

REINSURANCE GROUP OF AMERICA INC
Form 10-Q
May 03, 2019
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UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-Q

(Mark One)

QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For the quarterly period ended March 31, 2019

OR

TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934

Commission File Number 1-11848

REINSURANCE GROUP OF AMERICA, INCORPORATED

(Exact name of Registrant as specified in its charter)

MISSOURI 43-1627032
(State or other jurisdiction (IRS employer
of incorporation or organization) identification number)

16600 Swingley Ridge Road
Chesterfield, Missouri 63017
(Address of principal executive offices)

(636) 736-7000
(Registrant's telephone number, including area code)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted and posted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files).

Yes No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer Accelerated filer Non-accelerated filer
Smaller reporting company Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Act). Yes No

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Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value \$0.01	RGA	New York Stock Exchange
6.20% Fixed-To-Floating Rate Subordinated Debentures due 2042	RZA	New York Stock Exchange
5.75% Fixed-To-Floating Rate Subordinated Debentures due 2056	RZB	New York Stock Exchange

As of April 30, 2019, 62,560,064 shares of the registrant's common stock were outstanding.

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PART I - FINANCIAL INFORMATION

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED BALANCE SHEETS

(in thousands, except share data)

(Unaudited)

	March 31, 2019	December 31, 2018
Assets		
Fixed maturity securities available-for-sale, at fair value (amortized cost \$39,188,627 and \$38,882,168)	\$41,738,443	\$39,992,346
Equity securities, at fair value (cost \$111,785 and \$107,721)	89,865	82,197
Mortgage loans on real estate (net of allowances of \$11,218 and \$11,286)	5,117,545	4,966,298
Policy loans	1,312,349	1,344,980
Funds withheld at interest	5,729,838	5,761,471
Short-term investments	119,215	142,598
Other invested assets	2,006,870	1,915,297
Total investments	56,114,125	54,205,187
Cash and cash equivalents	2,020,396	1,889,733
Accrued investment income	442,956	427,893
Premiums receivable and other reinsurance balances	2,857,673	3,017,868
Reinsurance ceded receivables	814,806	757,572
Deferred policy acquisition costs	3,404,593	3,397,770
Other assets	1,037,932	839,222
Total assets	\$66,692,481	\$64,535,245
Liabilities and Stockholders' Equity		
Future policy benefits	\$25,976,847	\$25,285,400
Interest-sensitive contract liabilities	17,750,197	18,004,526
Other policy claims and benefits	5,911,554	5,642,755
Other reinsurance balances	517,096	487,177
Deferred income taxes	2,144,680	1,798,800
Other liabilities	1,278,108	1,396,200
Long-term debt	2,787,717	2,787,873
Collateral finance and securitization notes	656,174	681,961
Total liabilities	57,022,373	56,084,692
Commitments and contingent liabilities (See Note 8)		
Stockholders' Equity:		
Preferred stock - par value \$.01 per share, 10,000,000 shares authorized, no shares issued or outstanding	—	—
Common stock - par value \$.01 per share, 140,000,000 shares authorized, 79,137,758 shares issued at March 31, 2019 and December 31, 2018	791	791
Additional paid-in-capital	1,906,291	1,898,652
Retained earnings	7,412,081	7,284,949
Treasury stock, at cost - 16,593,411 and 16,323,390 shares	(1,415,020)	(1,370,602)
Accumulated other comprehensive income	1,765,965	636,763
Total stockholders' equity	9,670,108	8,450,553

Total liabilities and stockholders' equity	\$66,692,481	\$64,535,245
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See accompanying notes to condensed consolidated financial statements (unaudited).

Table of ContentsREINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME

(in thousands, except per share amounts)

(Unaudited)

	Three months ended	
	March 31,	
	2019	2018
Revenues:		
Net premiums	\$2,737,813	\$2,582,551
Investment income, net of related expenses	579,877	516,329
Investment related gains (losses), net:		
Other-than-temporary impairments on fixed maturity securities	(9,453) —
Other investment related gains (losses), net	17,241	(470)
Total investment related gains (losses), net	7,788	(470)
Other revenues	94,553	75,297
Total revenues	3,420,031	3,173,707
Benefits and Expenses:		
Claims and other policy benefits	2,508,324	2,362,101
Interest credited	133,189	80,449
Policy acquisition costs and other insurance expenses	311,881	356,902
Other operating expenses	201,483	191,274
Interest expense	40,173	37,454
Collateral finance and securitization expense	8,417	7,602
Total benefits and expenses	3,203,467	3,035,782
Income before income taxes	216,564	137,925
Provision for income taxes	47,057	37,695
Net income	\$169,507	\$100,230
Earnings per share:		
Basic earnings per share	\$2.70	\$1.55
Diluted earnings per share	\$2.65	\$1.52
See accompanying notes to condensed consolidated financial statements (unaudited).		

Table of ContentsREINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(in thousands)

(Unaudited)

	Three months ended	
	March 31,	
	2019	2018
Comprehensive income (loss)		
Net income	\$ 169,507	\$ 100,230
Other comprehensive income (loss), net of tax:		
Foreign currency translation adjustments	21,386	(1,160)
Net unrealized investment gains (losses)	1,108,211	(633,604)
Defined benefit pension and postretirement plan adjustments	(395)	(471)
Total other comprehensive income (loss), net of tax	1,129,202	(635,235)
Total comprehensive income (loss)	\$ 1,298,709	\$ (535,005)
See accompanying notes to condensed consolidated financial statements (unaudited).		

Table of ContentsREINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY

(in thousands except per share amounts)

(Unaudited)

	Common Stock	Additional Paid In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income	Total
Balance, December 31, 2018	\$ 791	\$ 1,898,652	\$ 7,284,949	\$(1,370,602)	\$ 636,763	\$ 8,450,553
Adoption of new accounting standards			(87)			(87)
Net income			169,507			169,507
Total other comprehensive income (loss)					1,129,202	1,129,202
Dividends to stockholders, \$0.60 per share			(37,707)			(37,707)
Purchase of treasury stock				(49,052)		(49,052)
Reissuance of treasury stock		7,639	(4,581)	4,634		7,692
Balance, March 31, 2019	\$ 791	\$ 1,906,291	\$ 7,412,081	\$(1,415,020)	\$ 1,765,965	\$ 9,670,108

	Common Stock	Additional Paid In Capital	Retained Earnings	Treasury Stock	Accumulated Other Comprehensive Income	Total
Balance, December 31, 2017	\$ 791	\$ 1,870,906	\$ 6,736,265	\$(1,102,058)	\$ 2,063,631	\$ 9,569,535
Adoption of new accounting standards			(2,020)			(2,020)
Net income			100,230			100,230
Total other comprehensive income (loss)					(635,235)	(635,235)
Dividends to stockholders, \$0.50 per share			(32,241)			(32,241)
Purchase of treasury stock				(2,616)		(2,616)
Reissuance of treasury stock		9,446	(4,689)	5,851		10,608
Balance, March 31, 2018	\$ 791	\$ 1,880,352	\$ 6,797,545	\$(1,098,823)	\$ 1,428,396	\$ 9,008,261

See accompanying notes to condensed consolidated financial statements (unaudited).

Table of ContentsREINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS

(in thousands)

(Unaudited)

	Three months ended March 31,	
	2019	2018
Cash Flows from Operating Activities:		
Net income	\$169,507	\$100,230
Adjustments to reconcile net income to net cash provided by operating activities:		
Change in operating assets and liabilities:		
Accrued investment income	(10,688)	(10,484)
Premiums receivable and other reinsurance balances	163,965	(275,354)
Deferred policy acquisition costs	(17,784)	13,007
Reinsurance ceded receivable balances	(65,053)	(21,872)
Future policy benefits, other policy claims and benefits, and other reinsurance balances	119,620	466,983
Deferred income taxes	39,490	33,715
Other assets and other liabilities, net	(107,266)	(41,385)
Amortization of net investment premiums, discounts and other	(16,659)	(31,032)
Depreciation and amortization expense	11,017	10,294
Investment related (gains) losses, net	(7,788)	470
Other, net	62,260	(20,823)
Net cash provided by operating activities	340,621	223,749
Cash Flows from Investing Activities:		
Sales of fixed maturity securities available-for-sale	3,139,794	1,898,722
Maturities of fixed maturity securities available-for-sale	195,625	195,549
Sales of equity securities	83	29,683
Principal payments on mortgage loans on real estate	93,393	102,002
Principal payments on policy loans	33,271	10,694
Purchases of fixed maturity securities available-for-sale	(3,010,397)	(1,969,899)
Purchases of equity securities	(3,173)	(2,173)
Cash invested in mortgage loans on real estate	(240,411)	(141,131)
Cash invested in funds withheld at interest, net	(36,995)	19,638
Purchase of businesses, net of cash acquired of \$27,374 and \$1,733	3,561	(24,864)
Purchases of property and equipment	(10,440)	(5,292)
Change in short-term investments	25,422	(13,026)
Change in other invested assets	(97,012)	(23,353)
Net cash provided by investing activities	92,721	76,550
Cash Flows from Financing Activities:		
Dividends to stockholders	(37,707)	(32,241)
Repayment of collateral finance and securitization notes	(29,064)	(27,104)
Principal payments of long-term debt	(690)	(662)
Purchases of treasury stock	(49,052)	(2,616)
Exercise of stock options, net	1,755	1,163
Change in cash collateral for derivative positions and other arrangements	(44,628)	19,537
Deposits on universal life and other investment type policies and contracts	44,926	83,004
Withdrawals on universal life and other investment type policies and contracts	(195,360)	(156,486)

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Net cash used in financing activities	(309,820)	(115,405)
Effect of exchange rate changes on cash	7,141	21,989
Change in cash and cash equivalents	130,663	206,883
Cash and cash equivalents, beginning of period	1,889,733	1,303,524
Cash and cash equivalents, end of period	\$2,020,396	\$1,510,407
Supplemental disclosures of cash flow information:		
Interest paid	\$40,193	\$39,284
Income taxes paid, net of refunds	\$3,076	\$6,356
Non-cash investing activities:		
Transfer of invested assets	\$720,983	\$605,085
Right-of-use assets acquired through operating leases	\$1,311	\$—
Purchase of businesses:		
Assets acquired, excluding cash acquired	\$8,303	\$59,184
Liabilities assumed	(11,864)	(34,320)
Net cash (received) paid on purchase	\$(3,561)	\$24,864
See accompanying notes to condensed consolidated financial statements (unaudited).		

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REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES

Notes to Condensed Consolidated Financial Statements

(Unaudited)

1. Business and Basis of Presentation

Business

Reinsurance Group of America, Incorporated (“RGA”) is an insurance holding company that was formed on December 31, 1992. RGA and its subsidiaries (collectively, the “Company”) is engaged 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, financial reinsurance, asset-intensive products, primarily annuities and stable value products.

Basis of Presentation

The unaudited condensed consolidated financial statements of the Company have been prepared in conformity with accounting principles generally accepted in the United States of America (“GAAP”) for interim financial information and with the instructions to Form 10-Q and Article 10 of Regulation S-X of the Securities and Exchange Commission (“SEC”). Accordingly, these condensed consolidated financial statements do not include all of the information and footnotes required by GAAP for complete financial statements and should be read in conjunction with the Company’s 2018 Annual Report on Form 10-K filed with the SEC on February 27, 2019 (the “2018 Annual Report”).

In the opinion of management, all adjustments, including normal recurring adjustments necessary for a fair presentation have been included. Interim results are not necessarily indicative of the results that may be expected for the year ending December 31, 2019.

Consolidation

These unaudited condensed consolidated financial statements include the accounts of RGA and its subsidiaries and all intercompany accounts and transactions have been eliminated. 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.

2. Earnings Per Share

The following table sets forth the computation of basic and diluted earnings per share on net income (in thousands, except per share information):

	Three months ended	
	March 31,	
	2019	2018
Earnings:		
Net income (numerator for basic and diluted calculations)	\$ 169,507	\$ 100,230
Shares:		
Weighted average outstanding shares (denominator for basic calculation)	62,758	64,490
Equivalent shares from outstanding stock options	1,269	1,382
Denominator for diluted calculation	64,027	65,872
Earnings per share:		
Basic	\$2.70	\$1.55
Diluted	\$2.65	\$1.52

The calculation of common equivalent shares does not include the impact of options having a strike or conversion price that exceeds the average stock price for the earnings period, as the result would be antidilutive. The calculation of common equivalent shares also excludes the impact of outstanding performance contingent shares, as the conditions necessary for their issuance have not been satisfied as of the end of the reporting period. The following table presents approximate amounts of stock options and performance contingent shares excluded from the calculation of common equivalent shares (in thousands):

Three
months
ended
March
31,
20192018

Excluded from common equivalent shares:

Stock options	544 276
Performance contingent shares	109 212

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3. Equity

Common stock

The changes in number of common stock shares, issued, held in treasury and outstanding are as follows for the periods indicated:

	Issued	Held In Treasury	Outstanding
Balance, December 31, 2018	79,137,758	16,323,390	62,814,368
Common stock acquired	—	344,237	(344,237)
Stock-based compensation ⁽¹⁾	—	(74,216)	74,216
Balance, March 31, 2019	79,137,758	16,593,411	62,544,347
	Issued	Held In Treasury	Outstanding
Balance, December 31, 2017	79,137,758	14,685,663	64,452,095
Stock-based compensation ⁽¹⁾	—	(60,678)	60,678
Balance, March 31, 2018	79,137,758	14,624,985	64,512,773

(1) Represents net shares issued from treasury pursuant to the Company's equity-based compensation programs.

Common Stock Held in Treasury

Common stock held in treasury is accounted for at average cost. Gains resulting from the reissuance of common stock held in treasury are credited to additional paid-in capital. Losses resulting from the reissuance of common stock held in treasury are charged first to additional paid-in capital to the extent the Company has previously recorded gains on treasury share transactions, then to retained earnings.

On January 24, 2019, RGA's board of directors authorized a share repurchase program for up to \$400.0 million of RGA's outstanding common stock. The authorization was effective immediately and does not have an expiration date. During the three months ended March 31, 2019, RGA repurchased 0.3 million shares of common stock under this program for \$50.0 million.

Accumulated Other Comprehensive Income (Loss)

The balance of and changes in each component of accumulated other comprehensive income (loss) ("AOCI") for the three months ended March 31, 2019 and 2018 are as follows (dollars in thousands):

	Accumulated Other Comprehensive Income (Loss), Net of Income Tax		
	Accumulated Currency Translation Adjustments of Investments ⁽¹⁾	Unrealized Appreciation (Depreciation)	Pension and Postretirement Benefits Total
Balance, December 31, 2018	\$(168,698)	\$ 856,159	\$ (50,698) \$ 636,763
Other comprehensive income (loss) before reclassifications	18,462	1,437,058	(1,787) 1,453,733
Amounts reclassified to (from) AOCI		(14,694)	1,286 (13,408)
Deferred income tax benefit (expense)	2,924	(314,153)	106 (311,123)
Balance, March 31, 2019	\$(147,312)	\$ 1,964,370	\$ (51,093) \$ 1,765,965
	Accumulated Other Comprehensive Income (Loss), Net of Income Tax		
	Accumulated Currency Translation Adjustments of Investments ⁽¹⁾	Unrealized Appreciation (Depreciation)	Pension and Postretirement Benefits Total
Balance, December 31, 2017	\$(86,350)	\$ 2,200,661	\$ (50,680) \$ 2,063,631
Other comprehensive income (loss) before reclassifications	5,696	(827,701)	(1,910) (823,915)

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Amounts reclassified to (from) AOCI	—	21,274	1,346	22,620
Deferred income tax benefit (expense)	(6,856) 172,823	93	166,060
Balance, March 31, 2018	\$(87,510)	\$ 1,567,057	\$ (51,151) \$1,428,396

Includes cash flow hedges of \$(1,902) and \$8,788 as of March 31, 2019 and December 31, 2018, respectively, and (1) \$20,662 and \$2,619 as of March 31, 2018 and December 31, 2017, respectively. See Note 5 - “Derivative Instruments” for additional information on cash flow hedges.

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The following table presents the amounts of AOCI reclassifications for the three months ended March 31, 2019 and 2018 (dollars in thousands):

Details about AOCI Components	Amount Reclassified from AOCI Three months ended March 31,		Affected Line Item in Statement of Income
	2019	2018	
Net unrealized investment gains (losses):			
Net unrealized gains (losses) on available-for-sale securities	\$(273)	\$(14,456)	Investment related gains (losses), net
Cash flow hedges - Interest rate	469	(370)	(1)
Cash flow hedges - Currency/Interest rate	25	144	(1)
Deferred policy acquisition costs attributed to unrealized gains and losses	14,473	(6,592)	(2)
Total	14,694	(21,274)	
Provision for income taxes	(3,006)	4,678	
Net unrealized gains (losses), net of tax	\$11,688	\$(16,596)	
Amortization of defined benefit plan items:			
Prior service cost (credit)	\$269	\$246	(3)
Actuarial gains/(losses)	(1,555)	(1,592)	(3)
Total	(1,286)	(1,346)	
Provision for income taxes	270	283	
Amortization of defined benefit plans, net of tax	\$(1,016)	\$(1,063)	
Total reclassifications for the period	\$10,672	\$(17,659)	

(1) See Note 5 - "Derivative Instruments" for additional information on cash flow hedges.

(2) This AOCI component is included in the computation of the deferred policy acquisition cost. See Note 8 - "Deferred Policy Acquisition Costs" of the 2018 Annual Report for additional details.

(3) This AOCI component is included in the computation of the net periodic pension cost. See Note 10 - "Employee Benefit Plans" for additional details.

Equity Based Compensation

Equity compensation expense was \$7.6 million and \$9.7 million for the three months ended March 31, 2019 and 2018, respectively. In the first quarter of 2019, the Company granted 0.2 million stock appreciation rights at \$145.25 weighted average exercise price per share and 0.1 million performance contingent units to employees. As of March 31, 2019, 1.6 million share options at a weighted average strike price per share of \$74.36 were vested and exercisable, with a remaining weighted average exercise period of 4.5 years. As of March 31, 2019, the total compensation cost of non-vested awards not yet recognized in the condensed consolidated financial statements was \$32.8 million. It is estimated that these costs will vest over a weighted average period of 1.2 years.

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4. 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”).

The following tables provide information relating to investments in fixed maturity securities by sector as of March 31, 2019 and December 31, 2018 (dollars in thousands):

March 31, 2019:	Amortized	Unrealized	Unrealized	Estimated	% of	Other-than-
	Cost	Gains	Losses	Fair	Total	temporary
				Value		impairments
						in AOCI
Available-for-sale:						
Corporate	\$24,216,876	\$1,024,557	\$164,095	\$25,077,338	60.1 %	\$ —
Canadian government	2,870,018	1,408,501	655	4,277,864	10.2	—
RMBS	1,969,694	34,746	10,254	1,994,186	4.8	—
ABS	2,243,449	14,286	15,749	2,241,986	5.4	275
CMBS	1,404,852	30,009	3,115	1,431,746	3.4	—
U.S. government	1,578,975	9,826	21,238	1,567,563	3.8	—
State and political subdivisions	738,690	56,668	2,641	792,717	1.9	—
Other foreign government	4,166,073	201,446	12,476	4,355,043	10.4	—
Total fixed maturity securities	\$39,188,627	\$2,780,039	\$230,223	\$41,738,443	100.0%	\$ 275

December 31, 2018:	Amortized	Unrealized	Unrealized	Estimated	% of	Other-than-
	Cost	Gains	Losses	Fair	Total	temporary
				Value		impairments
						in AOCI
Available-for-sale:						
Corporate	\$24,006,407	\$530,804	\$555,092	\$23,982,119	59.9 %	\$ —
Canadian government	2,768,466	1,126,227	2,308	3,892,385	9.7	—
RMBS	1,872,236	22,267	25,282	1,869,221	4.7	—
ABS	2,171,254	10,779	32,829	2,149,204	5.4	275
CMBS	1,428,115	9,153	18,234	1,419,034	3.5	—
U.S. government	2,233,537	10,204	57,867	2,185,874	5.5	—
State and political subdivisions	721,290	39,914	9,010	752,194	1.9	—
Other foreign government	3,680,863	109,320	47,868	3,742,315	9.4	—
Total fixed maturity securities	\$38,882,168	\$1,858,668	\$748,490	\$39,992,346	100.0%	\$ 275

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 condensed consolidated balance sheets. Fixed maturity securities received as collateral are held in separate custodial accounts and are not recorded on the Company’s condensed consolidated balance sheets. Subject to certain constraints, the Company is permitted by contract to sell or repledge collateral it receives; however, as of March 31, 2019 and December 31, 2018, 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 certain third-party 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 certain third-party reinsurance treaties as of March 31, 2019 and December 31, 2018 (dollars in thousands):

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	March 31, 2019		December 31, 2018	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities pledged as collateral	\$74,647	\$ 77,806	\$80,891	\$ 83,950
Fixed maturity securities received as collateral	n/a	668,046	n/a	616,584
Assets in trust held to satisfy collateral requirements	20,635,732	21,609,979	20,072,732	20,366,170

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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. The Company's exposure to concentrations of credit risk from single issuers greater than 10% of the Company's stockholders' equity included securities of the U.S. government and its agencies as well as the securities disclosed below as of March 31, 2019 and December 31, 2018 (dollars in thousands).

