

**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 September 30, 2017

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
(State or other jurisdiction
of incorporation or organization)

43-1627032
(IRS employer
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 and posted on its corporate Web site, if any, 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, a 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. (Check one):

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 Exchange Act).

Yes No

As of October 31, 2017, 64,404,061 shares of the registrant's common stock were outstanding.

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES

TABLE OF CONTENTS

<u>Item</u>		<u>Page</u>
<u>PART I – FINANCIAL INFORMATION</u>		
1	Financial Statements	
	Condensed Consolidated Balance Sheets (Unaudited) September 30, 2017 and December 31, 2016	3
	Condensed Consolidated Statements of Income (Unaudited) Three and nine months ended September 30, 2017 and 2016	4
	Condensed Consolidated Statements of Comprehensive Income (Unaudited) Three and nine months ended September 30, 2017 and 2016	5
	Condensed Consolidated Statements of Cash Flows (Unaudited) Nine months ended September 30, 2017 and 2016	6
	Notes to Condensed Consolidated Financial Statements (Unaudited):	7
	1. Business and Basis of Presentation	7
	2. Earnings Per Share	7
	3. Equity	8
	4. Investments	10
	5. Derivative Instruments	20
	6. Fair Value of Assets and Liabilities	28
	7. Segment Information	43
	8. Commitments, Contingencies and Guarantees	44
	9. Income Tax	45
	10. Employee Benefit Plans	46
	11. Reinsurance	46
	12. New Accounting Standards	47
2	Management’s Discussion and Analysis of Financial Condition and Results of Operations	49
3	Quantitative and Qualitative Disclosures About Market Risk	81
4	Controls and Procedures	82
<u>PART II – OTHER INFORMATION</u>		
1	Legal Proceedings	83
1A	Risk Factors	83
2	Unregistered Sales of Equity Securities and Use of Proceeds	83
6	Exhibits	83
	Signatures	85
	Index to Exhibits	84

PART I - FINANCIAL INFORMATION**ITEM 1. Financial Statements**

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

	September 30, 2017	December 31, 2016
(Dollars in thousands, except share data)		
Assets		
Fixed maturity securities:		
Available-for-sale at fair value (amortized cost of \$33,889,968 and \$30,211,787)	\$ 36,381,742	\$ 32,093,625
Mortgage loans on real estate (net of allowances of \$9,137 and \$7,685)	4,322,329	3,775,522
Policy loans	1,340,146	1,427,602
Funds withheld at interest	6,020,336	5,875,919
Short-term investments	80,582	76,710
Other invested assets	1,532,523	1,591,940
Total investments	49,677,658	44,841,318
Cash and cash equivalents	1,204,590	1,200,718
Accrued investment income	420,111	347,173
Premiums receivable and other reinsurance balances	2,411,777	1,930,755
Reinsurance ceded receivables	779,118	683,972
Deferred policy acquisition costs	3,315,237	3,338,605
Other assets	885,540	755,338
Total assets	\$ 58,694,031	\$ 53,097,879
Liabilities and Stockholders' Equity		
Future policy benefits	\$ 21,084,562	\$ 19,581,573
Interest-sensitive contract liabilities	16,370,090	14,029,354
Other policy claims and benefits	4,899,367	4,263,026
Other reinsurance balances	415,692	388,989
Deferred income taxes	3,180,545	2,770,640
Other liabilities	1,061,352	1,041,880
Long-term debt	2,788,480	3,088,635
Collateral finance and securitization notes	796,825	840,700
Total liabilities	50,596,913	46,004,797
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 September 30, 2017 and December 31, 2016	791	791
Additional paid-in capital	1,865,699	1,848,611
Retained earnings	5,712,590	5,199,130
Treasury stock, at cost - 14,769,487 and 14,835,256 shares	(1,107,719)	(1,094,779)
Accumulated other comprehensive income	1,625,757	1,139,329
Total stockholders' equity	8,097,118	7,093,082
Total liabilities and stockholders' equity	\$ 58,694,031	\$ 53,097,879

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

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF INCOME
(Unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
(Dollars in thousands, except per share data)				
Revenues:				
Net premiums	\$ 2,489,797	\$ 2,251,758	\$ 7,335,944	\$ 6,755,708
Investment income, net of related expenses	556,918	489,727	1,589,820	1,414,659
Investment related gains (losses), net:				
Other-than-temporary impairments on fixed maturity securities	(390)	—	(20,980)	(34,663)
Other investment related gains (losses), net	23,043	86,624	160,451	118,665
Total investment related gains (losses), net	22,653	86,624	139,471	84,002
Other revenues	75,942	72,468	218,091	197,844
Total revenues	3,145,310	2,900,577	9,283,326	8,452,213
Benefits and Expenses:				
Claims and other policy benefits	2,100,680	1,993,064	6,371,188	5,877,330
Interest credited	126,099	116,848	349,068	300,602
Policy acquisition costs and other insurance expenses	365,424	300,962	1,064,645	940,406
Other operating expenses	168,417	152,556	481,279	469,875
Interest expense	36,836	43,063	108,590	96,201
Collateral finance and securitization expense	7,692	6,484	21,235	19,396
Total benefits and expenses	2,805,148	2,612,977	8,396,005	7,703,810
Income before income taxes	340,162	287,600	887,321	748,403
Provision for income taxes	112,571	88,881	282,028	237,109
Net income	\$ 227,591	\$ 198,719	\$ 605,293	\$ 511,294
Earnings per share:				
Basic earnings per share	\$ 3.53	\$ 3.10	\$ 9.39	\$ 7.95
Diluted earnings per share	\$ 3.47	\$ 3.07	\$ 9.23	\$ 7.87
Dividends declared per share	\$ 0.50	\$ 0.41	\$ 1.32	\$ 1.15

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

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(Unaudited)

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Comprehensive income	(Dollars in thousands)			
Net income	\$ 227,591	\$ 198,719	\$ 605,293	\$ 511,294
Other comprehensive income, net of tax:				
Foreign currency translation adjustments	46,733	(28,233)	68,085	59,442
Net unrealized investment gains	(93,574)	254,658	415,870	1,445,776
Defined benefit pension and postretirement plan adjustments	700	527	2,473	(1,176)
Total other comprehensive income, net of tax	(46,141)	226,952	486,428	1,504,042
Total comprehensive income	\$ 181,450	\$ 425,671	\$ 1,091,721	\$ 2,015,336

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

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
CONDENSED CONSOLIDATED STATEMENTS OF CASH FLOWS
(Unaudited)

