RGA Americas Reinsurance Company, Ltd.

Consolidated Financial Statements as of and for the
Years Ended December 31, 2022 and 2021, and
Independent Auditor's Report

RGA AMERICAS REINSURANCE COMPANY, LTD.
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INDEPENDENT AUDITOR'S REPORT

To the Shareholder and Board of Directors of
RGA Americas Reinsurance Company, Ltd.:

Opinion

We have audited the consolidated financial statements of RGA Americas Reinsurance Company, Ltd. (the "Company"), which comprise the consolidated balance sheets as of December 31, 2022 and 2021, and the related consolidated statements of income, comprehensive income, shareholder's equity, and cash flows for the years then ended, and the related notes to the consolidated financial statements (collectively referred to as the "financial statements").

In our opinion, the accompanying financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2022 and 2021, and the results of its operations and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

We conducted our audits in accordance with auditing standards generally accepted in the United States of America (GAAS). Our responsibilities under those standards are further described in the Auditor's Responsibilities for the Audit of the Financial Statements section of our report. We are required to be independent of the Company and to meet our other ethical responsibilities, in accordance with the relevant ethical requirements relating to our audits. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Other Matter

As discussed in Note 1, results of the Company may not be indicative of those of a stand-alone entity, as the Company is a member of a controlled group of affiliated companies. Our opinion is not modified with respect to this matter.

Responsibilities of Management for the Financial Statements

Management is responsible for the preparation and fair presentation of the financial statements in accordance with accounting principles generally accepted in the United States of America, and for the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

In preparing the financial statements, management is required to evaluate whether there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for one year after the date that the financial statements are issued.

Auditor's Responsibilities for the Audit of the Financial Statements

Our objectives are to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue an auditor's report that includes our opinion. Reasonable assurance is a high level of assurance but is not absolute assurance and therefore is not a guarantee that an audit conducted in accordance with GAAS will always detect a material misstatement when it exists. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control. Misstatements are considered material if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.

In performing an audit in accordance with GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.

- Identify and assess the risks of material misstatement of the financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.

- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.

- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the financial statements.

- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

We are required to communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit, significant audit findings, and certain internal control-related matters that we identified during the audit.

Deloitte & Touche LLP

April 19, 2023

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED BALANCE SHEETS
(in thousands of U.S. dollars, except share data)

	December 31, 2022	December 31, 2021
Assets		
Fixed maturity securities available-for-sale at fair value (amortized cost of $26,402,539 and $24,698,771; allowance for credit losses of $2,961 and $122)	$ 23,468,197	$ 27,299,140
Equity securities, at fair value	45,261	52,492
Policy loans	9,323	10,188
Funds withheld at interest	8,437,800	13,042,999
Short-term investments	64,462	56,423
Other invested assets	2,295,024	1,761,467
Total investments	34,320,067	42,222,709
Cash and cash equivalents	1,035,023	1,275,720
Accrued investment income	285,563	221,601
Premiums receivable	1,357,572	1,135,421
Reinsurance ceded receivables	5,825,320	5,768,028
Deferred policy acquisition costs	1,692,088	1,988,019
Income tax recoverable	158,982	—
Deferred tax asset	87,245	39,844
Other reinsurance balances	2,149,510	1,674,329
Receivable from parent and affiliates	140,071	111,355
Other assets	295,026	518,621
Total assets	$ 47,346,467	$ 54,955,647
Liabilities and shareholder's equity		
Future policy benefits	$ 22,919,604	$ 25,034,453
Interest-sensitive contract liabilities	10,967,821	11,462,918
Other policy claims and benefits	3,304,738	3,588,152
Other reinsurance balances	3,892,685	1,860,478
Securities lending obligation	67,457	96,106
Income tax liability	—	110,097
Deferred income taxes	471,836	1,648,246
Affiliated notes payable	3,407	3,632
Payable to parent and affiliates	52,774	38,977
Funds withheld liabilities	3,424,233	4,081,652
Other liabilities	617,220	196,079
Total liabilities	45,721,775	48,120,790
Commitments and contingent liabilities (See Note 13)		
Shareholder's equity:		
Common stock (par value $1.00 per share; unlimited shares authorized; shares issued: 75,500,000 at both December 31, 2022 and 2021)	75,500	75,500
Additional paid-in-capital	907,612	901,006
Retained earnings	3,436,410	3,977,287
Accumulated other comprehensive income (loss)	(2,794,830)	1,881,064
Total shareholder's equity	1,624,692	6,834,857
Total liabilities and shareholder's equity	$ 47,346,467	$ 54,955,647

See accompanying notes to consolidated financial statements.

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED STATEMENTS OF INCOME
(in thousands of U.S. dollars)

	For the years ended December 31,	
	2022	2021
Revenues		
Net premiums	$ 4,756,876	$ 4,519,030
Net investment income	1,491,414	1,384,882
Change in value of funds withheld embedded derivatives	(1,123,233)	(410,535)
Investment related gains (losses), net	(117,873)	61,093
Other revenues	414,350	66,917
Total revenues	5,421,534	5,621,387
Benefits and expenses		
Claims and other policy benefits	4,418,161	4,697,112
Interest credited	275,568	353,217
Policy acquisition costs and other insurance expenses	850,204	483,498
Other operating expenses	394,015	339,003
Collateral finance expense	3,633	2,068
Total benefits and expenses	5,941,581	5,874,898
Loss before income taxes	(520,047)	(253,511)
Provision for income taxes	(79,170)	(13,260)
Net loss	$ (440,877)	$ (240,251)

See accompanying notes to consolidated financial statements.

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(in thousands of U.S. dollars)

	For the years ended December 31,	
	2022	2021
Comprehensive income (loss)		
Net loss	$ (440,877)	$ (240,251)
Other comprehensive loss, net of tax:		
Foreign currency translation adjustments	(163,559)	52,796
Net unrealized investment losses	(4,514,683)	(981,696)
Defined benefit pension and postretirement plan adjustments	2,348	2,881
Total other comprehensive loss, net of tax	(4,675,894)	(926,019)
Total comprehensive loss	$ (5,116,771)	$ (1,166,270)

See accompanying notes to consolidated financial statements.

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED STATEMENTS OF SHAREHOLDER'S EQUITY
(in thousands of U.S. dollars)

	Common Stock	Additional Paid-In-Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total
Balance, January 1, 2021	$ 75,500	$ 894,553	$ 4,467,538	$ 2,807,083	$ 8,244,674
Net loss	—	—	(240,251)	—	(240,251)
Total other comprehensive loss	—	—	—	(926,019)	(926,019)
Equity based compensation	—	6,453	—	—	6,453
Dividends to shareholder	—	—	(250,000)	—	(250,000)
Balance, December 31, 2021	75,500	901,006	3,977,287	1,881,064	6,834,857
Net loss	—	—	(440,877)	—	(440,877)
Total other comprehensive loss	—	—	—	(4,675,894)	(4,675,894)
Equity based compensation	—	6,606	—	—	6,606
Dividends to shareholder	—	—	(100,000)	—	(100,000)
Balance, December 31, 2022	$ 75,500	$ 907,612	$ 3,436,410	$ (2,794,830)	$ 1,624,692

See accompanying notes to consolidated financial statements.

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands of U.S. dollars)

	For the years ended December 31, 2022	2021
Cash flows from operating activities		
Net loss	$ (440,877)	$ (240,251)
Adjustments to reconcile net income to net cash provided by operating activities:		
Change in operating assets and liabilities:		
Accrued investment income	(80,179)	(19,642)
Premiums receivable and other reinsurance balances	(929,873)	(881,142)
Reinsurance ceded receivables	(709,191)	(1,239,727)
Deferred policy acquisition costs	114,339	(163,028)
Future policy benefits, other policy claims and benefits, and other reinsurance balances	1,572,532	5,159,193
Deferred income taxes	38,818	(57,821)
Receivable from parent and affiliates	(174,903)	(195,566)
Payable to parent and affiliates	13,797	11,970
Other assets and other liabilities, net	(116,456)	(69,369)
Amortization of net investment premiums, discounts and other	(120,488)	(106,538)
Depreciation and amortization expense	3,710	4,718
Investment related (gains) losses, net	117,873	(61,093)
Change in value of funds withheld embedded derivatives	1,123,233	410,535
Other, net	18,862	6,453
Gain on sale of business	—	(8,956)
Net cash provided by operating activities	431,197	2,549,736
Cash flows from investing activities		
Sales of fixed maturity securities available-for-sale	4,825,309	4,604,229
Sales of equity securities	31	2,551
Maturities of fixed maturity securities available-for-sale	366,586	503,576
Purchases of fixed maturity securities available-for-sale	(8,259,224)	(9,926,363)
Purchases of equity securities	—	(500)
Principal payments on policy loans	855	2,030
Cash withdrawn from funds withheld at interest	1,179,182	1,865,586
Change in short-term investments	(13,677)	12,999
Change in other invested assets	(805,198)	148,580
Purchase of a business, net of cash acquired of $52,932	—	(156,368)
Proceeds from sale of a business, net of cash transferred of $40,727	—	8,569
Net cash used in investing activities	(2,706,136)	(2,935,111)
Cash flows from financing activities		
Dividends to shareholder	(100,000)	(250,000)
Change in securities lending obligation	(28,649)	638
Change in cash collateral for derivative positions and other arrangements	442,984	184,677
Deposits on variable annuity contracts	2,943,050	1,282,256
Withdrawals on variable annuity contracts	(1,149,769)	(866,640)
Net cash provided by financing activities	2,107,616	350,931
Effect of exchange rate changes on cash	(73,374)	(17,345)
Change in cash and cash equivalents	(240,697)	(51,789)
Cash and cash equivalents, beginning of period	1,275,720	1,327,509
Cash and cash equivalents, end of period	$ 1,035,023	$ 1,275,720

RGA AMERICAS REINSURANCE COMPANY, LTD.
CONSOLIDATED STATEMENTS OF CASH FLOWS
(in thousands of U.S. dollars)

	For the years ended December 31, 2022	2021
Supplemental disclosures of cash flow information:		
Interest paid	$ 776	$ 184
Income taxes paid, net of refunds	152,595	92,705
Non-cash investing activities:		
Transfer of invested assets	$ 124,538	$ 241,451
Non-cash financing activities:		
Non-cash transfer - funds withheld liabilities	$ —	$ 2,944,589
Purchase of a business:		
Assets acquired, excluding cash acquired	$ —	$ 847,401
Liabilities assumed	—	(691,033)
Sale of a business:		
Assets disposed, net of cash transferred	$ —	$ (503,974)
Liabilities disposed	—	504,361

See accompanying notes to consolidated financial statements.

RGA Americas Reinsurance Company, Ltd.
Notes to consolidated financial statements
For the years ended December 31, 2022 and 2021
(in U.S. dollars)

Note 1 BUSINESS AND BASIS OF PRESENTATION

Business

RGA Americas Reinsurance Company, Ltd. ("RGA Americas") was incorporated in accordance with the Bermuda Companies Act 1981 on September 25, 2014 and is a Class E insurer. RGA Americas is a wholly owned subsidiary of Reinsurance Group of America, Incorporated ("RGA"), a United States of America ("U.S.") insurance holding company, formed on December 31, 1992. As of December 31, 2022, all outstanding shares of RGA Americas were owned by RGA. The consolidated financial statements herein include the assets, liabilities, and results of operations of RGA Americas and its wholly owned subsidiaries (collectively, the "Company"). Intercompany balances and transactions have been eliminated. The following reinsurance and insurance subsidiaries are either directly or indirectly owned by RGA Americas:

- RGA Atlantic Reinsurance Company Ltd. ("RGA Atlantic")
- RGA Life Reinsurance Company of Canada ("RGA Canada")
- RGA Reinsurance Company of South Africa, Limited ("RGA South Africa")
- RGA International Reinsurance Company dac ("RGA International")
- RGA Reinsurance Company of Australia Limited ("RGA Australia")
- Omnilife Insurance Company Limited ("Omnilife")
- Hodge Life Assurance Company Limited ("Hodge")

Since the Company is a member of a controlled group of affiliated companies, its results may not be indicative of those of a stand-alone entity.

The Company engages in providing traditional reinsurance, which includes individual and group life and health, disability, and critical illness reinsurance. The Company also provides financial solutions, which includes longevity reinsurance, reinsurance of asset-intensive products, primarily annuities, financial reinsurance, and capital solutions.

Reinsurance is an arrangement under which an insurance company, the reinsurer, agrees to indemnify another insurance company, the ceding company, for all or a portion of the insurance risks underwritten by the ceding company. Reinsurance is designed to:

(i) reduce the net amount at risk on individual risks, thereby enabling the ceding company to increase the volume of business it can underwrite, as well as increase the maximum risk it can underwrite on a single risk;

(ii) enhance the ceding company's financial strength and surplus position;

(iii) stabilize operating results by leveling fluctuations in the ceding company's loss experience; and

(iv) assist the ceding company in meeting applicable regulatory requirements.

Basis of Presentation

The consolidated financial statements of the Company have been prepared in accordance with U.S. generally accepted accounting principles ("GAAP"). The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosures of contingent assets and liabilities as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. The most significant estimates include those used in determining deferred policy acquisition costs ("DAC"), premiums receivable, future policy benefits, incurred but not reported claims ("IBNR"), income taxes, valuation of investments and investment impairments, and valuation of embedded derivatives. Actual results could differ materially from the estimates and assumptions used by management.

The accompanying consolidated financial statements include the accounts of RGA Americas and its subsidiaries, all of which are wholly owned. Entities in which the Company has significant influence over the operating and financing decisions but are not required to be consolidated are reported under the equity method of accounting. A portion of the Company's reinsurance receivables and policy liabilities are associated with affiliated companies, and the Company relies on affiliated companies for services. See Note 12 - "Related-Party Transactions" for further details.

The COVID-19 global pandemic and the response thereto continued to result in increases in mortality, morbidity and other insurance risks during 2022. The extent to which the Company's future results continue to be affected by COVID-19 will largely depend on, among other factors, country-specific circumstances, measures by public and private institutions, the impact of new variants of the virus, and vaccination levels globally. Given these many variables, the Company cannot reliably predict the future impact of the pandemic on its business, results of operations and financial condition.

There were no subsequent events that would require disclosure or adjustments to the accompanying consolidated financial statements through the date the consolidated financial statements were issued.

Note 2 SIGNIFICANT ACCOUNTING POLICIES AND PRONOUNCEMENTS

Investments

Fixed Maturity Securities

Fixed maturity securities classified as available-for-sale are reported at fair value and are so classified based upon the possibility that such securities could be sold prior to maturity if that action enables the Company to execute its investment philosophy and appropriately match investment results to operating and liquidity needs.

Unrealized gains and losses on fixed maturity securities classified as available-for-sale, less applicable deferred income taxes as well as related adjustments to DAC, if applicable, are recorded in other comprehensive income (loss) ("OCI").

Investment income is recognized as it accrues or is legally due. Realized gains and losses on sales of investments are included in investment related gains (losses), net, as are change in allowance for credit losses and impairments. The cost of investments sold is primarily determined based upon the specific identification method.

Equity Securities

Equity securities are carried at fair value and realized and unrealized gains and losses are included in investment related gains (losses), net.

Policy Loans

Policy loans are reported at the unpaid principal balance. Interest income on such loans is recorded as earned using the contractually agreed-upon interest rate. These policy loans present no credit risk because the amount of the loan cannot exceed the obligation due the ceding company upon the death of the insured or surrender of the underlying policy.

Funds Withheld at Interest

Funds withheld at interest represent amounts contractually withheld by ceding companies in accordance with reinsurance agreements. For agreements written on a modified coinsurance ("modco") basis and agreements written on a coinsurance funds withheld basis, assets that support the transactions are defined in the treaty, and are withheld and legally owned by the ceding company. Interest, recorded in net investment income, accrues to these assets at calculated rates as defined by the treaty terms.

Short-term Investments

Short-term investments represent investments with remaining maturities of one year or less, but greater than three months, at the time of acquisition and are stated at estimated fair value or amortized cost, which approximates estimated fair value. Interest on short-term investments is recorded in net investment income.

Other Invested Assets

In addition to derivative contracts discussed below, other invested assets include limited partnerships, real estate joint ventures, lifetime mortgages, mortgage loans and unit-linked investments.

The fair value option ("FVO") was elected for contractholder-directed investments supporting unit-linked variable annuity type liabilities that do not qualify for presentation and reporting as separate accounts. Changes in estimated fair value of unit-linked investments are included in net investment income.

Limited partnerships and real estate joint ventures, in which the Company has more than a minor influence over the investee's operations, are reported using the equity method of accounting. The Company generally recognizes its share of the investee's earnings in net investment income on a three-month lag in instances where the investee's financial information is not sufficiently timely or when the investee's reporting period differs from the Company's reporting period.

Limited partnerships, in which the Company has a minor ownership interest in or virtually no influence over the investee's operations, are primarily carried at estimated fair value. If a readily determinable fair value is not available, the Company uses the net asset value ("NAV") per share. Changes in estimated fair value are included in investment related gains (losses), net. Certain other limited partnerships are carried at cost less impairment.

The Company holds beneficial interests in lifetime mortgages in the United Kingdom ("U.K."). Lifetime mortgages represent loans provided to individuals 55 years of age and older secured by the borrower's residence. Lifetime mortgages are comparable to a home equity loan by allowing the borrower to utilize the equity in their home as collateral. The amount of the loan is dependent on the appraised value of the home at the time of origination, the borrower's age and interest rate. Unlike a home equity loan, no payment of principal or interest is required until the death of the borrower or sale of the home. Lifetime mortgages may also be either fully funded at origination, or the borrower can request periodic funding similar to a line of credit. Lifetime mortgages are subject to risks, including market, credit, interest rate, liquidity, operational, reputational and legal risks. Lifetime mortgages are carried at unpaid principal balances, net of any unamortized premium or discount, unamortized balance of loan origination fees and expenses, and allowance for credit losses. Interest income is accrued on the principal amount of the lifetime mortgage based on its contractual interest rate.