	March 31, 2019		December 31, 2018	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities guaranteed or issued by:				
Canadian province of Quebec	\$1,128,373	\$1,955,925	\$1,091,018	\$1,757,087
Canadian province of Ontario	946,731	1,287,150	913,642	1,187,526

The amortized cost and estimated fair value of fixed maturity securities classified as available-for-sale as of March 31, 2019 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. Asset and mortgage-backed 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	\$1,409,578	\$1,419,110
Due after one year through five years	8,141,200	8,340,166
Due after five years through ten years	8,933,926	9,345,621
Due after ten years	15,085,928	16,965,628
Asset and mortgage-backed securities	5,617,995	5,667,918
Total	\$39,188,627	\$41,738,443

Corporate Fixed Maturity Securities

The tables below show the major industry types of the Company's corporate fixed maturity holdings as of March 31, 2019 and December 31, 2018 (dollars in thousands):

March 31, 2019:		Estimated		
	Amortized Cost	Fair Value	% of Total	
Finance	\$ 8,981,541	\$9,249,273	36.9	%
Industrial	12,316,131	12,759,526	50.9	
Utility	2,919,204	3,068,539	12.2	
Total	\$ 24,216,876	\$25,077,338	100.0	%

December 31, 2018:		Estimated		
	Amortized Cost	Fair Value	% of Total	
Finance	\$ 8,793,742	\$8,730,568	36.3	%
Industrial	12,336,857	12,342,111	51.6	
Utility	2,875,808	2,909,440	12.1	
Total	\$ 24,006,407	\$23,982,119	100.0	%

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Other-Than-Temporary Impairments - Fixed Maturity Securities

As discussed in Note 2 – “Significant Accounting Policies and Pronouncements” of the 2018 Annual Report, a portion of certain other-than-temporary impairment (“OTTI”) losses on fixed maturity securities is recognized in AOCI. For these securities, the net amount recognized in the condensed consolidated statements of income (“credit loss impairments”) 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 debt security prior to impairment. Any remaining difference between the fair value and amortized cost is recognized in AOCI. The amount of pre-tax credit loss impairments on fixed maturity securities held by the Company, for which a portion of the OTTI loss was recognized in AOCI, was \$3.7 million as of March 31, 2019 and 2018. There were no changes in these amounts from their respective prior-year ending balances.

Unrealized Losses for Fixed Maturity Securities Available-for-Sale

The following table presents the total gross unrealized losses for the 1,585 and 3,109 fixed maturity securities as of March 31, 2019 and December 31, 2018, respectively, where the estimated fair value had declined and remained below amortized cost by the indicated amount (dollars in thousands):

	March 31, 2019			December 31, 2018		
	Gross			Gross		
	Unrealized	% of Total		Unrealized	% of Total	
	Losses			Losses		
Less than 20%	\$208,034	90.3	%	\$721,015	96.3	%
20% or more for less than six months	20,845	9.1		21,336	2.9	
20% or more for six months or greater	1,344	0.6		6,139	0.8	
Total	\$230,223	100.0	%	\$748,490	100.0	%

The Company’s determination of whether a decline in value is other-than-temporary includes an analysis of the underlying credit and the extent and duration of a decline in value. The Company’s credit analysis of an investment includes determining 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 tables present the estimated fair values and gross unrealized losses, including other-than-temporary impairment losses reported in AOCI, for 1,585 and 3,109 fixed maturity securities that have estimated fair values below amortized cost as of March 31, 2019 and December 31, 2018, respectively (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 remained below amortized cost.

	Less than 12 months		12 months or greater		Total	
	Gross		Gross		Gross	
	Estimated	Unrealized	Estimated	Unrealized	Estimated	Unrealized
	Fair Value	Losses	Fair Value	Losses	Fair Value	Losses
March 31, 2019:						
Investment grade securities:						
Corporate	\$1,140,753	\$ 23,578	\$3,756,371	\$ 108,434	\$4,897,124	\$ 132,012
Canadian government	2,812	19	72,244	636	75,056	655
RMBS	29,505	122	672,715	10,109	702,220	10,231
ABS	774,538	7,246	528,169	8,472	1,302,707	15,718
CMBS	100,664	369	227,404	2,746	328,068	3,115
U.S. government	1,265	1	1,125,274	21,237	1,126,539	21,238
State and political subdivisions	31,416	149	113,463	2,492	144,879	2,641
Other foreign government	115,581	2,813	345,928	7,213	461,509	10,026
Total investment grade securities	2,196,534	34,297	6,841,568	161,339	9,038,102	195,636

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Below investment grade securities:

Corporate	215,368	21,398	161,915	10,685	377,283	32,083
RMBS	—	—	1,001	23	1,001	23
ABS	—	—	1,029	31	1,029	31
Other foreign government	27,413	838	27,301	1,612	54,714	2,450
Total below investment grade securities	242,781	22,236	191,246	12,351	434,027	34,587
Total fixed maturity securities	\$2,439,315	\$ 56,533	\$7,032,814	\$ 173,690	\$9,472,129	\$ 230,223

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December 31, 2018:	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	\$8,505,371	\$302,604	\$3,611,266	\$195,082	\$12,116,637	\$497,686
Canadian government	25,169	419	131,806	1,612	156,975	2,031
RMBS	269,558	2,488	836,741	22,760	1,106,299	25,248
ABS	1,102,677	24,271	381,609	8,523	1,484,286	32,794
CMBS	384,259	4,304	414,719	13,930	798,978	18,234
U.S. government	8,616	80	1,086,694	57,787	1,095,310	57,867
State and political subdivisions	103,504	1,538	157,330	7,472	260,834	9,010
Other foreign government	789,859	24,509	472,934	17,446	1,262,793	41,955
Total investment grade securities	11,189,013	360,213	7,093,099	324,612	18,282,112	684,825
Below investment grade securities:						
Corporate	755,679	42,760	122,559	14,646	878,238	57,406
Canadian government	443	34	1,770	243	2,213	277
RMBS	—	—	1,026	34	1,026	34
ABS	—	—	1,063	35	1,063	35
Other foreign government	128,725	5,574	7,479	339	136,204	5,913
Total below investment grade securities	884,847	48,368	133,897	15,297	1,018,744	63,665
Total fixed maturity securities	\$12,073,860	\$408,581	\$7,226,996	\$339,909	\$19,300,856	\$748,490

The Company has no intention to sell, nor does it expect to be required to sell, the securities outlined in the table 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 interest rates.

Investment Income, Net of Related Expenses

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

	Three months ended	
	March 31,	
	2019	2018
Fixed maturity securities available-for-sale	\$415,087	\$369,203
Equity securities	1,246	1,682
Mortgage loans on real estate	59,562	50,199
Policy loans	14,109	14,780
Funds withheld at interest	61,734	75,445
Short-term investments and cash and cash equivalents	6,900	3,245
Other invested assets	42,236	23,828
Investment income	600,874	538,382
Investment expense	(20,997)	(22,053)
Investment income, net of related expenses	\$579,877	\$516,329

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Investment Related Gains (Losses), Net

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

	Three months ended March 31,	
	2019	2018
Fixed maturity securities available-for-sale:		
Other-than-temporary impairment losses	\$(9,453)	\$—
Gain on investment activity	28,045	10,966
Loss on investment activity	(18,723)	(20,380)
Equity securities:		
Gain on investment activity	74	28
Loss on investment activity	(1)	(950)
Change in unrealized gains (losses) recognized in earnings	3,744	(4,137)
Other impairment losses and change in mortgage loan provision	(1,859)	(312)
Derivatives and other, net	5,961	14,315
Total investment related gains (losses), net	\$7,788	\$(470)

The fixed maturity impairments for the three months ended March 31, 2019 were largely related to a U.S. utility company. There were no fixed maturity impairments for the three months ended March 31, 2018. The other impairment losses and change in mortgage loan provision for the three months ended March 31, 2019 were primarily due to impairments on real estate joint ventures and an increase of the equity release mortgage valuation allowance. The other impairment losses and change in mortgage loan provision for the three months ended March 31, 2018 were primarily due to impairments on real estate joint ventures offset by a release of the mortgage loan valuation allowance. The fluctuations in investment related gains (losses) for derivatives and other for the three months ended March 31, 2019, compared to the same period in 2018, are primarily due to changes in the fair value of embedded derivatives, futures and equity options offset by interest rate swaps.

During the three months ended March 31, 2019 and 2018, the Company sold fixed maturity securities with fair values of \$1,246.6 million and \$1,263.6 million at losses of \$18.7 million and \$20.4 million, respectively. During the three months ended March 31, 2019, the Company sold equity securities for immaterial losses. During the three months ended March 31, 2018, the Company sold equity securities with fair values of \$28.4 million at losses of \$1.0 million. The Company generally does not buy and sell securities on a short-term basis.

Securities Borrowing, Lending and Other

The following table includes the amount of borrowed securities, securities lent and securities collateral received as part of the securities lending program and repurchased/reverse repurchased securities pledged and received as of March 31, 2019 and December 31, 2018 (dollars in thousands).

	March 31, 2019		December 31, 2018	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Borrowed securities	\$339,593	\$371,473	\$335,781	\$366,663
Securities lending:				
Securities loaned	97,510	100,665	101,981	102,618
Securities received	n/a	107,000	n/a	112,000
Repurchase program/reverse repurchase program:				
Securities pledged	548,100	558,981	554,806	554,589
Securities received	n/a	558,523	n/a	530,932

The Company also held cash collateral for repurchase program/reverse repurchase programs of \$28.7 million and \$28.6 million at March 31, 2019 and December 31, 2018, respectively. No cash or securities have been pledged by the Company for its securities borrowing program as of March 31, 2019 and December 31, 2018.

The following tables present information on the Company's securities lending and repurchase transactions as of March 31, 2019 and December 31, 2018 (dollars in thousands). Collateral associated with certain borrowed securities is not included within the tables, as the collateral pledged to each counterparty is the right to reinsurance treaty cash flows.

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	March 31, 2019			
	Remaining Contractual Maturity of the Agreements			
	Overnight and Continuous	30-90 Days	Greater than 90 Days	Total
Securities lending transactions:				
Corporate	\$—	\$—	\$100,665	\$100,665
Total	—	—	100,665	100,665
Repurchase transactions:				
Corporate	—	—	267,846	267,846
U.S. government	—	43,657	165,272	208,929
Foreign government	—	—	82,206	82,206
Total	—	43,657	515,324	558,981
Total borrowings	\$—	-\$43,657	\$615,989	\$659,646

Gross amount of recognized liabilities for securities lending and repurchase transactions in preceding table \$694,271
Amounts related to agreements not included in offsetting disclosure \$34,625

	December 31, 2018			
	Remaining Contractual Maturity of the Agreements			
	Overnight and Continuous	30-90 Days	Greater than 90 Days	Total
Securities lending transactions:				
Corporate	\$—	\$—	-\$102,618	\$102,618
Total	—	—	102,618	102,618
Repurchase transactions:				
Corporate	—	—	254,151	254,151
U.S. government	—	—	221,572	221,572
Foreign government	—	—	78,866	78,866
Total	—	—	554,589	554,589
Total borrowings	\$—	-\$	-\$657,207	\$657,207

Gross amount of recognized liabilities for securities lending and repurchase transactions in preceding table \$671,492
Amounts related to agreements not included in offsetting disclosure \$14,285

The Company has elected to offset amounts recognized as receivables and payables resulting from the repurchase/reverse repurchase programs. After the effect of offsetting, the net amount presented on the condensed consolidated balance sheets was a liability of \$0.4 million as of both March 31, 2019 and December 31, 2018. As of March 31, 2019 and December 31, 2018, the Company recognized payables resulting from cash received as collateral associated with a repurchase agreement, as discussed above. Amounts owed to and due from the counterparties may be settled in cash or offset, in accordance with the agreements.

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Mortgage Loans on Real Estate

Mortgage loans represented approximately 9.1% of the Company's total investments as of both March 31, 2019 and December 31, 2018. As of March 31, 2019, mortgage loans were geographically dispersed throughout the U.S. with the largest concentrations in California (17.7%), Texas (11.8%) and Washington (7.1%) and include loans secured by properties in Canada (2.9%) and United Kingdom (0.5%). The recorded investment in mortgage loans on real estate presented below is gross of unamortized deferred loan origination fees and expenses, and valuation allowances. The distribution of mortgage loans by property type is as follows as of March 31, 2019 and December 31, 2018 (dollars in thousands):

Property type:	March 31, 2019		December 31, 2018	
	Carrying Value	% of Total	Carrying Value	% of Total
Office building	\$1,707,764	33.3 %	\$1,725,748	34.6 %
Retail	1,495,883	29.1	1,432,394	28.7
Industrial	1,021,871	19.9	961,924	19.3
Apartment	620,926	12.1	571,291	11.5
Other commercial	288,454	5.6	291,997	5.9
Recorded investment	\$5,134,898	100.0 %	\$4,983,354	100.0 %
Unamortized balance of loan origination fees and expenses	(6,135)		(5,770)	
Valuation allowances	(11,218)		(11,286)	
Total mortgage loans on real estate	\$5,117,545		\$4,966,298	

The maturities of mortgage loans as of March 31, 2019 and December 31, 2018 are as follows (dollars in thousands):

	March 31, 2019		December 31, 2018	
	Recorded Investment	% of Total	Recorded Investment	% of Total
Due within five years	\$1,449,925	28.2 %	\$1,425,598	28.6 %
Due after five years through ten years	2,833,275	55.2	2,686,264	53.9
Due after ten years	851,698	16.6	871,492	17.5
Total	\$5,134,898	100.0 %	\$4,983,354	100.0 %

The following tables set forth certain key credit quality indicators of the Company's recorded investment in mortgage loans as of March 31, 2019 and December 31, 2018 (dollars in thousands):

	Recorded Investment			Construction loans	Total	% of Total
	Debt Service Ratios >1.20x	1.00x - 1.20x	<1.00x			
March 31, 2019:						
Loan-to-Value Ratio						
0% - 59.99%	\$2,477,507	\$87,802	\$36,998	\$ 16,556	\$2,618,863	51.0 %
60% - 69.99%	1,692,549	78,559	41,680	21,051	1,833,839	35.7
70% - 79.99%	403,173	27,591	42,008	—	472,772	9.2
Greater than 80%	117,390	49,522	42,512	—	209,424	4.1
Total	\$4,690,619	\$243,474	\$163,198	\$ 37,607	\$5,134,898	100.0 %

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	Recorded Investment Debt Service Ratios			Construction loans	Total	% of Total
	>1.20x	1.00x - 1.20x	<1.00x			
December 31, 2018:						
Loan-to-Value Ratio						
0% - 59.99%	\$2,410,556	\$61,246	\$38,177	\$ 13,691	\$2,523,670	50.6 %
60% - 69.99%	1,618,374	73,908	38,120	18,929	1,749,331	35.1
70% - 79.99%	414,269	48,438	54,440	—	517,147	10.4
Greater than 80%	117,978	49,668	25,560	—	193,206	3.9
Total	\$4,561,177	\$233,260	\$156,297	\$ 32,620	\$4,983,354	100.0%

The age analysis of the Company's past due recorded investments in mortgage loans as of March 31, 2019 and December 31, 2018 is as follows (dollars in thousands):

	March 31, 2019	December 31, 2018
31-60 days past due	\$11,795	\$—
61-90 days past due	17,079	—
Total past due	28,874	—
Current	5,106,024	4,983,354
Total	\$5,134,898	\$4,983,354

The following table presents the recorded investment in mortgage loans, by method of measuring impairment, and the related valuation allowances as of March 31, 2019 and December 31, 2018 (dollars in thousands):

	March 31, 2019	December 31, 2018
Mortgage loans:		
Individually measured for impairment	\$17,079	\$30,635
Collectively measured for impairment	5,117,819	4,952,719
Recorded investment	\$5,134,898	\$4,983,354
Valuation allowances:		
Individually measured for impairment	\$—	\$—
Collectively measured for impairment	11,218	11,286
Total valuation allowances	\$11,218	\$11,286

Information regarding the Company's loan valuation allowances for mortgage loans for the three months ended March 31, 2019 and 2018 is as follows (dollars in thousands):

	Three months ended March 31,	
	2019	2018
Balance, beginning of period	\$11,286	\$9,384
Provision (release)	(73)	(516)
Translation adjustment	5	(4)
Balance, end of period	\$11,218	\$8,864

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Information regarding the portion of the Company's mortgage loans that were impaired as of March 31, 2019 and December 31, 2018 is as follows (dollars in thousands):

	Unpaid Principal Balance	Recorded Investment	Related Allowance	Carrying Value
March 31, 2019:				
Impaired mortgage loans with no valuation allowance recorded	\$17,084	\$17,079	\$—	\$17,079
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$17,084	\$17,079	\$—	\$17,079
December 31, 2018:				
Impaired mortgage loans with no valuation allowance recorded	\$30,660	\$30,635	\$—	\$30,635
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$30,660	\$30,635	\$—	\$30,635

The Company's average investment balance of impaired mortgage loans and the related interest income are reflected in the table below for the periods indicated (dollars in thousands):

	Three months ended March 31,			
	2019	2018		
	Average Recorded Investment ⁽¹⁾	Average Recorded Investment ⁽¹⁾		
	Interest Income	Interest Income		
Impaired mortgage loans with no valuation allowance recorded	\$23,857	\$14,640	\$328	\$56
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$23,857	\$14,640	\$328	\$56

(1) Average recorded investment represents the average loan balances as of the beginning of period and all subsequent quarterly end of period balances.

The Company did not acquire any impaired mortgage loans during the three months ended March 31, 2019 and 2018. The Company had no mortgage loans that were on a nonaccrual status as of March 31, 2019 and December 31, 2018.

Policy Loans

Policy loans comprised approximately 2.3% and 2.5% of the Company's total investments as of March 31, 2019 and December 31, 2018, respectively, the majority of which are associated with one client. These policy loans present no credit risk because 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

Funds withheld at interest comprised approximately 10.2% and 10.6% of the Company's total investments as of March 31, 2019 and December 31, 2018, respectively. Of the \$5.7 billion funds withheld at interest balance, net of embedded derivatives, as of March 31, 2019, \$3.7 billion of the balance is associated with one client. For reinsurance agreements written on a modified coinsurance basis and certain agreements written on a coinsurance funds withheld basis, assets equal to the net statutory reserves are withheld and legally owned and managed by the ceding company and are reflected as funds withheld at interest on the Company's condensed consolidated balance sheets. 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

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Other invested assets represented approximately 3.6% and 3.5% of the Company's total investments as of March 31, 2019 and December 31, 2018, respectively. Carrying values of these assets as of March 31, 2019 and December 31, 2018 are as follows (dollars in thousands):

	March 31, 2019	December 31, 2018
Limited partnership interests and real estate joint ventures	\$982,592	\$965,094
Equity release mortgages	595,559	475,905
Derivatives	132,412	180,699
FVO contractholder-directed unit-linked investments	202,848	197,770
Other	93,459	95,829
Total other invested assets	\$2,006,870	\$1,915,297

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5. Derivative Instruments

Accounting for Derivative Instruments and Hedging Activities

See Note 2 – “Significant Accounting Policies and Pronouncements” of the Company’s 2018 Annual Report for a detailed discussion of the accounting treatment for derivative instruments, including embedded derivatives. See Note 6 – “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

The Company utilizes various derivative instruments and strategies to manage its risks. Commonly used derivative instruments include, but are not necessarily limited to: credit default swaps, financial futures, equity options, foreign currency swaps, foreign currency forwards, interest rate swaps, synthetic guaranteed investment contracts (“GICs”), consumer price index (“CPI”) swaps, longevity swaps, mortality swaps and embedded derivatives.

For detailed information on these derivative instruments and the related strategies, see Note 5 – “Derivative Instruments” of the Company’s 2018 Annual Report.

Summary of Derivative Positions

Derivatives, except for embedded derivatives and longevity and mortality swaps, are carried on the Company’s condensed consolidated balance sheets in other invested assets or other liabilities, at fair value. Longevity and mortality swaps are included on the condensed consolidated balance sheets in other assets or other liabilities, at fair value. Embedded derivative assets and liabilities on modified coinsurance (“modco”) or funds withheld arrangements are included on the condensed consolidated balance sheets with the host contract in funds withheld at interest, at fair value. Embedded derivative liabilities on indexed annuity and variable annuity products are included on the condensed 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 March 31, 2019 and December 31, 2018 (dollars in thousands):

Primary Underlying Risk		March 31, 2019			December 31, 2018		
		Notional Amount	Carrying Value Assets	Value/Fair Liabilities	Notional Amount	Carrying Value Assets	Value/Fair Liabilities
Derivatives not designated as hedging instruments:							
Interest rate swaps	Interest rate	\$1,018,438	\$57,278	\$2,670	\$1,040,588	\$47,652	\$961
Financial futures	Equity	360,170	—	—	325,620	—	—
Foreign currency swaps	Foreign currency	149,698	—	4,629	149,698	504	4,659
Foreign currency forwards	Foreign currency	25,000	251	—	25,000	—	234
CPI swaps	CPI	388,151	—	20,505	385,580	—	11,384
Credit default swaps	Credit	1,348,300	6,614	58	1,338,300	6,003	1,166
Equity options	Equity	439,158	20,152	—	439,158	42,836	—
Longevity swaps	Longevity	897,440	48,869	—	917,360	47,789	—
Mortality swaps	Mortality	25,000	489	—	25,000	—	369
Synthetic GICs	Interest rate	13,895,380	—	—	13,397,729	—	—
Embedded derivatives in:							
Modco or funds withheld arrangements		—	107,506	—	—	109,597	—
Indexed annuity products		—	—	754,171	—	—	776,940

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Variable annuity products		—	—	149,764	—	—	167,925
Total non-hedging derivatives		18,546,735	241,159	931,797	18,044,033	254,381	963,638
Derivatives designated as hedging instruments:							
Interest rate swaps	Foreign currency/Interest rate	435,000	891	24,436	435,000	—	27,257
Foreign currency swaps	Foreign currency	451,686	38,620	479	494,461	51,311	—
Foreign currency forwards	Foreign currency	949,879	32,862	—	911,197	50,974	—
Total hedging derivatives		1,836,565	72,373	24,915	1,840,658	102,285	27,257
Total derivatives		\$20,383,300	\$313,532	\$956,712	\$19,884,691	\$356,666	\$990,895

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Fair Value Hedges

The Company designates and reports certain foreign currency swaps to hedge the foreign currency fair value exposure of foreign currency denominated assets as fair value hedges when they meet the requirements of the general accounting principles for Derivatives and Hedging. The gain or loss on the hedged item attributable to a change in foreign currency and the offsetting gain or loss on the related foreign currency swaps as of March 31, 2019 and 2018, were (dollars in thousands):

Type of Fair Value Hedge	Hedged Item	Gains (Losses) Recognized for Derivatives Investment Related	Gains (Losses) Recognized for Hedged Items
For the three months ended March 31, 2019:			
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ (709)	\$ (703)
For the three months ended March 31, 2018:			
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ (1,891)	\$ 1,891

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 flows: (i) certain interest rate swaps, in which the cash flows of liabilities are variable based on a benchmark rate; and (ii) certain interest rate swaps, in which the cash flows of assets are denominated in different currencies, commonly referred to as cross-currency swaps.

