NAIC National Association of Insurance Commissioners & The Center for Insurance Policy and Research

Capital Markets Special Report

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U.S. Insurers' Derivative Exposure Increased 9% in 2018

Analyst: Jean-Baptiste Carelus

jcarelus@naic.org

capitalmarkets@naic.org

Executive Summary

- In 2018, 298 U.S. insurers reported exposure to derivatives, down from 311 in 2017.
- The notional value of derivative exposure rose 9% to about $2.6 trillion as of year-end 2018 from $2.4 trillion as of year-end 2017.
    - Swaps accounted for 48.7% of the total notional value, followed by options (44.5%), futures (4.7%) and forwards (2.1%).
    - Hedging remains the main purpose for U.S. insurers' use of derivatives, at 95% of the total notional value ($2.3 trillion).
    - Life companies accounted for 97% of the total notional value, followed by property/casualty (P/C) at 3%, with fraternal and health companies, combined, accounting for less than 1%.
- Collateral posted by U.S. insurers had a fair value of $16.7 billion, whereas collateral posted to U.S. insurers had a fair value of $34.2 billion.

The derivatives market has grown substantially since its creation and has become a useful tool for insurers to diversify risk and potentially reduce volatility. For example, insurers with interest rate guaranteed products may use derivatives as a hedge against low and falling rates. Insurers with foreign currency exposure may want to hedge against negative currency fluctuations.

In this special report, U.S. insurer derivative exposures are 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 the book/adjusted carrying value (BACV) or the fair value (FV), both of which can be affected by factors such as market prices and accounting treatment.

For more background on derivatives, please see the NAIC Capital Markets Bureau primer on Derivatives published in July 2018.

The U.S. insurer derivative exposure in this report is as of year-end 2018, unless otherwise noted.

U.S. Insurer Derivative Exposure

U.S. insurers primarily used derivatives to hedge risks (e.g., interest rate risk, credit risk, currency risk and equity risk) and, to a lesser extent, to replicate assets and generate additional income. Use of derivatives is not widespread in the U.S. insurance industry, with only 7% of U.S. insurers reporting derivative exposure. The number of U.S. insurers that reported derivative exposure decreased to 298 in 2018 from 311 in 2017 (see Table 1).

Table 1: U.S. Insurers with Derivative Exposure

Industry	Number of Companies with Derivatives Exposure	Number of Companies: Total Industry	Percentage of Companies with Derivatives Exposure	Notional Value of Derivatives Exposure ($Mil.)
Life	219	722	30%	2,478,355
P/C	64	2,608	2%	83,736
Fraternal	4	74	5%	2,069
Health	11	1,014	1%	269
Title	0	58	0%	-
Total	**298**	**4,476**	**7%**	**2,564,429**

Life companies accounted for 219 (73%) of the total number of U.S. insurers with derivatives exposure; they also represented 30% of the 722 total life companies. Among P/C companies, 64 out of 2,608 (2%) reported derivative exposure.

U.S. insurers' derivative exposure had a notional value of $2.6 trillion, a 9% increase from $2.4 trillion in 2017. Life companies accounted for 96.6% of the reported notional value at $2.5 trillion, followed by P/C companies, which accounted for 3.3% of the notional value.

Swaps were the largest derivative type reported, accounting for 49% of total derivative exposure, compared to 48% in 2017. Table 2 and Table 3 show that swaps increased 10% to $1.2 trillion, from $1.1 trillion in 2017. Options (the second-largest derivative type) increased to 45% ($1.1 trillion) of the total notional value of derivative exposure, up from 43% ($1 trillion) in 2017. Futures and forwards represented 5% and 2%, respectively, of the total notional value of derivative exposure at year-end 2018.

Table 2: U.S. Insurer Derivatives Type as of Year-end 2018 ($Mil., Notional)

Industry	Swaps	Options	Futures	Forwards	Total	Pct of Total
Life	1,226,080	1,079,167	115,097	49,370	2,469,714	97%
P/C	18,571	58,378	2,907	3,520	83,376	3%
Fraternal	578	1,147	990	-	2,715	0%
Health	210	-	773	32	1,014	0%
Total	**1,245,439**	**1,138,692**	**119,766**	**52,922**	**2,556,819**	**100%**
Pct of Total	49%	45%	5%	2%	100%	

Table 3: U.S. Insurer Derivative Type as of Year-end 2017 ($Mil., Notional)

Industry	Swaps	Options	Futures	Forwards	Total	Pct of Total
Life	1,119,290	965,886	123,738	61,618	2,270,532	96%
P/C	17,120	57,328	3,266	6,233	83,947	4%
Fraternal	444	721	344		1,509	0%
Health	210		27	109	346	0%
Total	**1,137,064**	**1,023,935**	**127,376**	**67,960**	**2,356,335**	**100%**
Pct of Total	48%	43%	5%	3%	100%	

Hedging and Hedging Effectiveness

U.S. insurer derivative exposure for hedging increased to $2.3 trillion from $2.2 trillion in 2017. Of the reported purposes for derivative exposure, hedging (which consists of "Hedging Other" and "Hedging Effective" in Table 4) accounted for 94% of the total notional value, with "Hedging Other" at 84% of the total. All other purposes accounted for the remaining 6%. (See Table 4.)