Mortgage loans are carried at unpaid principal balances, net of any unamortized premium or discount, unamortized balance of loan origination fees and expenses, and allowance for credit losses. Interest income is accrued on the principal amount of the mortgage loan based on its contractual interest rate. Amortization of premiums, discounts, and loan origination fees are recorded using the effective yield method. The Company accrues interest on loans until it is probable the Company will not receive interest or the loan is 90 days past due. Interest income, amortization of premiums, accretion of discounts, amortization of loan origination fees and prepayment fees are reported in net investment income.

Securities Borrowing, Lending and Repurchase/Reverse Repurchase Programs

The Company participates in securities borrowing programs whereby securities, which are not reflected on the Company's consolidated balance sheets, are borrowed from third parties. The borrowed securities are used to provide collateral under affiliated reinsurance transactions. The Company is generally required to maintain a minimum of 100% to 110% of the fair value, or par value under certain programs, of the borrowed securities as collateral. The collateral generally consists of securities pledged to the third parties or rights to reinsurance treaty cash flows. If cash flows from the reinsurance treaties are insufficient to maintain the minimum collateral requirement, the Company may substitute cash or securities to meet the requirement.

The Company participates in securities borrowing programs whereby securities, which are not reflected on the Company's consolidated balance sheets, are borrowed from an affiliated party. The borrowed securities are used to provide collateral under affiliated reinsurance transactions. The collateral consists of rights to reinsurance treaty cash flows. If cash flows from the reinsurance treaties are insufficient to maintain the minimum collateral requirement, the Company may substitute cash or securities to meet the requirement.

The Company participates in a securities lending program whereby securities, reflected as investments on the Company's consolidated balance sheets, are loaned to an affiliated party. In return, the Company receives cash and securities as collateral, in an amount equal to a minimum of 102% of the fair value of the securities lent. The securities received as collateral are not reflected on the Company's consolidated balance sheets. The cash received is reflected in the Company's consolidated balance sheets, offset by a payable included in securities lending obligation on the consolidated balance sheets.

The Company participates in repurchase/reverse repurchase programs whereby securities, reflected as investments on the Company's consolidated balance sheets, are sold to third parties. In return, the Company purchases securities from the third parties. Under the agreements the Company's value of the securities sold is generally equal to 100% to 105% of the estimated fair value of the securities purchased. The securities purchased under reverse repurchase agreements are not reflected on the Company's consolidated balance sheets. Securities sold under such transactions may be sold or re-pledged by the transferee.

The Company participates in a repurchase/reverse repurchase program whereby securities, reflected as investments on the Company's consolidated balance sheets, are sold to an affiliated party. In return, the Company purchases securities from the affiliated party. Under the agreement the Company's value of the securities sold is generally equal to 100% of the estimated fair value of the securities purchased. The securities purchased are reflected as investments on an affiliate's consolidated balance sheets. In return, the Company pledges securities to the affiliate, which are reflected in the Company's consolidated balance sheets.

The Company participates in repurchase programs whereby securities, reflected as investments on the Company's consolidated balance sheets are sold to a third party. Under these agreements, the Company receives cash in an amount generally equal to 72% to 100% of the estimated fair value of the securities sold at the inception of the transaction, with a simultaneous agreement to repurchase such securities at a future date or on demand in an amount equal to the cash initially received plus interest. The Company monitors the ratio of the cash held to the estimated fair value of the securities sold throughout the duration of the transaction and additional cash or securities are provided or obtained as necessary. Securities sold under such transactions may be sold or re-pledged by the transferee. The obligation to repurchase bonds is reflected in other liabilities.

The Company participates in a repurchase program whereby securities, reflected as investments on an affiliate's consolidated balance sheets, are purchased by the Company. In return, the Company pays cash to the affiliate, which is offset by a receivable in other assets in the Company's consolidated balance sheets. The affiliate is required to maintain a minimum collateral balance with a fair value of 102% of the cash received.

Allowance for Credit Losses and Impairments

Fixed Maturity Securities

The Company identifies fixed maturity securities that could result in a credit loss by monitoring market events that could impact issuers' credit ratings, business climates, management changes, litigation, government actions and other similar factors. The Company also monitors late payments, pricing levels, rating agency actions, key financial ratios, financial statements, revenue forecasts and cash flow projections as indicators of credit issues.

The Company reviews all securities to determine whether a decline in fair value below amortized cost has resulted from a credit loss and whether an allowance for credit loss should be recognized. In making this determination, the Company considers relevant facts and circumstances including: (1) the reasons for the decline in fair value; (2) the issuer's financial position and access to capital; and (3) the Company's intent to sell a security or whether it is more likely than not it will be required to sell the security before the recovery of its amortized cost that, in some cases, may extend to maturity.

If the Company intends to sell a security or it is more likely than not that it would be required to sell a security before the recovery of its amortized cost, less any recorded credit loss, it recognizes an impairment loss in investment related gains (losses), net for the difference between amortized cost and fair value.

Credit impairments and changes in the allowance for credit losses on fixed maturity securities are reflected in investment related gains (losses), net, while non-credit impairment losses are recognized in accumulated other comprehensive income ("AOCI").

The Company estimates the amount of the credit loss component of a fixed maturity security impairment as the difference between amortized cost and the present value of the expected cash flows of the security. The Company excludes accrued interest from the amortized cost and the present value of the expected cash flows of the security. The present value is determined using the best estimate cash flows discounted at the effective interest rate implicit to the security at the date of purchase or the current yield to accrete an asset-backed or floating rate security. The techniques and assumptions for establishing the best estimate cash flows vary depending on the type of security. The asset-backed securities' cash flow estimates are based on security-specific facts and circumstances that may include collateral characteristics, expectations of delinquency and default rates, loss severity and prepayment speeds and structural support, including subordination and guarantees.

The Company writes off uncollectible fixed maturity securities when (1) it has sufficient information to determine that the issuer of the security is insolvent or (2) it has received notice that the issuer of the security has filed for bankruptcy, and the collectability of the asset is expected to be adversely impacted by the bankruptcy.

Other Invested Assets

Allowance for credit losses on mortgage loans are computed on an expected loss basis using a model that utilizes probability of default and loss given default methods over the lifetime of the loan. Within the reasonable and supportable forecast period (i.e. typically two years), the allowance for credit losses for mortgage loans is established based on several pool-level loan assumptions, defaults and loss severity, loss expectations for loans with similar risk characteristics and industry statistics. These evaluations are revised as conditions change and new information becomes available. The evaluation also includes the impact of expected changes in future macro-economic conditions. The Company reverts to historical loss information for periods beyond which it believes it is able to develop or obtain reasonable and supportable forecasts of future economic conditions. When individual loans no longer have similar credit risk characteristics of the commercial mortgage loan pool, they are removed from the pool and are evaluated individually for an allowance.

Any interest accrued or received on the net carrying amount of the impaired loan is included in net investment income or applied to the principal of the loan, depending on the assessment of the collectability of the loan. Mortgage loans deemed to be uncollectible or that have been foreclosed are charged off against the allowance for credit losses and subsequent recoveries, if any, are credited to the allowance for credit losses. Changes in allowance for credit losses are reported in investment related gains (losses), net.

The Company considers its limited partnership investments that are carried at cost for impairment when the carrying value of these investments exceeds the fair value. The Company takes into consideration the severity and duration of this excess when deciding if the investment is impaired. For equity method investments (including real estate joint ventures), the Company considers financial and other information provided by the investee, other known information and inherent risks in the underlying investments, as well as future capital commitments, in determining whether an impairment has occurred.

Derivative Instruments

Overview

The Company utilizes a variety of derivative instruments including swaps, options, forwards and futures, primarily to manage or hedge interest rate risk, credit risk, inflation risk, foreign currency risk, market volatility and various other market risks associated with its business. The Company does not invest in derivatives for speculative purposes. It is the Company's policy to enter into derivative contracts primarily with highly rated parties. See Note 4 - "Derivative Instruments" for additional detail on the Company's derivative positions.

Accounting and Financial Statement Presentation of Derivatives

Derivatives are carried on the Company's consolidated balance sheets primarily in other invested assets or other liabilities, at fair value. Certain derivatives are subject to master netting provisions and reported as a net asset or liability. On the date a derivative contract is executed, the Company designates the derivative as (1) a cash flow hedge, (2) a net investment hedge in a foreign operation or (3) free-standing derivatives held for other risk management purposes, which primarily involve managing asset or liability risks associated with the Company's reinsurance treaties that do not qualify for hedge accounting.

Changes in the fair value of free-standing derivative instruments, which do not receive accounting hedge treatment, are primarily reflected in investment related gains (losses), net.

Hedge Documentation and Hedge Effectiveness

To qualify for hedge accounting, at the inception of the hedging relationship, the Company formally documents its risk management objective and strategy for undertaking the hedging transaction, as well as its designation of the hedge as either (i) a cash flow hedge or (ii) a hedge of a net investment in a foreign operation ("NIFO"). In this documentation, the Company sets forth how the hedging instrument is expected to hedge the designated risks related to the hedged item and sets forth the method that will be used to retrospectively and prospectively assess the hedging instrument's effectiveness. A derivative designated as a hedging instrument must be assessed as being highly effective in offsetting the designated risk of the hedged item. Hedge effectiveness is formally assessed at inception and periodically throughout the life of the designated hedging relationship.

Under a cash flow hedge, changes in the fair value of the hedging derivative measured as effective are reported within AOCI and the deferred gains or losses on the derivative are reclassified into the consolidated statements of income when the Company's earnings are affected by the variability in cash flows of the hedged item. The fair values of the hedging derivatives are exclusive of any accruals that are separately reported within net investment income or other operating expenses, if applicable, to match the location of the hedged item.

In a NIFO hedge, changes in the fair value of the hedging derivative that are measured as effective are reported within AOCI consistent with the translation adjustment for the hedged net investment in the foreign operation.

The Company discontinues hedge accounting prospectively when: (i) it is determined that the derivative is no longer highly effective in offsetting changes in the estimated fair value or cash flows of a hedged item; (ii) the derivative expires, is sold, terminated, or exercised; (iii) it is no longer probable that the hedged forecasted transaction will occur; or (iv) the derivative is de-designated as a hedging instrument.

When hedge accounting is discontinued because it is determined that the derivative is not highly effective, the derivative continues to be carried in the consolidated balance sheets at fair value, with changes in fair value recognized in investment related gains (losses), net. Provided the hedged forecasted transaction occurrence is still probable, the changes in estimated fair value of derivatives recorded in OCI related to discontinued cash flow hedges are released into the consolidated statements of income when the Company's earnings are affected by the variability in cash flows of the hedged item.

When hedge accounting is discontinued because it is no longer probable that the forecasted transactions will occur on the anticipated date or within two months of that date, the derivative continues to be carried in the consolidated balance sheets at its estimated fair value, with changes in estimated fair value recognized currently in investment related gains (losses), net. Deferred gains and losses of a derivative recorded in OCI pursuant to the discontinued cash flow hedge of a forecasted transaction that is no longer probable are recognized immediately in investment related gains (losses), net.

In all other situations in which hedge accounting is discontinued, the derivative is carried at its estimated fair value in the consolidated balance sheets, with changes in its estimated fair value recognized in the current period as investment related gains (losses), net.

Embedded Derivatives

The Company reinsures certain annuity products that contain terms that are deemed to be embedded derivatives, primarily variable annuities with guaranteed minimum benefits. The Company assesses reinsurance contract terms to identify embedded derivatives, which are required to be bifurcated under the general accounting principles for *Derivatives and Hedging*. If the contract is not reported for in its entirety at fair value and it is determined that the terms of the embedded derivative are not clearly and closely related to the economic characteristics of the host contract, and that a separate instrument with the same terms would qualify as a derivative instrument, the embedded derivative is bifurcated from the host contract and accounted for separately.

Embedded derivatives are carried on the consolidated balance sheets at fair value in the same line item as the host contract. Changes in the fair value of embedded derivatives associated with variable annuity guaranteed minimum benefits are reflected in investment related gains (losses), net on the consolidated statements of income. See "Interest-Sensitive Contract Liabilities" below for additional information on embedded derivatives related to variable annuities. The Company has implemented an economic hedging strategy to mitigate the volatility associated with its reinsurance of variable annuity guaranteed minimum benefits. The hedging strategy is designed such that changes in the fair value of the hedge contracts, primarily futures, swap contracts and options, move in the opposite direction of changes in the fair value of the embedded derivatives. While the Company actively manages its hedging program, the hedges that are in place may not be totally effective in offsetting the embedded derivative changes due to the many variables that must be managed and the Company may see a corresponding increase or decrease in the net liability. The Company has elected not to assess this hedging strategy for hedge accounting treatment.

Additionally, reinsurance treaties written on a modco or funds withheld basis are subject to the general accounting principles for *Derivatives and Hedging* related to embedded derivatives. The Company's funds withheld at interest balances are primarily associated with its reinsurance treaties structured on a modco or funds withheld basis, the majority of which were subject to the general accounting principles for *Derivatives and Hedging* related to embedded derivatives. Management believes the embedded derivative feature in each of these reinsurance treaties is similar to a total return swap on the assets held by the ceding companies. The valuation of embedded derivatives is sensitive to the investment credit spread environment. Changes in the embedded derivatives caused by changes in investment credit spreads are also affected by the application of a credit valuation adjustment ("CVA"). The fair value calculation of an embedded derivative in an asset position utilizes a CVA based on the ceding company's credit risk. Conversely, the fair value calculation of an embedded derivative in a liability position utilizes a CVA based on the Company's credit risk. Generally, an increase in investment credit spreads, ignoring changes in the CVA, will have a negative impact on the fair value of the embedded derivative (decrease in income). The fair value of the embedded derivative assets and liabilities are included in the funds withheld at interest within total assets and in funds withheld liabilities within total liabilities, respectively. The change in the fair value of the embedded derivatives is recorded in change in value of funds withheld embedded derivatives.

The Company has entered into various financial reinsurance treaties on a funds withheld and modco basis. These treaties do not transfer significant insurance risk and are recorded on a deposit method of accounting with the Company earning a net fee. As a result of the experience refund provisions contained in these treaties, the value of the embedded derivatives in these contracts is currently considered immaterial. The Company monitors the performance of these treaties on a quarterly basis. Significant adverse performance or losses on these treaties may result in a loss associated with the embedded derivative.

Fair Value Measurements

General accounting principles for *Fair Value Measurements and Disclosures* define fair value, establish a framework for measuring fair value, establish a fair value hierarchy based on the inputs used to measure fair value and enhance disclosure requirements for fair value measurements. In compliance with these principles, the Company has categorized its assets and liabilities, based on the priority of the inputs to the valuation technique, into a three level hierarchy or separately for assets measured using NAV. The fair value hierarchy gives the highest priority to quoted prices in active markets for identical assets or liabilities (Level 1), the second highest priority to quoted prices in markets that are not active or inputs that are observable either directly or indirectly (Level 2) and the lowest priority to unobservable inputs (Level 3).

If the inputs used to measure fair value fall within different levels of the hierarchy, the category level is based on the lowest priority level input that is significant to the fair value measurement of the asset or liability.

See Note 5 - "Fair Value of Assets and Liabilities" for further details on the Company's assets and liabilities recorded at fair value.

Cash and Cash Equivalents

Cash and cash equivalents include cash on deposit and highly liquid debt instruments purchased with an original maturity of three months or less.

Premiums Receivable

Premiums are accrued when due and in accordance with information received from the ceding company. When the Company enters into a new reinsurance agreement, it records accruals based on the terms of the reinsurance treaty. Similarly, when a ceding company fails to report information on a timely basis, the Company records accruals based on the terms of the reinsurance treaty as well as historical experience. Other management estimates include adjustments for increased in force on existing treaties, lapsed premiums given historical experience, the financial health of specific ceding companies, collateral value and the legal right of offset on related amounts (i.e. allowances and claims) owed to the ceding company. Under the legal right of offset provisions in its reinsurance treaties, the Company can withhold payments for allowances and claims from unpaid premiums. Based on its review of these factors and historical experience, the Company did not believe a provision for doubtful accounts was necessary as of December 31, 2022 or 2021.

Reinsurance Ceded Receivables

The Company generally reports retrocession activity on a gross basis. Amounts paid or deemed to have been paid for reinsurance are reflected in reinsurance ceded receivables. The cost of reinsurance related to long-duration contracts is recognized over the terms of the reinsured policies on a basis consistent with the reporting of those policies.

Deferred Policy Acquisition Costs

Costs of acquiring new business, which vary with and are directly related to the production of new business, have been deferred to the extent that such costs are deemed recoverable from future premiums or gross profits. Such costs include commissions and allowances as well as certain costs of policy issuance and underwriting. Non-commission costs related to the acquisition of new and renewal insurance contracts may be deferred only if they meet the following criteria:

- Incremental direct costs of a successful contract acquisition
- Portions of employees' salaries and benefits directly related to time spent performing specified acquisition activities for a contract that has been acquired or renewed
- Other costs directly related to the specified acquisition or renewal activities that would not have been incurred had that acquisition contract transaction not occurred

The Company tests the recoverability for each year of business at issue before establishing additional DAC. The Company also performs annual tests to establish that DAC are expected to remain recoverable, and if financial performance significantly deteriorates to the point where a deficiency exists, a cumulative charge to current operations will be recorded. No such adjustments related to DAC recoverability were made in 2022 or 2021.

DAC related to traditional life insurance contracts are amortized with interest over the premium-paying period of the related policies in proportion to the ratio of individual period premium revenues to total anticipated premium revenues over the expected life of the policy. Such anticipated premium revenues are estimated using the same assumptions used for computing liabilities for future policy benefits.

DAC related to interest-sensitive life and investment-type policies are amortized over the expected lives of the policies, in proportion to the gross profits realized from mortality, investment income less interest credited, and expense margins.

Other Reinsurance Balances

The Company assumes and retrocedes financial reinsurance contracts that do not expose it to a reasonable possibility of loss from insurance risk. These contracts are reported as deposits and are included in other reinsurance balance assets and/or liabilities. The amount of revenue reported in other revenues on these contracts represents fees and the cost of insurance under the terms of the reinsurance agreement. Assets and liabilities are reported on a net or gross basis, depending on the specific details within each treaty. Reinsurance agreements reported on a net basis, where a legal right of offset exists, are generally included in other reinsurance balances on the consolidated balance sheets. Balances resulting from the assumption and/or subsequent transfer of benefits and obligations resulting from cash flows related to variable annuities have also been classified as other reinsurance balance assets and/or liabilities. Other reinsurance assets are included in other reinsurance balances within total assets, while other reinsurance liabilities are included in other reinsurance balances within total liabilities on the consolidated balance sheets.

