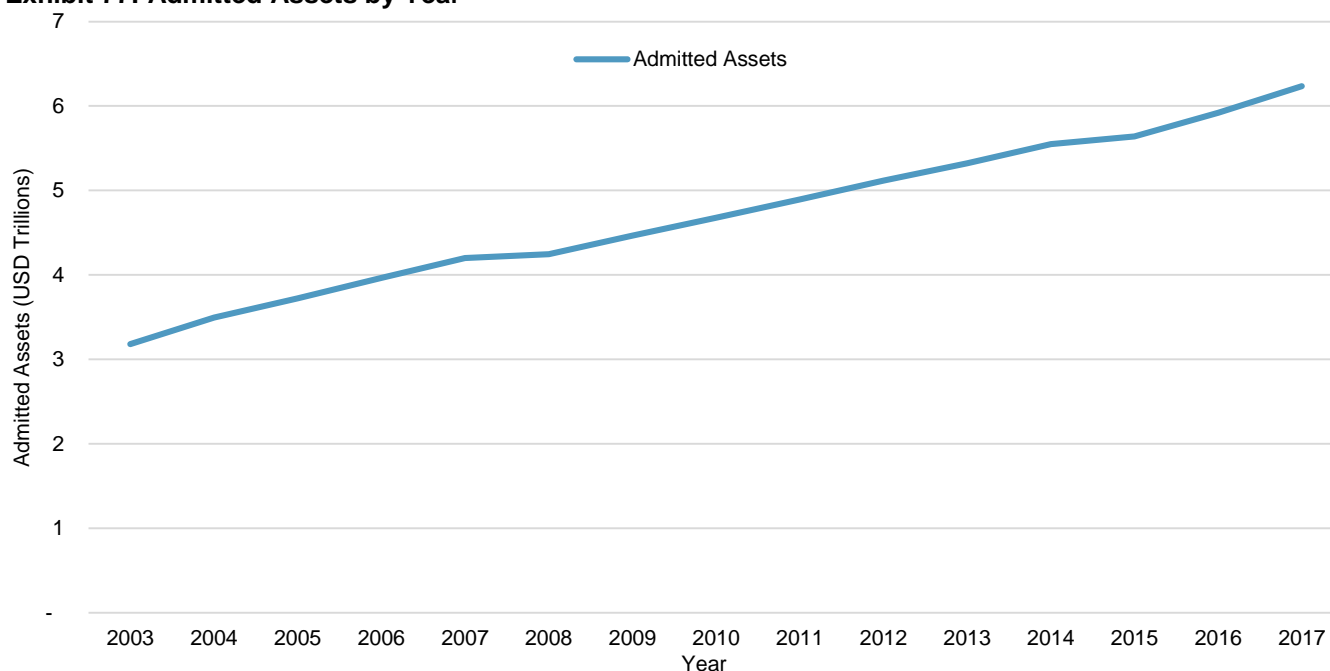
Exhibit 76: Companies Without Filing Data		
TYPE OF COMPANY	COMPANIES	ADMITTED ASSETS (%)
Health	15	0.18
Life	16	0.04
P&C	46	0.18
<b>Total</b>	<b>77</b>	<b>0.09</b>

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Table is provided for illustrative purposes.

Exhibit 77 shows the growth of admitted assets<sup>7</sup> for these companies from 2001 to 2017. At year-end 2017, admitted assets equaled USD 6.233 trillion.

<sup>7</sup> From Page 2, Row 12, Column 3 of the annual filings. Net admitted subtotals, cash, and invested assets is the sum of lines relating to bonds, stocks, mortgage loans on real estate, real estate, cash-related investments, contract loans, invested assets, write-ins, and receivable for securities. This excludes any valuation allowance. Net admitted assets exclude assets for which the state does not allow the company to take credit.



**Exhibit 77: Admitted Assets by Year**

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

We segregated the 1,984 companies by size, based on the amount of admitted assets.