	Nine months ended September 30,	
	2017	2016
	(Dollars in thousands)	
Cash Flows from Operating Activities:		
Net income	\$ 605,293	\$ 511,294
Adjustments to reconcile net income to net cash provided by operating activities:		
Change in operating assets and liabilities:		
Accrued investment income	(63,321)	(58,863)
Premiums receivable and other reinsurance balances	(421,027)	(3,619)
Deferred policy acquisition costs	67,471	(15,059)
Reinsurance ceded receivable balances	(120,013)	(77,741)
Future policy benefits, other policy claims and benefits, and other reinsurance balances	982,164	479,606
Deferred income taxes	236,185	165,988
Other assets and other liabilities, net	78,848	29,343
Amortization of net investment premiums, discounts and other	(95,227)	(55,967)
Depreciation and amortization expense	21,384	19,489
Investment related (gains) losses, net	(139,471)	(84,002)
Other, net	(47,787)	109,403
Net cash provided by operating activities	1,104,499	1,019,872
Cash Flows from Investing Activities:		
Sales of fixed maturity securities available-for-sale	6,364,236	3,649,187
Maturities of fixed maturity securities available-for-sale	385,993	349,836
Sales of equity securities	192,821	331,978
Principal payments on mortgage loans on real estate	208,052	377,671
Principal payments on policy loans	93,286	59,518
Purchases of fixed maturity securities available-for-sale	(7,450,749)	(5,938,302)
Purchases of equity securities	(60,790)	(523,499)
Cash invested in mortgage loans on real estate	(751,702)	(857,445)
Cash invested in policy loans	(5,830)	(5,685)
Cash invested in funds withheld at interest	(12,597)	(31,222)
Purchases of property and equipment	(33,242)	—
Change in short-term investments	65,664	418,625
Change in other invested assets	(51,476)	(78,068)
Net cash used in investing activities	(1,056,334)	(2,247,406)
Cash Flows from Financing Activities:		
Dividends to stockholders	(85,086)	(74,034)
Repayment of collateral finance and securitization notes	(56,637)	(60,971)
Proceeds from long-term debt issuance	—	799,984
Debt issuance costs	—	(9,026)
Principal payments of long-term debt	(301,927)	(1,850)
Purchases of treasury stock	(41,360)	(121,896)
Exercise of stock options, net	4,450	11,752
Change in cash collateral for derivative positions and other arrangements	(46,206)	24,749
Deposits on universal life and other investment type policies and contracts	1,007,563	874,708
Withdrawals on universal life and other investment type policies and contracts	(568,789)	(386,900)
Net cash provided by financing activities	(87,992)	1,056,516
Effect of exchange rate changes on cash	43,699	25,436
Change in cash and cash equivalents	3,872	(145,582)
Cash and cash equivalents, beginning of period	1,200,718	1,525,275
Cash and cash equivalents, end of period	\$ 1,204,590	\$ 1,379,693
Supplemental disclosures of cash flow information:		
Interest paid	\$ 129,136	\$ 114,043
Income taxes paid, net of refunds	\$ 27,385	\$ 47,312
Non-cash transactions:		
Transfer of invested assets	\$ 2,247,136	\$ 3,621

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

REINSURANCE GROUP OF AMERICA, INCORPORATED AND SUBSIDIARIES
Notes to Condensed Consolidated Financial Statements
(Unaudited)

1. Business and Basis of Presentation

Reinsurance Group of America, Incorporated (“RGA”) is an insurance holding company that was formed on December 31, 1992. The accompanying unaudited condensed consolidated financial statements of RGA and its subsidiaries (collectively, 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. Accordingly, these condensed consolidated financial statements do not include all of the information and footnotes required by GAAP for complete financial statements. In the opinion of management, all adjustments, including normal recurring adjustments necessary for a fair presentation have been included. Results for the nine months ended September 30, 2017 are not necessarily indicative of the results that may be expected for the year ending December 31, 2017. These unaudited condensed consolidated financial statements include the accounts of RGA and its subsidiaries, and all intercompany accounts and transactions have been eliminated. These condensed consolidated statements should be read in conjunction with the Company’s 2016 Annual Report on Form 10-K filed with the Securities and Exchange Commission (“SEC”) on February 28, 2017 (the “2016 Annual Report”).

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 September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Earnings:				
Net income (numerator for basic and diluted calculations)	\$ 227,591	\$ 198,719	\$ 605,293	\$ 511,294
Shares:				
Weighted average outstanding shares (denominator for basic calculation)	64,488	64,146	64,430	64,281
Equivalent shares from outstanding stock options	1,165	669	1,174	663
Denominator for diluted calculation	65,653	64,815	65,604	64,944
Earnings per share:				
Basic	\$ 3.53	\$ 3.10	\$ 9.39	\$ 7.95
Diluted	\$ 3.47	\$ 3.07	\$ 9.23	\$ 7.87

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. For the three months ended September 30, 2017, 0.1 million stock options and approximately 0.3 million performance contingent shares were excluded from the calculation. For the three months ended September 30, 2016, no stock options and approximately 0.7 million performance contingent shares were excluded from the calculation. Year-to-date amounts for equivalent shares from outstanding stock options and performance contingent shares are the weighted average of the individual quarterly amounts.

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, 2016	79,137,758	14,835,256	64,302,502
Common stock acquired	—	208,680	(208,680)
Stock-based compensation ⁽¹⁾	—	(274,449)	274,449
Balance, September 30, 2017	79,137,758	14,769,487	64,368,271
	Issued	Held In Treasury	Outstanding
Balance, December 31, 2015	79,137,758	13,933,232	65,204,526
Common stock acquired	—	1,356,892	(1,356,892)
Stock-based compensation ⁽¹⁾	—	(358,639)	358,639
Balance, September 30, 2016	79,137,758	14,931,485	64,206,273

(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 26, 2017, 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. In connection with this new authorization, the board of directors terminated the stock repurchase authority granted in 2016. During the first nine months of 2017, RGA repurchased 0.2 million shares of common stock under this program for \$26.9 million.