Table 4: U.S. Insurers' Derivative Exposure by Purpose/Strategy ($Mil., Notional)

Industry	Hedging Other	Hedging Effective	Other	Replication	Income Generation	Total	Pct of Total
Life	1,991,640	249,899	58,077	54,950	51	2,354,617	97%
P/C	64,302	2,332	10,140	3,670	26	80,470	3%
Fraternal	1,692	-	4	-	29	1,725	0%
Health	41	200	-	-	-	242	0%
Total	**2,057,675**	**252,431**	**68,222**	**58,619**	**106**	**2,437,054**	**100%**
Pct of Total	84%	10%	3%	2%	0%	100%	

Given strict criteria and the extensive documentation required, many hedges are not deemed effective[1] for accounting purposes, but they still provide strategic value; these positions, reported as "Hedging Other" on Schedule DB, are still intended to reduce risk, but they simply do not meet the accounting and documentation requirements.

Swap Exposure

Swap exposure increased about 10%, following a 6% increase from the previous year. Interest rate swaps remain the largest contract type at 79% of notional value compared to 80% in 2017. Currency swaps increased to 10% of notional value from 9%. U.S. insurers' exposure to total return and credit default swaps (CDS), and other types of swaps as a percentage of notional value remained unchanged from 2017 (see Table 5). As of year-end 2018, the vast majority (95%) of swap contracts were for hedging risk.

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

Table 5: U.S. Insurers' Swap Exposure by Contract Type ($Mil., Notional)

Industry	Interest Rate	Currency	Total Return	Credit Default Swap	Other	Total	Pct of Total
Life	967,990	126,358	74,733	35,821	21,178	1,226,080	98%
P/C	10,808	3,629	1,050	1,714	1,370	18,571	1%
Fraternal	15	563	-	-	-	578	0%
Health	210	-	-	-	-	210	0%
Total	**978,814**	**130,549**	**75,783**	**37,535**	**22,548**	**1,245,229**	**100%**
Pct of Total	79%	10%	6%	3%	2%	100%	

Options

Table 6 shows U.S. insurers' option exposure by type of contract and company type as of year-end 2018. Call options (calls) increased 30% to $529 billion, which is 46% of the total options' notional value ($1.1 trillion). 2018 was the second year of double-digit growth in calls for U.S. insurers, following a 53% increase in 2017. Calls for hedging accounted for about 97.5% ($516 billion) of all call transactions, unchanged from 2017.

Life and P/C companies accounted for approximately 99.9% of the industry's total option exposure.

Table 6: Option Exposure by Type of Contract ($Mil., Notional)

Industry	Call	Put	Cap	Floor	Other	Collar	Total	Pct of Total
Life	527,162	215,240	121,852	74,702	90,095	50,116	1,079,167	95%
P/C	1,097	11,521	10	43,977	1,773	-	58,378	5%
Fraternal	1,147	1	-	-	-	-	1,147	0%
Total	**529,406**	**226,761**	**121,863**	**118,679**	**91,868**	**50,116**	**1,138,692**	**100%**
Pct of Total	46%	20%	11%	10%	8%	4%	100%	

Table 7 shows the insurance industry's use of options by type according to the risks hedged. Equity risk, the largest category at $693 billion, increased 12% from $619.7 billion in 2017. Hedging for interest rate risk grew 20% to $348 billion from $290.3 billion in 2017. The increase in interest rate hedging may be a mitigant to the impact of rising interest rates in 2018.

Table 7: Option Exposure (for Hedging Purposes) by Type of Contract and Risk Hedged ($Mil., Notional)

Type of Risk	Call	Put	Cap	Floor	Other	Collar	Total	Pct of Total
Equity	432,413	181,205	184	-	40,656	38,866	693,324	64%
Interest Rate	68,849	30,162	121,615	69,826	46,549	11,250	348,250	32%
Currency	1,872	2,859	-	-	2,094	-	6,825	1%
Credit and Other	-	878	-	34,417	-	-	35,295	3%
Total	**503,134**	**215,105**	**121,799**	**104,243**	**89,299**	**50,116**	**1,083,694**	**100%**

Credit Default Swaps (CDS)

The notional value of CDS held by U.S. insurers totaled $37.5 billion (see Table 8), a 9% increase from $34.3 billion in 2017. Among U.S. insurers, life and P/C companies remain the only participants (on the asset side) in the CDS market since at least 2014, with life companies accounting for about 95% of CDS exposure.