- Small: Admitted Assets < USD 500 million
- Medium: USD 500 million ≤ Admitted Assets < USD 5 billion
- Large: USD 5 billion ≤ Admitted Assets < USD 50 billion
- Mega: Admitted Assets ≥ USD 50 billion

The SPGMI database classifies the ownership structure of an insurance company in 12 different ways; we condensed this into three types.

- Stock: Stock Companies
- Mutual: Mutual Companies
- Other: Risk Retention Groups, Reciprocal Exchange, Syndicate, Limited Liability Corporation, Non Profit, U.S. Branch of Alien Reinsurers, Partnerships, Proprietorships, Blue Cross/Blue Shield, and Other

Of the 619 groups described above, 265 had individual companies with different ownership structures. We defined the ownership of the group as the same as the ownership structure of the largest individual company in the group. Exhibit 78 gives the breakdown of the ownership and size used in this analysis.

**Exhibit 78: Number of Companies by Size, Type, and Ownership**

SIZE	COMPANY TYPE				SIZE	OWNERSHIP TYPE			
	LIFE	P&C	HEALTH	TOTAL		STOCK	MUTUAL	OTHER	TOTAL
Mega	23	6	0	29	Mega	24	5	0	29
Large	54	42	8	104	Large	83	12	9	104
Medium	86	167	56	309	Medium	182	80	47	309
Small	212	970	360	1542	Small	844	283	415	1542
Total	375	1185	424	1984	Total	1133	380	471	1984

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Table is provided for illustrative purposes.

The SPGMI data also allowed us to classify companies by business focus. For compactness, we grouped this data differently from SPGMI.

As with company type and ownership, of the 619 groups described above, 426 had individual companies with different business focuses. We defined the business focus of the group as the same as the business focus of the largest individual company in the group. Exhibit 79 shows the breakdown of the business focus used in this analysis.

**Exhibit 79: Number of Companies by Business Focus**

LIFE BUSINESS FOCUS	COUNT	P&C BUSINESS FOCUS	COUNT	HEALTH BUSINESS FOCUS	COUNT
Individual Life Focus	100	Personal Lines Focus	299	Comprehensive Health	134
Annuity Focus	64	P&C Minimum NPW	249	Dental/Vision	74
Group Accident & Health (A&H) Focus	46	Commercial Property Focus	171	Medicaid Provider	61
Specialty A&H Focus	37	Commercial Medical Malpractice Focus	125	Health Minimum Net Premiums Written	57
Life Minimum Net Premiums Written	33	Commercial Workers Compensation Focus	96	Medicare Provider	52
Life Insurance Focus	26	Commercial General Liability Focus	82	Health-Other Focus	43
Life & Annuities Focus	25	Commercial Lines Focus	79	Other Health	3
Credit Insurance Focus	23	Commercial Financial Lines Focus	41	<b>Total</b>	<b>424</b>
Individual Life and A&H Focus	11	Large Reinsurance Focus	17		
Life and A&H Focus	5	Reinsurance Focus	12		
Annuity and A&H Focus	3	Accident & Health Lines Focus	7		
Other Life	2	Other P&C	6		
<b>Total</b>	<b>375</b>	Personal Property Focus	1		
		<b>Total</b>	<b>1185</b>		

Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Table is provided for illustrative purposes.

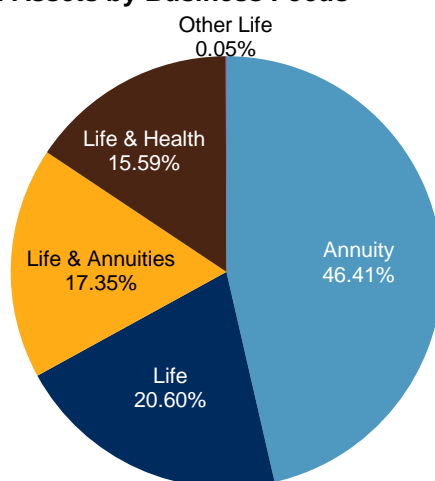
As shown in Exhibit 79, SPGMI had 12 classifications for Life insurance. We collapsed these into five groups.