The following table presents the components of AOCI, before income tax, and the condensed consolidated income statement classification where the gain or loss is recognized related to cash flow hedges for the three months ended March 31, 2019 and 2018 (dollars in thousands):

	Three months ended March 31,	
	2019	2018
Balance beginning of period	\$8,788	\$2,619
Gains (losses) deferred in other comprehensive income (loss)	(10,196)	17,817
Amounts reclassified to investment income	(25)	(144)
Amounts reclassified to interest expense	(469)	370
Balance end of period	\$(1,902)	\$20,662

As of March 31, 2019, the before-tax deferred net gains (losses) on derivative instruments recorded in AOCI that are expected to be reclassified to earnings during the next twelve months are approximately \$0.1 million and \$1.7 million in investment income and interest expense, respectively.

The following table presents the effect of derivatives in cash flow hedging relationships on the condensed consolidated statements of income and the condensed consolidated statements of comprehensive income for the three months ended March 31, 2019 and 2018 (dollars in thousands):

Derivative Type	Gain (Loss) Deferred in OCI	Gain (Loss) Reclassified into Income from OCI
		Investment Income
		Interest Expense

For the three months ended March 31, 2019:

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Interest rate	\$(12,101)	\$—	\$ 469
Currency/Interest rate	1,905	25	—
Total	\$(10,196)	\$25	\$ 469

For the three months ended March 31, 2018:

Interest rate	\$14,986	\$—	\$ (370)
Currency/Interest rate	2,831	144	—
Total	\$17,817	\$144	\$ (370)

For the three months ended March 31, 2019 and 2018, there were no material 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.

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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 net investments in foreign operations ("NIFO") hedges for the three months ended March 31, 2019 and 2018 (dollars in thousands):

Derivative Gains (Losses) Deferred in AOCI

Type of NIFO Hedge ⁽¹⁾	For the three months ended March 31,	
	2019	2018
Foreign currency swaps	\$ (7,007)	\$ 8,805
Foreign currency forwards	(18,112)	12,236

There were no sales or substantial liquidations of net investments in foreign operations that would have required (1) the reclassification of gains or losses from accumulated other comprehensive income (loss) into investment income during the periods presented.

The cumulative foreign currency translation gain recorded in AOCI related to these hedges was \$175.9 million and \$201.0 million at March 31, 2019 and December 31, 2018, respectively. If a hedged foreign operation was sold or substantially liquidated, the amounts in AOCI would be reclassified to the condensed consolidated statements of income. A pro rata portion would be reclassified upon partial sale of a hedged foreign operation.

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 qualified 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 in the condensed consolidated statements of income, except where otherwise noted.

A summary of the effect of non-hedging derivatives, including embedded derivatives, on the Company's condensed consolidated statements of income for the three months ended March 31, 2019 and 2018 is as follows (dollars in thousands):

Type of Non-hedging Derivative	Income Statement Location of Gain (Loss)	Gain (Loss) for the three months ended March 31,	
		2019	2018
Interest rate swaps	Investment related gains (losses), net	\$ 23,974	\$ (26,571)
Financial futures	Investment related gains (losses), net	(22,278)	129
Foreign currency swaps	Investment related gains (losses), net	723	—
Foreign currency forwards	Investment related gains (losses), net	492	323
CPI swaps	Investment related gains (losses), net	(8,851)	2,186
Credit default swaps	Investment related gains (losses), net	14,500	(402)
Equity options	Investment related gains (losses), net	(22,684)	2,593
Longevity swaps	Other revenues	2,143	2,267
Mortality swaps	Other revenues	858	—
Subtotal		(11,123)	(19,475)
Embedded derivatives in: Modco or funds withheld arrangements	Investment related gains (losses), net	(2,092)	13,611
Indexed annuity products	Interest credited	3,070	25,351
Variable annuity products	Investment related gains (losses), net	18,161	14,785
Total non-hedging derivatives		\$ 8,016	\$ 34,272

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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 at March 31, 2019 and December 31, 2018 (dollars in thousands):

Rating Agency Designation of Referenced Credit Obligations ⁽¹⁾	March 31, 2019			December 31, 2018		
	Estimated Fair Value of Swaps	Maximum Amount of Future Payments under Credit Default Swaps ⁽²⁾	Weighted Average Years to Maturity ⁽³⁾	Estimated Fair Value of 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	\$2,082	\$ 157,000	2.1	\$1,953	\$ 152,000	2.2
Subtotal	2,082	157,000	2.1	1,953	152,000	2.2
BBB+/BBB/BBB-						
Single name credit default swaps	3,672	358,700	2.0	2,930	353,700	2.2
Credit default swaps referencing indices	769	817,600	5.0	(76)	817,600	6.4
Subtotal	4,441	1,176,300	4.1	2,854	1,171,300	5.1
BB+/BB/BB-						
Single name credit default swaps	33	15,000	0.5	30	15,000	0.7
Subtotal	33	15,000	0.5	30	15,000	0.7
Total	\$6,556	\$ 1,348,300	3.8	\$4,837	\$ 1,338,300	4.7

(1) The rating agency designations are based on ratings from Standard and Poor's ("S&P").

(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 condensed 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 tables below, irrespective of whether they are subject to an enforceable master netting arrangement or a similar agreement. See Note 4 – "Investments" for information regarding the Company's securities borrowing, lending, repurchase and repurchase/reverse repurchase programs.

The following table provides information relating to the Company's derivative instruments as of March 31, 2019 and December 31, 2018 (dollars in thousands):

	Gross Amounts Recognized	Gross Amounts Offset in the Balance Sheet	Net Amounts Presented in the Balance Sheet	Gross Amounts Not Offset in the Balance Sheet	Net Amount
				Cash Collateral Pledged/Received ⁽¹⁾	
March 31, 2019:					
Derivative assets	\$ 206,026	\$ (24,745)	\$ 181,281	\$—\$ (205,177)	\$ (23,896)
Derivative liabilities	52,777	(24,745)	28,032	(63,992,980)	(73,940)
December 31, 2018:					
Derivative assets	\$ 247,069	\$ (18,581)	\$ 228,488	\$—\$ (235,611)	\$ (7,123)

Derivative liabilities 46,030 (18,581) 27,449 (71,324,080) (68,007)

(1)Includes initial margin posted to a central clearing partner.

The Company may be exposed to credit-related losses in the event of non-performance by counterparties to derivative financial instruments with a positive fair value. Generally, the credit exposure of the Company’s derivative contracts is limited to the fair value at the reporting date plus or minus any collateral posted or held by the Company. The Company had no credit exposure related to its derivative contracts, as of March 31, 2019 and December 31, 2018, as the net amount of collateral pledged to the Company from counterparties exceeded the fair value of the derivative contracts.

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

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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.

6. 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 fair value hierarchy that requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value and describes three levels of inputs that may be used to measure fair value:

Level 1 - Unadjusted quoted prices in active markets for identical assets or liabilities. The Company's Level 1 assets and liabilities are traded in active exchange markets.

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. 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 what other market participants would use when pricing similar assets and liabilities. Additionally, the Company's embedded derivatives, all of which are associated with reinsurance treaties and longevity and mortality swaps, are classified in Level 3 since their values include significant unobservable inputs.

For a discussion of the Company's valuation methodologies for assets and liabilities measured at fair value and the fair value hierarchy, see Note 6 in the Notes to Consolidated Financial Statements included in the Company's 2018 Annual Report.

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Assets and Liabilities by Hierarchy Level

Assets and liabilities measured at fair value on a recurring basis as of March 31, 2019 and December 31, 2018 are summarized below (dollars in thousands):

March 31, 2019:

	Total	Fair Value Measurements Using:		
		Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities – available-for-sale:				
Corporate	\$25,077,338	\$—	\$23,546,583	\$1,530,755
Canadian government	4,277,864	—	3,670,073	607,791
RMBS	1,994,186	—	1,987,664	6,522
ABS	2,241,986	—	2,128,199	113,787
CMBS	1,431,746	—	1,431,725	21
U.S. government	1,567,563	1,464,139	86,215	17,209
State and political subdivisions	792,717	—	782,555	10,162
Other foreign government	4,355,043	—	4,349,977	5,066
Total fixed maturity securities – available-for-sale	41,738,443	1,464,139	37,982,991	2,291,313
Equity securities	89,865	49,443	—	40,422
Funds withheld at interest – embedded derivatives	107,506	—	—	107,506
Cash equivalents	855,265	853,927	1,319	19
Short-term investments	75,360	4,766	41,392	29,202
Other invested assets:				
Derivatives:				
Interest rate swaps	48,683	—	48,683	—
Foreign currency forwards	33,113	—	33,113	—
Credit default swaps	(6,201)) —	(6,201)) —
Equity options	18,676	—	18,676	—
Foreign currency swaps	38,141	—	38,141	—
FVO contractholder-directed unit-linked investments	202,848	201,833	1,015	—
Total other invested assets	335,260	201,833	133,427	—
Other assets - longevity swaps	48,869	—	—	48,869
Total	\$43,250,568	\$2,574,108	\$38,159,129	\$2,517,331
Liabilities:				
Interest sensitive contract liabilities – embedded derivatives	\$903,935	\$—	\$—	\$903,935
Other liabilities:				
Derivatives:				
Interest rate swaps	17,620	—	17,620	—
Foreign currency swaps - non-hedged	4,629	—	4,629	—
CPI swaps	20,505	—	20,505	—
Credit default swaps	(12,757)) —	(12,757)) —
Equity options	(1,476)) —	(1,476)) —
Mortality swaps	(489)) —	—	(489)
Total	\$931,967	\$—	\$28,521	\$903,446

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December 31, 2018:	Total	Fair Value Measurements Using:		
		Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities – available-for-sale:				
Corporate	\$23,982,119	\$—	\$22,651,194	\$1,330,925
Canadian government	3,892,385	—	3,364,261	528,124
RMBS	1,869,221	—	1,862,366	6,855
ABS	2,149,204	—	2,053,632	95,572
CMBS	1,419,034	—	1,419,012	22
U.S. government	2,185,874	2,067,529	100,320	18,025
State and political subdivisions	752,194	—	741,992	10,202
Other foreign government	3,742,315	—	3,737,309	5,006
Total fixed maturity securities – available-for-sale	39,992,346	2,067,529	35,930,086	1,994,731
Equity securities	82,197	48,737	—	33,460
Funds withheld at interest – embedded derivatives	109,597	—	—	109,597
Cash equivalents	485,167	473,509	11,658	—
Short-term investments	105,991	4,989	98,774	2,228
Other invested assets:				
Derivatives:				
Interest rate swaps	37,976	—	37,976	—
Foreign currency forwards	50,740	—	50,740	—
Credit default swaps	4,466	—	4,466	—
Equity options	36,206	—	36,206	—
Foreign currency swaps	51,311	—	51,311	—
FVO contractholder-directed unit-linked investments	197,770	196,781	989	—
Total other invested assets	378,469	196,781	181,688	—
Other assets - longevity swaps	47,789	—	—	47,789
Total	\$41,201,556	\$2,791,545	\$36,222,206	\$2,187,805
Liabilities:				
Interest sensitive contract liabilities – embedded derivatives				
Other liabilities:	\$944,865	\$—	\$—	\$944,865
Derivatives:				
Interest rate swaps	18,542	—	18,542	—
Foreign currency swaps - non-hedged	4,155	—	4,155	—
CPI swaps	11,384	—	11,384	—
Credit default swaps	(371)) —	(371)) —
Equity options	(6,630)) —	(6,630)) —
Mortality swaps	369	—	—	369
Total	\$972,314	\$—	\$27,080	\$945,234

Transfers between Levels 1 and 2

Transfers between Levels 1 and 2 are made to reflect changes in observability of inputs and market activity. The Company recognizes transfers of assets and liabilities into and out of levels within the fair value hierarchy at the beginning of the quarter in which the actual event or change in circumstances that caused the transfer occurs. There were no transfers between Level 1 and Level 2 during the three months ended March 31, 2019 or 2018.

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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 March 31, 2019 and December 31, 2018 (dollars in thousands):

	Estimated Fair Value		Valuation Technique	Unobservable Inputs	Range (Weighted Average)	
	March 31, 2019	December 31, 2018			March 31, 2019	December 31, 2018
Assets:						
Corporate	\$740,698	\$642,647	Market comparable securities	Liquidity premium	0-5% (1%)	0-5% (1%)
				EBITDA Multiple	5.9x	5.9x-7.5x (6.5x)
ABS	81,417	77,842	Market comparable securities	Liquidity premium	0-1% (1%)	0-1% (1%)
U.S. government	17,209	18,025	Market comparable securities	Liquidity premium	0-1% (1%)	0-1% (1%)
Other foreign government	5,066	5,006	Market comparable securities	Liquidity premium	1	% 1
Equity securities	30,294	25,007	Market comparable securities	Liquidity premium	4	% 4
				EBITDA Multiple	6.9x-12.3x (8.2x)	6.9x-12.3x (7.9x)
Funds withheld at interest-embedded derivatives	107,506	109,597	Total return swap	Mortality	0-100% (2%)	0-100% (2%)
				Lapse	0-35% (11%)	0-35% (10%)
				Withdrawal	0-5% (3%)	0-5% (3%)
				CVA	0-5% (1%)	0-5% (1%)
				Crediting rate	2-4% (2%)	2-4% (2%)
Longevity swaps	48,869	47,789	Discounted cash flow	Mortality	0-100% (2%)	0-100% (2%)
				Mortality improvement	(10%)-10% (3%)	(10%)-10% (3%)
Liabilities:						
Interest sensitive contract liabilities-embedded derivatives-indexed annuities	754,171	776,940	Discounted cash flow	Mortality	0-100% (2%)	0-100% (2%)
				Lapse	0-35% (11%)	0-35% (10%)

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				Withdrawal	0-5% (3%)	0-5% (3%)
				Option budget projection	2-4% (2%)	2-4% (2%)
Interest sensitive contract liabilities-embedded derivatives-variable annuities	149,764	167,925	Discounted cash flow	Mortality	0-100% (1%)	0-100% (1%)
				Lapse	0-25% (5%)	0-25% (5%)
				Withdrawal	0-7% (4%)	0-7% (5%)
				CVA	0-5% (1%)	0-5% (1%)
				Long-term volatility	0-27% (13%)	0-27% (13%)
Mortality swaps	(489) 369	Discounted cash flow	Mortality	0-100% (1%)	0-100% (1%)

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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. In 2018, the Company transferred equity securities with a fair value of approximately \$38.9 million into Level 3 as a result of the adoption of the new accounting guidance for the recognition and measurement of equity securities (see “New Accounting Pronouncements – Financial Instruments – Recognition and Measurement” in Note 2 – “Significant Accounting Policies and Pronouncements” in the Notes to Consolidated Financial Statements included in the Company’s 2018 Annual Report).

For further information on the Company’s valuation processes, see Note 6 in the Notes to Consolidated Financial Statements included in the Company’s 2018 Annual Report.

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):

	Fixed maturity securities - available-for-sale				
	Corporate	Canadian government	RMBS	ABS	
Fair value, beginning of period	\$ 1,330,925	\$ 528,124	\$ 6,855	\$ 95,572	
Total gains/losses (realized/unrealized)					
Included in earnings, net:					
Investment income, net of related expenses	133	3,493	2	17	
Included in other comprehensive income	19,404	76,174	1	975	
Purchases ⁽¹⁾	214,441	—	—	31,322	
Sales ⁽¹⁾	(10,712)	—	—	—	
Settlements ⁽¹⁾	(23,436)	—	(336)	(14,099)	
Fair value, end of period	\$ 1,530,755	\$ 607,791	\$ 6,522	\$ 113,787	
Unrealized gains and losses recorded in earnings 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:					
Investment income, net of related expenses	\$ 166	\$ 3,493	\$ 2	\$ 17	
For the three months ended March 31, 2019 (continued):					
	Fixed maturity securities - available-for-sale				
	CMBS	U.S. government	State and political subdivisions	Other foreign government	Equity securities
Fair value, beginning of period	\$ 22	\$ 18,025	\$ 10,202	\$ 5,006	33,460
Total gains/losses (realized/unrealized)					
Included in earnings, net:					
Investment income, net of related expenses	—	(89)	5	—	—
Investment related gains (losses), net	—	—	—	—	3,762
Included in other comprehensive income	—	267	(7)	60	—
Purchases ⁽¹⁾	—	84	—	—	3,200
Settlements ⁽¹⁾	(1)	(1,078)	(38)	—	—
Fair value, end of period	\$ 21	\$ 17,209	\$ 10,162	\$ 5,066	\$ 40,422
Unrealized gains and losses recorded in earnings for the period relating to those Level 3 assets and liabilities that were still held at the end of the period					

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Included in earnings, net:

Investment income, net of related expenses	\$—	\$ (89) \$ 5	\$ —	\$ —
Investment related gains (losses), net	—	—	—	—	3,762

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For the three months ended March 31, 2019 (continued):	Funds withheld at interest- embedded derivatives	Cash equivalents	Short-term investments	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
Fair value, beginning of period	\$ 109,597	\$ —	\$ 2,228	\$ 47,789	\$(944,865)	\$ (369)
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses	—	—	32	—	—	—
Investment related gains (losses), net	(2,091)	—	—	—	18,161	—
Interest credited	—	—	—	—	3,070	—
Included in other comprehensive income	—	—	199	(1,063)	—	—
Other revenues	—	—	—	2,143	—	858
Purchases ⁽¹⁾	—	19	26,743	—	1,398	—
Settlements ⁽¹⁾	—	—	—	—	18,301	—
Fair value, end of period	\$ 107,506	\$ 19	\$ 29,202	\$ 48,869	\$(903,935)	\$ 489
Unrealized gains and losses recorded in earnings 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:						
Investment income, net of related expenses	\$—	\$ —	\$ 32	\$—	\$—	\$—
Investment related gains (losses), net	(2,091)	—	—	—	16,766	—
Other revenues	—	—	—	2,143	—	858
Interest credited	—	—	—	—	(15,231)	—
For the three months ended March 31, 2018:						
				Fixed maturity securities - available-for-sale		
				Corporate	Canadian government	RMBS ABS
Fair value, beginning of period				\$1,337,272	\$ 593,942	\$107,882 \$123,474
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses				(361)	3,444	(92) 106
Investment related gains (losses), net				—	—	— 2
Included in other comprehensive income				(32,852)	(24,639)	(1,110) 853
Purchases ⁽¹⁾				100,170	—	20,916 11,000
Sales ⁽¹⁾				(6,180)	—	— —
Settlements ⁽¹⁾				(75,146)	—	(2,963) (2,739)
Transfers into Level 3				7,166	—	— —
Transfers out of Level 3				(30,805)	—	(4,019) (1,990)
Fair value, end of period				\$1,299,264	\$ 572,747	\$120,614 \$130,706
Unrealized gains and losses recorded in earnings 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:						
Investment income, net of related expenses				\$(361)	\$ 3,444	\$(92) \$106

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For the three months ended March 31, 2018 (continued):

	Fixed maturity securities - available-for-sale			
	CMBS	U.S. government	State and political subdivisions	Other foreign government
Fair value, beginning of period	\$3,234	\$ 22,511	\$ 41,203	\$ 5,092
Total gains/losses (realized/unrealized)				
Included in earnings, net:				
Investment income, net of related expenses	—	(110)	8	—
Included in other comprehensive income	(47)	(340)	700	(88)
Purchases ⁽¹⁾	—	96	—	—
Settlements ⁽¹⁾	(1)	(1,104)	(35)	—
Transfers out of Level 3	(1,302)	—	—	—
Fair value, end of period	\$1,884	\$ 21,053	\$ 41,876	\$ 5,004
Unrealized gains and losses recorded in earnings 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:				
Investment income, net of related expenses	\$—	\$ (110)	\$ 8	\$ —

For the three months ended March 31, 2018 (continued):	Equity securities	Funds withheld at interest-embedded derivatives	Short-term investments	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
Fair value, beginning of period	\$—	\$ 122,194	\$ 3,096	\$ 40,659	\$(1,014,229)	\$(1,683)
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment related gains (losses), net	(2,677)	13,611	—	—	14,785	—
Interest credited	—	—	—	—	25,351	—
Included in other comprehensive income	—	—	(25)	1,085	—	—
Other revenues	—	—	—	2,267	—	—
Purchases ⁽¹⁾	—	—	146	—	(8,508)	—
Sales ⁽¹⁾	(28)	—	—	—	—	—
Settlements ⁽¹⁾	(48)	—	—	—	17,807	—
Transfers into Level 3	38,905	—	—	—	—	—
Fair value, end of period	\$36,152	\$ 135,805	\$ 3,217	\$ 44,011	\$(964,794)	\$(1,683)
Unrealized gains and losses recorded in earnings 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:						
Investment related gains (losses), net	\$(2,705)	\$ 13,611	\$ —	\$ —	\$ 12,901	\$ —
Other revenues	—	—	—	2,267	—	—
Interest credited	—	—	—	—	7,544	—

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 (1) purchased and sold/settled in the same period are excluded from the rollforward. The Company had no issuances during the period.