Accumulated Other Comprehensive Income (Loss)

The balance of and changes in each component of accumulated other comprehensive income (loss) ("AOCI") for the nine months ended September 30, 2017 and 2016 are as follows (dollars in thousands):

	Accumulated Currency Translation Adjustments	Unrealized Appreciation (Depreciation) of Investments ⁽¹⁾	Pension and Postretirement Benefits	Total
Balance, December 31, 2016	\$ (172,541)	\$ 1,355,033	\$ (43,163)	\$ 1,139,329
Other comprehensive income (loss) before reclassifications	23,117	671,564	(191)	694,490
Amounts reclassified to (from) AOCI	—	(51,407)	4,006	(47,401)
Deferred income tax benefit (expense)	44,968	(204,287)	(1,342)	(160,661)
Balance, September 30, 2017	\$ (104,456)	\$ 1,770,903	\$ (40,690)	\$ 1,625,757
	Accumulated Currency Translation Adjustments	Unrealized Appreciation (Depreciation) of Investments ⁽¹⁾	Pension and Postretirement Benefits	Total
Balance, December 31, 2015	\$ (181,151)	\$ 935,697	\$ (46,262)	\$ 708,284
Other comprehensive income (loss) before reclassifications	68,271	2,191,823	(6,079)	2,254,015
Amounts reclassified to (from) AOCI	—	(109,145)	4,253	(104,892)
Deferred income tax benefit (expense)	(8,829)	(636,902)	650	(645,081)
Balance, September 30, 2016	\$ (121,709)	\$ 2,381,473	\$ (47,438)	\$ 2,212,326

(1) Includes cash flow hedges of \$347 and \$(2,496) as of September 30, 2017 and December 31, 2016, respectively, and \$(40,597) and \$(29,397) as of September 30, 2016 and December 31, 2015, respectively. See Note 5 - "Derivative Instruments" for additional information on cash flow hedges.

The following table presents the amounts of AOCI reclassifications for the three and nine months ended September 30, 2017 and 2016 (dollars in thousands):

Details about AOCI Components	Amount Reclassified from AOCI				Affected Line Item in Statements of Income
	Three months ended September 30,		Nine months ended September 30,		
	2017	2016	2017	2016	
Net unrealized investment gains (losses):					
Net unrealized gains and losses on available-for-sale securities	\$ 10,515	\$ 72,351	\$ 39,032	\$ 84,250	Investment related gains (losses), net
Cash flow hedges - Currency/Interest rate	230	200	560	454	(1)
Cash flow hedges - Forward bond purchase commitments	224	137	286	(120)	(1)
Deferred policy acquisition costs attributed to unrealized gains and losses	1,116	12,090	11,529	24,561	(2)
Total	12,085	84,778	51,407	109,145	
Provision for income taxes	(3,991)	(27,680)	(16,015)	(32,676)	
Net unrealized gains (losses), net of tax	\$ 8,094	\$ 57,098	\$ 35,392	\$ 76,469	
Amortization of defined benefit plan items:					
Prior service cost (credit)	\$ 590	\$ 391	\$ 732	\$ 238	(3)
Actuarial gains/(losses)	(1,661)	(1,177)	(4,738)	(4,491)	(3)
Total	(1,071)	(786)	(4,006)	(4,253)	
Provision for income taxes	375	276	1,402	1,489	
Amortization of defined benefit plans, net of tax	\$ (696)	\$ (510)	\$ (2,604)	\$ (2,764)	
Total reclassifications for the period	\$ 7,398	\$ 56,588	\$ 32,788	\$ 73,705	

(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 2016 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 \$17.1 million and \$27.1 million in the first nine months of 2017 and 2016, respectively. In the first quarter of 2017, the Company granted 0.2 million stock appreciation rights at \$129.72 weighted average exercise price per share and 0.2 million performance contingent units to employees. Additionally, non-employee directors were granted a total of 7,696 shares of common stock. As of September 30, 2017, 1.6 million share options at a weighted average strike price per share of \$60.77 were vested and exercisable, with a remaining weighted average exercise period of 4.6 years. As of September 30, 2017, the total compensation cost of non-vested awards not yet recognized in the condensed consolidated financial statements was \$32.5 million. It is estimated that these costs will vest over a weighted average period of 1.2 years.

4. Investments

Fixed Maturity and Equity Securities Available-for-Sale

The following tables provide information relating to investments in fixed maturity and equity securities by sector as of September 30, 2017 and December 31, 2016 (dollars in thousands):

September 30, 2017:	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	% of Total	Other-than-temporary impairments in AOCI
Available-for-sale:						
Corporate securities	\$ 21,418,741	\$ 1,209,999	\$ 92,910	\$ 22,535,830	61.9%	\$ —
Canadian and Canadian provincial governments	2,850,982	1,142,635	2,432	3,991,185	11.0	—
Residential mortgage-backed securities	1,645,379	42,202	8,276	1,679,305	4.6	—
Asset-backed securities	1,680,918	18,713	5,063	1,694,568	4.7	275
Commercial mortgage-backed securities	1,293,296	25,471	5,445	1,313,322	3.6	—
U.S. government and agencies	1,621,053	13,614	30,998	1,603,669	4.4	—
State and political subdivisions	614,099	52,919	5,987	661,031	1.8	—
Other foreign government, supranational and foreign government-sponsored enterprises	2,765,500	145,025	7,693	2,902,832	8.0	—
Total fixed maturity securities	\$ 33,889,968	\$ 2,650,578	\$ 158,804	\$ 36,381,742	100.0%	\$ 275
Non-redeemable preferred stock	\$ 41,878	\$ 312	\$ 3,289	\$ 38,901	34.4%	—
Other equity securities	74,514	633	1,117	74,030	65.6	—
Total equity securities	\$ 116,392	\$ 945	\$ 4,406	\$ 112,931	100.0%	—

December 31, 2016:	Amortized Cost	Unrealized Gains	Unrealized Losses	Estimated Fair Value	% of Total	Other-than-temporary impairments in AOCI
Available-for-sale:						
Corporate securities	\$ 18,924,711	\$ 911,618	\$ 217,245	\$ 19,619,084	61.1%	\$ —
Canadian and Canadian provincial governments	2,561,605	1,085,982	3,541	3,644,046	11.4	—
Residential mortgage-backed securities	1,258,039	33,917	13,380	1,278,576	4.0	(375)
Asset-backed securities	1,443,822	9,350	23,828	1,429,344	4.5	275
Commercial mortgage-backed securities	1,342,440	28,973	7,759	1,363,654	4.2	—
U.S. government and agencies	1,518,702	12,644	63,044	1,468,302	4.6	—
State and political subdivisions	566,761	37,499	12,464	591,796	1.8	—
Other foreign government, supranational and foreign government-sponsored enterprises	2,595,707	123,054	19,938	2,698,823	8.4	—
Total fixed maturity securities	\$ 30,211,787	\$ 2,243,037	\$ 361,199	\$ 32,093,625	100.0%	\$ (100)
Non-redeemable preferred stock	\$ 55,812	\$ 1,648	\$ 6,337	\$ 51,123	18.6%	—
Other equity securities	229,767	1,792	7,321	224,238	81.4	—
Total equity securities	\$ 285,579	\$ 3,440	\$ 13,658	\$ 275,361	100.0%	—

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 September 30, 2017 and December 31, 2016, none of the collateral received had been sold or repledged. The Company also holds assets in trust to satisfy collateral requirements under 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 September 30, 2017 and December 31, 2016 (dollars in thousands):

	September 30, 2017		December 31, 2016	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities pledged as collateral	\$ 68,841	\$ 72,365	\$ 207,066	\$ 210,676
Fixed maturity securities received as collateral	n/a	461,237	n/a	300,925
Assets in trust held to satisfy collateral requirements	14,598,404	15,598,457	12,135,258	12,874,370

The Company monitors its concentrations of financial instruments on an ongoing basis and mitigates credit risk by maintaining a diversified investment portfolio which 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 September 30, 2017 and December 31, 2016 (dollars in thousands).