Affiliated Notes Payable

Affiliated notes payable includes cash borrowed from affiliated companies. Refer to Note 12 - "Related-Party Transactions" for further details.

Receivable From/Payable To Parent and Affiliates

Receivable from/payable to parent and affiliates is primarily comprised of non-reinsurance related receivables/payables. See Note 12 - "Related-Party Transactions" for further details about transactions with affiliated companies.

Other Assets

Other assets primarily include repo assets, surplus notes receivable, capitalized assets, right-of-use assets, operating joint ventures, investments in transit, and cash collateral pledged on derivative positions. Capitalized assets are stated at cost, less accumulated depreciation and amortization. Carrying values are reviewed at least annually for indicators of impairment in value.

Operating Joint Ventures

The Company has made investments in certain joint ventures that are strategic in nature and made other than for the sole purpose of generating investment income. These investments are reported under the equity method of accounting and are included in other assets. The Company's share of earnings from these joint ventures is reported in other revenues on the consolidated statements of income. The Company's investments in operating joint ventures do not have a material effect on the Company's results of operations and financial condition, and as a result no additional disclosures have been presented.

Future Policy Benefits

Liabilities for future benefits on life and health policies are established in an amount adequate to meet the estimated future obligations on policies in force. Liabilities for future policy benefits under long-duration life and health insurance policies have been computed based upon expected investment yields, mortality and withdrawal (lapse) rates, and other assumptions. These assumptions include a margin for adverse deviation and vary with the characteristics of the plan of insurance, year of issue, age of insured, and other appropriate factors. The mortality and withdrawal assumptions are based on the Company's experience as well as industry experience and standards. In establishing reserves for future policy benefits, the Company assigns policy liability assumptions to particular timeframes (eras) in such a manner as to be consistent with the underlying assumptions and economic conditions at the time the risks are assumed. The Company maintains a consistent approach to setting the provision for adverse deviation between eras.

Liabilities for future benefits on longevity business, including annuities in the payout phase, are established in an amount adequate to meet the estimated future obligations on policies in force, and have been calculated using expected mortality, investment yields, and other assumptions. These assumptions include a margin for adverse deviation and vary with the characteristics of the plan of insurance, year of issue, age of insured, and other appropriate factors. The mortality assumptions are based on the Company's experience as well as industry experience and standards. A deferred profit liability is established when the gross premium exceeds the net premium.

The Company periodically reviews actual and anticipated experience compared to the assumptions used to establish future policy benefits. The Company establishes premium deficiency reserves if actual and anticipated experience indicates that existing policy liabilities together with the present value of future gross premiums will not be sufficient to cover the present value of future benefits, settlement and maintenance costs and to recover unamortized acquisition costs. Anticipated investment income is considered in the calculation of premium deficiency losses for short-duration contracts. The premium deficiency reserve is established by a charge to income, as well as a reduction in unamortized acquisition costs and, to the extent there are no unamortized acquisition costs, an increase in future policy benefits.

The reserving process includes normal periodic reviews of assumptions used and adjustments of reserves to incorporate the refinement of the assumptions. Any such adjustments relate only to policies assumed in recent periods and the adjustments are reflected by a cumulative charge or credit to current operations.

The Company reinsures disability and long-term care products in various markets. Liabilities for future benefits on disability and long-term care policies' active lives are established in an amount adequate to meet the estimated future obligations on policies in force. These reserves are the amounts that, with the additional premiums to be received and interest thereon compounded annually at certain assumed rates, are calculated to be sufficient to meet the various policy and contract obligations as they mature.

The Company establishes future policy benefits for guaranteed minimum death benefits ("GMDB") relating to the reinsurance of certain variable annuity contracts by estimating the expected value of death benefits in excess of the projected account balance and recognizing the excess proportionally over the accumulation period based on total expected assessments. The Company regularly evaluates estimates used and adjusts the additional liability balance, with a related charge or credit to claims and other policy benefits, if actual experience or other evidence suggests that earlier assumptions should be revised. The assumptions used in estimating the GMDB liabilities are consistent with those used for amortizing DAC, and are thus subject to the same variability and risk. The Company's GMDB liabilities at December 31, 2022 and 2021 were not material.

Interest-Sensitive Contract Liabilities

Liabilities for future benefits on interest-sensitive life and investment-type contract liabilities are carried at the accumulated contract holder values without reduction for potential surrender or withdrawal charges. The Company reinsures asset-intensive products, including annuities. The liabilities under asset-intensive insurance contracts or reinsurance contracts reinsured on a coinsurance basis are included in interest-sensitive contract liabilities on the consolidated balance sheets. Asset-intensive contracts principally include individual fixed annuities in the accumulation phase, individual variable annuities, and group fixed annuities. Interest-sensitive contract liabilities are equal to (i) policy account values, which consist of an accumulation of gross premium payments; (ii) credited interest less expenses, mortality charges, and withdrawals; and (iii) fair value adjustments relating to business combinations. Liabilities for immediate annuities are calculated as the present value of the expected cash flows, with the locked-in discount rate determined such that there is no gain or loss at inception. Additionally, certain annuity contracts the Company reinsures contain terms, such as guaranteed minimum benefits and equity participation options, which are deemed to be embedded derivatives and are accounted for based on the general accounting principles for *Derivatives and Hedging*.

The Company establishes liabilities for guaranteed minimum living benefits relating to certain variable annuity products as follows:

- Guaranteed minimum income benefits ("GMIB") provide the contract holder, after a specified period of time determined at the time of issuance of the variable annuity contract, with a minimum level of income (annuity) payments. Under the reinsurance treaty, the Company makes a payment to the ceding company equal to the GMIB net amount-at-risk at the time of annuitization and thus these contracts meet the net settlement criteria of the general accounting principles for *Derivatives and Hedging* and the Company assumes no mortality risk. Accordingly, the GMIB is considered an embedded derivative, which is measured at fair value separately from the host variable annuity product.

- Guaranteed minimum withdrawal benefits ("GMWB") guarantee the contract holder a return of their purchase payment via partial withdrawals, even if the account value is reduced to zero, provided that the contract holder's cumulative withdrawals in a contract year do not exceed a certain limit. The initial guaranteed withdrawal amount is equal to the initial benefit base as defined in the contract (typically, the initial purchase payments plus applicable bonus amounts). The GMWB is also an embedded derivative, which is measured at fair value separately from the host variable annuity product.

- Guaranteed minimum accumulation benefits ("GMAB") provide the contract holder, after a specified period of time determined at the time of issuance of the variable annuity contract, with a minimum accumulation of their purchase payments even if the account value is reduced to zero. The initial guaranteed accumulation amount is equal to the initial benefit base as defined in the contract (typically, the initial purchase payments plus applicable bonus amounts). The GMAB is also an embedded derivative, which is measured at fair value separately from the host variable annuity product.

For GMIB, GMWB and GMAB, the initial benefit base is increased by additional purchase payments made within a certain time period and decreased by benefits paid and/or withdrawal amounts. After a specified period of time, the benefit base may also increase as a result of an optional reset as defined in the contract.

The fair values of the GMIB, GMWB and GMAB embedded derivative liabilities are reflected in interest-sensitive contract liabilities on the consolidated balance sheets and are calculated based on actuarial and capital market assumptions related to the projected cash flows, including benefits and related contract charges over the lives of the contracts. These projected cash flows incorporate expectations concerning policyholder behavior, such as lapses, withdrawals and benefit selections, and capital market assumptions such as interest rates and equity market volatilities. In measuring the fair value of GMIBs, GMWBs and GMABs, the Company attributes a portion of the fees collected from the policyholder equal to the present value of expected future guaranteed minimum income, withdrawal and accumulation benefits (at inception). The changes in fair value are reported in investment related gains (losses), net. Any additional fees represent "excess" fees and are reported in other revenues on the consolidated statements of income. These variable annuity guaranteed living benefits may be more costly than expected in volatile or declining equity markets or falling interest rate markets, causing an increase in interest-sensitive contract liabilities, negatively affecting net income.

The Company reviews its estimates of actuarial liabilities for interest-sensitive contract liabilities and compares them with its actual experience. Differences between actual experience and the assumptions used in pricing these guarantees and benefits and in the establishment of the related liabilities result in variances in profit and could result in losses. The effects of changes in such estimated liabilities are included in the results of operations in the period in which the changes occur.

Other Policy Claims and Benefits

Claims payable for IBNR losses are determined using case-basis estimates and lag studies of past experience. The time lag from the date of the claim or death to when the ceding company reports the claim to the Company can vary significantly by ceding company, business segment and product type. IBNR claims are estimates on an undiscounted basis, using actuarial estimates of historical claims expense, adjusted for current trends and conditions. These estimates are continually reviewed and the ultimate liability may vary significantly from the amount recognized, which are reflected in claims and other policy benefits in the period in which they are determined.

Securities Lending Obligation

The Company occasionally enters into securities borrowing and securities lending arrangements with several affiliated companies. The Company's obligation to return the securities or cash collateral, if any, is recorded as a securities lending obligation in the consolidated balance sheets. See "Securities Borrowing, Lending and Repurchase/Reverse Repurchase Agreements" above, Note 3 - "Investments" and Note 12 - "Related-Party Transactions" for further details on the Company's securities borrowing and securities lending arrangements.

Funds Withheld Liabilities

Funds withheld liabilities represent amounts contractually withheld by the Company in accordance with reinsurance agreements. For agreements written on a modco basis and agreements written on a coinsurance funds withheld basis, assets that support the ceded transactions are defined in the treaty, and are withheld and legally owned by the Company. Interest expense, recorded in interest credited, accrues to these assets at calculated rates as defined by the treaty terms.

Other Liabilities

Other liabilities primarily include investments in transit, cash collateral received on derivative positions, derivative liabilities, repo liability, employee benefits, and income tax liability.

Income Taxes

The Company provides for federal and foreign income taxes currently payable, as well as those deferred due to temporary differences between the tax basis of assets and liabilities and the reported amounts, and are recognized in net income or in certain cases in OCI. The Company's accounting for income taxes represents management's best estimate of various events and transactions considering the laws enacted as of the reporting date.

Deferred tax assets and liabilities are measured by applying the relevant jurisdictions' enacted tax rate for the period in which the temporary differences are expected to reverse to the temporary difference change for that period. The Company will establish a valuation allowance if management determines, based on available information, that it is more likely than not that deferred income tax assets will not be realized. The Company has deferred tax assets including those related to foreign tax credits and net operating losses. The Company has projected its ability to utilize its U.S. and foreign deferred tax assets and has determined that all of the U.S. assets including losses are expected to be utilized and established a valuation allowance on the portion of the foreign deferred tax assets the Company believes more likely than not will not be realized.

Significant judgment is required in determining whether valuation allowances should be established as well as the amount of such allowances. When making such a determination, consideration is given to, among other things, the following:

(i) taxable income in prior carryback years;

(ii) future reversals of existing taxable temporary differences;

(iii) future taxable income exclusive of reversing temporary differences and carryforwards; and

(iv) tax planning strategies.

Any such changes could significantly affect the amounts reported in the consolidated financial statements in the year these changes occur.

The Company reports uncertain tax positions in accordance with GAAP. In order to recognize the benefit of an uncertain tax position, the position must meet the more likely than not criteria of being sustained. Unrecognized tax benefits due to tax uncertainties that do not meet the more likely than not criteria are included within income tax liability and are charged to earnings in the period that such determination is made. The Company classifies interest related to tax uncertainties as interest expense whereas penalties related to tax uncertainties are classified as a component of income tax.

See Note 8 - "Income Tax" for further discussion.

Foreign Currency Translation

Assets, liabilities and results of foreign operations are recorded based on the functional currency of each foreign operation. The determination of the functional currency is based on economic facts and circumstances pertaining to each foreign operation. The Company's material functional currencies are the U.S. dollar, Australian dollar, Canadian dollar, British pound, Euro, Hong Kong dollar, Indian rupee, and Japanese yen. The translation of the functional currency into U.S. dollars is performed for balance sheet accounts using current exchange rates in effect at the balance sheet date and for revenue and expense accounts using weighted-average exchange rates during each year. Gains or losses, net of applicable deferred income taxes, resulting from such translation are included in accumulated currency translation adjustments in AOCI until the underlying functional currency operation is sold or substantially liquidated.

Recognition of Revenues and Related Expenses - Long-Duration Products

Life and health premiums are recognized as revenue when due from the insured, and are reported net of amounts retroceded. Benefits and expenses are reported net of amounts retroceded and are associated with earned premiums so that profits are recognized over the life of the related contract. This association is accomplished through the provision for future policy benefits and the amortization of DAC. Other revenues includes items such as treaty recapture fees, fees associated with financial reinsurance and policy changes on interest-sensitive and investment-type products that the Company reinsures. Any fees that are collected in advance of the period benefited are deferred and recognized over the period benefited.

For certain reinsurance transactions involving in force blocks of business, the ceding company pays a premium equal to the initial required reserve (future policy benefit). In such transactions, for income statement presentation, the Company nets the expense associated with the establishment of the reserve against the premiums from the transaction.

Revenues for interest-sensitive and investment-type products consist of investment income, policy charges for the cost of insurance, policy administration, and surrenders that have been assessed against policy account balances during the period. Interest-sensitive contract liabilities for these products represent policy account balances before applicable surrender charges. Policy benefits and claims that are charged to expenses include claims incurred in the period in excess of related policy account balances and interest credited to policy account balances. Interest is credited to policyholder account balances according to terms of the policies or contracts.

For each of its reinsurance contracts, the Company must determine if the contract provides indemnification against loss or liability relating to insurance risk, in accordance with GAAP. The Company must review all contractual features, particularly those that may limit the amount of insurance risk to which the Company is subject or features that delay the timely reimbursement of claims. If the Company determines that a contract does not expose it to a reasonable possibility of a significant loss from insurance risk, the Company records the contract on a deposit method of accounting with any net amount receivable reflected as an asset within other reinsurance balances, and any net amount payable reflected as a liability within other reinsurance balances. Fees earned on the contracts are reflected as other revenues, rather than premiums.

Recognition of Revenues and Related Expenses - Short-Duration Products

The Company provides reinsurance of medical, disability, life and other products for a fixed period of short-duration, typically one to three years. Under the short-duration insurance accounting model:

- Premiums are recognized over the coverage period in proportion to the amount of insurance protection provided.
- Claims or benefits are recognized when insured events occur, based on the ultimate cost to settle the claim, and are adjusted to reflect changes in estimates during the life of the contract. The estimated cost to settle the claim is based on actuarial assumptions for similar claims. The Company also establishes an IBNR liability based on historical reporting patterns.
- Eligible DAC are capitalized and amortized in proportion to premium.

Equity Based Compensation

RGA issues stock awards included in its incentive compensation plans. The fair value of the awards is expensed over the performance or service period, which generally corresponds to the vesting period, and is recognized as an increase to additional paid-in-capital in shareholder's equity, and stock-based compensation expense is reflected in other operating expenses. The Company recognized an immaterial amount of equity compensation expense in 2022 and 2021.

New Accounting Pronouncements

Changes to the general accounting principles are established by the Financial Accounting Standards Board ("FASB") in the form of accounting standards updates to the FASB Accounting Standards Codification™. Accounting standards updates not listed below were assessed and determined to be either not applicable or are expected to have minimal impact on the Company's consolidated financial statements.

Standards Adopted

There were no new accounting standards or updated accounting guidance adopted by the Company that had a material impact on the Company's results of operations and financial position.

Standards Not Yet Adopted

In the first quarter of 2023, the Company will adopt Accounting Standards Update ("ASU"): ASU 2018-12, Financial Services - Insurance (Topic 944): Targeted Improvements to the Accounting for Long-Duration Contracts ("ASU 2018-12"). ASU 2018-12 updates certain requirements for the accounting for long-duration insurance contracts.

- *Cash flow assumptions and measuring liability for future policy benefits* - ASU 2018-12 requires the Company to review its cash flow assumptions at least annually and update, when necessary, with the impact recognized in net income in the period of the change.

  Upon adoption, there will be an adjustment to retained earnings as a result of capping the net premium ratio at 100% and eliminating negative reserves on certain issue year cohorts.

- *Discount rate* - The discount rate assumption is prescribed by ASU 2018-12 as an upper-medium (low credit risk) fixed-income yield and is required to be updated every quarter. The change in the liability as a result of updating the discount rate assumption is recognized in OCI.

  Upon adoption, there will be an adjustment to AOCI as a result of remeasuring in force contract liabilities using current upper-medium grade fixed income instrument yields. The adjustment will largely reflect the difference between discount rates locked-in at contract inception versus current discount rates at transition.

- *DAC and similar balances* - DAC and other capitalized costs such as unearned revenue are amortized on a constant level or straight-line basis over the expected term of the contracts.

  Upon adoption, the Company expects an adjustment to AOCI for the removal of cumulative adjustments to DAC associated with unrealized gains and losses previously recorded in AOCI.

- *Market risk benefits* - Market risk benefits, which are contracts or contract features that provide protection to the policyholder from capital market risk and expose the Company to other-than-nominal capital market risk, are measured at fair value. The periodic change in fair value is recognized in net income with the exception of the periodic change in fair value related to the instrument-specific credit risk, which is recognized in OCI.

  Upon adoption, the Company expects an impact to (1) AOCI for the cumulative effect of changes in the instrument-specific credit risk between contract issue date and transition date and (2) retained earnings for the difference between fair value and carrying value at the transition date, excluding the changes in the instrument-specific credit risk.

The updated guidance for the cash flow assumptions, discount rate and DAC will be applied on a modified retrospective method to contracts in force as of January 1, 2021. The guidance for market risk benefits will be applied retrospectively as of January 1, 2021. The following summarizes the estimated impact the adoption will have on previously reported amounts:

- *Shareholder's equity as of January 1, 2021 (the transition date):* The Company estimates the adoption of the new guidance will decrease previously reported retained earnings by approximately \$0.5 billion to \$0.8 billion, net of tax, and AOCI by approximately \$2.4 billion to \$4.4 billion, net of tax, as of the transition date of January 1, 2021.