Nonrecurring Fair Value Measurements

During the three months ended March 31, 2019 and March 31, 2018, the Company did not have any adjustments to its financial instruments measured at fair value on a nonrecurring basis that are still held at the reporting date.

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Fair Value of Financial Instruments

The Company is required by general accounting principles for Fair Value Measurements and Disclosures to disclose the fair value of certain financial instruments including those that are not carried at fair value. The following table presents the carrying amounts and estimated fair values of the Company's financial instruments, which were not measured at fair value on a recurring basis, as of March 31, 2019 and December 31, 2018 (dollars in thousands). For additional information regarding the methods and significant assumptions used by the Company to estimate these fair values, see Note 6 in the Notes to Consolidated Financial Statements included in the Company's 2018 Annual Report. This table excludes any payables or receivables for collateral under repurchase agreements and other transactions. The estimated fair value of the excluded amount approximates carrying value as they equal the amount of cash collateral received/paid.

March 31, 2019:	Carrying Value (1)	Estimated Fair Value	Fair Value Measurement Using:			
			Level 1	Level 2	Level 3 NAV	
Assets:						
Mortgage loans on real estate	\$ 5,117,545	\$5,210,513	\$—	—	\$5,210,513	\$ —
Policy loans	1,312,349	1,312,349	—	1,312,349	—	—
Funds withheld at interest	5,619,039	5,823,245	—	—	5,823,245	—
Cash and cash equivalents	1,165,131	1,165,131	1,165,131	—	—	—
Short-term investments	43,855	43,855	43,855	—	—	—
Other invested assets	1,061,220	1,060,931	5,176,529	—	603,835	368,391
Accrued investment income	442,956	442,956	—	442,956	—	—
Liabilities:						
Interest-sensitive contract liabilities	\$ 14,543,332	\$ 14,790,369	\$—	—	\$14,790,369	\$ —
Long-term debt	2,787,717	2,915,623	—	—	2,915,623	—
Collateral finance and securitization notes	656,174	601,680	—	—	601,680	—
December 31, 2018:						
Assets:						
Mortgage loans on real estate	\$ 4,966,298	\$4,917,416	\$—	—	\$4,917,416	\$ —
Policy loans	1,344,980	1,344,980	—	1,344,980	—	—
Funds withheld at interest	5,655,055	5,802,518	—	—	5,802,518	—
Cash and cash equivalents	1,404,566	1,404,566	1,404,566	—	—	—
Short-term investments	36,607	36,607	36,607	—	—	—
Other invested assets	945,731	941,449	4,680,203	—	477,214	376,392
Accrued investment income	427,893	427,893	—	427,893	—	—
Liabilities:						
Interest-sensitive contract liabilities	\$ 14,547,436	\$ 14,611,011	\$—	—	\$14,611,011	\$ —
Long-term debt	2,787,873	2,752,047	—	—	2,752,047	—
Collateral finance and securitization notes	681,961	626,731	—	—	626,731	—

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

7. Segment Information

The accounting policies of the segments are the same as those described in the Significant Accounting Policies and Pronouncements in Note 2 of the consolidated financial statements accompanying the 2018 Annual Report. The Company measures segment performance primarily based on profit or loss from operations before income taxes. There are no intersegment reinsurance transactions and the Company does not have any material long-lived assets.

The Company allocates capital to its segments based on an internally developed economic capital model, the purpose of which is to measure the risk in the business and to provide a basis upon which capital is deployed. The economic capital model considers the unique and specific nature of the risks inherent in the Company's businesses. As a result of the economic capital allocation process, a portion of investment income is attributed to the segments based on the level of allocated capital. In addition, the segments are charged for excess capital utilized above the allocated economic capital basis. This charge is included in policy acquisition costs and other insurance expenses.

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The Company has geographic-based and business-based operational segments. Geographic-based operations are further segmented into traditional and financial solutions businesses. Information related to revenues, income (loss) before income taxes and total assets of the Company for each reportable segment are summarized below (dollars in thousands):

	Three months ended	
	March 31,	
Revenues:	2019	2018
U.S. and Latin America:		
Traditional	\$1,540,666	\$1,489,694
Financial Solutions	254,660	213,352
Total	1,795,326	1,703,046
Canada:		
Traditional	312,333	302,319
Financial Solutions	23,574	12,777
Total	335,907	315,096
Europe, Middle East and Africa:		
Traditional	384,006	393,782
Financial Solutions	109,421	88,143
Total	493,427	481,925
Asia Pacific:		
Traditional	673,172	614,539
Financial Solutions	54,528	19,846
Total	727,700	634,385
Corporate and Other	67,671	39,255
Total	\$3,420,031	\$3,173,707
	Three months ended	
	March 31,	
Income (loss) before income taxes:	2019	2018
U.S. and Latin America:		
Traditional	\$11,654	\$2,892
Financial Solutions	83,277	67,421
Total	94,931	70,313
Canada:		
Traditional	50,279	23,707
Financial Solutions	1,348	3,191
Total	51,627	26,898
Europe, Middle East and Africa:		
Traditional	15,424	15,421
Financial Solutions	38,390	39,164
Total	53,814	54,585
Asia Pacific:		
Traditional	36,624	22,887
Financial Solutions	6,083	4,021
Total	42,707	26,908
Corporate and Other	(26,515)	(40,779)
Total	\$216,564	\$137,925
Assets:	March 31,	December
	2019	31, 2018

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U.S. and Latin America:		
Traditional	\$ 18,820,270	\$ 19,235,781
Financial Solutions	20,308,486	19,870,388
Total	39,128,756	39,106,169
Canada:		
Traditional	3,579,658	4,200,792
Financial Solutions	57,549	154,000
Total	3,637,207	4,354,792
Europe, Middle East and Africa:		
Traditional	3,797,482	3,643,174
Financial Solutions	4,968,853	4,737,529
Total	8,766,335	8,380,703
Asia Pacific:		
Traditional	6,043,694	5,680,978
Financial Solutions	1,530,360	1,180,745
Total	7,574,054	6,861,723
Corporate and Other	7,586,129	5,831,858
Total	\$ 66,692,481	\$ 64,535,245

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8. Commitments, Contingencies and Guarantees

Commitments

Funding of Investments

The Company's commitments to fund investments as of March 31, 2019 and December 31, 2018 are presented in the following table (dollars in thousands):

	March 31, December 31,	
	2019	2018
Limited partnership interests and joint ventures	\$ 579,647	\$ 523,903
Commercial mortgage loans	147,898	22,605
Bank loans and private placements	77,854	137,076
Equity release mortgages	215,305	264,858

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.

Contingencies

Litigation

The Company is subject to litigation in the normal course of its business. The Company currently has no material litigation. A legal reserve is established when the Company is notified of an arbitration demand or litigation or is notified that an arbitration demand or litigation 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.

Other Contingencies

The Company indemnifies its directors and officers as provided in its charters and by-laws. Since this indemnity generally is not subject to limitation with respect to duration or amount, the Company does not believe that it is possible to determine the maximum potential amount due under this indemnity in the future.

Guarantees

Statutory Reserve Support

RGA, through wholly-owned subsidiaries, has committed to provide statutory reserve support to third parties, in exchange for a fee, by funding loans if certain defined events occur. Such statutory reserves are required under the U.S. Valuation of Life Policies Model Regulation (commonly referred to as Regulation XXX for term life insurance policies and Regulation A-XXX for universal life secondary guarantees). The third parties have recourse to RGA should the subsidiary fail to provide the required funding, however, as of March 31, 2019, the Company does not believe that it will be required to provide any funding under these commitments as the occurrence of the defined events is considered remote. The following table presents the maximum potential obligation for these commitments as of March 31, 2019 (dollars in millions):

Commitment Period	Maximum Potential Obligation
2023	\$ 500.0
2033	450.0
2034	2,000.0
2035	1,314.2
2036	2,658.0
2037	5,750.0
2038	1,800.0

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Other Guarantees

RGA has issued guarantees to third parties on behalf of its subsidiaries for the payment of amounts due under certain securities borrowing and repurchase arrangements, financing arrangements and office lease obligations, whereby, if a subsidiary fails to meet an obligation, RGA 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's 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 condensed 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's guarantees issued as of March 31, 2019 and December 31, 2018 are reflected in the following table (dollars in thousands):

	March 31, 2019	December 31, 2018
Treaty guarantees	\$1,481,172	\$ 1,392,352
Treaty guarantees, net of assets in trust	1,381,152	1,291,445
Securities borrowing and repurchase arrangements	272,365	269,980
Financing arrangements	57,801	61,273
Lease obligations	401	392

9. Income Tax

The provision for income tax expense differed from the amounts computed by applying the U.S. federal income tax statutory rate of 21% to pre-tax income as a result of the following for the three months ended March 31, 2019 and 2018, respectively (dollars in thousands):

	Three months ended March 31,	
	2019	2018
Tax provision at U.S. statutory rate	\$45,478	\$28,964
Increase (decrease) in income taxes resulting from:		
U.S. Tax Reform	—	775
Foreign tax rate differing from U.S. tax rate	664	1,432
Differences in tax bases in foreign jurisdictions	(15,078)	(5,760)
Deferred tax valuation allowance	18,544	7,947
Amounts related to tax audit contingencies	560	835
Corporate rate changes	(1,764)	111
Subpart F	165	658
Foreign tax credits	—	(572)
Global intangible low-taxed income, net of credit	—	4,409
Equity compensation excess benefit	(1,461)	(1,114)
Other, net	(51)	10
Total provision for income taxes	\$47,057	\$37,695
Effective tax rate	21.7 %	27.3 %

The effective tax rate for the three months ended March 31, 2019 and 2018 was higher than the U.S. Statutory tax rate of 21% primarily as a result of income in non-U.S. jurisdictions with tax rates greater than the U.S. and losses in foreign jurisdictions for which the company established a valuation allowance, which was partially offset with tax benefits related to bases differences in non-U.S. jurisdictions. The effective tax for the three months ended March 31, 2018 was further increased due to the inclusion of U.S. tax related to global intangible low-taxed income ("GILTI").

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10. Employee Benefit Plans

The components of net periodic benefit cost, included in other operating expenses on the condensed consolidated statements of income, for the three months ended March 31, 2019 and 2018 were as follows (dollars in thousands):

	Pension Benefits		Other Benefits	
	Three months ended March 31,		Three months ended March 31,	
	2019	2018	2019	2018
Service cost	\$3,138	\$2,654	\$757	\$636
Interest cost	1,386	1,330	580	530
Expected return on plan assets	(1,884)	(1,554)	—	—
Amortization of prior service cost (credit)	60	83	(329)	(329)
Amortization of prior actuarial losses	911	1,094	644	498
Net periodic benefit cost	\$3,611	\$3,607	\$1,652	\$1,335

11. Reinsurance

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. Consequently, allowances would be established for amounts deemed uncollectible. At March 31, 2019 and December 31, 2018, no allowances were deemed necessary. The Company regularly evaluates the financial condition of the insurance companies from which it assumes and to which it cedes reinsurance.

Retrocessions are arranged through the Company's retrocession pools for amounts in excess of the Company's retention limit. As of March 31, 2019, all rated retrocession pool participants followed by the A.M. Best Company were rated "A- (excellent)" or better. The Company verifies retrocession pool participants' ratings on a quarterly basis. For a majority of the retrocessionaires that were not rated, security in the form of letters of credit or trust assets has been posted. In addition, the Company performs annual financial reviews of its retrocessionaires to evaluate financial stability and performance. In addition to its third party retrocessionaires, various RGA reinsurance subsidiaries retrocede amounts in excess of their retention to affiliated subsidiaries.

The following table presents information for the Company's reinsurance ceded receivable assets, including the respective amount and A.M. Best rating for each reinsurer representing in excess of five percent of the total as of March 31, 2019 or December 31, 2018 (dollars in thousands):

Reinsurer	A.M. Best Rating	March 31, 2019		December 31, 2018	
		Amount	% of Total	Amount	% of Total
Reinsurer A	A+	\$324,370	39.8 %	\$303,036	40.0 %
Reinsurer B	A+	199,748	24.5	193,324	25.5
Reinsurer C	A	71,367	8.8	69,885	9.2
Reinsurer D	A++	50,244	6.2	36,600	4.8
Reinsurer E	A+	41,362	5.1	40,004	5.3
Other reinsurers		127,715	15.6	114,723	15.2
Total		\$814,806	100.0%	\$757,572	100.0%

Included in the total reinsurance ceded receivables balance were \$232.0 million and \$242.8 million of claims recoverable, of which \$6.7 million and \$17.4 million were in excess of 90 days past due, as of March 31, 2019 and December 31, 2018, respectively.

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12. Policy Claims and Benefits

Rollforward of Claims and Claim Adjustment Expenses

The liability for unpaid claims is reported in future policy benefits and other policy-related balances within the Company's consolidated balance sheet. Activity associated with unpaid claims is summarized below (dollars in thousands):

	Three months ended	
	March 31,	
	2019	2018
Balance at beginning of year	\$6,584,668	\$5,896,469
Less: reinsurance recoverable	(432,582)	(455,547)
Net balance at beginning of year	6,152,086	5,440,922
Incurred:		
Current year	2,807,937	2,663,116
Prior years	31,447	6,255
Total incurred	2,839,384	2,669,371
Payments:		
Current year	(186,601)	(180,802)
Prior years	(2,387,312)	(2,111,275)
Total payments	(2,573,913)	(2,292,077)
Other changes:		
Interest accretion	6,556	6,115
Foreign exchange adjustments	9,630	26,676
Total other changes	16,186	32,791
Net balance at end the period	6,433,743	5,851,007
Plus: reinsurance recoverable	499,562	469,419
Balance at end of the period	\$6,933,305	\$6,320,426

Incurred claims related to prior years reflected in the table above, resulted in part from developed claims for prior years being different than were anticipated when the liabilities for unpaid claims were originally estimated. These trends have been considered in establishing the current year liability for unpaid claims.

13. New Accounting Standards

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 condensed consolidated financial statements.

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Description	Date of Adoption	Effect on the financial statements or other significant matters
<p>Standards adopted:</p> <p>Financial Instruments - Recognition and Measurement This guidance requires equity investments that are not accounted for under the equity method of accounting to be measured at fair value with changes recognized in net income and also updates certain presentation and disclosure requirements.</p>	January 1, 2018	This guidance required a cumulative-effect adjustment for certain items upon adoption. The adoption of the new guidance was not material to the Company's financial position.
<p>Compensation - Retirement Benefits - Defined Benefit Plans - General This guidance is part of the FASB's disclosure framework project and eliminates certain disclosure requirements for defined benefit pension and other postretirement plans. Early adoption is permitted.</p>	December 31, 2018	This guidance was applied retrospectively to all periods presented in the year of adoption. The adoption of the new standard was not material to the Company's financial position.
<p>Leases This new standard, based on the principle that entities should recognize assets and liabilities arising from leases, does not significantly change the lessees' recognition, measurement and presentation of expenses and cash flows from the previous accounting standard. Leases are classified as finance or operating. The new standard's primary change is the requirement for entities to recognize a lease liability for payments and a right of use asset representing the right to use the leased asset during the term of operating lease arrangements. Lessees are permitted to make an accounting policy election to not recognize the asset and liability for leases with a term of twelve months or less. Lessors' accounting is largely unchanged from the previous accounting standard. In addition, the new standard expands the disclosure requirements of lease arrangements. Early adoption is permitted.</p>	January 1, 2019	This guidance was adopted by applying the optional transition method. The adoption of the standard did not have a material impact on the Company's results of operations or financial position. The adoption of the updated guidance resulted in the Company recognizing a right-to-use asset and lease liability of \$55.2 million included in other assets and other liabilities, respectively, in the condensed consolidated balance sheets.
<p>Derivatives and Hedging This updated guidance improves the financial reporting of hedging relationships to better portray the economic results of an entity's risk management activities in its financial statements and make certain targeted improvements to simplify the application of the hedge accounting in current GAAP related to the assessment of hedge effectiveness. Early adoption is permitted.</p>	January 1, 2019	This guidance was adopted by applying a modified retrospective approach to existing hedging relationships as of the date of adoption. The adoption of the new standard did not have a material impact on the Company's results of operations or financial position. Upon adoption of the standard, the Company recorded an immaterial adjustment to retained earnings as of the beginning of the first reporting period in which the guidance was effective and modified some disclosures.

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Description	Date of Adoption	Effect on the financial statements or other significant matters
<p>Standards not yet adopted: Financial Services - Insurance</p> <p>This guidance significantly changes how insurers account for long-duration insurance contracts. The new guidance also significantly expands the disclosure requirements of long-duration insurance contracts. Below are the most significant areas of change:</p>	January 1, 2021	See each significant area of change below for the method of adoption and impact to the Company's results of operations and financial position.
<p>Cash flow assumptions for measuring liability for future policy benefits The new guidance requires insurers to review, and if necessary, update the cash flow assumptions used to measure liabilities for future policy benefits periodically. The change in the liability estimate as a result of updating cash flow assumptions will be recognized in net income.</p>		Cash flow assumptions for measuring liability for future policy benefits The Company will likely adopt this guidance on a modified retrospective basis as of the earliest period presented in the year of adoption. The Company is currently evaluating the impact of this amendment on its results of operations and financial position but anticipates the updated guidance will likely have a material impact.
<p>Discount rate assumption for measuring liability for future policy benefits The new guidance requires insurers to update the discount rate assumption used to measure liabilities for future policy benefits at each reporting period, and the discount rate utilized must be based on an upper-medium grade fixed income instrument yield. The change in the liability estimate as a result of updating the discount rate assumption will be recognized in other comprehensive income.</p>		Discount rate assumption for measuring liability for future policy benefits The Company will likely adopt this guidance on a modified retrospective basis as of the earliest period presented in the year of adoption. The Company is currently evaluating the impact of this amendment on its results of operations and financial position but anticipates the updated guidance will likely have a material impact.
<p>Market risk benefits The new guidance created a new category of benefit features called market risk benefits that will be measured at fair value with changes in fair value attributable to a change in the instrument-specific credit risk recognized in other comprehensive income.</p>		Market risk benefits The Company will adopt this guidance on a retrospective
<p>Amortization of deferred acquisition costs ("DAC") and other balances The new guidance requires DAC and other balances to be amortized on a constant level basis over the expected term of the related contracts.</p>		

basis as of the earliest period presented in the year of adoption. The Company is currently evaluating the impact of this amendment on its results of operations and financial position but anticipates the guidance will likely have a material impact.

Amortization of deferred acquisition costs (“DAC”) and other balances The Company will likely adopt this guidance on a modified retrospective basis as of the earliest period presented in the year of adoption. The Company is currently evaluating the impact of this amendment on its results of operations and financial position but anticipates the updated guidance will likely have a material impact.

Financial Instruments - Credit Losses

This guidance adds to U.S. GAAP an impairment model, known as current expected credit loss (“CECL”) model that is based on expected losses rather than incurred losses. For traditional and other receivables, held-to-maturity debt securities, loans and other instruments entities will be required to use the new forward-looking “expected loss” model that generally will result in earlier recognition of allowance for losses. For available-for-sale debt securities with unrealized losses, entities will measure credit losses similar to what they do today, except the losses will be recognized as allowances rather than reduction to the amortized cost of the securities. Early adoption is permitted.

This guidance will be adopted through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective (that is, a modified-retrospective approach). The Company is currently evaluating the impact of this amendment on its results of operations and financial position.

Fair Value Measurement

This guidance is part of the FASB’s disclosure framework project and eliminates certain disclosure requirements for fair value measurement, requires entities to disclose new information and modifies existing disclosure requirements. Early adoption is permitted.

January 1, 2020 Certain disclosure changes in the new guidance will be applied prospectively in the year of adoption. The remaining changes in the new guidance will be applied retrospectively to all periods presented in the year of adoption. The Company is currently evaluating the impact of this amendment on its results of operations and

financial position.

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ITEM 2. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

Cautionary Note Regarding Forward-Looking Statements

This report contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995 including, among others, statements relating to projections of the strategies, earnings, revenues, income or loss, ratios, future financial performance, and growth potential of the Company. The words “intend,” “expect,” “project,” “estimate,” “predict,” “anticipate,” “should,” “believe,” and other similar expressions also are intended to identify forward-looking statements. Forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified. Future events and actual results, performance, and achievements could differ materially from those set forth in, contemplated by, or underlying the forward-looking statements.