	September 30, 2017		December 31, 2016	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Fixed maturity securities guaranteed or issued by:				
Canadian province of Quebec	\$ 1,115,505	\$ 1,766,749	\$ 1,004,261	\$ 1,612,957
Canadian province of Ontario	932,872	1,231,201	832,764	1,126,433

The amortized cost and estimated fair value of fixed maturity securities classified as available-for-sale at September 30, 2017 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	\$ 910,821	\$ 915,586
Due after one year through five years	7,339,134	7,618,692
Due after five years through ten years	9,581,912	10,090,704
Due after ten years	11,438,508	13,069,565
Asset and mortgage-backed securities	4,619,593	4,687,195
Total	\$ 33,889,968	\$ 36,381,742

Corporate Fixed Maturity Securities

The tables below show the major industry types of the Company's corporate fixed maturity holdings as of September 30, 2017 and December 31, 2016 (dollars in thousands):

September 30, 2017:	Estimated		
	Amortized Cost	Fair Value	% of Total
Finance	\$ 7,797,576	\$ 8,146,891	36.2%
Industrial	11,323,024	11,914,845	52.8
Utility	2,298,141	2,474,094	11.0
Total	\$ 21,418,741	\$ 22,535,830	100.0%

December 31, 2016:	Estimated		
	Amortized Cost	Fair Value	% of Total
Finance	\$ 6,725,199	\$ 6,888,968	35.2%
Industrial	10,228,813	10,639,613	54.2
Utility	1,970,699	2,090,503	10.6
Total	\$ 18,924,711	\$ 19,619,084	100.0%

Other-Than-Temporary Impairments - Fixed Maturity and Equity Securities

As discussed in Note 2 – “Summary of Significant Accounting Policies” of the 2016 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 following table sets forth the amount of pre-tax credit loss impairments on fixed maturity securities held by the Company as of the dates indicated, for which a portion of the OTTI loss was recognized in AOCI, and the corresponding changes in such amounts (dollars in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Balance, beginning of period	\$ 3,677	\$ 6,974	\$ 6,013	\$ 7,284
Credit loss OTTI previously recognized on securities which matured, paid down, prepaid or were sold during the period	—	—	(2,336)	(310)
Balance, end of period	\$ 3,677	\$ 6,974	\$ 3,677	\$ 6,974

Unrealized Losses for Fixed Maturity and Equity Securities Available-for-Sale

The following table presents the total gross unrealized losses for the 1,165 and 1,535 fixed maturity and equity securities as of September 30, 2017 and December 31, 2016, respectively, where the estimated fair value had declined and remained below amortized cost by the indicated amount (dollars in thousands):

	September 30, 2017		December 31, 2016	
	Gross Unrealized Losses	% of Total	Gross Unrealized Losses	% of Total
Less than 20%	\$ 140,313	86.0%	\$ 337,831	90.1%
20% or more for less than six months	3,407	2.1	19,438	5.2
20% or more for six months or greater	19,490	11.9	17,588	4.7
Total	\$ 163,210	100.0%	\$ 374,857	100.0%

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 or deferability features.

The following tables present the estimated fair values and gross unrealized losses, including other-than-temporary impairment losses reported in AOCI, for 1,165 and 1,535 fixed maturity and equity securities that have estimated fair values below amortized cost as of September 30, 2017 and December 31, 2016, 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	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
September 30, 2017:						
Investment grade securities:						
Corporate securities	\$ 2,035,856	\$ 15,923	\$ 1,213,026	\$ 49,422	\$ 3,248,882	\$ 65,345
Canadian and Canadian provincial governments	97,100	1,320	46,663	1,112	143,763	2,432
Residential mortgage-backed securities	507,372	5,084	154,469	3,189	661,841	8,273
Asset-backed securities	516,613	2,318	133,848	2,213	650,461	4,531
Commercial mortgage-backed securities	293,834	3,224	61,707	2,221	355,541	5,445
U.S. government and agencies	1,302,732	29,712	56,595	1,286	1,359,327	30,998
State and political subdivisions	53,977	743	62,530	5,156	116,507	5,899
Other foreign government, supranational and foreign government-sponsored enterprises	327,813	2,529	104,333	4,865	432,146	7,394
Total investment grade securities	5,135,297	60,853	1,833,171	69,464	6,968,468	130,317
Below investment grade securities:						
Corporate securities	170,023	3,780	95,089	23,785	265,112	27,565
Residential mortgage-backed securities	—	—	93	3	93	3
Asset-backed securities	—	—	5,611	532	5,611	532
State and political subdivisions	919	88	—	—	919	88
Other foreign government, supranational and foreign government-sponsored enterprises	11,219	77	15,667	222	26,886	299
Total below investment grade securities	182,161	3,945	116,460	24,542	298,621	28,487
Total fixed maturity securities	\$ 5,317,458	\$ 64,798	\$ 1,949,631	\$ 94,006	\$ 7,267,089	\$ 158,804
Non-redeemable preferred stock	\$ 6,712	\$ 345	\$ 25,983	\$ 2,944	\$ 32,695	\$ 3,289
Other equity securities	6,446	396	58,206	721	64,652	1,117
Total equity securities	\$ 13,158	\$ 741	\$ 84,189	\$ 3,665	\$ 97,347	\$ 4,406
December 31, 2016:						
Investment grade securities:						
Corporate securities	\$ 4,661,706	\$ 124,444	\$ 549,273	\$ 43,282	\$ 5,210,979	\$ 167,726
Canadian and Canadian provincial governments	101,578	3,541	—	—	101,578	3,541
Residential mortgage-backed securities	490,473	9,733	112,216	3,635	602,689	13,368
Asset-backed securities	563,259	12,010	257,166	9,653	820,425	21,663
Commercial mortgage-backed securities	368,465	6,858	10,853	166	379,318	7,024
U.S. government and agencies	1,056,101	63,044	—	—	1,056,101	63,044
State and political subdivisions	187,194	9,396	13,635	3,068	200,829	12,464
Other foreign government, supranational and foreign government-sponsored enterprises	524,236	13,372	51,097	2,981	575,333	16,353
Total investment grade securities	7,953,012	242,398	994,240	62,785	8,947,252	305,183
Below investment grade securities:						
Corporate securities	330,757	7,914	163,152	41,605	493,909	49,519
Residential mortgage-backed securities	—	—	412	12	412	12
Asset-backed securities	5,904	700	12,581	1,465	18,485	2,165
Commercial mortgage-backed securities	5,815	735	—	—	5,815	735
Other foreign government, supranational and foreign government-sponsored enterprises	32,355	1,258	39,763	2,327	72,118	3,585
Total below investment grade securities	374,831	10,607	215,908	45,409	590,739	56,016
Total fixed maturity securities	\$ 8,327,843	\$ 253,005	\$ 1,210,148	\$ 108,194	\$ 9,537,991	\$ 361,199
Non-redeemable preferred stock	\$ 10,831	\$ 831	\$ 21,879	\$ 5,506	\$ 32,710	\$ 6,337
Other equity securities	202,068	7,020	6,751	301	208,819	7,321
Total equity securities	\$ 212,899	\$ 7,851	\$ 28,630	\$ 5,807	\$ 241,529	\$ 13,658

