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U.S. Insurance Industry's Exposure to Derivatives Reaches $3 Trillion in Notional Value at Year-End 2021

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Executive Summary

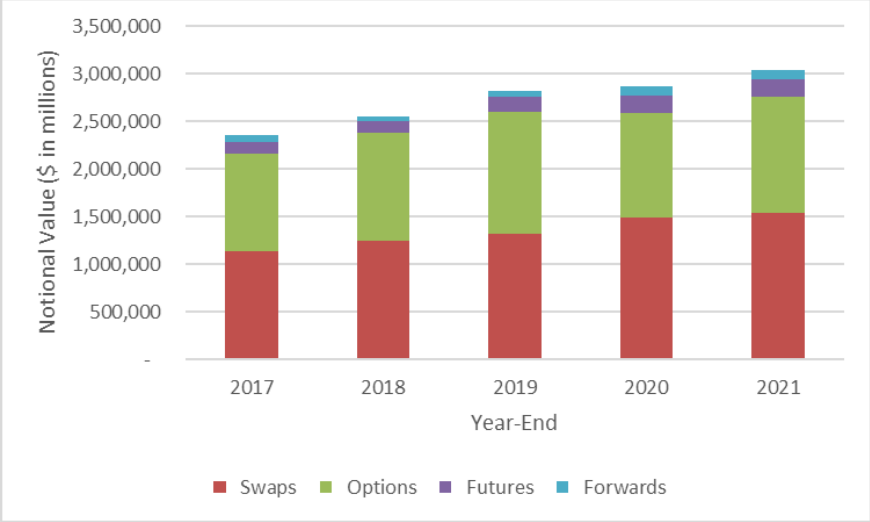
- At year-end 2021, the U.S. insurance industry reported derivatives positions with a total notional value of $3 trillion, an increase of 6% compared to the prior year.
- Insurers primarily use derivatives to reduce risks in their asset and liability portfolios, with approximately 95% of the industry's derivatives exposure used for hedging purposes.
- Life insurers accounted for the majority, or 98%, of the industry's notional value, while property/casualty (P/C) insurers' derivatives exposure has been on a declining trend in the last two years.
- Swaps and options were the most used derivatives, accounting for approximately 50% and 40% of U.S. insurers' total exposure, respectively.
- Derivatives are not broadly used across U.S. insurance companies, with only 7.2% of all active insurers reporting derivatives activity at year-end 2021.
- U.S. insurance companies that practice derivatives strategies tend to be large insurers with more than $10 billion in invested assets.

Derivatives are an important tool for U.S. insurance companies, used primarily to manage and hedge risks on both the asset and the liability sides of their balance sheets. Risks hedged by insurers include interest rate risk, credit risk, currency risk, and equity risk (e.g., related to variable annuities). Insurers also use derivatives to replicate assets and generate additional income but to a much lesser extent.

Derivatives Exposure is Growing but Concentrated in a Small Number of Insurers

Derivatives activity in the U.S. insurance industry has grown steadily year after year, along with total cash and invested assets. Total industry exposure to derivatives in notional value[1] reached $3 trillion at year-end 2021, representing an increase of 6.2% compared to year-end 2020 and 29.2% compared to year-end 2017 (see Chart 1). Year-over-year (YOY) growth in derivatives exposure was slightly lower than the 7% growth in the industry's cash and invested assets in 2021. In terms of book/adjusted carrying value (BACV), derivatives exposure totaled $122 billion, accounting for less than 2% of the industry's $8 trillion cash and invested assets.

Chart 1: U.S. Insurance Industry Derivatives Exposure, 2017–2021 (Notional $ in millions)



The composition of the industry's exposure by derivatives type has remained consistent over time. Swaps and options were the most used derivatives, accounting for approximately 50% and 40% of the total exposure, respectively. Forwards and futures were used less often and together represented less than 10% of the exposure.