Numerous important factors could cause actual results and events to differ materially from those expressed or implied by forward-looking statements including, without limitation, (1) adverse capital and credit market conditions and their impact on the Company’s liquidity, access to capital and cost of capital, (2) the impairment of other financial institutions and its effect on the Company’s business, (3) requirements to post collateral or make payments due to declines in market value of assets subject to the Company’s collateral arrangements, (4) the fact that the determination of allowances and impairments taken on the Company’s investments is highly subjective, (5) adverse changes in mortality, morbidity, lapsation or claims experience, (6) changes in the Company’s financial strength and credit ratings and the effect of such changes on the Company’s future results of operations and financial condition, (7) inadequate risk analysis and underwriting, (8) general economic conditions or a prolonged economic downturn affecting the demand for insurance and reinsurance in the Company’s current and planned markets, (9) the availability and cost of collateral necessary for regulatory reserves and capital, (10) market or economic conditions that adversely affect the value of the Company’s investment securities or result in the impairment of all or a portion of the value of certain of the Company’s investment securities, that in turn could affect regulatory capital, (11) market or economic conditions that adversely affect the Company’s ability to make timely sales of investment securities, (12) risks inherent in the Company’s risk management and investment strategy, including changes in investment portfolio yields due to interest rate or credit quality changes, (13) fluctuations in U.S. or foreign currency exchange rates, interest rates, or securities and real estate markets, (14) adverse litigation or arbitration results, (15) the adequacy of reserves, resources and accurate information relating to settlements, awards and terminated and discontinued lines of business, (16) the stability of and actions by governments and economies in the markets in which the Company operates, including ongoing uncertainties regarding the amount of U.S. sovereign debt and the credit ratings thereof, (17) competitive factors and competitors’ responses to the Company’s initiatives, (18) the success of the Company’s clients, (19) successful execution of the Company’s entry into new markets, (20) successful development and introduction of new products and distribution opportunities, (21) the Company’s ability to successfully integrate acquired blocks of business and entities, (22) action by regulators who have authority over the Company’s reinsurance operations in the jurisdictions in which it operates, (23) the Company’s dependence on third parties, including those insurance companies and reinsurers to which the Company cedes some reinsurance, third-party investment managers and others, (24) the threat of natural disasters, catastrophes, terrorist attacks, epidemics or pandemics anywhere in the world where the Company or its clients do business, (25) interruption or failure of the Company’s telecommunication, information technology or other operational systems, or the Company’s failure to maintain adequate security to protect the confidentiality or privacy of personal or sensitive data stored on such systems, (26) changes in laws, regulations, and accounting standards applicable to the Company, its subsidiaries, or its business, (27) the benefits or burdens associated with the Tax Cuts and Jobs Act of 2017 may be different than expected, (28) the effect of the Company’s status as an insurance holding company and regulatory restrictions on its ability to pay principal of and interest on its debt obligations, and (29) other risks and uncertainties described in this document and in the Company’s other filings with the Securities and Exchange Commission (“SEC”).

Forward-looking statements should be evaluated together with the many risks and uncertainties that affect the Company’s business, including those mentioned in this document and described in the periodic reports the Company files with the SEC. These forward-looking statements speak only as of the date on which they are made. The

Company does not undertake any obligations to update these forward-looking statements, even though the Company's situation may change in the future. For a discussion of these risks and uncertainties that could cause actual results to differ materially from those contained in the forward-looking statements, you are advised to see Item 1A – “Risk Factors” in the 2018 Annual Report.

Overview

The Company is among the leading global providers of life reinsurance and financial solutions, with \$3.4 trillion of life reinsurance in force and assets of \$66.7 billion as of March 31, 2019. Traditional reinsurance includes individual and group life and health, disability, and critical illness reinsurance. Financial solutions includes longevity reinsurance, asset-intensive reinsurance, financial reinsurance and stable value products. The Company derives revenues primarily from renewal premiums from existing reinsurance treaties, new business premiums from existing or new reinsurance treaties, fee income from financial solutions business and income earned on invested assets.

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Historically, the Company's primary business has been traditional life reinsurance, which involves reinsuring life insurance policies that are often in force for the remaining lifetime of the underlying individuals insured, with premiums earned typically over a period of 10 to 30 years. Each year, however, a portion of the business under existing treaties terminates due to, among other things, lapses or voluntary surrenders of underlying policies, deaths of insureds, and the exercise of recapture options by ceding companies. The Company has expanded its financial solutions business, including significant asset-intensive and longevity risk transactions, which allow its clients to take advantage of growth opportunities and manage their capital, longevity and investment risk.

The Company's long-term profitability largely depends on the volume and amount of death- and health-related claims incurred and the ability to adequately price the risks it assumes. While death claims are reasonably predictable over a period of many years, claims become less predictable over shorter periods and are subject to significant fluctuation from quarter to quarter and year to year. For longevity business, the Company's profitability depends on the lifespan of the underlying contract holders and the investment performance for certain contracts. Additionally, the Company generates profits on investment spreads associated with the reinsurance of investment type contracts and generates fees from financial reinsurance transactions, which are typically shorter duration than its traditional life reinsurance business. The Company believes its sources of liquidity are sufficient to cover potential claims payments on both a short-term and long-term basis.

As is customary in the reinsurance business, clients continually update, refine, and revise reinsurance information provided to the Company. Such revised information is used by the Company in preparation of its condensed consolidated financial statements and the financial effects resulting from the incorporation of revised data are reflected in the current period.

Segment Presentation

The Company has geographic-based and business-based operational segments. Geographic-based operations are further segmented into traditional and financial solutions businesses. The Company allocates capital to its segments based on an internally developed economic capital model, the purpose of which is to measure the risk in the business and to provide a consistent basis upon which capital is deployed. The economic capital model considers the unique and specific nature of the risks inherent in RGA's businesses.

As a result of the economic capital allocation process, a portion of investment income is credited to the segments based on the level of allocated capital. In addition, the segments are charged for excess capital utilized above the allocated economic capital basis. This charge is included in policy acquisition costs and other insurance expenses. Segment investment performance varies with the composition of investments and the relative allocation of capital to the operating segments.

Segment revenue levels can be significantly influenced by currency fluctuations, large transactions, mix of business and reporting practices of ceding companies, and therefore may fluctuate from period to period. Although reasonably predictable over a period of years, segment claims experience can be volatile over shorter periods. See "Results of Operations by Segment" below for further information about the Company's segments.

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Consolidated Results of Operations

The following table summarizes net income for the periods presented.

	Three months ended March 31,	
	2019	2018
Revenues:	(Dollars in thousands, except per share data)	
Net premiums	\$ 2,737,813	\$ 2,582,551
Investment income, net of related expenses	579,877	516,329
Investment related gains (losses), net:		
Other-than-temporary impairments on fixed maturity securities	(9,453) —
Other investment related gains (losses), net	17,241	(470)
Total investment related gains (losses), net	7,788	(470)
Other revenues	94,553	75,297
Total revenues	3,420,031	3,173,707
Benefits and Expenses:		
Claims and other policy benefits	2,508,324	2,362,101
Interest credited	133,189	80,449
Policy acquisition costs and other insurance expenses	311,881	356,902
Other operating expenses	201,483	191,274
Interest expense	40,173	37,454
Collateral finance and securitization expense	8,417	7,602
Total benefits and expenses	3,203,467	3,035,782
Income before income taxes	216,564	137,925
Provision for income taxes	47,057	37,695
Net income	\$ 169,507	\$ 100,230
Earnings per share:		
Basic earnings per share	\$ 2.70	\$ 1.55
Diluted earnings per share	\$ 2.65	\$ 1.52

Consolidated income before income taxes increased \$78.6 million, or 57.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income for the first three months of 2019 was primarily due to improved results in the U.S. and Latin America, Canada and Asia Pacific segments and increased investment income. Foreign currency fluctuations resulted in a decrease in income before income taxes of \$9.4 million for the first three months of 2019, as compared to the same period in 2018.

The Company recognizes in consolidated income, any changes in the fair value of embedded derivatives on modco or funds withheld treaties, equity-indexed annuity treaties (“EIAs”) and variable annuities with guaranteed minimum benefit riders. The Company utilizes freestanding derivatives to minimize the income statement volatility due to changes in the fair value of embedded derivatives associated with guaranteed minimum benefit riders. The following table presents the effect of embedded derivatives and related freestanding derivatives on income before income taxes for the periods indicated (dollars in thousands):

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	Three months ended March 31,	
	2019	2018
Modco/Funds withheld:		
Unrealized gains (losses)	\$(2,092)	\$13,611
Deferred acquisition costs/retrocession	(2,857)	(3,073)
Net effect	(4,949)	10,538
EIAs:		
Unrealized gains (losses)	(1,518)	28,563
Deferred acquisition costs/retrocession	875	(15,295)
Net effect	(643)	13,268
Guaranteed minimum benefit riders:		
Unrealized gains (losses)	18,161	14,785
Deferred acquisition costs/retrocession	(16,774)	2,333
Net effect	1,387	17,118
Related freestanding derivatives	(2,578)	(22,500)
Net effect after related freestanding derivatives	(1,191)	(5,382)
Total net effect of embedded derivatives	(4,205)	40,924
Related freestanding derivatives	(2,578)	(22,500)
Total net effect after freestanding derivatives	\$(6,783)	\$18,424

Net premiums increased \$155.3 million, or 6.0%, for the three months ended March 31, 2019, as compared to the same period in 2018 due to new business production. The Company added new business production, measured by face amount of insurance in force, of \$79.3 billion and \$96.7 billion during the first three months of 2019 and 2018, respectively. Foreign currency fluctuations reduced net premiums by \$78.8 million for the first three months of 2019, as compared to the same period in 2018. Consolidated assumed life insurance in force decreased to \$3,364.6 billion as of March 31, 2019 from \$3,383.8 billion as of March 31, 2018 due to foreign currency exchange fluctuations. Unfavorable foreign currency exchange fluctuations reduced assumed life insurance in force by \$102.1 billion from March 31, 2018.

Investment income, net of related expenses, increased \$63.5 million or 12.3%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase is largely attributable to an increase in the average asset base, and a slightly higher investment yield. Partially offsetting the increase in investment income was a decrease in the fair value attributed to the Company's funds withheld at interest investment associated with the reinsurance of certain EIAs, which decreased investment income by \$6.5 million in the first three months of 2019, as compared to the same period in 2018. The effect on investment income of the EIA's fair value changes is substantially offset by a corresponding change in interest credited to policyholder account balances resulting in an insignificant effect on net income.

Average invested assets at amortized cost, excluding spread related business, for the three months ended March 31, 2019 totaled \$28.1 billion, a 4.1% increase over March 31, 2018. The average yield earned on investments, excluding spread related business, was 4.49% and 4.46% for the three months ended March 31, 2019 and 2018, respectively. The average yield will vary from quarter to quarter and year to year depending on a number of variables, including the prevailing interest rate and credit spread environment, prepayment fees and make-whole premiums, changes in the mix of the underlying investments and cash balances, and the timing of dividends and distributions on certain investments. A continued low interest rate environment is expected to put downward pressure on this yield in future reporting periods.

Investment related gains, net increased by \$8.3 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase is primarily due to a decrease in realized losses of \$18.4 million compared to the same period in 2018. The reduction in realized loss was partially offset by less favorable changes in the fair value of

embedded derivatives on modco or funds withheld treaties in the current period compared to 2018 reflecting the impact of changes in interest rates and credit spreads on the calculation of fair value. Changes in the fair value associated with these embedded derivatives reduced investment related gains by \$2.1 million for the first three months of 2019 compared to an increase of \$13.6 million in the first three months of 2018. Impairments on fixed maturity securities increased by \$9.5 million in the first three months of 2019, as compared to the same period in 2018. See Note 4 - "Investments" and Note 5 - "Derivative Instruments" in the Notes to Condensed Consolidated Financial Statements for additional information on the impairment losses and derivatives.

The effective tax rate on a consolidated basis was 21.7% and 27.3% for the first quarter 2019 and 2018, respectively. See Note 9 - "Income Tax" in the Notes to Condensed Consolidated Financial Statements for additional information on the Company's consolidated effective tax rates.

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Critical Accounting Policies

The preparation of financial statements in conformity with GAAP requires the application of accounting policies that often involve a significant degree of judgment. Management, on an ongoing basis, reviews estimates and assumptions used in the preparation of financial statements. If management determines that modifications in assumptions and estimates are appropriate given current facts and circumstances, results of operations and financial position as reported in the condensed consolidated financial statements could change significantly.

Management believes the critical accounting policies relating to the following areas are most dependent on the application of estimates and assumptions:

Premiums receivable;

Deferred acquisition costs;

Liabilities for future policy benefits and incurred but not reported claims;

Valuation of investments and other-than-temporary impairments to specific investments;

Valuation of embedded derivatives; and

Income taxes.

A discussion of each of the critical accounting policies may be found in the Company's 2018 Annual Report under "Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Policies."

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Results of Operations by Segment

U.S. and Latin America Operations

The U.S. and Latin America operations include business generated by its offices in the U.S., Mexico and Brazil. The offices in Mexico and Brazil provide services to clients in other Latin American countries. U.S. and Latin America operations consist of two major segments: Traditional and Financial Solutions. The Traditional segment primarily specializes in the reinsurance of individual mortality-risk, health and long-term care and to a lesser extent, group reinsurance. The Financial Solutions segment consists of Asset-Intensive and Financial Reinsurance. Asset-Intensive within the Financial Solutions segment includes coinsurance of annuities and corporate-owned life insurance policies and to a lesser extent fee-based synthetic guaranteed investment contracts, which include investment-only, stable value contracts. Financial Reinsurance within the Financial Solutions segment primarily involves assisting ceding companies in meeting applicable regulatory requirements by enhancing the ceding companies' financial strength and regulatory surplus position through relatively low risk reinsurance transactions. Due to the low-risk nature of financial reinsurance transactions, they typically do not qualify as reinsurance under GAAP, so only the related net fees are reflected in other revenues on the condensed consolidated statements of income.

For the three months ended March 31, 2019:

(dollars in thousands)

	Traditional	Financial Solutions		Total U.S. and Latin America
		Asset-Intensive	Financial Reinsurance	
Revenues:				
Net premiums	\$1,356,882	\$7,210	\$ —	\$1,364,092
Investment income, net of related expenses	185,534	197,221	1,016	383,771
Investment related gains (losses), net	(6,472)	1,046	—	(5,426)
Other revenues	4,722	22,674	25,493	52,889
Total revenues	1,540,666	228,151	26,509	1,795,326
Benefits and expenses:				
Claims and other policy benefits	1,300,065	48,099	—	1,348,164
Interest credited	19,874	88,710	—	108,584
Policy acquisition costs and other insurance expenses	176,003	19,233	5,376	200,612
Other operating expenses	33,070	7,151	2,814	43,035
Total benefits and expenses	1,529,012	163,193	8,190	1,700,395
Income before income taxes	\$11,654	\$64,958	\$ 18,319	\$94,931

For the three months ended March 31, 2018:

(dollars in thousands)

	Traditional	Financial Solutions		Total U.S. and Latin America
		Asset-Intensive	Financial Reinsurance	
Revenues:				
Net premiums	\$1,299,422	\$5,192	\$ —	\$1,304,614
Investment income, net of related expenses	183,060	157,912	1,822	342,794
Investment related gains (losses), net	1,683	676	—	2,359
Other revenues	5,529	22,959	24,791	53,279
Total revenues	1,489,694	186,739	26,613	1,703,046
Benefits and expenses:				
Claims and other policy benefits	1,254,961	15,945	—	1,270,906
Interest credited	20,280	54,212	—	74,492
Policy acquisition costs and other insurance expenses	177,640	62,035	4,000	243,675
Other operating expenses	33,921	7,285	2,454	43,660

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Total benefits and expenses	1,486,802	139,477	6,454	1,632,733
Income before income taxes	\$2,892	\$47,262	\$ 20,159	\$70,313

Income before income taxes increased by \$24.6 million, or 35.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income before income taxes was primarily due to the impact of higher investment related gains (losses) in the Asset-Intensive segment as well as improved claims experience within the U.S. Traditional segment. Offsetting these somewhat was the change in the value of the embedded derivatives associated with reinsurance treaties structured on a modco or funds withheld basis, net of the corresponding impact to deferred acquisition costs.

Traditional Reinsurance

Income before income taxes for the U.S. and Latin America Traditional segment increased by \$8.8 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase is primarily due to improved claims experience in 2019 from both individual mortality and group business.

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Net premiums increased \$57.5 million, or 4.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to organic growth combined with strong new business in the first quarter of 2019. The segment added new individual life business production, measured by face amount of insurance in force of \$28.8 billion and \$23.3 billion in the first three months of 2019 and 2018, respectively.

Net investment income increased \$2.5 million, or 1.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was due to an increase in the invested asset base, partially offset by lower variable investment income quarter over quarter. Investment related gains (losses), net decreased \$8.2 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Claims and other policy benefits as a percentage of net premiums (“loss ratios”) were 95.8% and 96.6% for the three months ended March 31, 2019 and 2018, respectively. The decrease in the loss ratio in 2019 was primarily due to unfavorable 2018 claims experience in traditional individual mortality, associated with the influenza season, and the group disability line of business.

Interest credited expense decreased by \$0.4 million, or 2.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. Interest credited in this segment relates to amounts credited on cash value products, which also have a significant mortality component. Income before income taxes is affected by the spread between the investment income and the interest credited on the underlying products.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 13.0% and 13.7% for the three months ended March 31, 2019 and 2018, respectively. While these ratios are expected to remain in a predictable range, they may fluctuate from period to period due to varying allowance levels within coinsurance-type arrangements. In addition, the amortization pattern of previously capitalized amounts, which are subject to the form of the reinsurance agreement and the underlying insurance policies, may vary. Also, the mix of first year coinsurance business versus yearly renewable term business can cause the percentage to fluctuate from period to period.

Other operating expenses decreased \$0.9 million, or 2.5%, for the three months ended March 31, 2019, as compared to the same period in 2018 due to decreased variable compensation. Other operating expenses as a percentage of net premiums were 2.4% and 2.6% for the three month periods ended March 31, 2019 and 2018, respectively. The expense ratio tends to fluctuate only slightly from period to period due to the maturity and scale of this segment.

Financial Solutions - Asset-Intensive Reinsurance

Asset-Intensive reinsurance within the U.S. and Latin America Financial Solutions segment primarily involves assuming investment risk within underlying annuities and corporate-owned life insurance policies. Most of these agreements are coinsurance, coinsurance with funds withheld or modco. The Company recognizes profits or losses primarily from the spread between the investment income earned and the interest credited on the underlying deposit liabilities, income associated with longevity risk, and fees associated with variable annuity account values and guaranteed investment contracts.

Impact of certain derivatives:

Income from the asset-intensive business tends to be volatile due to changes in the fair value of certain derivatives, including embedded derivatives associated with reinsurance treaties structured on a modco or funds withheld basis, as well as embedded derivatives associated with the Company’s reinsurance of equity-indexed annuities and variable annuities with guaranteed minimum benefit riders. Fluctuations occur period to period primarily due to changing investment conditions including, but not limited to, interest rate movements (including risk-free rates and credit spreads), implied volatility, the Company’s own credit risk and equity market performance, all of which are factors in the calculations of fair value. Therefore, management believes it is helpful to distinguish between the effects of changes in these derivatives, net of related hedging activity, and the primary factors that drive profitability of the underlying treaties, namely investment income, fee income (included in other revenues), and interest credited. These fluctuations are considered unrealized by management and do not affect current cash flows, crediting rates or spread performance on the underlying treaties.

The following table summarizes the asset-intensive results and quantifies the impact of these embedded derivatives for the periods presented. Revenues before certain derivatives, benefits and expenses before certain derivatives, and income before income taxes and certain derivatives should not be viewed as substitutes for GAAP revenues, GAAP

benefits and expenses, and GAAP income before income taxes.

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(dollars in thousands)	Three months ended	
	March 31, 2019	2018
Revenues:		
Total revenues	\$228,151	\$186,739
Less:		
Embedded derivatives – modco/funds withheld treaties	4,383	11,918
Guaranteed minimum benefit riders and related free standing derivatives	(2,835)	(4,588)
Revenues before certain derivatives	226,603	179,409
Benefits and expenses:		
Total benefits and expenses	163,193	139,477
Less:		
Embedded derivatives – modco/funds withheld treaties	2,857	3,073
Guaranteed minimum benefit riders and related free standing derivatives	(1,644)	794
Equity-indexed annuities	643	(13,268)
Benefits and expenses before certain derivatives	161,337	148,878
Income before income taxes:		
Income before income taxes	64,958	47,262
Less:		
Embedded derivatives – modco/funds withheld treaties	1,526	8,845
Guaranteed minimum benefit riders and related free standing derivatives	(1,191)	(5,382)
Equity-indexed annuities	(643)	13,268
Income before income taxes and certain derivatives	\$65,266	\$30,531

Embedded Derivatives - Modco/Funds Withheld Treaties - Represents the change in the fair value of embedded derivatives on funds withheld at interest associated with treaties written on a modco or funds withheld basis. The fair value changes of embedded derivatives on funds withheld at interest associated with treaties written on a modco or funds withheld basis are reflected in revenues, while the related impact on deferred acquisition expenses is reflected in benefits and expenses. The Company's utilization of a credit valuation adjustment did not have a material effect on the change in fair value of these embedded derivatives for the three months ended March 31, 2019 and 2018.