The above estimates assume an effective tax rate of 20%. While the Company has substantially completed the necessary updates to its valuation models and other systems to implement the standard, the Company's implementation of the new guidance is continuing to be refined and reviewed. The actual impact of adoption, including the actual tax rates, will be finalized upon completion the Company's disclosure and controls procedures regarding the adoption of the new guidance. Therefore, the Company's estimates are subject to change.

Note 3 INVESTMENTS

Fixed Maturity Securities Available-for-Sale

The Company holds various types of fixed maturity securities available-for-sale and classifies them as corporate securities ("Corporate"), Canadian and Canadian provincial government securities ("Canadian government"), residential mortgage-backed securities ("RMBS"), asset-backed securities ("ABS"), commercial mortgage-backed securities ("CMBS"), U.S. government and agencies ("U.S. government"), state and political subdivisions, and other foreign government, supranational and foreign government-sponsored enterprises ("Other foreign government"). RMBS, ABS and CMBS are collectively "structured securities".

The following tables provide information relating to investments in fixed maturity securities by type as of December 31, 2022 and 2021 (dollars in thousands):

December 31, 2022:	Amortized Cost	Allowance for Credit Losses	Unrealized Gains	Unrealized Losses	Estimated Fair Value	% of Total
Available-for-sale:						
Corporate	$ 16,670,857	$ 2,961	$ 73,850	$ 2,397,221	$ 14,344,525	61.1 %
Canadian government	3,203,819	—	380,846	54,706	3,529,959	15.0
RMBS	140,914	—	113	14,860	126,167	0.5
ABS	859,077	—	1,330	115,786	744,621	3.2
CMBS	401,822	—	2	48,647	353,177	1.5
U.S. government	192,048	—	2,645	5,914	188,779	0.8
State and political subdivisions	222,860	—	693	44,462	179,091	0.8
Other foreign government [(1)]	4,711,142	—	7,622	716,886	4,001,878	17.1
Total fixed maturity securities	$ 26,402,539	$ 2,961	$ 467,101	$ 3,398,482	$ 23,468,197	100.0 %

(1) The Company holds securities of the Government of Japan and certain Japanese government agencies of $2,200.0 million and $1,790.3 million of amortized cost and estimated fair value, respectively.

December 31, 2021:	Amortized Cost	Allowance for Credit Losses	Unrealized Gains	Unrealized Losses	Estimated Fair Value	% of Total
Available-for-sale:						
Corporate	$ 14,697,303	$ 122	$ 1,002,135	$ 106,156	$ 15,593,160	57.1 %
Canadian government	3,227,735	—	1,599,109	932	4,825,912	17.7
RMBS	87,115	—	1,384	626	87,873	0.3
ABS	777,688	—	3,675	2,911	778,452	2.9
CMBS	340,170	—	9,989	868	349,291	1.3
U.S. government	465,588	—	5,175	805	469,958	1.7
State and political subdivisions	171,915	—	15,510	1,096	186,329	0.7
Other foreign government [(1)]	4,931,257	—	137,497	60,589	5,008,165	18.3
Total fixed maturity securities	$ 24,698,771	$ 122	$ 2,774,474	$ 173,983	$ 27,299,140	100.0 %

(1) The Company holds securities of the Government of Japan and certain Japanese government agencies of $2,536.5 million and $2,510.5 million of amortized cost and estimated fair value, respectively.

The Company enters into various collateral arrangements with counterparties that require both the pledging and acceptance of fixed maturity securities as collateral. Pledged fixed maturity securities are included in fixed maturity securities, available-for-sale in the consolidated balance sheets. Fixed maturity securities received as collateral are held in separate custodial accounts and are not recorded on the Company's consolidated balance sheets. Subject to certain constraints, the Company is permitted by contract to sell or repledge collateral it receives; however, as of December 31, 2022 and 2021, none of the collateral received had been sold or repledged. The Company also holds assets in trust to satisfy collateral requirements under derivative transactions and reinsurance treaties. The following table includes fixed maturity securities pledged and received as collateral and assets in trust held to satisfy collateral requirements under derivative transactions and reinsurance treaties as of December 31, 2022 and 2021 (dollars in thousands):

	2022		2021	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities pledged as collateral	$ 342,938	$ 280,835	$ 66,035	$ 68,761
Fixed maturity securities received as collateral	n/a	540,084	n/a	658,705
Assets in trust held to satisfy collateral requirements	11,776,340	10,179,554	9,514,604	10,466,603

Of the assets in trust shown above, the Company held $567.2 million and $731.0 million in estimated fair values for the benefit of a related party as of December 31, 2022 and 2021, respectively.

The Company monitors its concentrations of financial instruments on an ongoing basis and mitigates credit risk by maintaining a diversified investment portfolio that limits exposure to any one issuer. As of December 31, 2022, the Company's exposure to concentrations of credit risk from single issuers greater than 10% of the Company's equity included securities of the U.S. government and its agencies. In addition, the Company's exposure to concentrations of credit risk from single issuers greater than 10% of the Company's equity includes the securities in the table below as of December 31, 2022 and 2021 (dollars in thousands):

	2022		2021	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities guaranteed or issued by:				
Government of Japan	$ 2,179,016	$ 1,770,403	$ 2,512,581	$ 2,486,159
Canadian province of Quebec	1,395,265	1,610,466	1,334,784	2,302,906
Canadian province of Ontario	981,710	1,067,741	1,085,463	1,444,547
Canadian province of British Columbia	306,837	329,409	330,687	441,358
Republic of India	304,268	296,142	287,282	291,121
ERM Funding PLC ERMF 21-1 (1)	205,700	145,341	251,768	251,774
Berkshire Hathaway Inc	181,440	141,909	120,360	121,644

(1) ERM - Equity release mortgage backed securities.

The amortized cost and estimated fair value of fixed maturity securities classified as available-for-sale as of December 31, 2022 are shown by contractual maturity in the table below (dollars in thousands). Actual maturities can differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without call or prepayment penalties. Structured securities are shown separately in the table below as they are not due at a single maturity date.

	Amortized Cost	Estimated Fair Value
Available-for-sale:		
Due in one year or less	$ 466,217	$ 469,318
Due after one year through five years	4,143,470	4,042,030
Due after five years through ten years	5,682,244	5,185,954
Due after ten years	14,708,795	12,546,930
Structured securities	1,401,813	1,223,965
Total	$ 26,402,539	$ 23,468,197

Corporate Fixed Maturity Securities

The tables below show the major sectors of the Company's corporate fixed maturity holdings as of December 31, 2022 and 2021 (dollars in thousands):

December 31, 2022:	Amortized Cost	Estimated Fair Value	% of Total
Finance	$ 6,653,440	$ 5,693,938	39.7 %
Industrial	8,155,014	7,083,715	49.4
Utility	1,862,403	1,566,872	10.9
Total	$ 16,670,857	$ 14,344,525	100.0 %

December 31, 2021:	Amortized Cost	Estimated Fair Value	% of Total
Finance	$ 6,028,692	$ 6,360,363	40.7 %
Industrial	6,962,642	7,399,088	47.5
Utility	1,705,969	1,833,709	11.8
Total	$ 14,697,303	$ 15,593,160	100.0 %

Allowance for Credit Losses and Impairments - Fixed Maturity Securities Available-for-Sale

As discussed in Note 2 - "Significant Accounting Policies and Pronouncements", allowances for credit losses on fixed maturity securities are recognized in investment related gains (losses), net. The amount recognized represents the difference between the amortized cost of the security and the net present value of its projected future cash flows discounted at the effective interest rate implicit in the fixed maturity security prior to the allowance for credit losses. Any remaining difference between the fair value and amortized cost is recognized in OCI.

The following tables present the rollforward of the allowance for credit losses in fixed maturity securities by type for the years ended December 31, 2022 and 2021 (dollars in thousands):

For the year ended December 31, 2022:	Corporate
Balance, beginning of period	$ 122
Credit losses recognized on securities for which credit losses were not previously recorded	2,961
Reductions for securities sold during the period	(122)
Balance, end of period	$ 2,961

For the year ended December 31, 2021:	Corporate	CMBS	Total
Balance, beginning of period	$ 1,279	$ 331	$ 1,610
Credit losses recognized on securities for which credit losses were not previously recorded	1,052	—	1,052
Reductions for securities sold during the period	(2,566)	(331)	(2,897)
Additional increases or decreases for credit losses on securities that had an allowance recorded in a previous period	357	—	357
Balance, end of period	$ 122	$ —	$ 122

Unrealized Losses for Fixed Maturity Securities Available-for-Sale

The Company's determination of whether a decline in value necessitates the recording of an allowance for credit losses includes an analysis of whether the issuer is current on its contractual payments, evaluating whether it is probable that the Company will be able to collect all amounts due according to the contractual terms of the security and analyzing the overall ability of the Company to recover the amortized cost of the investment.

The following table presents the estimated fair values and gross unrealized losses for the 3,408 and 1,053 fixed maturity securities for which an allowance for credit loss has not been recorded as of December 31, 2022 and 2021, and the estimated fair value had declined and remained below amortized cost (dollars in thousands). These investments are presented by class and grade of security, as well as the length of time the related fair value has continuously remained below amortized cost.

December 31, 2022:	Less than 12 months		12 months or greater		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Investment grade securities:						
Corporate	$ 8,512,935	$ 1,091,818	$ 3,597,430	$ 1,249,517	$ 12,110,365	$ 2,341,335
Canadian government	482,123	38,307	48,061	16,212	530,184	54,519
RMBS	94,941	6,832	22,529	8,028	117,470	14,860
ABS	399,238	33,785	291,994	78,705	691,232	112,490
CMBS	274,955	32,339	72,962	15,961	347,917	48,300
U.S. government	172,202	5,914	—	—	172,202	5,914
State and political subdivisions	140,566	34,897	24,338	9,565	164,904	44,462
Other foreign government	1,553,629	159,785	2,130,560	551,140	3,684,189	710,925
Total investment grade securities	11,630,589	1,403,677	6,187,874	1,929,128	17,818,463	3,332,805
Below investment grade securities:						
Corporate	280,026	16,280	176,540	39,606	456,566	55,886
Canadian government	—	—	1,348	187	1,348	187
ABS	21,222	1,875	5,058	1,421	26,280	3,296
CMBS	—	—	2,308	347	2,308	347
Other foreign government	30,315	1,262	31,822	4,699	62,137	5,961
Total below investment grade securities	331,563	19,417	217,076	46,260	548,639	65,677
Total fixed maturity securities	$ 11,962,152	$ 1,423,094	$ 6,404,950	$ 1,975,388	$ 18,367,102	$ 3,398,482

December 31, 2021:	Less than 12 months		12 months or greater		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
Investment grade securities:						
Corporate	$ 2,972,707	$ 66,796	$ 580,208	$ 32,188	$ 3,552,915	$ 98,984
Canadian government	17,670	488	5,062	444	22,732	932
RMBS	31,027	375	7,918	251	38,945	626
ABS	209,102	2,287	49,857	624	258,959	2,911
CMBS	48,742	844	—	—	48,742	844
U.S. government	416,352	805	—	—	416,352	805
State and political subdivisions	31,112	907	3,075	189	34,187	1,096
Other foreign government	1,865,459	25,766	634,921	32,735	2,500,380	58,501
Total investment grade securities	5,592,171	98,268	1,281,041	66,431	6,873,212	164,699
Below investment grade securities:						
Corporate	182,076	3,025	42,765	4,147	224,841	7,172
CMBS	2,632	24	—	—	2,632	24
Other foreign government	29,625	1,078	11,510	1,010	41,135	2,088
Total below investment grade securities	214,333	4,127	54,275	5,157	268,608	9,284
Total fixed maturity securities	$ 5,806,504	$ 102,395	$ 1,335,316	$ 71,588	$ 7,141,820	$ 173,983

The Company has no intention to sell, nor does it expect to be required to sell, the securities outlined in the tables above, as of the dates indicated. However, unforeseen facts and circumstances may cause the Company to sell fixed maturity securities in the ordinary course of managing its portfolio to meet certain diversification, credit quality and liquidity guidelines. Changes in unrealized losses are primarily driven by changes in risk-free interest rates and credit spreads.

Net Investment Income

Major categories of net investment income consist of the following (dollars in thousands):

	For the years ended December 31,	
	2022	2021
Fixed maturity securities available-for-sale	$ 924,353	$ 795,769
Equity securities	1,957	2,095
Policy loans	254	326
Funds withheld at interest	568,278	552,323
Short-term investments and cash and cash equivalents	10,461	951
Other invested assets	43,236	75,727
Investment income	1,548,539	1,427,191
Investment expense	(57,125)	(42,309)
Net investment income	$ 1,491,414	$ 1,384,882

Investment Related Gains (Losses), Net

Investment related gains (losses), net consist of the following (dollars in thousands):

	For the years ended December 31,	
	2022	2021
Fixed maturity securities available for sale:		
Change in allowance for credit losses	$ (2,839)	$ 1,486
Impairments on fixed maturity securities	(4,199)	(411)
Realized gains on investment activity	143,570	68,591
Realized losses on investment activity	(179,501)	(28,947)
Net gains (losses) on equity securities	(4,051)	10,852
Change in mortgage loan allowance for credit losses	(2,238)	291
Change in fair value of certain limited partnership investments and other, net	17,789	19,418
Net losses on derivatives	(86,404)	(10,187)
Total investment related gains (losses), net	$ (117,873)	$ 61,093

Securities held by the Company that were non-income producing as of December 31, 2022, were not material. As of December 31, 2021, the Company did not hold any securities that were non-income producing. Generally, securities are non-income producing when principal or interest is not paid primarily as a result of bankruptcies or credit defaults.

For the years ended December 31, 2022 and 2021, there were securities purchased from affiliates for cash with estimated fair values of $13.3 million and $204.2 million, respectively, at the time of transfer. For the years ended December 31, 2022 and 2021, there were no securities sold to affiliates for cash.

Securities Borrowing, Lending and Repurchase/Reverse Repurchase Agreements

The following table provides information relating to securities borrowing, lending, and repurchase/reverse repurchase agreements as of December 31, 2022 and 2021 (dollars in thousands):

	2022		2021	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Securities borrowing agreements:				
Securities borrowed (1)	n/a	$ 801,658	n/a	$ 277,384
Securities pledged as collateral (2)	858,844	692,752	279,174	289,634
Securities lending agreements:				
Securities loaned (2)	59,360	55,181	88,806	95,916
Securities received as collateral (3)	n/a	66,000	n/a	94,000
Repurchase/reverse repurchase agreements:				
Securities sold (2)	913,482	793,915	659,561	682,531
Cash (4)	51,414	51,414	237,000	237,000
Securities purchased (3)	n/a	686,797	n/a	940,833
Cash received (5)	149,432	149,432	1,270	1,270

(1) Securities borrowed are not reflected on the consolidated balance sheets. Collateral associated with certain borrowed securities is not included within this table as the collateral pledged to the counterparty is the right to reinsurance treaty cash flows.
(2) Securities loaned, pledged or sold to counterparties are included within fixed maturity securities.
(3) Securities received as collateral or purchased from counterparties are not reflected on the consolidated financial statements.
(4) A receivable for the cash held by counterparties is included within other assets.
(5) A payable for the cash received by the Company is included within other liabilities.

The following tables present information on the remaining contractual maturity of the Company's securities lending and repurchase/reverse repurchase agreements as of December 31, 2022 and 2021 (dollars in thousands).

	December 31, 2022				
	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Up to 30 Days	30 - 90 Days	Greater than 90 Days	Total
Securities lending agreements:					
Corporate	$ —	$ —	$ —	$ 42,796	$ 42,796
State and political subdivisions	—	—	—	2,817	2,817
Other foreign government	—	—	—	9,568	9,568
Total	—	—	—	55,181	55,181
Repurchase/reverse repurchase agreements:					
Corporate	—	—	—	279,402	279,402
RMBS	—	—	—	10,075	10,075
ABS	—	—	—	53,503	53,503
CMBS	—	—	—	62,608	62,608
U.S. government and agencies	—	—	—	14,725	14,725
Other foreign government	—	—	—	373,602	373,602
Total	—	—	—	793,915	793,915
Total agreements	$ —	$ —	$ —	$ 849,096	$ 849,096

	December 31, 2021				
	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Up to 30 Days	30 - 90 Days	Greater than 90 Days	Total
Securities lending agreements:					
Corporate	$ —	$ —	$ —	$ 87,154	$ 87,154
State and political subdivisions	—	—	—	3,448	3,448
Other foreign government	—	—	—	5,314	5,314
Total	—	—	—	95,916	95,916
Repurchase/reverse repurchase agreements:					
Corporate	—	—	—	305,232	305,232
U.S. government and agencies	—	—	—	16,304	16,304
Other foreign government	—	—	—	360,995	360,995
Total	—	—	—	682,531	682,531
Total agreements	$ —	$ —	$ —	$ 778,447	$ 778,447

Policy Loans

The majority of policy loans are associated with one reinsurance agreement with an affiliated company. These policy loans present no credit risk as the amount of the loan cannot exceed the obligation due to the ceding company upon the death of the insured or surrender of the underlying policy. The provisions of the treaties in force and the underlying policies determine the policy loan interest rates. The Company earns a spread between the interest rate earned on policy loans and the interest rate credited to corresponding liabilities.

Funds Withheld at Interest

As of December 31, 2022, $7.5 billion of the funds withheld at interest balance is associated with reinsurance agreements with affiliated companies. See Note 12 - "Related-Party Transactions" for further details of affiliated transactions. In the event of a ceding company's insolvency, the Company would need to assert a claim on the assets supporting its reserve liabilities. However, the risk of loss to the Company is mitigated by its ability to offset amounts it owes the ceding company for claims or allowances against amounts owed to the Company from the ceding company.