Derivatives are not broadly used across U.S. insurance companies, with only 7.2% of all active insurers reporting activity at year-end 2021 (see Table 1). Approximately 30% of all life companies engaged in derivatives transactions, while less than 5% of P/C companies and less than 2% of health companies participated. Title companies have no exposure to derivatives. The total number of U.S. insurers that reported derivatives exposure was unchanged at 328 in 2021 compared to 2020.

[1] U.S. insurer derivatives exposure is represented by the notional value, which is the nominal or face amount of a financial instrument that is used to calculate payments made on that instrument. Notional values are not indicators of true economic exposure, but they serve as a more consistent indicator of market activity and scale than book/adjusted carrying value (BACV) or fair value (FV), both of which can be affected by factors such as market prices and accounting treatment.

Table 1: U.S. Insurance Companies with Derivatives Exposure at Year-End 2021

Statement Type	Number of Companies Reporting Derivatives Exposure	Number of Companies: Total Industry	Percentage of Companies with Derivatives Exposure
Life	226	763	29.6%
P/C	86	2,621	3.3%
Health	16	1,133	1.4%
Title	0	59	0.0%
Total	**328**	**4,576**	**7.2%**

U.S. insurance companies that practice derivatives strategies tend to be the larger companies in terms of invested assets. Insurers with more than $10 billion in invested assets accounted for 94% of the industry's total notional value of derivatives, and insurers with invested assets between $5 billion and $10 billion represented 4% of total notional value.

Insights into Insurer Derivatives Uses and Strategies

Life insurers accounted for the majority, or 98.3%, of the industry's $3 trillion notional value of derivatives exposure at year-end 2021 (see Table 2). Their exposure increased by 6.9% compared to year-end 2020. On the other hand, P/C insurers' derivatives exposure has been on a declining trend, decreasing by 21.4% to $51 billion at year-end 2021 compared to the prior year and down almost 40% from $84 billion at year-end 2017. Health companies continue to have minimal exposure.

Table 2: Total U.S. Insurance Industry Derivatives Exposure by Derivatives Type, Year-End 2021 (Notional $ in millions)

Statement Type	Swaps	Options	Futures	Forwards	Total	% of Total
Life	1,523,760	1,195,280	174,291	101,181	2,994,512	98.3%
P/C	17,482	25,039	3,169	5,262	50,952	1.7%
Health	209	-	281	79	569	0.0%
Total	**1,541,451**	**1,220,319**	**177,742**	**106,521**	**3,046,033**	**100%**
% of Total	50.6%	40.1%	5.8%	3.5%	100%	

U.S. insurance companies used options and forwards more frequently in 2021 compared to the prior year to manage risks. Exposure to options and forwards as measured by notional value increased by 12% and 11%, respectively, to $1.2 trillion and $106 billion at year-end 2021 (see Table 2). The notional value of swaps at year-end 2021 totaled $1.5 trillion, an increase of 3% compared to the previous year. Meanwhile, the notional value of futures declined by 4% YOY to $177 billion.

Insurers primarily use derivatives to reduce inherent risks in their asset and liability portfolios, with approximately 95% of the industry's derivatives exposure used for hedging purposes (see Table 3). Over 80% of the hedging exposure was reported as "Hedging Other," with the remaining reported as

"Hedging Effective."[2] Hedging overall has been reported as the primary use for 94% of U.S. insurers' derivatives exposure since at least year-end 2011. In addition, as U.S. insurance companies have gained more experience with the strict criteria and extensive documentation required to deem a hedge as effective, the percentage of derivatives' notional value reported as "Hedging Effective" has increased. Specifically, it increased to 17.8% of year-end 2021 derivatives exposure from 10% of year-end 2018 exposure.