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 and equity securities in the ordinary course of managing its portfolio to meet certain diversification, credit quality and liquidity guidelines.

Unrealized losses on below investment grade securities as of September 30, 2017 are primarily related to high-yield corporate securities. Changes in unrealized losses are primarily being driven by changes in credit spreads and 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 September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Fixed maturity securities available-for-sale	\$ 359,157	\$ 325,089	\$ 1,039,392	\$ 961,096
Mortgage loans on real estate	50,040	39,802	138,829	121,494
Policy loans	15,404	15,391	45,870	47,897
Funds withheld at interest	102,144	104,609	327,089	273,482
Short-term investments and cash and cash equivalents	1,977	1,752	5,266	6,265
Other invested assets	47,595	21,138	90,488	57,896
Investment income	576,317	507,781	1,646,934	1,468,130
Investment expense	(19,399)	(18,054)	(57,114)	(53,471)
Investment income, net of related expenses	\$ 556,918	\$ 489,727	\$ 1,589,820	\$ 1,414,659

Investment Related Gains (Losses), Net

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

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Fixed maturity and equity securities available for sale:				
Other-than-temporary impairment losses on fixed maturity securities recognized in earnings	\$ (390)	\$ —	\$ (20,980)	\$ (34,663)
Impairment losses on equity securities	(889)	—	(889)	—
Gain on investment activity	19,522	46,346	91,635	127,153
Loss on investment activity	(7,678)	(9,054)	(30,712)	(43,397)
Other impairment losses and change in mortgage loan provision	(2,446)	(262)	(9,220)	(2,111)
Derivatives and other, net	14,534	49,594	109,637	37,020
Total investment related gains (losses), net	\$ 22,653	\$ 86,624	\$ 139,471	\$ 84,002

The fixed maturity impairments for the three and nine months ended September 30, 2017 and 2016 were largely related to high-yield and emerging market corporate securities. The equity impairments for the three and nine months ended September 30, 2017 were related to an equity position received as part of a debt restructuring. The other impairment losses and change in mortgage loan provision for the three and nine months ended September 30, 2017 and 2016 were primarily due to impairments on limited partnerships. The fluctuations in investment related gains (losses) for derivatives and other for the three and nine months ended September 30, 2017, compared to the same periods in 2016, are primarily due to changes in the fair value of embedded derivatives and interest rate swaps.

During the three months ended September 30, 2017 and 2016, the Company sold fixed maturity and equity securities with fair values of \$484.7 million and \$317.3 million at losses of \$7.7 million and \$9.1 million, respectively. During the nine months ended September 30, 2017 and 2016, the Company sold fixed maturity and equity securities with fair values of \$1,771.4 million and \$903.1 million at losses of \$30.7 million and \$43.4 million, respectively. The Company generally does not buy and sell securities on a short-term basis.

Securities Borrowing, Lending and Other

The Company participates in securities borrowing programs whereby securities, which are not reflected on the Company's condensed consolidated balance sheets, are borrowed from third parties. The borrowed securities are used to provide collateral under affiliated reinsurance transactions. The Company is required to maintain a minimum of 100% of the fair value, or par value, under certain programs, of the borrowed securities as collateral. The collateral consists of rights to reinsurance treaty cash flows. If cash flows from the reinsurance treaties are insufficient to maintain the minimum collateral requirement, the Company may substitute cash or securities to meet the requirement. No cash or securities have been pledged by the Company for this purpose.

The Company also participates in a securities lending program whereby securities, reflected as investments on the Company's condensed consolidated balance sheets, are loaned to a third party. The Company receives securities as collateral, in an amount equal to a minimum of 105% of the fair value of the securities lent. The securities received as collateral are not reflected on the Company's condensed consolidated balance sheets.

The Company also participates in repurchase/reverse repurchase programs in which securities, reflected as investments on the Company's condensed consolidated balance sheets, are pledged to third parties. In return, the Company receives securities from the third parties with an estimated fair value equal to a minimum of 100% of the securities pledged. The securities received are not reflected on the Company's condensed consolidated balance sheets.

The Company also participates in a repurchase program in which securities, reflected as investments on the Company's condensed consolidated balance sheets, are pledged to a third party. In return, the Company receives cash from the third party, which is reflected as a payable to the third party and included in other liabilities on the condensed consolidated balance sheets. The Company is required to maintain a minimum collateral balance with a fair value of 102% of the cash received.

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 September 30, 2017 and December 31, 2016 (dollars in thousands).

	September 30, 2017		December 31, 2016	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Borrowed securities	\$ 360,475	\$ 379,101	\$ 263,820	\$ 279,186
Securities lending:				
Securities loaned	117,219	121,958	74,389	73,625
Securities received	n/a	120,000	n/a	80,000
Repurchase program/reverse repurchase program:				
Securities pledged	491,824	512,613	476,531	499,891
Securities received	n/a	522,354	n/a	515,200

The Company also held cash collateral for securities lending and the repurchase program/reverse repurchase programs of \$38.5 million and \$28.8 million at September 30, 2017 and December 31, 2016, respectively.