- Annuity: Annuity Focus and Annuity and A&H Focus
- Life: Individual Life and A&H Focus, Individual Life Focus, Life Insurance Focus, and Life Minimum NPW
- Life & Health: Group A&H Focus, Specialty A&H Focus, and Life and A&H Focus
- Life & Annuities: Life & Annuities Focus
- Other: Credit Insurance Focus and Other Life



For the Life insurance companies, Annuity companies had almost one-half of all the admitted assets (see Exhibit 80).

**Exhibit 80: Life Insurance Admitted Assets by Business Focus**



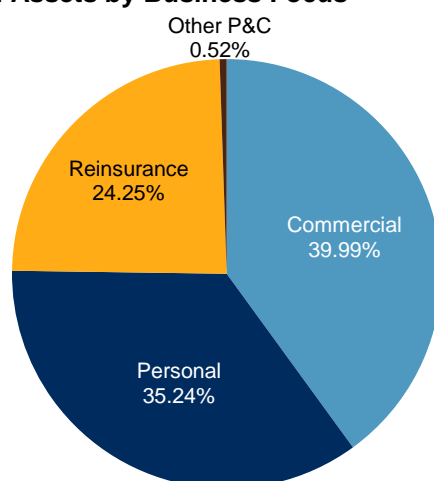
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

The SPGMI database classified P&C companies in 13 ways (see Exhibit 79), which we compressed into four areas.

- Commercial: Commercial Financial Lines Focus, Commercial General Liability Focus, Commercial Lines Focus, Commercial Medical Malpractice Focus, Commercial Property Focus, and Commercial Workers Compensation Focus
- Personal: Personal Lines Focus and Personal Property Focus
- Reinsurance: Large Reinsurance Focus and Reinsurance Focus
- Other: Accident & Health Lines Focus, P&C Minimum NPW, and Other P&C

Commercial and Personal companies had roughly the same amount of P&C admitted assets (see Exhibit 81).

**Exhibit 81: P&C Insurance Admitted Assets by Business Focus**



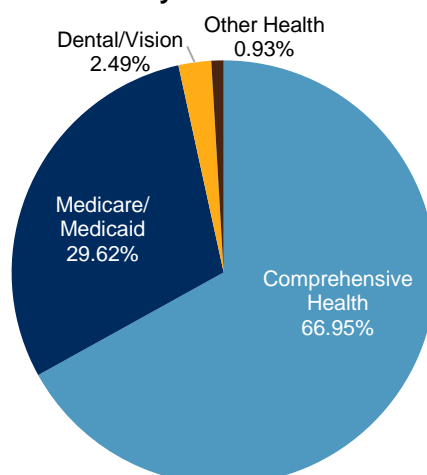
Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

As shown in Exhibit 79, Health companies had seven areas of business focus, which we collapsed into four groups.

- Comprehensive Health: Comprehensive Health
- Dental/Vision: Dental/Vision
- Medicaid/Medicare: Medicaid Provider and Medicare Provider
- Other: Health-Other Focus, Health Minimum NPW, and Other Health

Comprehensive Health companies had a clear majority of the Health admitted assets.

#### Exhibit 82: Health Insurance Admitted Assets by Business Focus



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

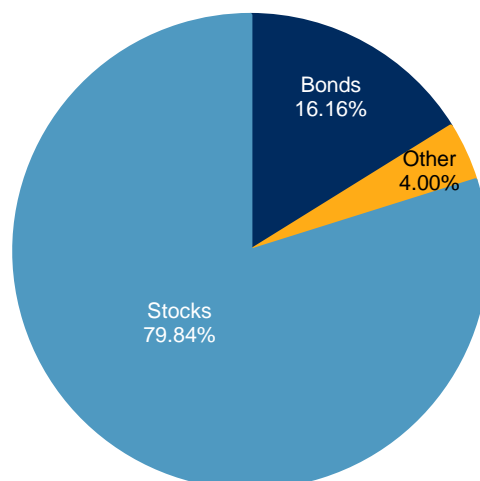
From the SPGMI database, we extracted a list of all ETFs held by insurance companies. We did this by matching both the tickers and CUSIP numbers of the holdings against a master ETF list. In spite of error-checking, insurance companies did not always file complete or correct information. In as much as the underlying data had errors, this analysis contained errors.