Table 8: Industry CDS Exposure ($Mil., Notional)

Industry	Seller	Buyer	Total	Pct of Total
Life	30,305	5,516	35,821	95%
P/C	801	913	1,714	5%
Total	**31,106**	**6,429**	**37,535**	**100%**
Pct of Total	83%	17%	100%	

CDS can either be bought or sold for different purposes. To buy protection is to reduce (short) credit risk, and to sell (write) protection is to assume (go long) credit risk. Credit sentiment among U.S. insurers remains positive, as indicated by the ratio of bought protection falling to 17% of total protection from 23% in 2017. Selling protection was 83% of total CDS exposure in 2018.

In 2018, replication was the dominant use of CDS at 90% of reported transactions, although CDS for hedging increased to 10% from 7% in 2017.

Counterparty Exposure

According to the NAIC *Annual Statement Instructions,* counterparty exposure is the exposure to credit risk associated with the use of derivative instruments with that counterparty. The BACV of counterparty exposure is net of collateral posted by the insurer.

Table 9 summarizes U.S. insurer exposure to the largest 10 counterparties. The 10 counterparties represented 50% of total counterparty exposure in the U.S. insurance industry. Counterparty exposure is most concentrated for life companies, where the top 10 represented 49% of the total U.S. insurer counterparty exposure net of collateral.

Table 9: U.S. Insurers' Largest 10 Counterparty Exposures ($Mil., BACV)

Counterparty	Life	Health	P/C	Fraternal	Total	Pct of Total
J.P. Morgan Chase	511.1	-	0.1	-	511.2	9%
Barclays Bank Plc	501.3	-	0.1	0.4	501.7	9%
Bank of America Merrill Lynch	412.1	38.5	1.8	-	452.3	8%
AIG Financial Products	284.4	-	-	-	284.4	5%
Credit Suisse	162.4	-	0.2	-	162.6	3%
Wells Fargo & Co	161.5	-	0.5	-	162.0	3%
UBS AG	156.6	-	1.9	-	158.4	3%
Citibank	135.9	-	16.7	0.0	152.6	3%
Deutsche Bank AG	150.5	-	0.4	-	151.0	3%
Goldman Sachs	126.2	-	0.9	0.0	127.2	2%
Largest 10 Total	**2,602.1**	**38.5**	**22.5**	**0.4**	**2,663.5**	49%
Total	**5,292.5**	**81.3**	**70.2**	**4.2**	**5,448.3**	**100%**
Largest 10 as % of Total	49%	47%	32%	10%	49%	

Posted Collateral

Typically, derivative transactions, like CDS, require posting collateral as a means of reducing counterparty risk.[2] Table 10 shows about $16.5 billion in BACV of collateral that was posted by insurers with counterparties ($16.7 billion in FV). Collateral posted by U.S. insurers decreased in 2018 from $19.3 billion in 2017 and

[2] Note that collateral pledged to counterparties by U.S. insurers remains on the insurer's balance sheet. Generally, the amount pledged is small compared to total assets and is a restricted asset.

$21.8 billion in 2016. Although remaining the largest users of derivatives among all U.S. insurers, the proportion of collateral posted by life companies to counterparties decreased slightly to 94% in 2018 from 95% in 2017.

Counterparties posted about $34.2 billion in FV of collateral to U.S. insurers as of year-end 2018. In comparison, in 2017 and 2016, U.S. insurers reported posted collateral from counterparties of $40.5 billion in each of the two years.

Table 10: Collateral Posted by U.S. Insurers by Bond Type ($Mil., BACV)

Collateral Type	Life	P/C	Fraternal	Total	Pct of Total
U.S. Treasury and Agency	9,124	542	62	9,728	59%
Cash	3,374	385	-	3,759	23%
Corporate Bond	2,105	11	-	2,116	13%
Loan-backed and Structured (ABS)	862	16	-	878	5%
Municipal	11	7	-	17	0%
Other	8	-	-	8	0%
Exchange Traded Funds	-	4	-	4	0%
Total	**15,483**	**965**	**62**	**16,510**	**100%**
Pct of Total	94%	6%	0%	100%	

U.S. Treasury and agency securities as a proportion of collateral posted by U.S. insurers comprised 59% of the total BACV, up from 55% in 2017. Other significant collateral types were cash (23%) and U.S. corporate bonds (13%); together, all three accounted for about 95% of collateral posted by insurers. Loan-backed and structured securities (ABS) accounted for the remaining 5%.

Summary

Derivative exposure was more concentrated among insurers in 2018. The notional value of derivative exposure increased year-over-year by 9%, although the number of insurers reporting derivative exposure fell to 298 in 2018 from 311 in 2017. Life companies continued to account for the largest derivative exposure. U.S. insurers engaged in derivative transactions mainly for hedging purposes; those hedges were predominantly to manage interest rate and currency risk.

The NAIC Capital Markets Bureau will continue to track derivative usage trends among insurers, and it will monitor developments in the derivatives market and their impact on insurance industry investments. We will report on any developments as deemed appropriate.

Useful Links:

NAIC Capital Markets Primer – Derivatives, July 2018

NAIC Capital Markets Special Report – U.S. Insurer Derivative Exposure Increased in 2017, November 2018

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