The change in fair value of the embedded derivatives - modco/funds withheld treaties increased income before income taxes by \$1.5 million and \$8.8 million for the three months ended March 31, 2019 and 2018, respectively. The increase in income for the three months ended March 31, 2019 and 2018 was primarily due to tightening credit spreads.

Guaranteed Minimum Benefit Riders - Represents the impact related to guaranteed minimum benefits associated with the Company's reinsurance of variable annuities. The fair value changes of the guaranteed minimum benefits along with the changes in fair value of the free standing derivatives (interest rate swaps, financial futures and equity options), purchased by the Company to substantially hedge the liability are reflected in revenues, while the related impact on deferred acquisition expenses is reflected in benefits and expenses. The Company's utilization of a credit valuation adjustment did not have a material effect on the change in fair value of these embedded derivatives for the three months ended March 31, 2019 and 2018.

The change in fair value of the guaranteed minimum benefits, after allowing for changes in the associated free standing derivatives, decreased income before income taxes by \$1.2 million and \$5.4 million for the three months ended March 31, 2019 and 2018, respectively. The decrease in income for the three months ended March 31, 2019 and 2018 was primarily due to interest rate movements.

Equity-Indexed Annuities - Represents changes in the liability for equity-indexed annuities in excess of changes in account value, after adjustments for related deferred acquisition expenses. The change in fair value of embedded derivative liabilities associated with equity-indexed annuities decreased income before income taxes by \$0.6 million and increased by \$13.3 million for the three months ended March 31, 2019 and 2018, respectively. The decrease in

income for the three months ended March 31, 2019 was due to interest rate movements. The increase for the three months ended March 31, 2018 was primarily due to lower policyholder lapses and withdrawals.

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The changes in derivatives discussed above are considered unrealized by management and do not affect current cash flows, crediting rates or spread performance on the underlying treaties. Fluctuations occur period to period primarily due to changing investment conditions including, but not limited to, interest rate movements (including benchmark rates and credit spreads), credit valuation adjustments, implied volatility and equity market performance, all of which are factors in the calculations of fair value. Therefore, management believes it is helpful to distinguish between the effects of changes in these derivatives and the primary factors that drive profitability of the underlying treaties, namely investment income, fee income (included in other revenues) and interest credited.

Discussion and analysis before certain derivatives:

Income before income taxes and certain derivatives increased by \$34.7 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to higher investment related gains (losses), net of the corresponding impact to deferred acquisition costs, associated with coinsurance and funds withheld portfolios and the contribution from transactions executed in the second half of 2018. Funds withheld capital gains (losses) are reported in investment income.

Revenue before certain derivatives increased by \$47.2 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in the first quarter was primarily due to the contribution from transactions executed in the second half of 2018 and higher investment related gains (losses) associated with coinsurance and funds withheld portfolios.

Benefits and expenses before certain derivatives increased by \$12.5 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in the first quarter of 2019 was primarily due to the contribution from transactions executed in the second half of 2018.

The invested asset base supporting this segment increased to \$19.9 billion as of March 31, 2019 from \$16.0 billion as of March 31, 2018 due to transactions executed in the second half of 2018. As of March 31, 2019, \$3.8 billion of the invested assets were funds withheld at interest, of which greater than 90% is associated with one client.

Financial Solutions - Financial Reinsurance

Financial Reinsurance within the U.S. and Latin America Financial Solutions segment income before income taxes consists primarily of net fees earned on financial reinsurance transactions. Additionally, a portion of the business is brokered business in which the Company does not participate in the assumption of risk. The fees earned from financial reinsurance contracts and brokered business are reflected in other revenues, and the fees paid to retrocessionaires are reflected in policy acquisition costs and other insurance expenses.

Income before income taxes decreased \$1.8 million, or 9.1%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease was primarily due to the termination of certain agreements.

As of March 31, 2019 and 2018, the amount of reinsurance assumed from client companies, as measured by pre-tax statutory surplus, risk based capital and other financial structures was \$14.6 billion and \$13.3 billion, respectively. The increase was primarily due to a number of new transactions offsetting the termination of certain agreements, as well as organic growth on existing transactions. Fees earned from this business can vary significantly depending on the size of the transactions and the timing of their completion and therefore can fluctuate from period to period.

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Canada Operations

The Company conducts reinsurance business in Canada primarily through RGA Canada. The Canada operations are primarily engaged in Traditional reinsurance, which consists mainly of traditional individual life reinsurance, and to a lesser extent creditor, group life and health, critical illness and disability reinsurance. Creditor insurance covers the outstanding balance on personal, mortgage or commercial loans in the event of death, disability or critical illness and is generally shorter in duration than traditional individual life insurance. The Canada Financial Solutions segment consists of longevity and financial reinsurance.

(dollars in thousands)

	Three months ended March 31,					
	2019			2018		
Revenues:	Traditional	Financial Solutions	Total Canada	Traditional	Financial Solutions	Total Canada
Net premiums	\$255,257	\$ 21,989	\$277,246	\$252,723	\$ 11,305	\$264,028
Investment income, net of related expenses	49,693	718	50,411	50,584	115	50,699
Investment related gains (losses), net	7,404	—	7,404	(731)	—	(731)
Other revenues	(21)	867	846	(257)	1,357	1,100
Total revenues	312,333	23,574	335,907	302,319	12,777	315,096
Benefits and expenses:						
Claims and other policy benefits	199,856	21,153	221,009	212,825	9,115	221,940
Interest credited	55	—	55	5	—	5
Policy acquisition costs and other insurance expenses	53,908	449	54,357	57,032	96	57,128
Other operating expenses	8,235	624	8,859	8,750	375	9,125
Total benefits and expenses	262,054	22,226	284,280	278,612	9,586	288,198
Income before income taxes	\$50,279	\$ 1,348	\$51,627	\$23,707	\$ 3,191	\$26,898

Income before income taxes increased by \$24.7 million, or 91.9%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income in the first three months of 2019 is primarily due to favorable traditional individual life mortality experience as compared to the same period in 2018. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in income before income taxes of \$2.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Traditional Reinsurance

Income before income taxes for the Canada Traditional segment increased by \$26.6 million, or 112.1%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income before income taxes in 2019 is primarily due to favorable traditional individual life mortality experience. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in income before income taxes of \$2.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net premiums increased \$2.5 million, or 1.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in 2019 was primarily due to a new inforce block transaction during the last quarter of 2018. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in net premiums of \$12.7 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net investment income decreased \$0.9 million, or 1.8%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in 2019 is primarily a result of foreign currency exchange fluctuation in the Canadian dollar partially offset by an increase in the invested asset base due to growth in underlying business volume. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in net investment income of \$2.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Investment related gains (losses), net increased by \$8.1 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in 2019 was primarily due to an increase in the fair market value of derivatives.

Loss ratios were 78.3% and 84.2% for the three months ended March 31, 2019 and 2018, respectively. The decrease in the loss ratio for the first quarter of 2019, as compared to the same period in 2018, is due to favorable traditional individual life mortality experience and the aforementioned new inforce block transaction in the last quarter of 2018. Loss ratios for the traditional individual life mortality business were 83.5% and 91.3% for the first three months ended March 31, 2019 and 2018, respectively. Excluding creditor business, claims as a percentage of net premiums for this segment were 73.2% and 77.0% for the three months ended March 31, 2019 and 2018, respectively. Historically, the loss ratio increased primarily as the result of several large permanent level premium in force blocks assumed in 1997 and 1998. These blocks are mature blocks of long-term permanent level premium business in which mortality as a percentage of net premiums is expected to be higher than historical ratios. The nature of permanent

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level premium policies requires the Company to set up actuarial liabilities and invest the amounts received in excess of early-year claims costs to fund claims in later years when premiums, by design, continue to be level as compared to expected increasing mortality or claim costs. As such, investment income becomes a more significant component of profitability of these in force blocks. Excluding creditor business, claims and other policy benefits, as a percentage of net premiums and investment income were 70.1% and 75.3% for the three months ended March 31, 2019 and 2018, respectively.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 21.1% and 22.6% for the three months ended March 31, 2019 and 2018, respectively. Overall, while these ratios are expected to remain in a predictable range, they may fluctuate from period to period due to varying allowance levels and product mix. In addition, the amortization patterns of previously capitalized amounts, which are subject to the form of the reinsurance agreement and the underlying insurance policies, may vary.

Other operating expenses decreased by \$0.5 million, or 5.9%, for the three months ended March 31, 2019, as compared to the same period in 2018. Other operating expenses as a percentage of net premiums were 3.2% and 3.5% for the three months ended March 31, 2019 and 2018, respectively.

Financial Solutions Reinsurance

Income before income taxes decreased by \$1.8 million, or 57.8%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in income in the first three months was primarily due to unfavorable experience on longevity business. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in income before income taxes of \$0.1 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net premiums increased \$10.7 million, or 94.5%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to a new financial solutions reinsurance transaction completed in the first three months of 2019. Foreign currency exchange fluctuation in the Canadian dollar resulted in a decrease in net premiums of \$1.0 million for the three months ended March 31, 2019, as compared to the same period in 2018. Net investment income increased \$0.6 million for the three months ended March 31, 2019, as compared to the same period in 2018 primarily due to an increase in the invested asset base.

Claims and other policy benefits increased \$12.0 million, or 132.1%, for the three months ended March 31, 2019 as compared to the same period in 2018. The increase was primarily a result of the aforementioned new financial solutions reinsurance transaction completed in the first three months of 2019.

Europe, Middle East and Africa Operations

The Europe, Middle East and Africa (“EMEA”) operations include business generated by its offices principally in France, Germany, Ireland, Italy, the Middle East, the Netherlands, Poland, South Africa, Spain and the United Kingdom (“UK”). EMEA consists of two major segments: Traditional and Financial Solutions. The Traditional segment primarily provides reinsurance through yearly renewable term and coinsurance agreements on a variety of life, health and critical illness products. Reinsurance agreements may be facultative or automatic agreements covering primarily individual risks and, in some markets, group risks. The Financial Solutions segment consists of reinsurance and other transactions associated with longevity closed blocks, payout annuities, capital management solutions and financial reinsurance.

(dollars in thousands)

	Three months ended March 31,			2018		
	Traditional	Financial Solutions	Total EMEA	Traditional	Financial Solutions	Total EMEA
Revenues:						
Net premiums	\$363,884	\$52,101	\$415,985	\$375,729	\$47,979	\$423,708
Investment income, net of related expenses	18,802	48,665	67,467	15,764	31,932	47,696
Investment related gains (losses), net	—	3,364	3,364	9	3,352	3,361
Other revenues	1,320	5,291	6,611	2,280	4,880	7,160
Total revenues	384,006	109,421	493,427	393,782	88,143	481,925

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Benefits and expenses:

Claims and other policy benefits	312,135	48,878	361,013	326,802	42,471	369,273
Interest credited	—	12,342	12,342	—	(2,652)	(2,652)
Policy acquisition costs and other insurance expenses	29,953	631	30,584	25,552	1,080	26,632
Other operating expenses	26,494	9,180	35,674	26,007	8,080	34,087
Total benefits and expenses	368,582	71,031	439,613	378,361	48,979	427,340
Income (loss) before income taxes	\$ 15,424	\$ 38,390	\$ 53,814	\$ 15,421	\$ 39,164	\$ 54,585

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Income before income taxes decreased by \$0.8 million, or 1.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in income before income taxes for the first three months was primarily due to foreign exchange fluctuations and the normalization of performance on closed longevity blocks and payout annuities after favorable performance in 2018. Foreign currency exchange fluctuations resulted in a decrease in income before income taxes totaling \$4.5 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Traditional Reinsurance

Income before income taxes for the three months ended March 31, 2019 was consistent with the same period in 2018. Foreign currency exchange fluctuations resulted in a decrease in income before income taxes totaling \$1.7 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net premiums decreased \$11.8 million, or 3.2%, for the three months ended March 31, 2019, as compared to the same period in 2018 with an increase in business volume on existing treaties more than offset by unfavorable foreign currency fluctuations. Foreign currency exchange fluctuations decreased net premiums by \$32.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

A portion of the net premiums for the segment, in each period presented, relates to reinsurance of critical illness coverage, primarily in the UK. This coverage provides a benefit in the event of the diagnosis of a pre-defined critical illness. Net premiums earned from this coverage totaled \$44.4 million and \$48.9 million for the first three months of 2019 and 2018, respectively.

Net investment income increased \$3.0 million, or 19.3%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase for the first three months of 2019 was primarily due to an increase in the invested asset base and an increase in the investment yield. Foreign currency exchange fluctuation resulted in a decrease in net investment income of \$1.7 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Loss ratios for this segment were 85.8% and 87.0% for the three month periods ended March 31, 2019 and 2018, respectively. The slight decrease in the loss ratio for the first three months of 2019 is primarily due to changes in business mix reflecting increased volumes of business with lower loss ratios, but with higher allowances. These higher allowances are reflected in the increase in the policy acquisition cost ratio.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 8.2% and 6.8% for the three months ended March 31, 2019 and 2018, respectively. The increase in policy acquisition cost ratio is due primarily to changes in the mix of business reflecting increased volumes of business with higher allowances.

Other operating expenses increased \$0.5 million, or 1.9%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase is in line with expected expense levels needed to support the business as well as higher incentive compensation. Other operating expenses as a percentage of net premiums totaled 7.3% and 6.9% for the three months ended March 31, 2019 and 2018, respectively.

Financial Solutions Reinsurance

Income before income taxes decreased by \$0.8 million, or 2.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in income before income taxes for the first three months was primarily due to foreign exchange fluctuations and the normalization of performance on closed longevity blocks and payout annuities after favorable performance in 2018. Foreign currency exchange fluctuations resulted in a decrease in income before income taxes totaling \$2.8 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net premiums increased \$4.1 million, or 8.6%, for the three months ended March 31, 2019, as compared to the same period in 2018. Net premiums increased primarily due to increased volumes of closed longevity block business. Foreign currency exchange fluctuations decreased net premiums by \$3.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net investment income increased \$16.7 million, or 52.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to an increase in investment income associated with unit-linked policies, which fluctuate with market performance. The effect on investment income related to unit-linked

products is substantially offset by a corresponding change in interest credited. Foreign currency exchange fluctuation resulted in a decrease in investment income of \$3.6 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Other revenues increased by \$0.4 million, or 8.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. Fees earned from this business can vary significantly depending on the size of the transactions and the timing of their completion and, therefore, can fluctuate from period to period.

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Claims and other policy benefits increased \$6.4 million, or 15.1%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in claims and other policy benefits was primarily due to increased volumes of closed longevity block business as well as a normalization of performance compared to favorable performance in 2018. Foreign currency exchange fluctuations decreased claims and other policy benefits by \$3.4 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Interest credited expense increased by \$15.0 million for the three months ended March 31, 2019, as compared to the same period in 2018. Interest credited in this segment relates to amounts credited to the contractholders of unit-linked products. The effect on interest credited related to unit-linked products is substantially offset by a corresponding change in investment income.

Other operating expenses increased \$1.1 million, or 13.6%, for the three months ended March 31, 2019, as compared to the same period in 2018, with the increase primarily due to business acquisition related costs. Foreign currency exchange fluctuations decreased other operating expenses by \$0.7 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Asia Pacific Operations

The Asia Pacific operations include business generated by its offices principally in Australia, China, Hong Kong, India, Japan, Malaysia, New Zealand, Singapore, South Korea and Taiwan. The Traditional segment's principal types of reinsurance include individual and group life and health, critical illness, disability and superannuation.

Superannuation is the Australian government mandated compulsory retirement savings program. Superannuation funds accumulate retirement funds for employees, and, in addition, typically offer life and disability insurance coverage. The Financial Solutions segment includes financial reinsurance and asset-intensive transactions including certain disability, life and health blocks with significant investment risk. Reinsurance agreements may be facultative or automatic agreements covering primarily individual risks and in some markets, group risks.

(dollars in thousands)

	Three months ended March 31,					
	2019			2018		
Revenues:	Traditional	Financial Solutions	Total Asia Pacific	Traditional	Financial Solutions	Total Asia Pacific
Net premiums	\$646,741	\$ 33,795	\$680,536	\$589,513	\$ 678	\$590,191
Investment income, net of related expenses	25,335	10,269	35,604	24,600	10,394	34,994
Investment related gains (losses), net	8	4,069	4,077	8	3,467	3,475
Other revenues	1,088	6,395	7,483	418	5,307	5,725
Total revenues	673,172	54,528	727,700	614,539	19,846	634,385
Benefits and expenses:						
Claims and other policy benefits	546,454	31,719	578,173	495,194	4,468	499,662
Interest credited	—	6,702	6,702	—	6,394	6,394
Policy acquisition costs and other insurance expenses	50,323	5,379	55,702	58,782	1,197	59,979
Other operating expenses	39,771	4,645	44,416	37,676	3,766	41,442
Total benefits and expenses	636,548	48,445	684,993	591,652	15,825	607,477
Income before income taxes	\$36,624	\$ 6,083	\$42,707	\$22,887	\$ 4,021	\$26,908

Income before income taxes increased by \$15.8 million, or 58.7%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income before income taxes for the first three months is primarily attributable to favorable overall experience in Asia, partially offset by a loss in Australia. Foreign currency exchange fluctuations resulted in a decrease to income before income taxes totaling \$2.0 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Traditional Reinsurance

Income before income taxes increased by \$13.7 million, or 60.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income before income taxes in 2019 was primarily due to more profitable new business and favorable claims experience in Asia as compared to the prior year same quarter. Foreign

currency exchange fluctuations resulted in a decrease to income before income taxes totaling \$2.2 million for the three months ended 2019, as compared to the same period in 2018.

Net premiums increased by \$57.2 million, or 9.7%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase for the three month period in 2019 was driven by new business growth. Foreign currency exchange fluctuations resulted in a decrease in net premiums of \$27.2 million for the three months ended March 31, 2019, as compared to the same period in 2018.

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A portion of the net premiums for the segment, in each period presented, relates to reinsurance of critical illness coverage. This coverage provides a benefit in the event of the diagnosis of a pre-defined critical illness. Reinsurance of critical illness in the segment is offered primarily in South Korea, Australia, China and Hong Kong. Net premiums earned from this coverage totaled \$252.1 million and \$235.7 million for the three months ended March 31, 2019 and 2018, respectively.

Net investment income increased \$0.7 million, or 3.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to an increase in the invested asset base. Foreign currency exchange fluctuations resulted in a decrease in net investment income of \$1.7 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Loss ratios for this segment were 84.5% and 84.0% for the three months ended March 31, 2019 and 2018, respectively. The increase in the loss ratio for the first three months of 2019 was primarily due to unfavorable claims experience in Australia, partially offset by net favorable claims experience across Asia compared to the prior year same quarter.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 7.8% and 10.0% for the three months ended March 31, 2019 and 2018, respectively. The ratio of policy acquisition costs and other insurance expenses as a percentage of net premiums fluctuates periodically due to timing of client company reporting and variations in the mixture of business. The decrease in the current quarter is primarily due to higher allowances based on updated client reporting in the prior year.

Other operating expenses increased \$2.1 million or 5.6%, for the three months ended March 31, 2019, as compared to the same period in 2018 mainly due to growth in headcount across Asia to manage the business growth in the region. Foreign currency exchange fluctuations resulted in a decrease in other operating expenses of \$1.8 million for the three months ended March 31, 2019, as compared to the same period in 2018. Other operating expenses as a percentage of net premiums totaled 6.1% and 6.4% for the three months ended March 31, 2019 and 2018, respectively. The timing of premium flows and the level of costs associated with development of new markets within the segment may cause other operating expenses as a percentage of net premiums to fluctuate from period to period.

Financial Solutions Reinsurance

Income before income taxes increased by \$2.1 million, or 51.3%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in income before income taxes is primarily attributable to favorable lapse experience on a closed treaty in Japan and new transactions in Asia. Foreign currency exchange fluctuations increased income before income taxes by \$0.2 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Net premiums increased \$33.1 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase was primarily due to new asset-intensive transactions in Asia.

Net investment income decreased \$0.1 million, or 1.2%, for the three months ended March 31, 2019, as compared to the same period in 2018. Foreign currency exchange fluctuation resulted in a decrease in net investment income of \$0.4 million for the three months ended March 31, 2019, as compared to the same period in 2018.

Other revenues increased by \$1.1 million, or 20.5%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase compared to the same period in 2018 is primarily due to higher income from new financial reinsurance transactions. As of March 31, 2019 and 2018, the amount of reinsurance assumed from client companies, as measured by pre-tax statutory surplus, risk based capital and other financial reinsurance structures was \$3.1 billion and \$2.6 billion, respectively. Fees earned from this business can vary significantly depending on the size of the transactions and the timing of their completion and, therefore, can fluctuate from period to period.

Claims and other policy benefits increased by \$27.3 million for the three months ended March 31, 2019, as compared to the same period in 2018. This increase is attributable to new asset-intensive transactions in Asia.

Interest credited expense increased by \$0.3 million, or 4.8%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase is primarily driven by growth from new asset-intensive transactions.

Other operating expenses increased \$0.9 million, or 23.3%, for the three months ended March 31, 2019, as compared to the same period in 2018. The timing of premium flows and the level of costs associated with new transactions and

the entrance into and development of new markets within the segment may cause other operating expenses to fluctuate from period to period.