#### Appendix 1.2: First Bridge Data

To understand the nature of these ETFs, we obtained a master list of U.S. ETFs and the characteristics of these ETFs from First Bridge. We assumed accuracy and completeness of the data from First Bridge. This database, as of year-end 2017, contained 2,112 ETFs, representing USD 3.431 trillion in assets. We noted that U.S. insurance companies did not invest in a majority of these ETFs.

In some cases, we grouped the data differently from First Bridge. First Bridge classified each ETF into six asset classes. We retained separate asset classes for Stocks and Bonds and mapped the remaining four—Commodities & Metals, Currency, Target Date/Multi-Asset, and Other Asset Types—into an “Other” bucket.

Stock ETFs represented the majority of these ETFs, by AUM and by number of funds. The “Other” category consisted mostly of Commodities, Preferred Stocks, and Master Limited Partnerships.

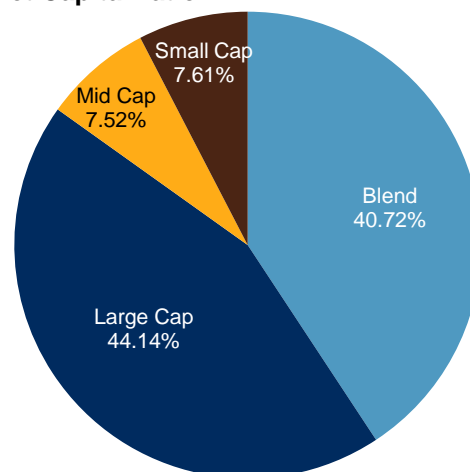
**Exhibit 83: ETFs by Asset Class**

Source: First Bridge. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

First Bridge classifies Stock ETFs into eight capitalization buckets: Broad Market/Multi-Cap, Large & Mid Cap, Large Cap, Mega Cap, Micro Cap, Mid Cap, Small Cap, and Small & Mid Cap (SMID). We compressed these into four buckets.

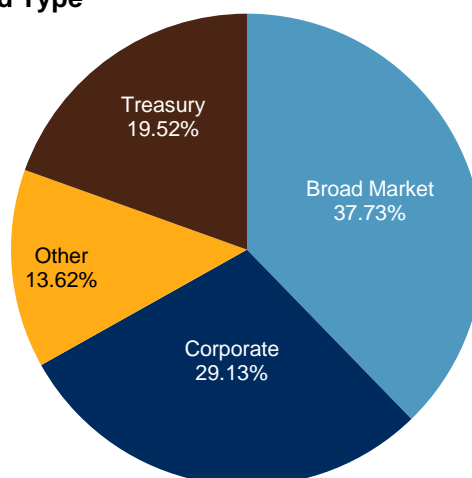
- Blend: Broad Market/Multi-Cap
- Large Cap: Large Cap and Mega Cap
- Mid Cap: Mid Cap, SMID, and Large & Mid Cap
- Small Cap: Small Cap and Micro Cap

The overall U.S. ETF market split nearly equally between Blend and Large Cap (see Exhibit 84).

**Exhibit 84: Stock ETF AUM by Market Capitalization**

Source: First Bridge. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

First Bridge has eight bond types: Broad Market, Corporate, Treasury & Government, Convertible, Inflation Protected, Mortgage, Money Market, and Municipal. We collapsed the last four into the “Other” group.

**Exhibit 85: Bond ETF AUM by Bond Type**

Source: First Bridge. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Most ETFs, in number and AUM, have a market-capitalization weighting. Index providers and ETF sponsors have created new indices and ETFs that formulaically model some of the methodology of active managers. The earliest attempt classified stocks by their price to earnings (P/E) ratio. A “Value” bucket contained low P/E stocks, while a “Growth” bucket contained stocks with a high P/E ratio. The industry called these new classifications “Smart Beta.” We classified ETFs in three ways.