The following table presents information on the Company's securities lending and repurchase transactions as of September 30, 2017 and December 31, 2016 (dollars in thousands). Collateral associated with certain borrowed securities is not included within the table, as the collateral pledged to each counterparty is the right to reinsurance treaty cash flows.

	September 30, 2017				
	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Up to 30 Days	30-90 Days	Greater than 90 Days	Total
Securities lending transactions:					
Corporate securities	\$ —	\$ —	\$ —	\$ 121,958	\$ 121,958
Total	—	—	—	121,958	121,958
Repurchase transactions:					
Corporate securities	—	1,472	5,402	175,258	182,132
Residential mortgage-backed securities	—	—	—	87,418	87,418
U.S. government and agencies	—	—	23,206	196,040	219,246
Foreign government	—	—	—	21,370	21,370
Other	2,447	—	—	—	2,447
Total	2,447	1,472	28,608	480,086	512,613
Total transactions	\$ 2,447	\$ 1,472	\$ 28,608	\$ 602,044	\$ 634,571

Gross amount of recognized liabilities for securities lending and repurchase transactions in preceding table	\$ 680,850
Amounts related to agreements not included in offsetting disclosure	\$ 46,279

	December 31, 2016				
	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Up to 30 Days	30-90 Days	Greater than 90 Days	Total
Securities lending transactions:					
Corporate securities	\$ —	\$ —	\$ 4,017	\$ 69,608	\$ 73,625
Total	—	—	4,017	69,608	73,625
Repurchase transactions:					
Corporate securities	\$ —	\$ —	\$ 3,220	\$ 166,979	\$ 170,199
Residential mortgage-backed securities	—	—	—	92,546	92,546
U.S. government and agencies	—	—	—	216,000	216,000
Foreign government	—	—	—	19,900	19,900
Other	1,246	—	—	—	1,246
Total	1,246	—	3,220	495,425	499,891
Total borrowings	\$ 1,246	\$ —	\$ 7,237	\$ 565,033	\$ 573,516

Gross amount of recognized liabilities for securities lending and repurchase transactions in preceding table	\$ 624,032
Amounts related to agreements not included in offsetting disclosure	\$ 50,516

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 \$7.9 million and \$5.5 million of September 30, 2017 and December 31, 2016, respectively. As of September 30, 2017 and December 31, 2016, 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.

Mortgage Loans on Real Estate

Mortgage loans represented approximately 8.7% and 8.4% of the Company's total investments as of September 30, 2017 and December 31, 2016. The Company makes mortgage loans on income producing properties that are geographically diversified throughout the U.S. with the largest concentration being in the state of California, which represented 21.2% and 22.1% of mortgage loans on real estate as of September 30, 2017 and December 31, 2016, respectively. 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 September 30, 2017 and December 31, 2016 (dollars in thousands):

Property type:	September 30, 2017		December 31, 2016	
	Carrying Value	% of Total	Carrying Value	% of Total
Office building	\$ 1,426,673	32.9%	\$ 1,270,113	33.6%
Retail	1,316,463	30.4	1,179,936	31.2
Industrial	891,051	20.6	713,461	18.8
Apartment	508,367	11.7	447,088	11.8
Other commercial	191,443	4.4	172,609	4.6
Recorded investment	4,333,997	100.0%	\$ 3,783,207	100.0%
Unamortized balance of loan origination fees and expenses	(2,531)		—	
Valuation allowances	(9,137)		(7,685)	
Total mortgage loans on real estate	\$ 4,322,329		\$ 3,775,522	

The maturities of the mortgage loans as of September 30, 2017 and December 31, 2016 are as follows (dollars in thousands):

	September 30, 2017		December 31, 2016	
	Recorded Investment	% of Total	Recorded Investment	% of Total
Due within five years	\$ 1,086,700	25.1%	\$ 822,073	21.7%
Due after five years through ten years	2,334,113	53.8	2,099,559	55.5
Due after ten years	913,184	21.1	861,575	22.8
Total	\$ 4,333,997	100.0%	\$ 3,783,207	100.0%

The following tables set forth certain key credit quality indicators of the Company's recorded investment in mortgage loans as of September 30, 2017 and December 31, 2016 (dollars in thousands):

	Recorded Investment				
	Debt Service Ratios			Total	% of Total
	>1.20x	1.00x - 1.20x	<1.00x		
September 30, 2017:					
Loan-to-Value Ratio					
0% - 59.99%	\$ 2,060,277	\$ 51,162	\$ 4,698	\$ 2,116,137	48.8%
60% - 69.99%	1,515,469	86,613	44,358	1,646,440	38.0
70% - 79.99%	424,195	32,664	19,850	476,709	11.0
Greater than 80%	51,348	19,951	23,412	94,711	2.2
Total	\$ 4,051,289	\$ 190,390	\$ 92,318	\$ 4,333,997	100.0%

	Recorded Investment				
	Debt Service Ratios			Total	% of Total
	>1.20x	1.00x - 1.20x	<1.00x		
December 31, 2016:					
Loan-to-Value Ratio					
0% - 59.99%	\$ 1,859,640	\$ 64,749	\$ 1,366	\$ 1,925,755	50.8%
60% - 69.99%	1,257,788	34,678	—	1,292,466	34.2
70% - 79.99%	370,092	20,869	24,369	415,330	11.0
Greater than 80%	114,297	—	35,359	149,656	4.0
Total	\$ 3,601,817	\$ 120,296	\$ 61,094	\$ 3,783,207	100.0%

None of the payments due to the Company on its recorded investment in mortgage loans were delinquent as of September 30, 2017 and December 31, 2016.

The following table presents the recorded investment in mortgage loans, by method of measuring impairment, and the related valuation allowances as of September 30, 2017 and December 31, 2016 (dollars in thousands):

	September 30, 2017	December 31, 2016
Mortgage loans:		
Individually measured for impairment	\$ 5,856	\$ 2,216
Collectively measured for impairment	4,328,141	3,780,991
Recorded investment	\$ 4,333,997	\$ 3,783,207
Valuation allowances:		
Individually measured for impairment	\$ —	\$ —
Collectively measured for impairment	9,137	7,685
Total valuation allowances	\$ 9,137	\$ 7,685

Information regarding the Company's loan valuation allowances for mortgage loans for the three and nine months ended September 30, 2017 and 2016 is as follows (dollars in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Balance, beginning of period	\$ 8,156	\$ 6,499	\$ 7,685	\$ 6,813
Provision (release)	977	247	1,444	(67)
Translation adjustment	4	—	8	—
Balance, end of period	\$ 9,137	\$ 6,746	\$ 9,137	\$ 6,746