Other Invested Assets

Other invested assets include limited partnerships, real estate joint ventures, lifetime mortgages, derivative contracts and mortgage loans. Other invested assets also include unit-linked securities, which are included in "Other" in the table below. As of December 31, 2022 and 2021, the allowance for credit losses for lifetime mortgages was not material. The carrying values of other invested assets as of December 31, 2022 and 2021 are as follows (dollars in thousands):

	2022	2021
Limited partnerships and real estate joint ventures	$ 452,455	$ 262,756
Lifetime mortgages	868,222	757,612
Derivatives	140,243	207,319
Mortgage loans	806,271	473,195
Other	27,833	60,585
Total other invested assets	$ 2,295,024	$ 1,761,467

Note 4 DERIVATIVE INSTRUMENTS

Accounting for Derivative Instruments and Hedging Activities

See Note 2 - "Significant Accounting Policies and Pronouncements" for a detailed discussion of the accounting treatment for derivative instruments, including embedded derivatives and Note 5 - "Fair Value of Assets and Liabilities" for additional disclosures related to the fair value hierarchy for derivative instruments, including embedded derivatives.

Types of Derivatives Used by the Company

Credit Derivatives

The Company sells protection under single name credit default swaps and credit default swap index tranches, as well as other credit derivatives, to diversify its credit risk exposure in certain portfolios and, in combination with purchasing securities, to replicate characteristics of similar investments based on the credit quality and term of the credit default swap. Credit default triggers for indexed reference entities and single name reference entities are defined in the contracts. The Company's maximum exposure to credit loss equals the notional value for credit default swaps. In the event of default of a referencing entity, the Company is typically required to pay the protection holder the full notional value less a recovery amount determined at auction.

Equity Derivatives

Exchange-traded equity futures are used primarily to economically hedge liabilities embedded in certain variable annuity products. With exchange-traded equity futures transactions, the Company agrees to purchase or sell a specified number of contracts, the value of which is determined by the relevant stock indices. The Company posts variation margin on a daily basis in an amount equal to the difference between the daily estimated fair values of those contracts. The Company enters into exchange-traded futures with regulated futures commission merchants that are members of the exchange.

Equity index options are used by the Company primarily to hedge minimum guarantees embedded in certain variable annuity products. To hedge against adverse changes in equity indices, the Company buys put options. The contracts are net settled in cash based on differentials in the indices at the time of exercise and the strike price.

Foreign Currency Derivatives

Foreign currency swaps are used by the Company to reduce the risk from fluctuations in foreign currency exchange rates associated with its assets and liabilities denominated in foreign currencies. With a foreign currency swap transaction, the Company agrees with another party to exchange, at specified intervals, the difference between one currency and another at a forward exchange rate calculated by reference to an agreed upon principal amount. The principal amount of each currency is exchanged at the termination of the currency swap by each party.

Foreign currency forwards are used by the Company to reduce the risk from fluctuations in foreign currency exchange rates associated with its assets and liabilities denominated in foreign currencies. With a foreign currency forward transaction, the Company agrees with another party to deliver a specified amount of an identified currency at a specified future date. The price is agreed upon at the time of the contract and payment for such a contract is made in a different currency at the specified future date.

Interest Rate Derivatives

Interest rate swaps are used by the Company primarily to reduce market risks from changes in interest rates, to alter interest rate exposure arising from mismatches between assets and liabilities (duration mismatches) and to manage the risk of cash flows of liabilities that are variable based on a benchmark rate. With an interest rate swap, the Company agrees with another party to exchange, at specified intervals, the difference between two rates, which can be either fixed-rate or floating-rate interest amounts, tied to an agreed-upon notional principal amount. These transactions are executed pursuant to master agreements that provide for a single net payment or individual gross payments at each due date.

Interest rate options include swaptions that are used by the Company to hedge interest rate risk associated with the Company's long-term liabilities and invested assets. A swaption is an option to enter a swap with a forward starting effective date. The Company pays a premium for purchased swaptions.

Total return swaps are used by the Company to exchange, at specified intervals, the difference between the economic risk and calculated rate of return of an asset or a market index and a benchmark interest rate, calculated by reference to an agreed notional amount. No cash is exchanged at the outset of the contract. Cash is paid and received over the life of the contract based on the terms of the swap. These transactions are entered into pursuant to master agreements that provide for a single net payment to be made by the counterparty at each due date. Total return swaps are used by the Company to reduce market risks from changes in interest rates and to alter interest rate exposure arising from mismatches between assets and liabilities (duration mismatches).

Forward bond purchase commitments are used by the Company to hedge against the variability in the anticipated cash flows required to purchase securities. With forward bond purchase commitments, the forward price is agreed upon at the time of the contract and payment for such contract is made at the future specified settlement date of the securities.

Other Derivatives

Consumer price index ("CPI") swaps are used by the Company primarily to economically hedge liabilities embedded in certain insurance products where value is directly affected by changes in a designated benchmark CPI. With a CPI swap transaction, the Company agrees with another party to exchange the actual amount of inflation realized over a specified period of time for a fixed amount of inflation determined at inception. These transactions are executed pursuant to master agreements that provide for a single net payment or individual gross payments to be made by the counterparty at each due date. Most of these swaps will require a single payment to be made by one counterparty at the maturity date of the swap.

The Company has certain embedded derivatives that are required to be separated from their host contracts and reported as derivatives. Host contracts include reinsurance treaties structured on a modco or funds withheld basis. Additionally, the Company reinsures variable annuity contracts with benefits that are considered embedded derivatives, including GMWB, GMAB, and GMIB treaties.

Summary of Derivative Positions

Derivatives, except for embedded derivatives, are included in other invested assets or other liabilities, at fair value. Embedded derivative assets on modco or funds withheld arrangements are included on the consolidated balance sheets with the host contract in funds withheld at interest, at fair value. Embedded derivative liabilities on variable annuity products are included on the consolidated balance sheets with the host contract in interest-sensitive contract liabilities, at fair value. The following table presents the notional amounts and gross fair value of derivative instruments prior to taking into account the netting effects of master netting agreements as of December 31, 2022 and 2021 (dollars in thousands):

		December 31, 2022			December 31, 2021		
			Carrying Value/ Fair Value			Carrying Value/ Fair Value	
	Primary Underlying Risk	Notional Amount	Assets	Liabilities	Notional Amount	Assets	Liabilities
Derivatives not designated as hedging instruments:							
Interest rate swaps	Interest rate	$ 1,065,892	$ 1,888	$ 674	$ 1,155,592	$ 94,131	$ 1,103
Interest rate options	Interest rate	5,554,750	32,548	—	—	—	—
Total return swaps	Interest rate	500,000	18,327	—	—	—	—
Financial futures	Equity	260,169	—	—	240,312	—	—
Foreign currency swaps	Foreign currency	149,698	18,429	—	149,698	910	—
Foreign currency forwards	Foreign currency	386,450	24,067	—	395,000	1,773	4,001
CPI swaps	CPI	489,394	18,487	2,685	443,148	33,773	6,104
Credit default swaps	Credit	1,407,500	507	19,173	1,174,999	28,270	294
Equity options	Equity	332,961	34,873	—	472,366	28,904	—
Embedded derivatives in:							
Modco or funds withheld arrangements		—	438,681	798,210	—	829,066	63,696
Variable annuity products		—	—	123,568	—	—	161,866
Total non-hedging derivatives		10,146,814	587,807	944,310	4,031,115	1,016,827	237,064
Derivatives designated as hedging instruments:							
Interest rate swaps	Foreign currency/ interest rate	570,341	3,226	82,427	515,500	4,322	—
Foreign currency swaps	Foreign currency	—	—	—	39,019	396	878
Foreign currency forwards	Foreign currency	1,019,221	37,872	766	1,320,206	13,908	10,930
Forward bond purchase commitments	Interest rate	407,226	—	95,705	544,884	14,263	918
Total hedging derivatives		1,996,788	41,098	178,898	2,419,609	32,889	12,726
Total derivatives		$12,143,602	$ 628,905	$ 1,123,208	$ 6,450,724	$ 1,049,716	$ 249,790

Cash Flow Hedges

Certain derivative instruments are designated as cash flow hedges when they meet the requirements of the general accounting principles for *Derivatives and Hedging*. The Company designates and accounts for the following as cash flow hedges: (i) certain interest rate swaps, in which the cash flows of assets and liabilities are variable based on a benchmark rate; (ii) certain interest rate swaps, in which the cash flows of assets are denominated in different currencies, commonly referred to as cross-currency swaps and (iii) forward bond purchase commitments.

The following table presents the components of AOCI, before income tax, and the consolidated income statement classification where the gain or loss is recognized related to cash flow hedges for the years ended December 31, 2022 and 2021 (dollars in thousands):

	Amounts Included in AOCI
Balance, January 1, 2021	$ 8,344
Gains deferred in OCI	11,024
Balance, December 31, 2021	19,368
Losses deferred in OCI	(263,163)
Amounts reclassified to investment income	494
Balance, December 31, 2022	$ (243,301)

As of December 31, 2022, approximately $0.6 million of before-tax deferred net gains on derivative instruments recorded in AOCI are expected to be reclassified to interest expense during the next twelve months.

The following table presents the effect of derivatives in cash flow hedging relationships on the consolidated statements of income and the consolidated statements of shareholder's equity for the years ended December 31, 2022 and 2021 (dollars in thousands):

Derivative Type	Gains (Losses) Deferred in OCI	Gains (Losses) Reclassified into Income from AOCI		
For the year ended December 31, 2022:		Investment Related Gains (Losses)	Investment Income	Interest Expense
Interest rate	$ (265,142)	$ —	$ —	$ —
Foreign currency/interest rate	1,979	—	(494)	—
Total	$ (263,163)	$ —	$ (494)	$ —
For the year ended December 31, 2021:				
Interest rate	$ 11,161	$ —	$ —	$ —
Foreign currency/interest rate	(137)	—	—	—
Total	$ 11,024	$ —	$ —	$ —

For the years ended December 31, 2022 and 2021, there were no amounts reclassified into earnings relating to instances in which the Company discontinued cash flow hedge accounting because the forecasted transaction did not occur by the anticipated date or within the additional time period permitted by the authoritative guidance for the accounting for derivatives and hedging.

Hedges of Net Investments in Foreign Operations

The Company uses foreign currency swaps and foreign currency forwards to hedge a portion of its net investment in certain foreign operations against adverse movements in exchange rates. The following table illustrates the Company's NIFO hedges and the gains (losses) deferred in OCI for the years ended December 31, 2022 and 2021 (dollars in thousands):

	Derivative Gains (Losses) Deferred in OCI	
	For the years ended December 31,	
Type of NIFO Hedge	2022	2021
Foreign currency swaps	$ 406	$ (2,121)
Foreign currency forwards	72,330	163
Total	$ 72,736	$ (1,958)

The cumulative foreign currency translation recorded in AOCI related to these hedges was a gain of $68.1 million and a loss of $4.6 million as of December 31, 2022 and 2021, respectively. If a hedged foreign operation was sold or substantially liquidated, the amounts in AOCI would be reclassified to the consolidated statements of income. A pro rata portion would be reclassified upon partial sale of a hedged foreign operation. There were no sales or substantial liquidations of NIFO that would have required the reclassification of gains or losses from AOCI into investment income during the periods presented.

Non-qualifying Derivatives and Derivatives for Purposes Other Than Hedging

The Company uses various other derivative instruments for risk management purposes that either do not qualify or have not been elected for hedge accounting treatment. The gain or loss related to the change in fair value for these derivative instruments is recognized in investment related gains (losses), net, except where otherwise noted.

A summary of the effect of non-hedging derivatives, including embedded derivatives, on the Company's consolidated statements of income for the years ended December 31, 2022 and 2021 is as follows (dollars in thousands):

Type of Non-hedging Derivative	Income Statement Location of Gains (Losses)	Gains (Losses) for the years ended December 31, 2022	2021
Interest rate swaps	Investment related gains (losses), net	$ (122,487)	$ (21,703)
Interest rate options	Investment related gains (losses), net	2,578	—
Total return swaps	Investment related gains (losses), net	21,382	—
Financial futures	Investment related gains (losses), net	27,520	(23,336)
Foreign currency swaps	Investment related gains (losses), net	20,770	19,997
Foreign currency forwards	Investment related gains (losses), net	(49,683)	(19,962)
CPI swaps	Investment related gains (losses), net	25,746	41,228
Credit default swaps	Investment related gains (losses), net	(65,684)	32,743
Equity options	Investment related gains (losses), net	14,068	(33,173)
Subtotal		(125,790)	(4,206)
Embedded derivatives in:			
Modco or funds withheld arrangements	Change in value of funds withheld embedded derivatives	(1,123,233)	(410,535)
Variable annuity products	Investment related gains (losses), net	38,298	(7,039)
Total non-hedging derivatives		$ (1,210,725)	$ (421,780)

Changes in the CVA utilized by the Company to value its embedded derivatives resulted in investment related gains (losses), net of approximately $1.9 million and $(40.9) million for the years ended December 31, 2022 and 2021, respectively.

Credit Derivatives

The following table presents the estimated fair value, maximum amount of future payments and weighted average years to maturity of credit default swaps sold by the Company as of December 31, 2022 and 2021 (dollars in thousands):

	2022			2021		
Rating Agency Designation of Referenced Credit Obligations(1)	Estimated Fair Value of Credit Default Swaps	Maximum Amount of Future Payments under Credit Default Swaps(2)	Weighted Average Years to Maturity(3)	Estimated Fair Value of Credit Default Swaps	Maximum Amount of Future Payments under Credit Default Swaps(2)	Weighted Average Years to Maturity(3)
AAA/AA+/AA/AA-/A+/A/A-						
Single name credit default swaps	$ (18,406)	$ 415,000	19.3	$ 27,423	$ 559,999	15.2
BBB+/BBB/BBB-						
Single name credit default swaps	167	67,500	3.1	617	45,000	3.2
Credit default swaps referencing indices	(362)	915,000	6.2	(31)	565,000	5.1
Subtotal	(195)	982,500	6.0	586	610,000	5.0
BB+/BB/BB-						
Single name credit default swaps	(65)	10,000	2.5	(33)	5,000	2.0
Total	$ (18,666)	$ 1,407,500	9.9	$ 27,976	$ 1,174,999	9.8

(1) The rating agency designations are based on ratings from Standard and Poor's.
(2) Assumes the value of the referenced credit obligations is zero.
(3) The weighted average years to maturity of the credit default swaps is calculated based on weighted average notional amounts.

Netting Arrangements and Credit Risk

Certain of the Company's derivatives are subject to enforceable master netting arrangements and reported as a net asset or liability in the consolidated balance sheets. The Company nets all derivatives that are subject to such arrangements.

The Company has elected to include all derivatives, except embedded derivatives, in the table below, irrespective of whether they are subject to an enforceable master netting arrangement or a similar agreement. See Note 3 - "Investments" for information regarding the Company's securities borrowing, lending, and repurchase/reverse repurchase programs. See "Embedded Derivatives" above for information regarding the Company's bifurcated embedded derivatives.

The following table provides information relating to the netting of the Company's derivative instruments as of December 31, 2022 and 2021 (dollars in thousands):

	Gross Amounts Recognized	Gross Amounts Offset in the Balance Sheets	Net Amounts Presented in the Balance Sheets	Financial Instruments/ Collateral[(1)]	Net Amount
December 31, 2022:					
Derivative assets	$ 190,224	$ (49,981)	$ 140,243	$ (140,243)	$ —
Derivative liabilities	201,430	(49,981)	151,449	(151,449)	—
December 31, 2021:					
Derivative assets	$ 220,650	$ (13,331)	$ 207,319	$ (127,085)	$ 80,234
Derivative liabilities	24,228	(13,331)	10,897	(10,897)	—

(1) Includes initial margin posted to a central clearing partner for financial instruments and excludes the excess of collateral received/ pledged from/to the counterparty.

The Company may be exposed to credit-related losses in the event of non-performance by counterparties to derivative financial instruments. Generally, the credit exposure of the Company's derivative contracts is limited to the fair value and accrued interest of non-collateralized derivative contracts in an asset position at the reporting date. As of December 31, 2022, the Company had credit exposure of $14.0 million.

Derivatives may be exchange-traded or they may be privately negotiated contracts, which are referred to as over-the-counter ("OTC") derivatives. Certain of the Company's OTC derivatives are cleared and settled through central clearing counterparties ("OTC cleared") and others are bilateral contracts between two counterparties. The Company manages its credit risk related to OTC derivatives by entering into transactions with creditworthy counterparties, maintaining collateral arrangements and through the use of master netting agreements that provide for a single net payment to be made by one counterparty to another at each due date and upon termination. The Company is only exposed to the default of the central clearing counterparties for OTC cleared derivatives, and these transactions require initial and daily variation margin collateral postings. Exchange-traded derivatives are settled on a daily basis, thereby reducing the credit risk exposure in the event of non-performance by counterparties to such financial instruments.

Note 5 FAIR VALUE OF ASSETS AND LIABILITIES

Fair Value Measurement

General accounting principles for Fair Value Measurements and Disclosures define fair value as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date. These principles also establish a three-level fair value hierarchy that requires the Company to maximize the use of observable inputs and to minimize the use of unobservable inputs when measuring fair value:

Level 1 - Unadjusted quoted prices in active markets for identical assets or liabilities. Active markets are defined through various characteristics for the measured asset/liability, such as having many transactions and narrow bid/ask spreads.

Level 2 - Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities; quoted prices in markets that are not active; or market standard valuation techniques and assumptions that use significant inputs that are observable or can be corroborated by observable market data for substantially the full term of the assets or liabilities.

Level 3 - Unobservable inputs that are supported by little or no market activity and that are significant to the fair value of the related assets or liabilities and include those whose value is determined using market standard valuation techniques described above. Prices are determined using valuation methodologies such as discounted cash flow models and other similar techniques that require management's judgment or estimation in developing inputs that are consistent with those other market participants would use when pricing similar assets and liabilities.