Table 3: U.S. Insurance Industry Derivatives Exposure by Purpose/Strategy, Year-End 2021 (Notional $ in millions)

Statement Type	Hedging Other	Hedging Effective	Replication	Income Generation	Other	Total	% of Total
Life	2,318,104	538,177	74,812	540	62,880	2,994,514	98.3%
P/C	38,567	2,859	374	124	9,028	50,951	1.7%
Health	265	200	-	-	103	568	0.0%
Total	**2,356,936**	**541,236**	**75,186**	**664**	**72,012**	**3,046,033**	**100%**
% of Total	77.4%	17.8%	2.5%	0.02%	2.4%	100%	

Replication strategies, or reproducing the investment characteristics of permissible investment assets using derivatives instruments, accounted for 2.5% of the industry's total notional value. While income generation is a permitted use for derivatives, it is not a strategy insurers frequently utilize, accounting for only 0.02% of total notional value. U.S. insurers also reported $72 billion of derivatives that were allowed under a basket, as prescribed under various state investment laws for other uses outside of hedging, replications, and income generation.

As shown in Table 4, interest rate swaps were the most common type of swap contract, with 73% of notional value for all open swap positions at year-end 2021, despite a decline from 79% of notional value at year-end 2018. Foreign currency, total return, and credit default swaps accounted for 12%, 8%, and 5% of total notional value, respectively. In comparison to year-end 2018, their share of notional value increased approximately two percentage points each.

Table 4: U.S. Insurance Industry Swap Derivatives Exposure by Type of Contract, Year-End 2021 (Notional $ in millions)

Statement Type	Interest Rate	Currency	Total Return	Credit Default	Other	Total
Life	1,112,260	174,370	118,894	82,711	35,526	1,523,761
P/C	11,095	4,296	138	1,952	1	17,482
Health	209	-	-	-	-	209
Total	**1,123,564**	**178,666**	**119,032**	**84,662**	**35,527**	**1,541,452**
% of Total	72.9%	11.6%	7.7%	5.5%	2.3%	100%

[2] According to the *Accounting Practices and Procedures Manual* (AP&P Manual), a hedge is generally considered effective when "the change in fair value [cash flows or present value of cash flows] of the derivatives hedging instrument is within 80 to 125 percent of the opposite change in fair value [cash flows or present value of cash flows] of the hedged item attributable to the hedged risk." A hedge can also be designated as effective "when an R-squared of 0.80 or higher is achieved when using a regression analysis technique."

Exposure to credit default swaps totaled $85 billion at year-end 2021 (see Table 5). Approximately 68% of the exposure was used in hedging strategies and 32% in replication strategies.

Table 5: U.S. Insurance Industry Credit Default Swap Exposure by Purpose/Strategy, Year-End 2021 ($ in millions)

Purpose/Strategy	Notional Value	% of Total
Hedging	57,227	67.6%
Replication	27,431	32.4%
Other	5	0.0%
Total	**84,662**	**100.0%**

The total notional value of options was $1.2 billion at year-end 2021, increasing by approximately 11% compared to the prior year. U.S. insurers used call options and put options more frequently in 2021, with their notional value increasing by 21% and 45%, respectively, on a YOY basis. They used option contracts primarily for hedging. Call options were the most used options contract, accounting for 53% of the industry's total notional value for all open options contracts at year-end 2021 (see Table 6). Put options were the second largest option contract, at 27% of notional value. Caps, floors, collars, and other options represented the remaining options exposure at year-end 2021.

Table 6: U.S. Insurance Industry Options Derivatives Exposure by Type of Contract, Year-End 2021 (Notional $ in millions)

Purpose/Strategy	Call Options	Put Options	Caps	Floors	Collars	Other	Total	% of Total
Hedging	620,848	318,796	118,112	35,463	29,969	64,621	1,187,809	97.3%
Income Generation	481	80	-	-	-	55	616	0.1%
Replication	178	-	-	-	-	-	178	0.0%
Other	22,208	9,426	69	-	-	11	31,714	2.6%
Total	**643,715**	**328,302**	**118,181**	**35,463**	**29,969**	**64,687**	**1,220,317**	**100%**
% of Total	52.7%	26.9%	9.7%	2.9%	2.5%	5.3%	100%	

The NAIC Capital Markets Bureau will continue to monitor trends in the U.S. insurance industry's derivatives exposure and report as deemed appropriate.

Questions and comments are always welcome. Please contact the Capital Markets Bureau at CapitalMarkets@naic.org.