Information regarding the portion of the Company's mortgage loans that were impaired as of September 30, 2017 and December 31, 2016 is as follows (dollars in thousands):

	Unpaid Principal Balance	Recorded Investment	Related Allowance	Carrying Value
September 30, 2017:				
Impaired mortgage loans with no valuation allowance recorded	\$ 6,427	\$ 5,856	\$ —	\$ 5,856
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$ 6,427	\$ 5,856	\$ —	\$ 5,856
December 31, 2016:				
Impaired mortgage loans with no valuation allowance recorded	\$ 2,758	\$ 2,216	\$ —	\$ 2,216
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$ 2,758	\$ 2,216	\$ —	\$ 2,216

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

	Three months ended September 30,			
	2017		2016	
	Average Recorded Investment ⁽¹⁾	Interest Income	Average Recorded Investment ⁽¹⁾	Interest Income
Impaired mortgage loans with no valuation allowance recorded	\$ 3,967	\$ 33	\$ 6,953	\$ 107
Impaired mortgage loans with valuation allowance recorded	—	—	—	—
Total impaired mortgage loans	\$ 3,967	\$ 33	\$ 6,953	\$ 107

	Nine months ended September 30,			
	2017		2016	
	Average Recorded Investment ⁽¹⁾	Interest Income	Average Recorded Investment ⁽¹⁾	Interest Income
Impaired mortgage loans with no valuation allowance recorded	\$ 3,062	\$ 100	\$ 4,687	\$ 324
Impaired mortgage loans with valuation allowance recorded	—	—	5,459	—
Total impaired mortgage loans	\$ 3,062	\$ 100	\$ 10,146	\$ 324

(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 nine months ended September 30, 2017 and 2016. The Company had no mortgage loans that were on a nonaccrual status at September 30, 2017 and December 31, 2016.

Policy Loans

Policy loans comprised approximately 2.7% and 3.2% of the Company's total investments as of September 30, 2017 and December 31, 2016, 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 12.1% and 13.1% of the Company's total investments as of September 30, 2017 and December 31, 2016, respectively. Of the \$6.0 billion funds withheld at interest balance, net of embedded derivatives, as of September 30, 2017, \$4.0 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

Other invested assets include equity securities, limited partnership interests, joint ventures (other than operating joint ventures), derivative contracts and fair value option (“FVO”) contractholder-directed unit-linked investments. Other invested assets also include Federal Home Loan Bank of Des Moines (“FHLB”) common stock, equity release mortgages and structured loans, all of which are included in other in the table below. The fair value option was elected for contractholder-directed investments supporting unit-linked variable annuity type liabilities which do not qualify for presentation and reporting as separate accounts. Other invested assets represented approximately 3.1% and 3.6% of the Company’s total investments as of September 30, 2017 and December 31, 2016, respectively. Carrying values of these assets as of September 30, 2017 and December 31, 2016 are as follows (dollars in thousands):

	September 30, 2017	December 31, 2016
Equity securities	\$ 112,931	\$ 275,361
Limited partnership interests and real estate joint ventures	761,739	687,522
Derivatives	133,405	229,108
FVO contractholder-directed unit-linked investments	210,660	190,120
Other	313,788	209,829
Total other invested assets	\$ 1,532,523	\$ 1,591,940

5. Derivative Instruments

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 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 September 30, 2017 and December 31, 2016 (dollars in thousands):

	September 30, 2017			December 31, 2016		
	Notional Amount	Carrying Value/Fair Value		Notional Amount	Carrying Value/Fair Value	
		Assets	Liabilities		Assets	Liabilities
Derivatives not designated as hedging instruments:						
Interest rate swaps	\$ 946,726	\$ 61,263	\$ 1,825	\$ 949,556	\$ 78,405	\$ 5,949
Financial futures	448,600	—	—	475,968	—	—
Foreign currency forwards	6,000	(84)	—	25,000	—	5,070
Consumer price index swaps	132,081	589	420	20,615	—	262
Credit default swaps	948,000	7,905	490	926,000	12,012	2,871
Equity options	541,532	20,006	—	525,894	33,459	—
Longevity swaps	945,120	37,827	—	841,360	26,958	—
Mortality swaps	50,000	—	1,683	50,000	—	2,462
Synthetic guaranteed investment contracts	9,119,434	—	—	8,834,700	—	—
Embedded derivatives in:						
Modified coinsurance or funds withheld arrangements	—	84,325	—	—	—	22,529
Indexed annuity products	—	—	821,821	—	—	805,672
Variable annuity products	—	—	168,119	—	—	184,636
Total non-hedging derivatives	13,137,493	211,831	994,358	12,649,093	150,834	1,029,451
Derivatives designated as hedging instruments:						
Interest rate swaps	435,000	—	22,133	435,000	27,901	31,223
Foreign currency swaps	796,489	71,032	13,876	928,505	104,359	734
Foreign currency forwards	331,135	1,418	10,203	—	—	—
Total hedging derivatives	1,562,624	72,450	46,212	1,363,505	132,260	31,957
Total derivatives	\$ 14,700,117	\$ 284,281	\$ 1,040,570	\$ 14,012,598	\$ 283,094	\$ 1,061,408

Netting Arrangements

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. See “Embedded Derivatives” below for information regarding the Company’s bifurcated embedded derivatives.

The following table provides information relating to the Company’s derivative instruments as of September 30, 2017 and December 31, 2016 (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
				Financial Instruments ⁽¹⁾	Cash Collateral Pledged/Received	
September 30, 2017:						
Derivative assets	\$ 199,956	\$ (28,724)	\$ 171,232	\$ (17,782)	\$ (174,120)	\$ (20,670)
Derivative liabilities	50,630	(28,724)	21,906	(58,360)	(30,771)	(67,225)
December 31, 2016:						
Derivative assets	\$ 283,094	\$ (27,028)	\$ 256,066	\$ (16,913)	\$ (254,498)	\$ (15,345)
Derivative liabilities	48,571	(27,028)	21,543	(95,863)	(1,441)	(75,761)

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

Accounting for Derivative Instruments and Hedging Activities

The Company does not enter into derivative instruments for speculative purposes. As discussed below under “Non-qualifying Derivatives and Derivatives for Purposes Other Than Hedging,” the Company uses various derivative instruments for risk management purposes that either do not qualify or have not been qualified for hedge accounting treatment. As of September 30, 2017 and December 31, 2016, the Company held interest rate swaps that were designated and qualified as cash flow hedges of interest rate risk, for variable rate liabilities and foreign currency assets, foreign currency swaps and foreign currency forwards that were designated and qualified as hedges of a portion of its net investment in its foreign operations, foreign currency swaps that were designated and qualified as fair value hedges of foreign currency risk, and derivative instruments that were not designated as hedging instruments. See Note 2 – “Summary of Significant Accounting Policies” of the Company’s 2016 Annual Report for a detailed discussion of the accounting treatment for derivative instruments, including embedded derivatives. Derivative instruments are carried at fair value and generally require an insignificant amount of cash at inception of the contracts.