Assets and Liabilities by Hierarchy Level

Assets and liabilities measured at fair value on a recurring basis as of December 31, 2022 and 2021 are summarized below (dollars in thousands):

December 31, 2022:		Fair Value Measurements Using:	
	Total	Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities - available-for-sale:				
Corporate	$ 14,344,525	$ —	$ 12,759,501	$ 1,585,024
Canadian government	3,529,959	—	3,529,959	—
RMBS	126,167	—	126,167	—
ABS	744,621	—	320,843	423,778
CMBS	353,177	—	286,744	66,433
U.S. government	188,779	184,013	4,766	—
State and political subdivisions	179,091	—	174,110	4,981
Other foreign government	4,001,878	—	3,970,417	31,461
Total fixed maturity securities - available-for-sale	23,468,197	184,013	21,172,507	2,111,677
Equity securities	45,261	26,928	—	18,333
Funds withheld at interest - embedded derivatives	(798,210)	—	—	(798,210)
Funds withheld at interest	53,615	—	—	53,615
Cash equivalents	367,566	367,566	—	—
Short-term investments	64,169	11,072	49,843	3,254
Other invested assets(1):				
Derivatives	140,243	—	140,243	—
Other	23,460	—	23,460	—
Total other invested assets	163,703	—	163,703	—
Total	$ 23,364,301	$ 589,579	$ 21,386,053	$ 1,388,669
Liabilities:				
Interest-sensitive contract liabilities - embedded derivatives	$ 123,568	$ —	$ —	$ 123,568
Funds withheld liabilities - embedded derivatives	(438,681)	—	—	(438,681)
Other liabilities:				
Derivatives	151,449	—	151,449	—
Total	$ (163,664)	$ —	$ 151,449	$ (315,113)

(1) Excludes limited partnerships that are measured at estimated fair value using the NAV per share (or its equivalent) as a practical expedient. As of December 31, 2022, the fair value of such investments was $7.8 million.

December 31, 2021:	Total	Fair Value Measurements Using: Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities - available-for-sale:				
Corporate	$ 15,593,160	$ —	$ 14,416,700	$ 1,176,460
Canadian government	4,825,912	—	4,825,912	—
RMBS	87,873	—	87,873	—
ABS	778,452	—	339,932	438,520
CMBS	349,291	—	269,762	79,529
U.S. government	469,958	463,768	6,190	—
State and political subdivisions	186,329	—	186,329	—
Other foreign government	5,008,165	—	4,980,520	27,645
Total fixed maturity securities - available-for-sale	27,299,140	463,768	25,113,218	1,722,154
Equity securities	52,492	38,719	—	13,773
Funds withheld at interest - embedded derivatives	829,066	—	—	829,066
Funds withheld at interest	83,085	—	—	83,085
Cash equivalents	331,357	331,357	—	—
Short-term investments	56,423	246	36,178	19,999
Other invested assets(1):				
Derivatives	207,319	—	207,319	—
Other	52,465	—	52,465	—
Total other invested assets	259,784	—	259,784	—
Total	$ 28,911,347	$ 834,090	$ 25,409,180	$ 2,668,077
Liabilities:				
Interest-sensitive contract liabilities - embedded derivatives	$ 161,866	$ —	$ —	$ 161,866
Funds withheld liabilities - embedded derivatives	63,696	—	—	63,696
Other liabilities:				
Derivatives	10,897	—	10,897	—
Total	$ 236,459	$ —	$ 10,897	$ 225,562

(1) Excludes limited partnerships that are measured at estimated fair value using the NAV per share (or its equivalent) as a practical expedient. As of December 31, 2021, the fair value of such investments was $5.6 million.

The Company may utilize information from third parties, such as pricing services and brokers, to assist in determining the fair value for certain assets and liabilities; however, management is ultimately responsible for all fair values presented in the Company's consolidated financial statements. This includes responsibility for monitoring the fair value process, ensuring objective and reliable valuation practices and pricing of assets and liabilities, and approving changes to valuation methodologies and pricing sources. The selection of the valuation technique(s) to apply considers the definition of an exit price and the nature of the asset or liability being valued and significant expertise and judgment is required.

The Company performs initial and ongoing analysis and review of the various techniques utilized in determining fair value to ensure that they are appropriate and consistently applied, and that the various assumptions are reasonable. The Company analyzes and reviews the information and prices received from third parties to ensure that the prices represent a reasonable estimate of the fair value and to monitor controls around pricing, which includes quantitative and qualitative analysis and is overseen by the Company's investment and accounting personnel. Examples of procedures performed include, but are not limited to, review of pricing trends, comparison of a sample of executed prices of securities sold to the fair value estimates, comparison of fair value estimates to management's knowledge of the current market, and ongoing confirmation that third party pricing services use, wherever possible, market-based parameters for valuation. In addition, the Company utilizes both internal and external cash flow models to analyze the reasonableness of fair values utilizing credit spread and other market assumptions, where appropriate. As a result of the analysis, if the Company determines there is a more appropriate fair value based upon the available market data, the price received from the third party is adjusted accordingly. The Company also determines if the inputs used in estimated fair values received from pricing services are observable by assessing whether these inputs can be corroborated by observable market data.

For assets and liabilities reported at fair value, the Company utilizes, when available, fair values based on quoted prices in active markets that are regularly and readily obtainable. Generally, these are very liquid investments and the valuation does not require management judgment. When quoted prices in active markets are not available, fair value is based on market valuation techniques, market comparable pricing and the income approach. The use of different techniques, assumptions and inputs may have a material effect on the estimated fair values of the Company's securities holdings. For the periods presented, the application of market standard valuation techniques applied to similar assets and liabilities has been consistent.

The methods and assumptions the Company uses to estimate the fair value of assets and liabilities measured at fair value on a recurring basis are summarized below.

Fixed Maturity Securities - The fair values of the Company's publicly-traded fixed maturity securities are generally based on prices obtained from independent pricing services. Prices from pricing services are sourced from multiple vendors, and a vendor hierarchy is maintained by asset type based on historical pricing experience and vendor expertise. The Company generally receives prices from multiple pricing services for each security, but ultimately uses the price from the vendor that is highest in the hierarchy for the respective asset type. To validate reasonableness, prices are periodically reviewed as explained above. Consistent with the fair value hierarchy described above, securities with quotes from pricing services are generally reflected within Level 2, as they are primarily based on observable pricing for similar assets and/or other market observable inputs. If the pricing information received from third party pricing services is not reflective of market activity or other inputs observable in the market, the Company may challenge the price through a formal process with the pricing service.

If the Company ultimately concludes that pricing information received from the independent pricing service is not reflective of fair value, non-binding broker quotes are used, if available. If the Company concludes that the values from both pricing services and brokers are not reflective of fair value, an internally developed valuation may be prepared; however, this occurs infrequently. Internally developed valuations or non-binding broker quotes are also used to determine fair value in circumstances where vendor pricing is not available. These valuations may use significant unobservable inputs, which reflect the Company's assumptions about the inputs that market participants would use in pricing the asset. Observable market data may not be available in certain circumstances such as market illiquidity and credit events related to the security. Pricing service overrides, internally developed valuations and non-binding broker quotes are generally based on significant unobservable inputs and are reflected as Level 3 in the valuation hierarchy.

The inputs used in the valuation of corporate and government securities include, but are not limited to standard market observable inputs that are derived from, or corroborated by, market observable data including market yield curve, duration, call provisions, observable prices and spreads for similar publicly traded or privately placed issues that incorporate the credit quality and industry sector of the issuer. For internal pricing of private placements and structured securities, valuation is based primarily on matrix pricing or other similar techniques using standard market inputs including spreads for actively traded securities, spreads off benchmark yields, expected prepayment speeds and volumes, current and forecasted loss severity, rating, weighted average coupon, weighted average maturity, average delinquency rates, geographic region, debt service coverage ratios and issuance-specific information including, but not limited to: collateral type, payment terms of the underlying assets, payment priority within the tranche, structure of the security, deal performance and vintage of loans.

When observable inputs are not available, the market standard valuation techniques for determining the estimated fair value of certain types of securities that trade infrequently, and therefore have little or no price transparency, rely on inputs that are significant to the estimated fair value that are not observable in the market or cannot be derived principally from or corroborated by observable market data, such as market illiquidity. Other significant unobservable inputs used in the fair value measurement of the Company's private debt investments include a multiple of earnings before interest, taxes, depreciation and amortization ("EBITDA"). These unobservable inputs can be based in large part on management judgment or estimation, and cannot be supported by reference to market activity. Even though unobservable, these inputs are based on assumptions deemed appropriate given the circumstances and are believed to be consistent with what other market participants would use when pricing such securities.

Equity Securities - Equity securities consist principally of preferred stock of publicly and privately traded companies. The fair values of publicly traded equity securities are primarily based on quoted market prices in active markets and are classified within Level 1 in the fair value hierarchy. Non-binding broker quotes and internally developed evaluations for equity securities are generally based on significant unobservable inputs and are reflected as Level 3 in the fair value hierarchy.

Embedded Derivatives - The fair value of embedded derivative liabilities, including those calculated by third parties, are monitored through the use of attribution reports to quantify the effect of underlying sources of fair value change, including capital market inputs based on policyholder account values, interest rates and short-term and long-term implied volatilities, from period to period. Actuarial assumptions are based on experience studies performed internally in combination with available industry information and are reviewed on a periodic basis, at least annually.

For embedded derivative liabilities associated with the underlying products in reinsurance treaties, primarily variable annuity treaties, the Company utilizes a discounted cash flow model, which includes an estimate of future equity option purchases and an adjustment for a CVA. The variable annuity embedded derivative calculations are performed by third parties based on methodology and input assumptions provided by the Company. To validate the reasonableness of the resulting fair value, the Company's internal actuaries perform reviews and analytical procedures on the results. The capital market inputs to the model, such as equity indexes, short-term equity volatility and interest rates, are generally observable. The valuation also requires certain significant inputs, which are generally not observable and accordingly, the valuation is considered Level 3 in the fair value hierarchy.

The fair value of embedded derivatives associated with funds withheld reinsurance treaties is determined based upon a total return swap technique with reference to the fair value of the investments held by the ceding company that support the Company's funds withheld at interest asset with an adjustment for a CVA. The fair value of the underlying assets is generally based on variety of sources and pricing methodologies chosen by the ceding company, which are not transparent to the Company and may include significant unobservable inputs. Additionally, some of the valuations also require certain significant inputs, which are generally not observable. Therefore, the valuation of the embedded derivative assets and liabilities associated with these funds withheld reinsurance treaties are considered Level 3 in the fair value hierarchy. Where those funds withheld reinsurance agreements are ceded by the Company, the same approach is taken to valuing the embedded derivatives associated with the funds withheld at interest liability.

Credit Valuation Adjustment - The Company bases its CVA on corporate Option-adjusted spread ("OAS") indexes and market conditions adjusted for the Company's specific factors. The input assumptions are a combination of externally derived and publically available information, corporate OAS indexes, market inputs, and internally developed data based on Company specific investments by rating category.

Funds Withheld at Interest - Funds withheld at interest, elected at fair value on a limited basis, include assets where inputs are not observable in the market and are considered Level 3 in the fair value hierarchy.

Cash Equivalents and Short-Term Investments - Cash equivalents and short-term investments include money market instruments and other highly liquid debt instruments. Money market instruments are generally valued using unadjusted quoted prices in active markets that are accessible for identical assets and are primarily classified as Level 1. The fair value of certain other cash equivalents and short-term investments, such as bonds with original maturities twelve months or less, are based upon other market observable data and are typically classified as Level 2. However, certain short-term investments may incorporate significant unobservable inputs resulting in a Level 3 classification. Various time deposits, certificates of deposit and sweeps carried as cash equivalents or short-term investments are not measured at estimated fair value and therefore are excluded from the tables presented.

Other - FVO contractholder-directed investments supporting unit-linked variable annuity type liabilities consist of fixed maturity securities. The fair value of the fixed maturity contractholder-directed securities is determined on a basis consistent with the methodologies described above for fixed maturity securities and are classified within Level 2 of the hierarchy.

Derivative Assets and Derivative Liabilities - All of the derivative instruments utilized by the Company are classified within Level 2 on the fair value hierarchy. These derivatives are principally valued using an income approach. Valuations of interest rate contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, London Interbank Offered Rate ("LIBOR") basis curves, Secured Overnight Financing Rate basis curves, Overnight Index Swaps curves, and repurchase rates. Valuations of foreign currency contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, LIBOR basis curves, currency spot rates, and cross currency basis curves. Valuations of credit contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, credit curves, and recovery rates. Valuations of equity market contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, spot equity index levels, and dividend yield curves. Valuations of equity market contracts, option-based, are based on option pricing models, which utilize significant inputs that may include the swap yield curve, spot equity index levels, dividend yield curves, and equity volatility.

Quantitative Information Regarding Internally-Priced Assets and Liabilities

The following table presents quantitative information about significant unobservable inputs used in Level 3 fair value measurements that are developed internally by the Company as of December 31, 2022 and 2021 (dollars in thousands):

Assets:	Estimated Fair Value 2022	Estimated Fair Value 2021	Valuation Technique	Unobservable Input	Range (Weighted Average) 2022	Range (Weighted Average) 2021
Corporate	$ —	$ 4,452	Market comparable securities	Liquidity premium	—	1 %
				EBITDA multiple	—	5.2x-6.7x (5.7x)
ABS	62,870	27,752	Market comparable securities	Liquidity premium	0-9% (3%)	2-9% (6%)
Equity securities	416	—	Market comparable securities	EBITDA multiple	11.2x	—
Funds withheld at interest - embedded derivatives, net	—	765,370	Total return swap	Mortality	—	0-100% (3%)
				Lapse	—	0-35% (18%)
				Withdrawal	—	0-5% (4%)
				CVA	—	0-5% (0%)
				Crediting rate	—	1-4% (2%)
Liabilities:						
Interest-sensitive contract liabilities - embedded derivatives - variable annuities	$ 123,568	$ 161,866	Discounted cash flow	Mortality	0-100% (2%)	0-100% (2%)
				Lapse	0-25% (3%)	0-25% (4%)
				Withdrawal	0-7% (6%)	0-7% (5%)
				CVA	0-5% (1%)	0-5% (1%)
				Long-term volatility	0-27% (13%)	0-27% (14%)
Funds withheld at interest - embedded derivatives, net	359,529	—	Total return swap	Mortality	0-100% (3%)	—
				Lapse	0-35% (17%)	—
				Withdrawal	0-5% (4%)	—
				CVA	0-5% (0%)	—
				Crediting rate	1-4% (2%)	—

Changes in Level 3 Assets and Liabilities

Assets and liabilities transferred into Level 3 are due to a lack of observable market transactions and price information. Transfers out of Level 3 are primarily the result of the Company obtaining observable pricing information or a third party pricing quotation that appropriately reflects the fair value of those assets and liabilities.

The reconciliations for all assets and liabilities measured at fair value on a recurring basis using significant unobservable inputs (Level 3) are as follows (dollars in thousands):

For the year ended December 31, 2022:	Fixed maturity securities - available-for-sale								
	Corporate	Foreign govt	Structured securities	U.S. and local govt	Equity securities	Short-term investments	Funds withheld at interest - embedded derivatives, net[1]	Funds withheld at interest	Interest-sensitive contract liabilities - embedded derivatives
Fair value, beginning of period	$1,176,460	$ 27,645	$ 518,049	$ —	$ 13,773	$ 19,999	$ 765,370	$ 83,085	$ (161,866)
Total gains/losses (realized/unrealized)									
Included in earnings, net:									
Net investment income	1,638	—	352	41	—	5	—	(13,569)	—
Investment related gains (losses), net	4,981	—	(111)	—	4,560	1,100	—	—	38,298
Change in value of funds withheld embedded derivatives	—	—	—	—	—	—	(1,123,233)	—	—
Included in OCI	(170,042)	(10,091)	(120,240)	462	—	(1,095)	(1,666)	(8,931)	—
Purchases[2]	795,228	—	144,186	4,478	—	3,265	—	3,211	—
Sales[2]	(43,826)	—	(29,254)	—	—	—	—	—	—
Settlements[2]	(162,061)	—	(37,758)	—	—	(20,020)	—	(10,181)	—
Transfers into Level 3	21,538	13,907	14,987	—	—	—	—	—	—
Transfers out of Level 3	(38,892)	—	—	—	—	—	—	—	—
Fair value, end of period	$1,585,024	$ 31,461	$ 490,211	$ 4,981	$ 18,333	$ 3,254	$ (359,529)	$ 53,615	$ (123,568)
Total gains/losses (realized/unrealized) recorded for the period relating to those Level 3 assets and liabilities that were still held at the end of the period									
Included in earnings, net:									
Net investment income	$ 648	$ —	$ 350	$ 41	$ —	$ —	$ —	$(13,607)	$ —
Investment related gains (losses), net	(2,953)	—	—	—	4,560	—	—	—	38,298
Change in value of funds withheld embedded derivatives	—	—	—	—	—	—	(1,123,233)	—	—
Included in OCI	(158,079)	(10,091)	(120,016)	462	—	—	(1,666)	(8,544)	—

(1) Funds withheld at interest - embedded derivative assets and liabilities are presented net for purposes of the rollforward.

(2) The amount reported within purchases, sales and settlements is the purchase price (for purchases) and the sales/settlement proceeds (for sales and settlements) based upon the actual date purchased or sold/settled. Items purchased and sold/settled in the same period are excluded from the rollforward.

For the year ended December 31, 2021:	Fixed maturity securities - available-for-sale							
	Corporate	Foreign govt	Structured securities	Equity securities	Short-term investments	Funds withheld at interest - embedded derivatives, net[1]	Funds withheld at interest	Interest-sensitive contract liabilities - embedded derivatives
Fair value, beginning of period	$ 723,235	$ 5,756	$ 91,891	$ 4,176	$ 4,135	$1,177,720	$ 55,965	$ (154,827)
Total gains/losses (realized/ unrealized)								
Included in earnings, net:								
Net investment income	626	—	195	—	—	—	(3,367)	—
Investment related gains (losses), net	(893)	—	245	772	—	—	—	(7,039)
Change in value of funds withheld embedded derivatives	—	—	—	—	—	(410,535)	—	—
Included in OCI	(25,220)	(3,104)	1,556	—	5	(1,815)	(982)	—
Purchases[2]	678,805	24,993	468,327	8,825	19,994	—	35,491	—
Sales[2]	(18,868)	—	—	—	—	—	—	—
Settlements[2]	(181,225)	—	(48,165)	—	(4,135)	—	(4,022)	—
Transfers into Level 3	—	—	4,000	—	—	—	—	—
Fair value, end of period	$1,176,460	$ 27,645	$ 518,049	$ 13,773	$ 19,999	$ 765,370	$ 83,085	$ (161,866)
Total gains/losses (realized/unrealized) recorded for the period relating to those Level 3 assets and liabilities that were still held at the end of the period								
Included in earnings, net:								
Net investment income	$ (116)	$ —	$ 195	$ —	$ —	$ —	$ (3,403)	$ —
Investment related gains (losses), net	—	—	—	772	—	—	—	(7,039)
Change in value of funds withheld embedded derivatives	—	—	—	—	—	(410,535)	—	—
Included in OCI	(23,810)	(3,104)	1,608	—	5	(1,815)	(966)	—

(1) Funds withheld at interest - embedded derivative assets and liabilities are presented net for purposes of the rollforward.
(2) The amount reported within purchases, sales and settlements is the purchase price (for purchases) and the sales/settlement proceeds (for sales and settlements) based upon the actual date purchased or sold/settled. Items purchased and sold/settled in the same period are excluded from the rollforward.