- Traditional Market Weighted: Standard Market-Capitalization Weighting
- Traditional Smart Beta: Value, Growth, Dividend, and Equal Weighted
- New Smart Beta: All other Smart Beta strategies, such as Momentum and Low Volatility, as well as Single- and Multi-Factor

Unfortunately, First Bridge does not have a built-in Smart Beta classification, so we constructed a Smart Beta tag based on three existing classifications in First Bridge: Growth/Value, Fundamental Weighting Type, and Index Weighting Scheme.

Growth/Value included four factors: Growth, Value, Core/Blend, and Not Applicable.

Fundamental Weighting Type included 11 factors: Dividend Weighted, Earnings Weighted, FTSE RAFI, Growth/Value Factor Weighted, Momentum Weighted, Multi-Factor Weighted, Quality Weighted, Revenue Weighted, Valuation Weighted, Other, and Not Applicable.

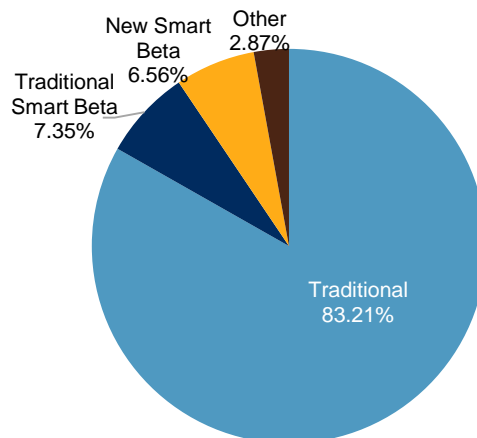
Index Weighting Scheme included seven factors: Equal Weighted, Fundamental Weighted, Market Cap Weighted, Volatility/Beta Weighted, Price Weighted, Other, and Not Applicable.

We constructed our Smart Beta tag with a series of classifications.

- Index Weighting Scheme = Market Cap Weighted → Market Cap
- Growth/Value = Growth or Value → Traditional Smart Beta
- Fundamental Weight Type = Dividend Weighted → Traditional Smart Beta
- Index Weighting Scheme = Equal Weighted → Traditional Smart Beta
- All three classifications are “Not Applicable” → Other
- None of the above classifications apply → New Smart Beta

A majority of U.S. ETFs weight their funds using Market Cap; Traditional Smart Beta accounted for 7.35% of U.S. ETF assets, and New Smart Beta accounted for 6.56% of assets. A residual 2.87% remained unaccounted for—these are mostly Gold and other metal ETFs (see Exhibit 86).

#### Exhibit 86: ETF AUM by Smart Beta



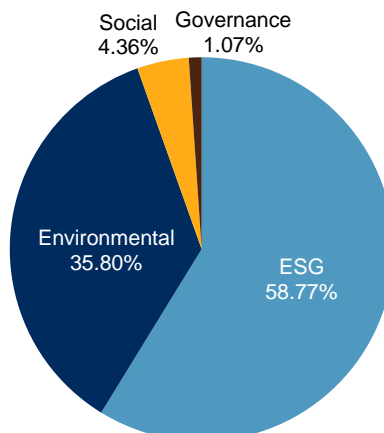
Source: First Bridge. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

First Bridge classified the ESG philosophy of each ETF. Their categories were: Faith Based, Corporate Governance, ESG, Waste Management, Low Carbon Footprint, Clean Energy, and Not Applicable. We grouped these into five classifications.

- Environmental: Clean Energy, Low Carbon Footprint, and Waste Management
- ESG: ESG
- Governance: Corporate Governance
- Social: Faith Based
- Not ESG: Not Applicable

The vast majority of U.S. ETF AUM (99.84%) did not follow any sort of ESG mandate. Of the ETF assets that did have an ESG mandate, most had either a broad ESG mandate or an Environmental mandate. Only 5% of U.S. ETF assets with an ESG mandate had a Social or Governance mandate (see Exhibit 87).