Corporate and Other

Corporate and Other revenues primarily include investment income from unallocated invested assets, investment related gains and losses and service fees. Corporate and Other expenses consist of the offset to capital charges allocated to the operating segments within the policy acquisition costs and other insurance income line item, unallocated overhead and executive costs, interest expense

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related to debt, and the investment income and expense associated with the Company's collateral finance and securitization transactions and service business expenses. Additionally, Corporate and Other includes results from certain wholly-owned subsidiaries, such as RGAX, and joint ventures that, among other activities, develop and market technology, and provide consulting and outsourcing solutions for the insurance and reinsurance industries. In the past two years, the Company has increased its investment and expenditures in this area in an effort to both support its clients and generate new future revenue streams.

(dollars in thousands)	Three months ended	
	March 31,	
	2019	2018
Revenues:		
Net premiums	\$(46)	\$10
Investment income, net of related expenses	42,624	40,146
Investment related gains (losses), net	(1,631)	(8,934)
Other revenues	26,724	8,033
Total revenues	67,671	39,255
Benefits and expenses:		
Claims and other policy benefits	(35)	320
Interest credited	5,506	2,210
Policy acquisition costs and other insurance income	(29,374)	(30,512)
Other operating expenses	69,499	62,960
Interest expense	40,173	37,454
Collateral finance and securitization expense	8,417	7,602
Total benefits and expenses	94,186	80,034
Loss before income taxes	\$(26,515)	\$(40,779)

Loss before income taxes decreased by \$14.3 million, or 35.0%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in loss before income taxes in the first quarter was primarily due to increases in investment income and other revenues and a decrease in net investment related losses, which are partially offset by an increase in other operating expenses.

Net investment income increased by \$2.5 million, or 6.2%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in the first quarter was largely attributable to an increase in unallocated invested assets and a higher average investment yield.

Net investment related losses decreased by \$7.3 million, or 81.7%, for the three months ended March 31, 2019, as compared to the same period in 2018. The decrease in the first quarter was primarily due to an increase in net gains on the sale of fixed maturity securities of \$5.1 million and an increase in the fair value of equity securities of \$8.1 million, which were offset by a \$3.7 million increase in other-than-temporary impairments on fixed maturity securities and other investments.

Other revenues increased by \$18.7 million for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in the first quarter was mainly due to a recapture of a collateral finance transaction, which resulted in a \$12.9 million gain. In addition, the Company's RGAX operations contributed \$11.1 million to other revenues in 2019 compared to \$6.5 million in 2018.

Policy acquisition costs and other insurance income increased by \$1.1 million, or 3.7%, for the three months ended March 31, 2019, as compared to the same period in 2018. Fluctuations period over period were attributable to the offset to capital charges allocated to the operating segments.

Other operating expenses increased by \$6.5 million, or 10.4%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in other operating expenses was primarily due to strategic initiatives such as RGAX, and increased incentive-based compensation.

Interest expense increased by \$2.7 million, or 7.3%, for the three months ended March 31, 2019, as compared to the same period in 2018. The increase in interest expense was due to variability in tax-related interest expense.

Liquidity and Capital Resources

Overview

The Company believes that cash flows from the source of funds available to it will provide sufficient cash flows for the next twelve months to satisfy the current liquidity requirements of the Company under various scenarios that include the potential risk of early recapture of reinsurance treaties, market events and higher than expected claims. The Company performs periodic liquidity stress

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testing to ensure its asset portfolio includes sufficient high quality liquid assets that could be utilized to bolster its liquidity position under stress scenarios. These assets could be utilized as collateral for secured borrowing transactions with various third parties or by selling the securities in the open market if needed. The Company's liquidity requirements have been and will continue to be funded through net cash flows from operations. However, in the event of significant unanticipated cash requirements beyond normal liquidity needs, the Company has multiple liquidity alternatives available based on market conditions and the amount and timing of the liquidity need. These alternatives include borrowings under committed credit facilities, secured borrowings, the ability to issue long-term debt, preferred securities or common equity and, if necessary, the sale of invested assets subject to market conditions.

Current Market Environment

The current low interest rate environment in select markets, primarily the U.S., Canada and Europe, continues to put downward pressure on the Company's investment yield. The Company's average investment yield, excluding spread business, for the three months ended March 31, 2019 was 4.49%, three basis points above the same period in 2018. The Company's insurance liabilities, in particular its annuity products, are sensitive to changing market factors. Gross unrealized gains on fixed maturity securities available-for-sale increased from \$1,858.7 million at December 31, 2018 to \$2,780.0 million at March 31, 2019. Similarly, gross unrealized losses decreased from \$748.5 million at December 31, 2018 to \$230.2 million at March 31, 2019.

The Company continues to be in a position to hold any investment security showing an unrealized loss until recovery, provided it remains comfortable with the credit of the issuer. As indicated above, gross unrealized gains on fixed maturity securities of \$2,780.0 million remain well in excess of gross unrealized losses of \$230.2 million as of March 31, 2019. The Company does not rely on short-term funding or commercial paper and to date it has experienced no liquidity pressure, nor does it anticipate such pressure in the foreseeable future.

The Company projects its reserves to be sufficient, and it would not expect to write down deferred acquisition costs or be required to take any actions to augment capital, even if interest rates remain at current levels for the next five years, assuming all other factors remain constant. While the Company has felt the pressures of sustained low interest rates and volatile equity markets and may continue to do so, its business operations are not overly sensitive to these risks. Although management believes the Company's current capital base is adequate to support its business at current operating levels, it continues to monitor new business opportunities and any associated new capital needs that could arise from the changing financial landscape.

The Holding Company

RGA is an insurance holding company whose primary uses of liquidity include, but are not limited to, the immediate capital needs of its operating companies, dividends paid to its shareholders, repurchase of common stock and interest payments on its indebtedness. The primary sources of RGA's liquidity include proceeds from its capital-raising efforts, interest income on undeployed corporate investments, interest income received on surplus notes with RGA Reinsurance, RCM and Rockwood Re and dividends from operating subsidiaries. As the Company continues its expansion efforts, RGA will continue to be dependent upon these sources of liquidity. The following tables provide comparative information for RGA (dollars in thousands):

	Three months ended March 31,	
	2019	2018
Interest expense	\$48,450	\$45,444
Capital contributions to subsidiaries	20,500	11,000
Dividends to shareholders	37,707	32,241
Interest and dividend income	30,112	31,547
	March	December
	31, 2019	31, 2018
Cash and invested assets	\$492,969	\$658,850

See Item 15, Schedule II - "Condensed Financial Information of the Registrant" in the 2018 Annual Report for additional financial information related to RGA.

The undistributed earnings of substantially all of the Company's foreign subsidiaries have been reinvested indefinitely in those non-U.S. operations, as described in Note 9 - "Income Tax" of the Notes to Consolidated Financial Statements in the 2018 Annual Report. As U.S. Tax Reform 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 are repatriated. RGA endeavors to maintain a capital structure that provides financial and operational flexibility to its subsidiaries, credit ratings that support its competitive position in the financial services marketplace, and shareholder returns. As part of the Company's capital deployment strategy, it has in recent years repurchased shares of RGA common stock and paid dividends to RGA

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shareholders, as authorized by the board of directors. RGA's current share repurchase program, which was approved by the board of directors in January 2019, authorizes the repurchase of up to \$400.0 million of common stock. The pace of repurchase activity depends on various factors such as the level of available cash, an evaluation of the costs and benefits associated with alternative uses of excess capital, such as acquisitions and in force reinsurance transactions, and RGA's stock price.

Details underlying dividend and share repurchase program activity were as follows (in thousands, except share data):

	Three months ended March 31,	
	2019	2018
Dividends to shareholders	\$37,707	\$32,241
Repurchases of treasury stock	50,000	—
Total amount paid to shareholders	\$87,707	\$32,241

Number of shares repurchased	344,237	—
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Average price per share	\$145.25	\$—
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In April 2019, RGA's board of directors declared a quarterly dividend of \$0.60 per share. All future payments of dividends are at the discretion of RGA's board of directors and will depend on the Company's earnings, capital requirements, insurance regulatory conditions, operating conditions, and other such factors as the board of directors may deem relevant. The amount of dividends that RGA can pay will depend in part on the operations of its reinsurance subsidiaries. See Note 3 - "Equity" in the Notes to Condensed Consolidated Financial Statements for information on the Company's share repurchase program.

Debt

Certain of the Company's debt agreements contain financial covenant restrictions related to, among others, liens, the issuance and disposition of stock of restricted subsidiaries, minimum requirements of consolidated net worth, maximum ratios of debt to capitalization and change of control provisions. The Company is required to maintain a minimum consolidated net worth, as defined in the debt agreements, of \$5.3 billion, calculated as of the last day of each fiscal quarter. Also, consolidated indebtedness, calculated as of the last day of each fiscal quarter, cannot exceed 35% of the sum of the Company's consolidated indebtedness plus adjusted consolidated stockholders' equity. A material ongoing covenant default could require immediate payment of the amount due, including principal, under the various agreements. Additionally, the Company's debt agreements contain cross-default covenants, which would make outstanding borrowings immediately payable in the event of a material uncured covenant default under any of the agreements, including, but not limited to, non-payment of indebtedness when due for an amount in excess of the amounts set forth in those agreements, bankruptcy proceedings, or any other event that results in the acceleration of the maturity of indebtedness.

As of March 31, 2019 and December 31, 2018, the Company had \$2.8 billion in outstanding borrowings under its debt agreements and was in compliance with all covenants under those agreements. As of March 31, 2019 and December 31, 2018, the average interest rate on long-term debt outstanding was 5.24%. The ability of the Company to make debt principal and interest payments depends on the earnings and surplus of subsidiaries, investment earnings on undeployed capital proceeds, available liquidity at the holding company, and the Company's ability to raise additional funds.

The Company enters into derivative agreements with counterparties that reference either the Company's debt rating or its financial strength rating. If either rating is downgraded in the future, it could trigger certain terms in the Company's derivative agreements, which could negatively affect overall liquidity. For the majority of the Company's derivative agreements, there is a termination event, at the Company's option, should the long-term senior debt ratings drop below either BBB+ (S&P) or Baa1 (Moody's) or the financial strength ratings drop below either A- (S&P) or A3 (Moody's). The Company may borrow up to \$850.0 million in cash and obtain letters of credit in multiple currencies on its revolving credit facility that matures in August 2023. As of March 31, 2019, the Company had no cash borrowings outstanding and \$18.7 million in issued, but undrawn, letters of credit under this facility.

Based on the historic cash flows and the current financial results of the Company, management believes RGA's cash flows will be sufficient to enable RGA to meet its obligations for at least the next 12 months.

Credit and Committed Facilities

At March 31, 2019, the Company maintained an \$850.0 million syndicated revolving credit facility and certain committed letter of credit facilities aggregating \$1,258.9 million. See Note 13 - "Debt" in the Notes to Consolidated Financial Statements in the 2018 Annual Report for further information about these facilities.

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The Company has obtained bank letters of credit in favor of various affiliated and unaffiliated insurance companies from which the Company assumes business. These letters of credit represent guarantees of performance under the reinsurance agreements and allow ceding companies to take statutory reserve credits. Certain of these letters of credit contain financial covenant restrictions similar to those described in the “Debt” discussion above. At March 31, 2019, there were approximately \$102.2 million of outstanding bank letters of credit in favor of third parties. Additionally, in accordance with applicable regulations, the Company utilizes letters of credit to secure statutory reserve credits when it retrocedes business to its affiliated subsidiaries. The Company cedes business to its affiliates to help reduce the amount of regulatory capital required in certain jurisdictions, such as the U.S. and the UK. The Company believes the capital required to support the business in the affiliates reflects more realistic expectations than the original jurisdiction of the business, where capital requirements are often considered to be quite conservative. As of March 31, 2019, \$1.5 billion in letters of credit from various banks were outstanding, but undrawn, backing reinsurance between the various subsidiaries of the Company.

Cash Flows

The Company’s principal cash inflows from its reinsurance operations include premiums and deposit funds received from ceding companies. The primary liquidity concerns with respect to these cash flows are early recapture of the reinsurance contract by the ceding company and lapses of annuity products reinsured by the Company. The Company’s principal cash inflows from its invested assets result from investment income and the maturity and sales of invested assets. The primary liquidity concerns with respect to these cash inflows relates to the risk of default by debtors and interest rate volatility. The Company manages these risks very closely. See “Investments” and “Interest Rate Risk” below. Additional sources of liquidity to meet unexpected cash outflows in excess of operating cash inflows and current cash and equivalents on hand include selling short-term investments or fixed maturity securities and drawing funds under a revolving credit facility, under which the Company had availability of \$831.4 million as of March 31, 2019. The Company also has \$747.5 million of funds available through collateralized borrowings from the FHLB as of March 31, 2019. As of March 31, 2019, the Company could have borrowed these additional amounts without violating any of its existing debt covenants.

The Company’s principal cash outflows relate to the payment of claims liabilities, interest credited, operating expenses, income taxes, dividends to shareholders, purchases of treasury stock, and principal and interest under debt and other financing obligations. 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 enterprises or reinsurers under excess coverage and coinsurance contracts (See Note 2, “Significant Accounting Policies and Pronouncements” in the Notes to Consolidated Financial Statements in the 2018 Annual Report). The Company performs annual financial reviews of its retrocessionaires to evaluate financial stability and performance. The Company has never experienced a material default in connection with retrocession arrangements, nor has it experienced any difficulty in collecting claims recoverable from retrocessionaires; however, no assurance can be given as to the future performance of such retrocessionaires nor to the recoverability of future claims. The Company’s management believes its current sources of liquidity are adequate to meet its cash requirements for the next 12 months.

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Summary of Primary Sources and Uses of Liquidity and Capital

The Company's primary sources and uses of liquidity and capital are summarized as follows:

	For the three months ended March 31,	
	2019	2018
	(Dollars in thousands)	
Sources:		
Net cash provided by operating activities	\$340,621	\$223,749
Exercise of stock options, net	1,755	1,163
Change in cash collateral for derivative positions and other arrangements	—	19,537
Effect of exchange rate changes on cash	7,141	21,989
Total sources	349,517	266,438
Uses:		
Net cash (provided by) used in investing activities	(92,721)	(76,550)
Dividends to stockholders	37,707	32,241
Repayment of collateral finance and securitization notes	29,064	27,104
Principal payments of long-term debt	690	662
Purchases of treasury stock	49,052	2,616
Change in cash collateral for derivative positions and other arrangements	44,628	—
Cash used for changes in universal life and other investment type policies and contracts	150,434	73,482
Total uses	218,854	59,555
Net change in cash and cash equivalents	\$130,663	\$206,883

Cash Flows from Operations - The principal cash inflows from the Company's reinsurance activities come from premiums, investment and fee income, annuity considerations and deposit funds. The principal cash outflows relate to the liabilities associated with various life and health insurance, annuity and disability products, operating expenses, income tax payments and interest on outstanding debt obligations. The primary liquidity concern with respect to these cash flows is the risk of shortfalls in premiums and investment income, particularly in periods with abnormally high claims levels.

Cash Flows from Investments - The principal cash inflows from the Company's investment activities come from repayments of principal on invested assets, proceeds from maturities of invested assets, sales of invested assets and settlements of freestanding derivatives. The principal cash outflows relate to purchases of investments, issuances of policy loans and settlements of freestanding derivatives. The Company typically has a net cash outflow from investing activities because cash inflows from insurance operations are reinvested in accordance with its asset/liability management discipline to fund insurance liabilities. The Company closely monitors and manages these risks through its credit risk management process. The primary liquidity concerns with respect to these cash flows are the risk of default by debtors and market disruption, which could make it difficult for the Company to sell investments.

Financing Cash Flows - The principal cash inflows from the Company's financing activities come from issuances of RGA debt and equity securities, and deposit funds associated with universal life and other investment type policies and contracts. The principal cash outflows come from repayments of debt, payments of dividends to stockholders, purchases of treasury stock, and withdrawals associated with universal life and other investment type policies and contracts. A primary liquidity concern with respect to these cash flows is the risk of early contractholder and policyholder withdrawal.

Contractual Obligations

There were no material changes in the Company's contractual obligations from those reported in the 2018 Annual Report.

Asset / Liability Management

The Company actively manages its cash and invested assets using an approach that is intended to balance quality, diversification, asset/liability matching, liquidity and investment return. The goals of the investment process are to optimize after-tax, risk-adjusted investment income and after-tax, risk-adjusted total return while managing the assets and liabilities on a cash flow and duration basis.

The Company has established target asset portfolios for its operating segments, which represent the investment strategies intended to profitably fund its liabilities within acceptable risk parameters. These strategies include objectives and limits for effective duration, yield curve sensitivity and convexity, liquidity, asset sector concentration and credit quality.

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The Company's asset-intensive products are primarily supported by investments in fixed maturity securities reflected on the Company's balance sheet and under funds withheld arrangements with the ceding company. Investment guidelines are established to structure the investment portfolio based upon the type, duration and behavior of products in the liability portfolio so as to achieve targeted levels of profitability. The Company manages the asset-intensive business to provide a targeted spread between the interest rate earned on investments and the interest rate credited to the underlying interest-sensitive contract liabilities. The Company periodically reviews models projecting different interest rate scenarios and their effect on profitability. Certain of these asset-intensive agreements, primarily in the U.S. and Latin America Financial Solutions operating segment, are generally funded by fixed maturity securities that are withheld by the ceding company.

The Company's liquidity position (cash and cash equivalents and short-term investments) was \$2,139.6 million and \$2,032.3 million at March 31, 2019 and December 31, 2018, respectively. Liquidity needs are determined from valuation analyses conducted by operational units and are driven by product portfolios. Periodic evaluations of demand liabilities and short-term liquid assets are designed to adjust specific portfolios, as well as their durations and maturities, in response to anticipated liquidity needs.

See "Securities Borrowing, Lending and Other" in Note 4 - "Investments" in the Notes to Condensed Consolidated Financial Statements for information related to the Company's securities borrowing, lending and repurchase/reverse repurchase programs. In addition to its security agreements with third parties, certain RGA's subsidiaries have entered into intercompany securities lending agreements to more efficiently source securities for lending to third parties and to provide for more efficient regulatory capital management.

The Company is a member of the FHLB and holds \$83.5 million of FHLB common stock, which is included in other invested assets on the Company's condensed consolidated balance sheets. The Company has entered into funding agreements with the FHLB under guaranteed investment contracts whereby the Company has issued the funding agreements in exchange for cash and for which the FHLB has been granted a blanket lien on the Company's commercial and residential mortgage-backed securities and commercial mortgage loans used to collateralize the Company's obligations under the funding agreements. The Company maintains control over these pledged assets, and may use, commingle, encumber or dispose of any portion of the collateral as long as there is no event of default and the remaining qualified collateral is sufficient to satisfy the collateral maintenance level. The funding agreements and the related security agreements represented by this blanket lien provide that upon any event of default by the Company, the FHLB's recovery is limited to the amount of the Company's liability under the outstanding funding agreements. The amount of the Company's liability for the funding agreements with the FHLB under guaranteed investment contracts was \$1.8 billion and \$1.7 billion at March 31, 2019 and December 31, 2018, respectively, which is included in interest sensitive contract liabilities on the Company's condensed consolidated balance sheets. The advances on these agreements are collateralized primarily by commercial and residential mortgage-backed securities, commercial mortgage loans, and U.S. Treasury and government agency securities. The amount of collateral exceeds the liability and is dependent on the type of assets collateralizing the guaranteed investment contracts.

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Investments

Management of Investments

The Company's investment and derivative strategies involve matching the characteristics of its reinsurance products and other obligations and to seek to closely approximate the interest rate sensitivity of the assets with estimated interest rate sensitivity of the reinsurance liabilities. The Company achieves its income objectives through strategic and tactical asset allocations, security and derivative strategies within an asset/liability management and disciplined risk management framework. Derivative strategies are employed within the Company's risk management framework to help manage duration, currency, and other risks in assets and/or liabilities and to replicate the credit characteristics of certain assets. For a discussion of the Company's risk management process see "Market and Credit Risk" in the "Enterprise Risk Management" section below.

The Company's portfolio management groups work with the Enterprise Risk Management function to develop the investment policies for the assets of the Company's domestic and international investment portfolios. All investments held by the Company, directly or in a funds withheld at interest reinsurance arrangement, are monitored for conformance with the Company's stated investment policy limits as well as any limits prescribed by the applicable jurisdiction's insurance laws and regulations. See Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements for additional information regarding the Company's investments.

Portfolio Composition

The Company had total cash and invested assets of \$58.1 billion and \$56.1 billion as of March 31, 2019 and December 31, 2018, respectively, as illustrated below (dollars in thousands):

	March 31, 2019	% of Total	December 31, 2018	% of Total
Fixed maturity securities, available-for-sale	\$41,738,443	71.8 %	\$39,992,346	71.3 %
Equity securities	89,865	0.1	82,197	0.1
Mortgage loans on real estate	5,117,545	8.8	4,966,298	8.8
Policy loans	1,312,349	2.3	1,344,980	2.4
Funds withheld at interest	5,729,838	9.9	5,761,471	10.3
Short-term investments	119,215	0.2	142,598	0.3
Other invested assets	2,006,870	3.4	1,915,297	3.4
Cash and cash equivalents	2,020,396	3.5	1,889,733	3.4
Total cash and invested assets	\$58,134,521	100.0%	\$56,094,920	100.0%

Investment Yield

The following table presents consolidated average invested assets at amortized cost, net investment income and investment yield, excluding spread related business. Spread related business is primarily associated with contracts on which the Company earns an interest rate spread between assets and liabilities. To varying degrees, fluctuations in the yield on other spread related business is generally subject to corresponding adjustments to the interest credited on the liabilities (dollars in thousands).