Nonrecurring Fair Value Measurements

The Company has certain assets subject to measurement at fair value on a nonrecurring basis, in periods subsequent to their initial recognition if they are determined to be impaired. For the years ended December 31, 2022 and 2021, the Company did not have any material assets that were measured at fair value due to impairment.

Fair Value of Financial Instruments Carried at Other Than Fair Value

The following table presents the carrying values and estimated fair values of the Company's financial instruments, which were not measured at fair value on a recurring basis, as of December 31, 2022 and 2021 (dollars in thousands). This table excludes any payables or receivables for collateral under repurchase/reverse repurchase programs and other transactions. The estimated fair value of the excluded amount approximates carrying value as they equal the amount of cash collateral received/paid.

December 31, 2022:	Carrying Value(1)	Estimated Fair Value	Fair Value Measurement Using:		
			Level 1	Level 2	Level 3
Assets:					
Policy loans	$ 9,323	$ 9,323	$ —	$ 9,323	$ —
Funds withheld at interest	9,182,395	9,182,395	—	—	9,182,395
Cash and cash equivalents	667,457	667,457	667,457	—	—
Short-term investments	293	293	293	—	—
Other invested assets	1,682,838	1,428,005	4,313	—	1,423,692
Accrued investment income	285,563	285,563	—	285,563	—
Liabilities:					
Interest-sensitive contract liabilities	$ 10,446,786	$ 10,532,448	$ —	$ —	$ 10,532,448
Funds withheld liabilities	3,862,914	3,862,914	—	—	3,862,914
December 31, 2021:					
Assets:					
Policy loans	$ 10,188	$ 10,188	$ —	$ 10,188	$ —
Funds withheld at interest	12,130,848	12,130,848	—	—	12,130,848
Cash and cash equivalents	944,363	944,363	944,363	—	—
Other invested assets	1,246,515	1,243,737	6,133	—	1,237,604
Accrued investment income	221,601	221,601	—	221,601	—
Liabilities:					
Interest-sensitive contract liabilities	$ 9,800,906	$ 10,649,571	$ —	$ —	$ 10,649,571
Funds withheld liabilities	4,017,956	4,017,956	—	—	4,017,956

(1) Carrying values presented herein may differ from those in the Company's consolidated balance sheets because certain items within the respective financial statement captions may be measured at fair value on a recurring basis.

Policy Loans - Policy loans typically carry an interest rate that is adjusted annually based on an observable market index and therefore carrying value approximates fair value. The valuation of policy loans is considered Level 2 in the fair value hierarchy.

Funds Withheld at Interest and Funds Withheld Liabilities - The carrying value of funds withheld at interest approximates fair value except where the funds withheld are specifically identified in the agreement. When funds withheld are specifically identified in the agreement, the fair value is based on the fair value of the underlying assets that are held by the ceding company. A variety of sources and pricing methodologies, which are not transparent to the Company and may include significant unobservable inputs, are used to value the securities that are held in distinct portfolios, therefore the valuation of these funds withheld assets and liabilities are considered Level 3 in the fair value hierarchy.

Cash and Cash Equivalents and Short-term Investments - The carrying values of cash and cash equivalents and short-term investments approximate fair values due to the short-term maturities of these instruments and are considered Level 1 in the fair value hierarchy.

Other Invested Assets - This primarily includes lifetime mortgages, mortgage loans, limited partnerships accounted for using the cost method and cash collateral. The fair value of the Company's lifetime mortgage loan portfolio, considered Level 3 in the fair value hierarchy, is estimated by discounting cash flows, both principal and interest, using a risk-free rate plus an illiquidity premium. The cash flow analysis considers future expenses, changes in property prices, and actuarial analysis of borrower behavior, mortality and morbidity. The fair value of mortgage loans is estimated by discounting cash flows, both principal and interest, using current interest rates for mortgage loans with similar credit ratings and similar remaining maturities. As such, inputs include current treasury yields and spreads, which are based on the credit rating and average life of the loan, corresponding to the market spreads. The valuation of mortgage loans is considered Level 3 in the fair value hierarchy. The fair value of limited partnerships accounted for using the cost method, considered Level 3 in the fair value hierarchy, is estimated by internally developed valuation techniques. The fair value of the Company's cash collateral is considered to be the carrying value and considered to be Level 1 in the fair value hierarchy.

Accrued Investment Income - The carrying value for accrued investment income approximates fair value as there are no adjustments made to the carrying value. This is considered Level 2 in the fair value hierarchy.

Interest-Sensitive Contract Liabilities - The carrying and fair values of interest-sensitive contract liabilities reflected in the table above exclude contracts with significant mortality risk. The fair value of the Company's interest-sensitive contract liabilities utilizes a market standard technique with both capital market inputs and policyholder behavior assumptions, as well as cash values adjusted for recapture fees. The capital market inputs to the model, such as interest rates, are generally observable. Policyholder behavior assumptions are generally not observable and may require use of significant management judgment. The valuation of interest-sensitive contract liabilities is considered Level 3 in the fair value hierarchy.

Note 6 REINSURANCE

In the normal course of business, the Company seeks to limit its exposure to loss on any single insured and to recover a portion of benefits paid by ceding reinsurance to other insurance or reinsurance companies under excess coverage and coinsurance contracts.

Retrocession reinsurance treaties do not relieve the Company from its obligations to direct writing companies. Failure of retrocessionaires to honor their obligations could result in losses to the Company. The Company regularly evaluates the financial condition of the insurance and reinsurance companies from which it assumes and to which it cedes reinsurance. Consequently, allowances would be established for amounts deemed uncollectible. At December 31, 2022 and 2021, no allowances were deemed necessary.

Retrocessions are arranged through the Company's retrocession pools for amounts in excess of the Company's retention limit. As of December 31, 2022, all rated retrocession pool participants followed by the A.M. Best Company were rated "A- (excellent)" or better.

Included in the total reinsurance ceded receivables balances were $439.2 million and $459.8 million of claims recoverable, of which $310.9 million and $299.6 million were with affiliates, as of December 31, 2022 and 2021, respectively.

The effect of reinsurance on net premiums is as follows for the years ended December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Reinsurance assumed:		
Affiliated	$ 1,053,929	$ 1,132,811
Non-affiliated	4,950,560	4,673,444
Total reinsurance assumed	6,004,489	5,806,255
Direct insurance issued:		
Non-affiliated	24	4,864
Reinsurance ceded:		
Affiliated	(777,136)	(763,494)
Non-affiliated	(470,501)	(528,595)
Total reinsurance ceded	(1,247,637)	(1,292,089)
Net premiums	$ 4,756,876	$ 4,519,030

The effect of reinsurance on claims and other policy benefits is as follows for the years ended December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Reinsurance assumed:		
Affiliated	$ 1,074,768	$ 1,255,215
Non-affiliated	4,459,823	4,713,845
Total reinsurance assumed	5,534,591	5,969,060
Direct insurance issued:		
Non-affiliated	12,133	(16,068)
Reinsurance ceded:		
Affiliated	(721,029)	(786,659)
Non-affiliated	(407,534)	(469,221)
Total reinsurance ceded	(1,128,563)	(1,255,880)
Net claims and other policy benefits	$ 4,418,161	$ 4,697,112

The effect of reinsurance on life reinsurance in force is shown in the following schedule as of December 31, 2022 and 2021 (dollars in millions):

	2022	2021
Life insurance in force assumed:		
Affiliated	$ 327,254	$ 289,733
Non-affiliated	1,469,131	1,540,387
Total life insurance in force assumed	1,796,385	1,830,120
Life insurance in force ceded:		
Affiliated	(238,024)	(266,366)
Non-affiliated	(36,735)	(37,743)
Total life insurance in force ceded	(274,759)	(304,109)
Life insurance in force net:		
Affiliated	89,230	23,367
Non-affiliated	1,432,396	1,502,644
Total life insurance in force net	$ 1,521,626	$ 1,526,011
Assumed/net percentage	118.06 %	119.93 %

At December 31, 2022 and 2021, respectively, the Company provided approximately $4.6 billion and $2.9 billion of financial reinsurance, as measured by pre-tax statutory surplus, risk based capital and other financial reinsurance structures, to other insurance companies under financial reinsurance or capital solutions transactions to assist ceding companies in meeting applicable regulatory requirements. Generally, such financial reinsurance is provided by the Company committing cash or assuming insurance liabilities, which are collateralized by future profits on the reinsured business. The Company earns a fee based on the amount of net outstanding financial reinsurance.

Reinsurance treaties, whether facultative or automatic, may provide for recapture rights on the part of the ceding company. Recapture rights permit the ceding company to reassume all or a portion of the risk formerly ceded to the reinsurer after an agreed-upon period of time, generally 10 years, or in some cases due to changes in the financial condition or ratings of the reinsurer. Recapture of business previously ceded does not affect premiums ceded prior to the recapture of such business but would reduce premiums in subsequent periods. Additionally, some reinsurance treaties give the ceding company the right to require the Company to place assets in trust for their benefit to support the ceding company's statutory reserve credits, in the event of a downgrade of the Company's credit ratings and or other statutory measure to specified levels, generally non-investment grade levels, or if minimum levels of financial condition are not maintained. As of December 31, 2022, the Company was not required to post additional collateral and did not have a reinsurance treaty recaptured as a result of credit downgrade or defined statutory measure decline.

Note 7 DEFERRED POLICY ACQUISITION COSTS

The following reflects the amounts of policy acquisition costs deferred and amortized for the years ended December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Balance, beginning of year	$ 1,988,019	$ 1,844,251
Capitalization	289,320	245,627
Amortization (including interest)	(559,764)	(82,676)
Foreign currency translation	(25,487)	(19,183)
Balance, end of year	$ 1,692,088	$ 1,988,019

Some reinsurance agreements involve reimbursing the ceding company for allowances and commissions in excess of first-year premiums. These amounts represent acquisition costs and are capitalized to the extent deemed recoverable from the future premiums and amortized against future profits of the business. This type of agreement presents a risk to the extent that the business lapses faster than originally anticipated, resulting in future profits being insufficient to recover the Company's investment.

Note 8 INCOME TAX

RGA files a U.S. consolidated tax return which includes the operations of the Company and all its U.S. subsidiaries. The Company's foreign subsidiaries are taxed under applicable local statutes.

On August 16, 2022, the Inflation Reduction Act of 2022 ("the Act") was enacted in the U.S. The Act includes law changes relating to tax, climate change, energy and health care. In particular, for tax years ending after December 31, 2022, the Act imposes a 15% minimum tax on adjusted financial statement income for applicable corporations with average financial statement income over $1 billion for the previous 3-year period ending in 2022 or after. The Act also imposes a 1% excise tax on stock buybacks of a publicly traded corporation. The tax provisions are not expected to have a material impact to the Company's tax expense.

Under current Bermuda law, the Company is not required to pay taxes in Bermuda on either income or capital gains. The Company has received an undertaking from the Minister of Finance in Bermuda that in the event of income or capital gains taxes being imposed, the Company will be exempted from such taxes until March 31, 2035. RGA Americas has made the Internal Revenue Code Section 953(d) election to be taxed as a U.S. domestic corporation for purposes of U.S. corporate tax.

RGA Atlantic is domiciled in Barbados. As part of the Insurance (Amendment) Act of Barbados, RGA Atlantic was granted a class one license and is subject to tax at 0%.

RGA Atlantic, RGA Canada, RGA South Africa, RGA International, RGA Australia, Omnilife, and Hodge are Controlled Foreign Corporations ("CFC") for U.S. federal income tax purposes and file Form 5471 - Information Return of U.S. Persons With Respect to Certain Foreign Corporations. These CFCs are not subject to U.S. income taxes directly but are subject to tax as a CFC under subchapter N, Subpart F of the U.S. Internal Revenue Code. Further, RGA South Africa, RGA International, RGA Australia, Omnilife, and Hodge are subject to Global Intangible Low-Taxed Income ("GILTI") in the U.S. Any U.S. tax liability generated under Subpart F or GILTI for RGA South Africa and Hodge would be borne by its parent company, RGA Americas, and therefore could be considered a current or deferred tax liability of RGA Americas. Any U.S. tax liability generated under Subpart F or GILTI for RGA International, RGA Australia and Omnilife would be borne by its parent company, RGA Americas Investments LLC ("RAIL"), and therefore could be considered a current or deferred tax liability of RAIL.

The provision for income tax expense for the years ended December 31, 2022 and 2021 consists of the following (dollars in thousands):

	2022	2021
Current income tax expense	$ (117,988)	$ 44,561
Deferred income tax benefit	38,818	(57,821)
Total provision for income taxes	$ (79,170)	$ (13,260)

The Company's effective tax rate differed from the U.S. federal income tax statutory rate of 21.0% as a result of the following for the years ended December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Tax provision at U.S. statutory rate	$ (109,225)	$ (53,237)
Increase (decrease) in income taxes resulting from:		
Deferred tax valuation allowance	(10,049)	(8,071)
Differences in tax basis in foreign jurisdictions	12,603	(2,336)
Subpart F for non-full inclusion companies	59,568	1,604
Foreign tax credits	(50,809)	—
GILTI, net of credits	20,423	10,817
Tax rate differences on income in other jurisdictions	16,797	17,084
Return to provision adjustments	(14,268)	(12,821)
Amounts related to uncertain tax positions	(3,322)	2,716
Corporate rate changes	3,201	31,131
Other, net	(4,089)	(147)
Total provision for income taxes	$ (79,170)	$ (13,260)
Effective tax rate	15.2 %	5.2 %

The effective tax rate for 2022 on the pretax loss was lower than the U.S. statutory rate of 21.0% primarily as a result of income in jurisdictions with tax rates differing from the U.S., Subpart F income generated primarily in RGA Canada, and GILTI generated in RGA Australia, Omnilife, and Hodge. These increases were partially offset by return to provision adjustments, benefits from foreign tax credits and valuation allowance releases. The effective tax rate for 2021 on the pretax loss was lower than the U.S. statutory rate of 21.0% primarily as a result of income earned in jurisdictions with tax rates higher than the U.S. and GILTI. Furthermore, the U.K. enacted an increase to the statutory tax rate resulting in a tax expense from the remeasurement of the deferred tax liabilities. These increases were partially offset by return to provision adjustments and a net valuation allowance release primarily related to income earned in RGA Australia.

Total income taxes for the years ended December 31, 2022 and 2021 were as follows (dollars in thousands):

	2022	2021
Provision for income taxes	$ (79,170)	$ (13,260)
Income tax from OCI:		
Foreign currency translation	20,350	25,412
Net unrealized holding loss on investments recognized for financial reporting purposes	(1,279,687)	(297,067)
Unrealized pension and post retirement	850	1,044
Total income taxes provided	$ (1,337,657)	$ (283,871)

The tax effects of temporary differences that give rise to significant portions of the deferred income tax assets and liabilities at December 31, 2022 and 2021 are presented in the following tables (dollars in thousands):

	2022	2021
Deferred income tax assets:		
Nondeductible accruals	$ 7,069	$ 7,855
Net operating loss carryforward	284,238	224,728
Tax credit carryforward	29,795	25,951
Invested assets	643,608	—
Other	4,577	4,558
Subtotal	969,287	263,092
Valuation allowance	(171,792)	(190,117)
Total deferred income tax assets	797,495	72,975
Deferred income tax liabilities:		
Deferred acquisition costs	201,980	242,466
Policy reserves and other reinsurance liabilities	656,207	949,958
Invested assets	—	184,112
Outside basis difference foreign subsidiaries	259,879	252,422
Foreign currency translation	64,020	52,419
Total deferred income tax liabilities	1,182,086	1,681,377
Net deferred income tax liabilities	$ 384,591	$ 1,608,402
Balance sheet presentation of net deferred income tax liabilities:		
Included in deferred tax asset	$ 87,245	$ 39,844
Included in deferred income taxes	471,836	1,648,246
Net deferred income tax liabilities	$ 384,591	$ 1,608,402

As of December 31, 2022, the valuation allowance against deferred tax assets was $171.8 million. During 2022, there were increases to the valuation allowance related to losses in foreign subsidiaries that do not have a history of income. These increases were partially offset by pretax earnings in certain subsidiaries with valuation allowances, primarily RGA Australia, and foreign currency translation.

As of December 31, 2021, the valuation allowance against deferred tax assets was $190.1 million. During 2021, there were decreases to the valuation allowance of $16.0 million primarily as a result of GAAP earnings at RGA Australia. This decrease was partially offset by increases in the valuation allowances due to losses in subsidiaries that do not have a history of income. The valuation allowance was further impacted by changes in foreign currency translation during the year.

The earnings of substantially all of the Company's foreign subsidiaries have been permanently reinvested in foreign operations. The Company has provided a deferred tax liability for the future expected tax on foreign subsidiaries where the Company cannot assert permanent reinvestment. At December 31, 2022 and 2021, the financial reporting basis in excess of the tax basis for which no deferred taxes have been recognized was approximately $1,541.9 million and $1,744.5 million, respectively. As the U.S. Tax Cuts and Jobs Act of 2017 generally eliminates U.S. federal income taxes on dividends from foreign subsidiaries, the Company does not expect to incur material income taxes if these funds were repatriated.