#### Exhibit 87: ESG ETF AUM by Market Capitalization

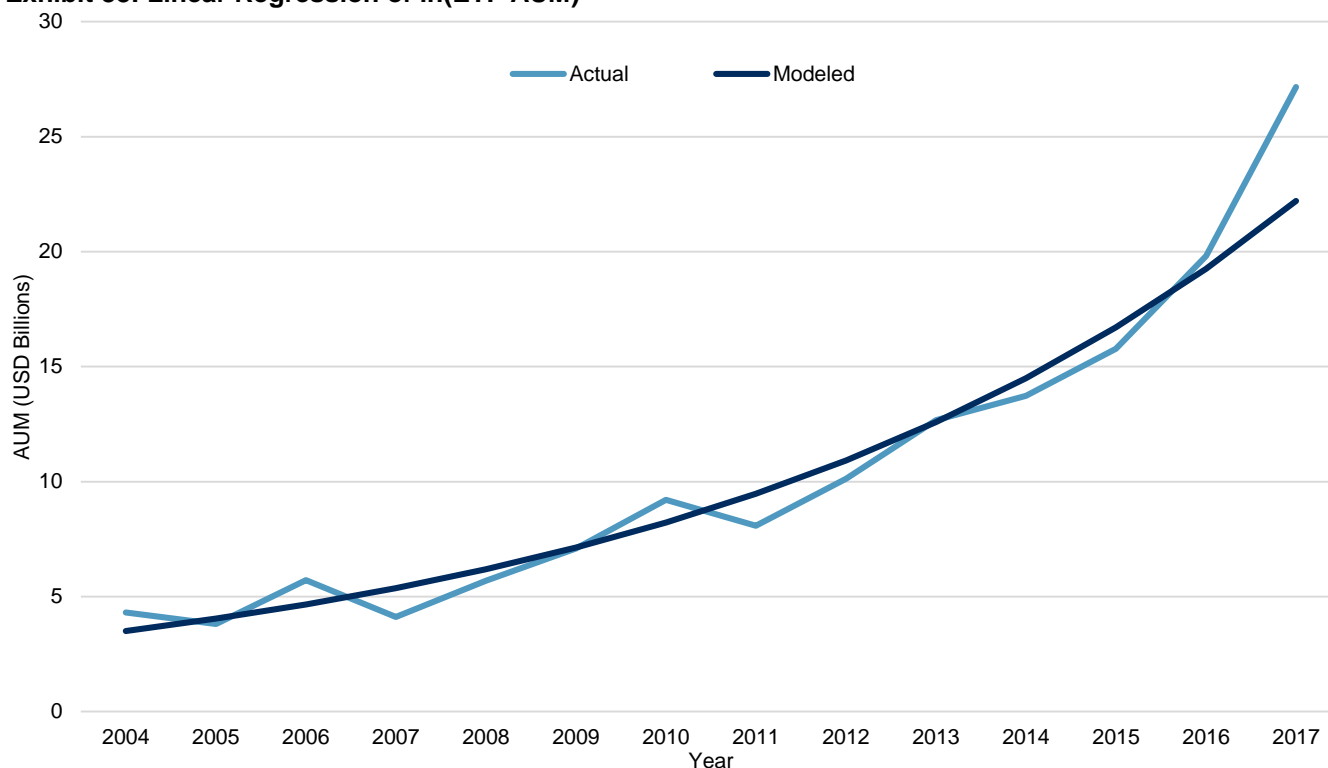


Source: First Bridge. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

## APPENDIX 2: LINEAR REGRESSION OF INSURANCE ETF AUM GROWTH

To model the growth trend of ETFs in insurance companies, we applied a linear regression to the data (see Exhibit 88).

**Exhibit 88: Linear Regression of ln(ETF AUM)**



Source: NAIC via S&P Global Market Intelligence. Data as of Dec. 31, 2017. Chart is provided for illustrative purposes.

Based on the data, the following equation shows the projected ETF AUM as a function of the year.

$$\ln(\text{ETF AUM}) = 0.1419 \times \text{Year} - 262.4630$$

This model had a coefficient of determination of 94.70%. The coefficient of determination explains how well the model explains the actual results. This value can range from 0% to 100%. A value of 0% implies the independent variable (year) cannot explain the dependent variable (AUM). A value of 100% implies the model explains the dependent variable exactly. Using this model, we estimate the future AUM, assuming the growth continues according to historical trend.

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