	Three months ended March 31,		
	2019	2018	Increase/ (Decrease)
Average invested assets at amortized cost	\$28,096,587	\$27,024,934	4.0 %
Net investment income	310,229	296,473	4.6 %
Investment yield (ratio of net investment income to average invested assets)	4.49	% 4.46	% 3 bps

Fixed Maturity Securities Available-for-Sale

See "Fixed Maturity Securities Available-for-Sale" in Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements for tables that provide the amortized cost, unrealized gains and losses, estimated fair value of these securities, and the other-than-temporary impairments in AOCI by sector as of March 31, 2019 and December 31,

2018.

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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”). For both March 31, 2019 and December 31, 2018, approximately 95.6% of the Company’s consolidated investment portfolio of fixed maturity securities were investment grade.

Important factors in the selection of investments include diversification, quality, yield, call protection and total rate of return potential. The relative importance of these factors is determined by market conditions and the underlying reinsurance liability and existing portfolio characteristics. The largest asset class in which fixed maturity securities were invested was corporate securities, which represented approximately 60.1% and 59.9% of total fixed maturity securities as of March 31, 2019 and December 31, 2018, respectively. See “Corporate Fixed Maturity Securities” in Note 4 – “Investments” in the Notes to Condensed Consolidated Financial Statements for tables showing the major industry types, which comprise the corporate fixed maturity holdings at March 31, 2019 and December 31, 2018. As of March 31, 2019, the Company’s investments in Canadian government securities represented 10.2% of the fair value of total fixed maturity securities compared to 9.7% of the fair value of total fixed maturities at December 31, 2018. These assets are primarily high quality, long duration provincial strips, the valuation of which is closely linked to the interest rate curve. These assets are longer in duration and held primarily for asset/liability management to meet Canadian regulatory requirements. See “Fixed Maturity Securities Available-for-Sale” in Note 4 – “Investments” in the Notes to Condensed Consolidated Financial Statements for tables showing the various sectors as of March 31, 2019 and December 31, 2018.

The Company references rating agency designations in some of its investments disclosures. These designations are based on the ratings from nationally recognized statistical rating organizations, primarily Moody’s, S&P and Fitch. Structured securities held by the Company’s insurance subsidiaries that maintain the NAIC statutory basis of accounting utilize the NAIC rating methodology. The NAIC assigns designations to publicly traded as well as privately placed securities. The designations assigned by the NAIC range from class 1 to class 6, with designations in classes 1 and 2 generally considered investment grade (BBB or higher rating agency designation). NAIC designations in classes 3 through 6 are generally considered below investment grade (BB or lower rating agency designation). The quality of the Company’s available-for-sale fixed maturity securities portfolio, as measured at fair value and by the percentage of fixed maturity securities invested in various ratings categories, relative to the entire available-for-sale fixed maturity security portfolio, at March 31, 2019 and December 31, 2018 was as follows (dollars in thousands):

NAIC Designation	Rating Agency Designation	March 31, 2019			December 31, 2018		
		Amortized Cost	Estimated Fair Value	% of Total	Amortized Cost	Estimated Fair Value	% of Total
1	AAA/AA/A	\$25,496,994	\$27,673,531	66.3 %	\$24,904,526	\$26,180,440	65.5 %
2	BBB	11,872,478	12,244,807	29.3	12,141,601	12,023,426	30.1
3	BB	1,318,883	1,319,201	3.2	1,409,235	1,371,328	3.4
4	B	419,764	422,390	1.0	395,694	385,670	1.0
5	CCC and lower	13,414	14,357	—	13,183	12,860	—
6	In or near default	67,094	64,157	0.2	17,929	18,622	—
	Total	\$39,188,627	\$41,738,443	100.0 %	\$38,882,168	\$39,992,346	100.0 %

The Company’s fixed maturity portfolio includes structured securities. The following table shows the types of structured securities the Company held at March 31, 2019 and December 31, 2018 (dollars in thousands):

March 31, 2019		December 31, 2018	
Amortized Cost	Estimated	Amortized Cost	Estimated

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		Fair Value		Fair Value	
RMBS:					
Agency	\$798,669	\$815,317	\$811,044	\$814,568	
Non-agency	1,171,025	1,178,869	1,061,192	1,054,653	
Total RMBS	1,969,694	1,994,186	1,872,236	1,869,221	
CMBS	1,404,852	1,431,746	1,428,115	1,419,034	
ABS	2,243,449	2,241,986	2,171,254	2,149,204	
Total	\$5,617,995	\$5,667,918	\$5,471,605	\$5,437,459	

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The Company's RMBS include agency-issued pass-through securities and collateralized mortgage obligations. A majority of the agency-issued pass-through securities are guaranteed or otherwise supported by the Federal Home Loan Mortgage Corporation, Federal National Mortgage Association, or the Government National Mortgage Association. The principal risks inherent in holding mortgage-backed securities are prepayment and extension risks, which will affect the timing of when cash will be received and are dependent on the level of mortgage interest rates. Prepayment risk is the unexpected increase in principal payments from the expected, primarily as a result of owner refinancing. Extension risk relates to the unexpected slowdown in principal payments from the expected. In addition, non-agency mortgage-backed securities face credit risk should the borrower be unable to pay the contractual interest or principal on their obligation. The Company monitors its mortgage-backed securities to mitigate exposure to the cash flow uncertainties associated with these risks.

The Company's ABS include credit card receivables, railcar leasing, student loans, single-family rentals, home equity loans and collateralized debt obligations (primarily collateralized loan obligations). The Company owns floating rate securities that represent approximately 16.4% and 16.0% of the total fixed maturity securities at March 31, 2019 and December 31, 2018, respectively. These investments have a higher degree of income variability than the other fixed income holdings in the portfolio due to the floating rate nature of the interest payments. The Company holds these investments to match specific floating rate liabilities primarily reflected in the condensed consolidated balance sheets as collateral finance notes, as well as to enhance asset management strategies. In addition to the risks associated with floating rate securities, principal risks in holding asset-backed securities are structural, credit and capital market risks. Structural risks include the securities' cash flow priority in the capital structure and the inherent prepayment sensitivity of the underlying collateral. Credit risks include the adequacy and ability to realize proceeds from the collateral. Credit risks are mitigated by credit enhancements that include excess spread, over-collateralization and subordination. Capital market risks include general level of interest rates and the liquidity for these securities in the marketplace. The Company monitors its fixed maturity securities to determine impairments in value and evaluates factors such as financial condition of the issuer, payment performance, the length of time and the extent to which the market value has been below amortized cost, compliance with covenants, general market and industry sector conditions, current intent and ability to hold securities, and various other subjective factors. Based on management's judgment, securities determined to have an other-than-temporary impairment in value are written down to fair value. See "Investments – Other-than-Temporary Impairment" in Note 2 – "Significant Accounting Policies and Pronouncements" in the Notes to Consolidated Financial Statements in the 2018 Annual Report for additional information. The table below summarizes other-than-temporary impairments and changes in the mortgage loan provision for the three months ended March 31, 2019 and 2018 (dollars in thousands).

	Three months ended March 31,	
	2019	2018
Impairment losses on fixed maturity securities	\$9,453	\$—
Other impairment losses	1,932	828
Change in mortgage loan provision	(73)	(516)
Total	\$11,312	\$312

The fixed maturity impairments for the three months ended March 31, 2019 were largely related to a U.S. utility company. There were no fixed maturity impairments for the three months ended March 31, 2018. In addition, other impairment losses for the three months ended March 31, 2019 and 2018 were primarily due to impairments on real estate joint ventures.

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At March 31, 2019 and December 31, 2018, the Company had \$230.2 million and \$748.5 million, respectively, of gross unrealized losses related to its fixed maturity securities. The distribution of the gross unrealized losses related to these securities is shown below.

	March 31, 2019	December 31, 2018		
Sector:				
Corporate	71.3	74.2	%	%
Canadian government	0.3	0.3		
RMBS	4.5	3.4		
ABS	6.8	4.4		
CMBS	1.4	2.4		
U.S. government	9.2	7.7		
State and political subdivisions	1.1	1.2		
Other foreign government	5.4	6.4		
Total	100.0%	100.0	%	
Industry:				
Finance	21.5	27.5	%	%
Asset-backed	6.8	4.4		
Industrial	43.2	38.2		
Mortgage-backed	5.9	5.8		
Government	16.0	15.6		
Utility	6.6	8.5		
Total	100.0%	100.0	%	

See “Unrealized Losses for Fixed Maturity Securities Available-for-Sale” in Note 4 – “Investments” in the Notes to Condensed Consolidated Financial Statements for a table that presents the total gross unrealized losses for these securities at March 31, 2019 and December 31, 2018, respectively, where the estimated fair value had declined and remained below amortized cost by less than 20% or more than 20%.

The Company’s determination of whether a decline in value is other-than-temporary includes analysis of the underlying credit and the extent and duration of a decline in value. The Company’s credit analysis of an investment includes determining 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. In the Company’s impairment review process, the duration and severity of an unrealized loss position for equity securities are given greater weight and consideration given the lack of contractual cash flows and the deferability features of these securities.

See “Unrealized Losses for Fixed Maturity Securities Available-for-Sale” in Note 4 – “Investments” in the Notes to Condensed Consolidated Financial Statements for tables that present the estimated fair values and gross unrealized losses, including other-than-temporary impairment losses reported in AOCI, for these securities that have estimated fair values below amortized cost, by class and grade security, as well as the length of time the related market value has remained below amortized cost as of March 31, 2019 and December 31, 2018.

As of March 31, 2019 and December 31, 2018, the Company classified approximately 5.5% and 5.0%, respectively, of its fixed maturity securities in the Level 3 category (refer to Note 6 – “Fair Value of Assets and Liabilities” in the Notes to Condensed Consolidated Financial Statements for additional information). These securities primarily consist of private placement corporate securities, bank loans, and Canadian provincial strips with inactive trading markets. See “Securities Borrowing, Lending and Other” in Note 4 - “Investments” in the Notes to Condensed Consolidated Financial Statements for information related to the Company’s securities borrowing, lending, repurchase and repurchase/reverse repurchase programs.

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Mortgage Loans on Real Estate

Mortgage loans represented approximately 8.8% of the Company's cash and invested assets as of both March 31, 2019 and December 31, 2018. The Company's mortgage loan portfolio consists of U.S., Canada and United Kingdom based investments primarily in commercial offices, light industrial properties and retail locations. The mortgage loan portfolio is diversified by geographic region and property type. The mortgage loan portfolio was diversified by geographic region and property type discussed further under "Mortgage Loans on Real Estate" in Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements.

As of March 31, 2019 and December 31, 2018, the Company's mortgage loans, gross of unamortized deferred loan origination fees and expenses and valuation allowances, were distributed geographically as follows (dollars in thousands):

	March 31, 2019		December 31, 2018	
	Recorded Investment	% of Total	Recorded Investment	% of Total
U.S. Region:				
Pacific	\$1,372,810	26.8 %	\$1,396,346	28.0 %
South Atlantic	965,962	18.8	964,174	19.3
Mountain	724,392	14.1	693,281	13.9
East North Central	620,124	12.1	605,608	12.2
West North Central	298,669	5.8	288,949	5.8
West South Central	631,742	12.3	567,541	11.4
Middle Atlantic	201,250	3.9	202,235	4.1
East South Central	139,314	2.7	117,588	2.4
New England	5,582	0.1	5,609	0.1
Subtotal - U.S.	4,959,845	96.6	4,841,331	97.2
Canada	147,701	2.9	135,394	2.7
United Kingdom	27,352	0.5	6,629	0.1
Total	\$5,134,898	100.0 %	\$4,983,354	100.0 %

Valuation allowances on mortgage loans are established based upon inherent losses expected by management to be realized in connection with future dispositions or settlement of mortgage loans, including foreclosures. The valuation allowances are established after management considers, among other things, the value of underlying collateral and payment capabilities of debtors. Any subsequent adjustments to the valuation allowances will be treated as investment gains or losses.

See "Mortgage Loans on Real Estate" in Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements for information regarding valuation allowances and impairments.

Policy Loans

Policy loans comprised approximately 2.3% and 2.4% of the Company's cash and invested assets as of March 31, 2019 and December 31, 2018, respectively, the majority of which are associated with one client. 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. 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.

Table of Contents**Funds Withheld at Interest**

Funds withheld at interest comprised approximately 9.9% and 10.3% of the Company's cash and invested assets as of March 31, 2019 and December 31, 2018, respectively. For reinsurance agreements written on a modified coinsurance basis and certain agreements written on a coinsurance basis, assets equal to the net statutory reserves are withheld and legally owned and managed by the ceding company, and are reflected as funds withheld at interest on the Company's condensed consolidated balance sheets. 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 by the ceding company. Interest accrues to the total funds withheld at interest assets at rates defined by the treaty terms. The Company is subject to the investment performance on the withheld assets, although it does not directly control them. These assets are primarily fixed maturity investment securities and pose risks similar to the fixed maturity securities the Company owns. To mitigate this risk, the Company helps set the investment guidelines followed by the ceding company and monitors compliance. Ceding companies with funds withheld at interest had an average financial strength rating of "A" at March 31, 2019 and December 31, 2018. Certain ceding companies maintain segregated portfolios for the benefit of the Company.

Other Invested Assets

Other invested assets include limited partnership interests, joint ventures (other than operating joint ventures), equity release mortgages, derivative contracts, FVO contractholder-directed unit-linked investments, and FHLB common stock. Other invested assets represented approximately 3.4% of the Company's cash and invested assets for both March 31, 2019 and December 31, 2018. See "Other Invested Assets" in Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements for a table that presents the carrying value of the Company's other invested assets by type as of March 31, 2019 and December 31, 2018.

The Company utilizes derivative financial instruments to protect the Company against possible changes in the fair value of its investment portfolio as a result of interest rate changes, to hedge liabilities associated with the reinsurance of variable annuities with guaranteed living benefits and to manage the portfolio's effective yield, maturity and duration. In addition, the Company utilizes derivative financial instruments to reduce the risk associated with fluctuations in foreign currency exchange rates. The Company uses both exchange-traded, centrally cleared, and customized over-the-counter derivative financial instruments.

See Note 5 – "Derivative Instruments" in the Notes to Condensed Consolidated Financial Statements for a table that presents the notional amounts and fair value of investment related derivative instruments held at March 31, 2019 and December 31, 2018.

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 at the reporting date plus or minus any collateral posted or held by the Company. The Company had no credit exposure related to its derivative contracts, excluding futures and mortality swaps, at March 31, 2019 and December 31, 2018, as the net amount of collateral pledged to the Company from counterparties exceeded the fair value of the derivative contracts.

The Company manages its credit risk related to over-the-counter derivatives by entering into transactions with creditworthy counterparties, maintaining collateral arrangements and through the use of master agreements that provide for a single net payment to be made by one counterparty to another at each due date and upon termination. As exchange-traded futures are affected through regulated exchanges, and positions are marked to market on a daily basis, the Company has minimal exposure to credit-related losses in the event of nonperformance by counterparties. See Note 5 – "Derivative Instruments" in the Notes to Condensed Consolidated Financial Statements for more information regarding the Company's derivative instruments.

The Company holds beneficial interests in equity release mortgages in the UK. Equity release mortgages represent loans provided to individuals 55 years of age and older secured by the borrower's residence. Equity release 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. Equity release mortgages may also be either fully funded at origination, or the borrower can request periodic funding similar to a line of credit. Equity release mortgages are subject to risks, including market, credit, interest rate, liquidity, operational, reputational and legal risks.

Other invested assets include \$595.6 million and \$475.9 million of equity release mortgages as of March 31, 2019 and December 31, 2018, respectively. Investment income includes \$7.1 million and \$3.4 million in interest income earned on equity release mortgages for the three months ended March 31, 2019 and 2018, respectively.

New Accounting Standards

See Note 13 — “New Accounting Standards” in the Notes to Condensed Consolidated Financial Statements.

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ITEM 3. Quantitative and Qualitative Disclosures About Market Risk

Market risk is the risk of fluctuations in the value of financial instruments as a result of absolute or relative changes in interest rates, foreign currency exchange rates, equity prices or commodity prices. To varying degrees, the Company products and services, and the investment activities supporting them, generate exposure to market risk. The market risk incurred, and the Company's strategies for managing this risk, vary by product. As of March 31, 2019, there have been no material changes in the Company's economic exposure to market risk or the Company's Enterprise Risk Management function from December 31, 2018, a description of which may be found in its Annual Report on Form 10-K, for the year ended December 31, 2018, Item 7A, "Quantitative and Qualitative Disclosures about Market Risk," filed with the Securities and Exchange Commission.

ITEM 4. Controls and Procedures

The Chief Executive Officer and the Chief Financial Officer have evaluated the effectiveness of the design and operation of the Company's disclosure controls and procedures as defined in Exchange Act Rule 13a-15(e) as of the end of the period covered by this report. Based on that evaluation, the Chief Executive Officer and the Chief Financial Officer concluded that these disclosure controls and procedures were effective.

There was no change in the Company's internal control over financial reporting as defined in Exchange Act Rule 13a-15(f) during the quarter ended March 31, 2019, that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting.

PART II - OTHER INFORMATION

ITEM 1. Legal Proceedings

The Company is subject to litigation in the normal course of its business. The Company currently has no material litigation. A legal reserve is established when the Company is notified of an arbitration demand or litigation or is notified that an arbitration demand or litigation 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.

ITEM 1A. Risk Factors

There were no material changes from the risk factors disclosed in the 2018 Annual Report.

ITEM 2. Unregistered Sales of Equity Securities and Use of Proceeds

Issuer Purchases of Equity Securities

The following table summarizes RGA's repurchase activity of its common stock during the quarter ended March 31, 2019:

	Total Number of Shares Purchased ⁽¹⁾	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs ⁽¹⁾	Maximum Number (or Approximate Dollar Value) of Shares that May Yet Be Purchased Under the Plan or Program
January 1, 2019 - January 31, 2019	10,001	\$ 142.53	—	\$ 89,579,317
February 1, 2019 - February 28, 2019	3,438	\$ 144.24	—	\$ 89,579,317
March 1, 2019 - March 31, 2019	795	\$ 145.25	344,237	\$ 39,579,388

(1)RGA had no repurchases of common stock under its share repurchase program for January and February 2019 and repurchased 344,237 of common stock under its share repurchase program for \$50.0 million during March 2019. The Company net settled - issuing 29,098, 10,973 and 2,860 shares from treasury and repurchasing from recipients 10,001, 3,438 and 795 shares in January, February and March 2019, respectively, in settlement of income tax

withholding requirements incurred by the recipients of equity incentive awards.
On January 24, 2019, RGA's board of directors authorized a share repurchase program, with no expiration date, for up to \$400.0 million of RGA's outstanding common stock.

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ITEM 6. Exhibits
See index to exhibits.

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INDEX TO EXHIBITS

Exhibit Number	Description
<u>3.1</u>	<u>Amended and Restated Articles of Incorporation, as amended by Amendment of Articles of Incorporation, effective as of May 23, 2018, incorporated by reference to Exhibit 3.1 to Quarterly Report on Form 10-Q for the period ended June 30, 2018, filed on August 3, 2018 (File No. 1-11848)</u>
<u>3.2</u>	<u>Amended and Restated Bylaws, effective as of May 23, 2018, incorporated by reference to Exhibit 3.2 to Current Report on Form 8-K filed on May 24, 2018 (File No. 1-11848)</u>
<u>10.1</u>	<u>Form of Performance Contingent Share Agreement under RGA Flexible Stock Plan, as amended and restated effective May 23, 2017*</u>
<u>10.2</u>	<u>Form of Stock Appreciation Right Award Agreement under RGA Flexible Stock Plan, as amended and restated effective May 23, 2017*</u>
<u>10.3</u>	<u>Form of Non-Qualified Stock Option Agreement under RGA Flexible Stock Plan, as amended and restated effective May 23, 2017*</u>
<u>31.1</u>	<u>Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 302 of the Sarbanes-Oxley Act of 2002</u>
<u>31.2</u>	<u>Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 302 of the Sarbanes-Oxley Act of 2002</u>
<u>32.1</u>	<u>Certification of Chief Executive Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002</u>
<u>32.2</u>	<u>Certification of Chief Financial Officer pursuant to 18 U.S.C. Section 1350, as adopted pursuant to section 906 of the Sarbanes-Oxley Act of 2002</u>
<u>101.INS</u>	<u>XBRL Instance Document</u>
<u>101.SCH</u>	<u>XBRL Taxonomy Extension Schema Document</u>
<u>101.CAL</u>	<u>XBRL Taxonomy Extension Calculation Linkbase Document</u>
<u>101.LAB</u>	<u>XBRL Taxonomy Extension Label Linkbase Document</u>
<u>101.PRE</u>	<u>XBRL Taxonomy Extension Presentation Linkbase Document</u>
<u>101.DEF</u>	<u>XBRL Taxonomy Extension Definition Linkbase Document</u>

* Represents a management contract or compensatory plan or arrangement

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SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

Reinsurance Group of America, Incorporated

Date: May 3, 2019

By: /s/ Anna Manning
Anna Manning
President & Chief Executive Officer
(Principal Executive Officer)

Date: May 3, 2019

By: /s/ Todd C. Larson
Todd C. Larson
Senior Executive Vice President & Chief Financial
Officer
(Principal Financial and Accounting Officer)