During 2022 and 2021, the Company made federal and foreign tax payments of approximately $155.2 million and $110.8 million, respectively. During 2022 and 2021, the Company received federal and foreign tax refunds of approximately $2.6 million and $18.1 million, respectively.

The following table presents consolidated net operating losses ("NOL") as of December 31, 2022 (dollars in thousands):

NOL with no expiration and with no valuation allowance	$ 531,034
NOL with a full valuation allowance	76,040
NOL with no expiration and a partial valuation allowance	526,892
Total NOL carryforwards	$ 1,133,966

These NOLs, other than the NOLs for which there is a valuation allowance, are expected to be utilized in the normal course of business during the period allowed for carryforwards and in any event, are not expected to be lost, due to the application of tax planning strategies that management would utilize.

As of December 31, 2022, the Company had foreign tax credit carryforwards of $24.5 million related to RGA International for which there is a full valuation allowance.

The Company files income tax returns in the U.S. federal jurisdiction and various state and foreign jurisdictions. The Company is under continuous examination by the Internal Revenue Service and is subject to audit by taxing authorities in other foreign jurisdictions in which the Company has significant business operations. The income tax years under examination vary by jurisdiction. The Company is no longer subject to U.S. federal income tax examinations by tax authorities for years prior to 2019, Canadian tax authorities for years prior to 2017 and with a few exceptions, the Company is no longer subject to state and foreign income tax examinations by tax authorities for years prior to 2018.

As of December 31, 2022, the Company's total amount of unrecognized tax benefits is $8.4 million, all of which would affect the effective tax rate, if recognized. Management believes it is reasonably possible that the unrecognized tax benefit could decrease by up to $1.3 million over the next 12 months if statues expire.

A reconciliation of the beginning and ending amount of unrecognized tax benefits for the years ended December 31, 2022 and 2021 is as follows (dollars in thousands):

	Total Unrecognized Tax Benefits	
	2022	2021
Beginning balance, January 1	$ 12,074	$ 10,372
Additions for tax positions of prior years	—	2,017
Additions for tax positions of current year	—	54
Reductions for tax positions of prior years	(3,677)	—
Payments on deposit	—	(369)
Ending balance, December 31	$ 8,397	$ 12,074

The Company recognized interest expense (benefit) associated with uncertain tax positions in 2022 and 2021 of $(0.8) million and $0.8 million, respectively. As of December 31, 2022 and 2021, the Company had $1.1 million and $2.0 million, respectively, of accrued interest related to unrecognized tax benefits. There are no penalties accrued as of December 31, 2022 and 2021.

Note 9 EMPLOYEE BENEFIT PLANS

RGA Canada sponsors an unfunded non-contributory defined benefit pension plan ("Pension Plan") for certain eligible employees. The benefits under the Pension Plan, which is a non-qualified plan, are generally based on years of service and compensation levels. For non-qualified plans, there are no required funding levels. Effective January 1, 2020, the Pension Plan was closed to new employees.

A December 31 measurement date is used for the Pension Plan. The status of the Pension Plan as of December 31, 2022 and 2021 is summarized below (dollars in thousands):

	2022	2021
Change in benefit obligation:		
Benefit obligation at beginning of year	$ 17,803	$ 19,303
Service cost	425	762
Interest cost	475	445
Special termination benefits	—	475
Actuarial gains	(2,648)	(3,064)
Benefits paid	(398)	(279)
Foreign exchange translations and other adjustments	(1,116)	161
Benefit obligation at end of year	$ 14,541	$ 17,803

	2022	2021
Change in plan assets:		
Fair value of plan assets at beginning of year	$ —	$ —
Employer contributions	398	279
Benefits paid and expenses	(398)	(279)
Fair value of plan assets at end of year	$ —	$ —
Funded status at end of year	$ (14,541)	$ (17,803)

	2022	2021
Aggregate fair value of plan assets	$ —	$ —
Aggregate projected benefit obligations	14,541	17,803
Under funded	$ (14,541)	$ (17,803)

	2022	2021
Amounts recognized in AOCI:		
Net actuarial loss	$ 370	$ 3,569
Total	$ 370	$ 3,569

The following table presents information for the Pension Plan with a projected benefit obligation in excess of plan assets as of December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Projected benefit obligation	$ 14,541	$ 17,803
Fair value of plan assets	—	—

The following table presents information for the Pension Plan with an accumulated benefit obligation in excess of plan assets as of December 31, 2022 and 2021 (dollars in thousands):

	2022	2021
Accumulated benefit obligation	$ 12,927	$ 16,267
Fair value of plan assets	—	—

The components of net periodic benefit cost, included in other operating expenses on the consolidated statements of income, and other changes in plan assets and benefit obligations recognized in OCI were as follows (dollars in thousands):

	2022	2021
Net periodic benefit cost:		
Service cost	$ 425	$ 762
Interest cost	475	445
Special termination benefits	—	475
Amortization of net actuarial losses	433	952
Net periodic benefit cost	1,333	2,634
Other changes in plan assets and benefit obligations recognized in OCI:		
Net actuarial gains	(2,648)	(3,064)
Amortization of net actuarial losses	(433)	(952)
Foreign exchange translations and other adjustments	(118)	91
Total recognized in OCI	(3,199)	(3,925)
Total recognized in net periodic benefit cost and OCI	$ (1,866)	$ (1,291)

During 2023, RGA Canada expects to contribute $0.6 million to the Pension Plan.

The following benefit payments, which reflect expected future service as appropriate, are expected to be paid (dollars in thousands):

2023	$ 587
2024	1,159
2025	1,264
2026	1,264
2027	1,556
2028-2032	10,040

Assumptions

The weighted average assumptions used to determine the benefit obligation and net periodic benefit cost for the years ended December 31, 2022 and 2021 were as follows:

	2022	2021
Benefit obligation		
Discount rate	5.05 %	2.70 %
Rate of compensation increase	5.75 %	3.75 %
Net periodic benefit cost		
Discount rate	2.70 %	2.20 %
Rate of compensation increase	3.75 %	3.75 %

Savings and Investment Plans

Certain subsidiaries of RGA Americas also sponsor savings and investment plans under which a portion of employee contributions are matched. Subsidiary contributions to these plans were $3.7 million and $3.6 million in 2022 and 2021, respectively.

Note 10 FINANCIAL CONDITION AND NET INCOME ON A STATUTORY BASIS - SIGNIFICANT SUBSIDIARIES

The foreign insurance subsidiaries of RGA Americas prepare their statutory financial statements in conformity with statutory accounting practices prescribed or permitted by the local regulatory authority, which vary materially from statements prepared in accordance with GAAP. The differences between statutory financial statements and financial statements prepared in accordance with GAAP vary between jurisdictions.

Statutory net income and capital and surplus of the Company's primary operating insurance subsidiaries, determined in accordance with statutory accounting practices prescribed by the local regulatory authority are as follows (dollars in thousands):

	Statutory Capital & Surplus		Statutory Net Income (Loss)	
	2022	2021	2022	2021
RGA Atlantic	$ 759,299	$ 1,136,799	$ 35,578	$ (226,259)
RGA Canada	938,065	903,308	108,150	25,117
RGA International	214,079	1,121,175	30,608	42,677
RGA Australia	386,938	484,635	(68,228)	(22,405)
Other	225,373	132,146	(44,105)	(44,562)

The Company's foreign insurance subsidiaries prepare financial statements in accordance with local regulatory requirements. The regulatory authorities in these foreign jurisdictions establish some form of minimum regulatory capital and surplus requirements. All of the Company's foreign insurance subsidiaries have regulatory capital and surplus that exceed the local minimum requirements. These requirements do not represent a significant constraint for the payment of dividends by the Company's foreign insurance companies.

Note 11 EQUITY

The Company is authorized to issue an unlimited number of $1.00 par value common shares. The Company had issued 75.5 million common shares with a stated value of $75.5 million as of December 31, 2022 and 2021.

The Company is registered under the Bermuda Insurance Act 1978 (the "Act") and amendments thereto and related regulations, which require that the Company maintain a minimum solvency margin. The minimum solvency margin required at December 31, 2022 and 2021 is the greater of $8.0 million or 2% of the first $500 million of statutory assets of the Company plus 1.5% of statutory assets of the Company above $500 million. The Company is required to calculate an enhanced capital requirement ("ECR") and target capital level ("TCL") as prescribed by or under rules made under Section 6A of the Act, which are additional capital and surplus requirements to the minimum solvency margin. The Company's ECR is the higher of the Bermuda Solvency Capital Requirement ("BSCR") model and the minimum margin of solvency. The TCL is calculated as 120% of the ECR. As of December 31, 2022 and 2021, the Company has met the requirements. As of December 31, 2022 and 2021, statutory capital and surplus of the Company was $1,606.9 million and $6,813.2 million, respectively.

The Bermuda Monetary Authority considers prepaid and fixed assets non-admitted assets. As non-admitted assets, such balances were reflected as a reduction of statutory surplus, and reinsurance assets and liabilities were presented net of reinsurance.

In 2022 and 2021, the Company paid dividends of $100 million and $250 million, respectively, to RGA.

Note 12 RELATED-PARTY TRANSACTIONS

The Company transacts business with affiliated companies on a regular basis. These transactions primarily consist of reinsurance agreements, notes with affiliates, securities lending agreements, administrative service agreements, investment management agreements, and the Company may purchase or sell securities with affiliated companies. The table below contains material related-party reinsurance transactions, other than those previously disclosed in Note 6 - "Reinsurance", as of December 31, 2022 and 2021 (in thousands):

	2022	2021
Funds withheld liabilities	$ 3,410,199	$ 4,070,392
Future policy benefits	5,123,502	6,640,207
Interest-sensitive contract liabilities	5,304,301	8,526,169

RGA established an intercompany revolving credit facility where certain subsidiaries, including the Company, can lend to or borrow from each other and from RGA in order to manage capital and liquidity more efficiently. The intercompany revolving credit facility, which is a series of demand loans among RGA and its affiliates, is permitted under applicable insurance laws. This facility reduces overall borrowing costs by allowing RGA and its affiliates to access internal cash resources instead of incurring third-party transaction costs. The lending and borrowing under the intercompany revolving credit facility include the following notes:

The Company issued a note payable to RGA International Division Sydney Office Pty Limited with a maturity date of September 16, 2025. The outstanding note balances as of December 31, 2022 and 2021 were $3.4 million and $3.6 million, respectively.

See Note 3 - "Investments" for information on security purchases and sales with affiliated companies.

During 2020, RGA established an intercompany derivative cash collateral pool where RGA and certain subsidiaries, including the Company, pool derivative cash collateral into a single concentration account held by an affiliated company. This derivative cash collateral pool allows the Company to lend or borrow cash from the concentration account in order to more efficiently meet its collateral obligations under its respective derivative transactions. The Company is paid or charged an arm's length interest rate based on its net loan balance with the concentration account. As of December 31, 2022 and 2021, the Company had amounts due from affiliates under the concentration agreement of $132.9 million and $104.5 million, respectively.

The Company regularly transacts business with affiliates under various service agreements and investment management agreements. As of December 31, 2022 and 2021, the Company had receivables from affiliates of $7.2 million and $6.9 million, respectively, and payables to affiliates of $52.8 million and $39.0 million, respectively, associated with these agreements.

The Company also participates in securities lending transactions with affiliates. As of December 31, 2022 and 2021, the amounts due to affiliates under these agreements were $67.5 million and $96.1 million, respectively.

Note 13 COMMITMENTS, CONTINGENCIES AND GUARANTEES

Commitments

Funding of Investments

The Company's commitments to fund investments as of December 31, 2022 and 2021 are presented in the following table (dollars in thousands):

	2022	2021
Limited partnership interests and joint ventures	$ 92,610	$ 303,744
Mortgage loans	7,500	46,694
Bank loans and private placements	334,226	325,054
Lifetime mortgages	59,168	40,533

The Company anticipates that the majority of its current commitments will be invested over the next five years; however, these commitments could become due any time at the request of the counterparties. Bank loans and private placements are included in fixed maturity securities available-for-sale.

The Company has an immaterial liability, included in other liabilities, for current expected credit losses associated with unfunded commitments as of December 31, 2022 and 2021.

Letters of Credit

In the ordinary course of business, the Company provides letters of credit as security to cover liabilities relating to reinsurance agreements. The total amount of letters of credit outstanding at December 31, 2022 was $24.5 million, none of which was for the benefit of a related party. The total amount of letters of credit outstanding at December 31, 2021 was $24.9 million, of which $20.0 million was for the benefit of a related party. RGA is the guarantor to these letters of credit as of December 31, 2022 and 2021.

Contingencies

Litigation

The Company is subject to litigation and regulatory investigations or actions from time to time. Based on current knowledge, management does not believe that loss contingencies arising from pending legal, regulatory and governmental matters will have a material adverse effect on the financial condition, results of operations or cash flows of the Company. However, in light of the inherent uncertainties involved in future or pending legal, regulatory and governmental matters, some of which are beyond the Company's control, and indeterminate or potentially substantial amount of damages sought in any such matters, an adverse outcome could be material to the Company's financial condition, results of operations or cash flows for any particular reporting period. A legal reserve is established when the Company is notified of an arbitration demand, litigation or regulatory action, or is notified that an arbitration demand, litigation or regulatory action is imminent, it is probable that the Company will incur a loss as a result and the amount of the probable loss is reasonably capable of being estimated.

Guarantees

Other Guarantees

RGA Americas has issued guarantees to third parties on behalf of its subsidiaries for the payment of amounts due under certain reinsurance treaties, securities borrowing and repurchase arrangements, financing arrangements and office lease obligations, whereby if a subsidiary fails to meet an obligation, RGA Americas or one of its other subsidiaries will make a payment to fulfill the obligation. Additionally, in limited circumstances, treaty guarantees are granted to ceding companies in order to provide them additional security, particularly in cases where RGA Americas' subsidiary is relatively new, unrated, or not of a significant size, relative to the ceding company. Liabilities supported by the treaty guarantees, before consideration of any legally offsetting amounts due from the guaranteed party are reflected on the Company's consolidated balance sheets in future policy benefits. Potential guaranteed amounts of future payments will vary depending on production levels and underwriting results. Guarantees related to securities borrowing and repurchase arrangements provide additional security to third parties should a subsidiary fail to provide securities when due. RGA Americas' guarantees issued as of December 31, 2022 and 2021 are reflected in the following table (dollars in millions):

	2022	2021
Treaty guarantees	$ 317	$ 300
Treaty guarantees, net of assets in trust	317	300

Note 14 OTHER COMPREHENSIVE INCOME (LOSS)

The following table presents the components of the Company's OCI for the years ended December 31, 2022 and 2021 (dollars in thousands):

For the year ended December 31, 2022:	Before-Tax Amount	Tax (Expense) Benefit	After-Tax Amount
Foreign currency translation adjustments, change arising during year	$ (143,209)	$ (20,350)	$ (163,559)
Unrealized losses on investments: (1)			
Unrealized net holding losses arising during the year	(5,827,302)	1,280,355	(4,546,947)
Less: Reclassification adjustment for net losses realized in net income	(32,932)	668	(32,264)
Net unrealized losses	(5,794,370)	1,279,687	(4,514,683)
Unrealized pension and postretirement benefits, net gains arising during the year	3,198	(850)	2,348
Other comprehensive income (loss)	$ (5,934,381)	$ 1,258,487	$ (4,675,894)

For the year ended December 31, 2021:	Before-Tax Amount	Tax (Expense) Benefit	After-Tax Amount
Foreign currency translation adjustments, change arising during year	$ 78,208	$ (25,412)	$ 52,796
Unrealized losses on investments: (1)			
Unrealized net holding losses arising during the year	(1,235,152)	288,253	(946,899)
Less: Reclassification adjustment for net gains realized in net income	43,611	(8,814)	34,797
Net unrealized losses	(1,278,763)	297,067	(981,696)
Unrealized pension and postretirement benefits, net gains arising during the year	3,925	(1,044)	2,881
Other comprehensive income (loss)	$ (1,196,630)	$ 270,611	$ (926,019)

(1) Includes cash flow hedges. See Note 4 - "Derivative Instruments" for additional information on cash flow hedges.

The balances of and changes in each component of AOCI for the years ended December 31, 2022 and 2021 were as follows (dollars in thousands):

	Accumulated Currency Translation Adjustments	Unrealized Appreciation (Depreciation) of Investments[1]	Pension and Postretirement Benefits	Accumulated Other Comprehensive Income (Loss)
Balance, January 1, 2021	$ (165,641)	$ 2,978,225	$ (5,501)	$ 2,807,083
OCI before reclassifications	52,796	(946,899)	2,182	(891,921)
Amounts reclassified from AOCI	—	(34,797)	699	(34,098)
Balance, December 31, 2021	(112,845)	1,996,529	(2,620)	1,881,064
OCI before reclassifications	(163,559)	(4,546,947)	2,030	(4,708,476)
Amounts reclassified from AOCI	—	32,264	318	32,582
Balance, December 31, 2022	$ (276,404)	$ (2,518,154)	$ (272)	$ (2,794,830)

(1) Includes cash flow hedges of $(243.3) million and $19.4 million as of December 31, 2022 and 2021, respectively. See Note 4 - "Derivative Instruments" for additional information on cash flow hedges.

The following table presents the amounts of AOCI reclassifications for the years ended December 31, 2022 and 2021 (dollars in thousands):

Details about AOCI Components	Amount Reclassified from AOCI 2022	Amount Reclassified from AOCI 2021	Affected Line Item in Statements of Income
Net unrealized investment gains (losses):			
Net unrealized gains (losses) on available-for-sale securities	$ (32,932)	$ 43,611	Investment related gains (losses), net
Provision for income taxes	668	(8,814)	
Net unrealized gains (losses), net of tax	$ (32,264)	$ 34,797	
Amortization of defined benefit plan items:			
Actuarial losses	$ (433)	$ (952)	(1)
Provision for income taxes	115	253	
Amortization of defined benefit plans, net of tax	$ (318)	$ (699)	
Total reclassifications for the period	$ (32,582)	$ 34,098	

(1) See Note 9 - "Employee Benefit Plans" for information on employee benefit plans.