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 September 30, 2017 and 2016, were (dollars in thousands):

Type of Fair Value Hedge	Hedged Item	Gains (Losses) Recognized for Derivatives	Gains (Losses) Recognized for Hedged Items	Ineffectiveness Recognized in Investment Related Gains (Losses), net
For the three months ended September 30, 2017:				
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ 2,100	\$ (2,100)	\$ —
For the three months ended September 30, 2016:				
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ 3,205	\$ (3,205)	\$ —
For the nine months ended September 30, 2017:				
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ 9,541	\$ (9,541)	\$ —
For the nine months ended September 30, 2016:				
Foreign currency swaps	Foreign-denominated fixed maturity securities	\$ 5,317	\$ (5,317)	\$ —

A regression analysis was used, both at inception of the hedge and on an ongoing basis, to determine whether each derivative used in a hedged transaction is highly effective in offsetting changes in the hedged item. For the foreign currency swaps, the change in fair value related to changes in the benchmark interest rate and credit spreads are excluded from the hedge effectiveness. For the three and nine months ended September 30, 2017, \$0.2 million and \$0.8 million, respectively, of the change in the estimated fair value of derivatives, was excluded from hedge effectiveness. For the three and nine months ended September 30, 2016, \$1.6 million and \$(5.4) million, respectively, of the change in the estimated fair value of derivatives, was excluded from hedge effectiveness.

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; (ii) certain interest rate swaps, in which the cash flows of assets are denominated in different currencies, commonly referred to as cross-currency swaps; and (iii) forward bond purchase commitments.

The following table presents the components of AOCI, before income tax, and the condensed consolidated income statement classification where the gain or loss is recognized related to cash flow hedges for the three and nine months ended September 30, 2017 and 2016 (dollars in thousands):

	Three months ended September 30,	
	2017	2016
Balance beginning of period	\$ 7,690	\$ (41,192)
Gains (losses) deferred in other comprehensive income (loss) on the effective portion of cash flow hedges	(6,889)	932
Amounts reclassified to investment related (gains) losses, net	(183)	(116)
Amounts reclassified to investment income	(271)	(221)
Balance end of period	\$ 347	\$ (40,597)

	Nine months ended September 30,	
	2017	2016
Balance beginning of period	\$ (2,496)	\$ (29,397)
Gains (losses) deferred in other comprehensive income (loss) on the effective portion of cash flow hedges	3,689	(10,866)
Amounts reclassified to investment related (gains) losses, net	(142)	53
Amounts reclassified to investment income	(704)	(387)
Balance end of period	\$ 347	\$ (40,597)

As of September 30, 2017, 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 \$(0.4) million. This expectation is based on the anticipated interest payments on hedged investments in fixed maturity securities that will occur over the next twelve months, at which time the Company will recognize the deferred net gains (losses) as an adjustment to investment income over the term of the investment cash flows.

The following table presents the effective portion 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 and nine months ended September 30, 2017 and 2016 (dollars in thousands):

Derivative Type	Effective Portion			
	Gain (Loss) Deferred in OCI	Gain (Loss) Reclassified into Income from OCI		
		Investment Related Gains (Losses)	Investment Income	
For the three months ended September 30, 2017:				
Interest rate	\$ (8,421)	\$ —	\$ —	\$ —
Currency/Interest rate	1,544	—	—	230
Forward bond purchase commitments	(12)	183	—	41
Total	\$ (6,889)	\$ 183	\$ —	\$ 271
For the three months ended September 30, 2016:				
Interest rate	\$ (3,282)	\$ —	\$ —	\$ —
Currency/Interest rate	4,214	—	—	200
Forward bond purchase commitments	—	116	—	21
Total	\$ 932	\$ 116	\$ —	\$ 221
For the nine months ended September 30, 2017:				
Interest rate	\$ (6,205)	\$ —	\$ —	\$ —
Currency/Interest rate	9,894	—	—	560
Forward bond purchase commitments	—	142	—	144
Total	\$ 3,689	\$ 142	\$ —	\$ 704
For the nine months ended September 30, 2016:				
Interest rate	\$ (15,617)	\$ —	\$ —	\$ —
Currency/Interest rate	4,751	—	—	454
Forward bond purchase commitments	—	(53)	—	(67)
Total	\$ (10,866)	\$ (53)	\$ —	\$ 387

All components of each derivative's gain or loss were included in the assessment of hedge effectiveness. For the three and nine months ended September 30, 2017 and 2016, the ineffective portion of derivatives reported as cash flow hedges was not material to the Company's results of operations. Also, 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.

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 and nine months ended September 30, 2017 and 2016 (dollars in thousands):

Type of NIFO Hedge ⁽¹⁾⁽²⁾	Derivative Gains (Losses) Deferred in AOCI			
	For the three months ended September 30,		For the nine months ended September 30,	
	2017	2016	2017	2016
Foreign currency swaps	\$ (35,198)	\$ 8,341	\$ (60,723)	\$ (23,151)
Foreign currency forwards	4,627	—	8,785	—
Total	\$ (30,571)	\$ 8,341	\$ (51,938)	\$ (23,151)

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

(2) There was no ineffectiveness recognized for the Company's hedges of net investments in foreign operations.

The cumulative foreign currency translation gain recorded in AOCI related to these hedges was \$109.7 million and \$161.6 million at September 30, 2017 and December 31, 2016, 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 and nine months ended September 30, 2017 and 2016 is as follows (dollars in thousands):

Type of Non-hedging Derivative	Income Statement Location of Gain (Loss)	Gain (Loss) for the three months ended September 30,	
		2017	2016
Interest rate swaps	Investment related gains (losses), net	\$ 641	\$ 4,122
Financial futures	Investment related gains (losses), net	(8,890)	(11,677)
Foreign currency forwards	Investment related gains (losses), net	24	507
CPI swaps	Investment related gains (losses), net	220	76
Credit default swaps	Investment related gains (losses), net	4,137	6,672
Equity options	Investment related gains (losses), net	(8,295)	(13,648)
Longevity swaps	Other revenues	3,334	8,921
Mortality swaps	Other revenues	(132)	(400)
Subtotal		(8,961)	(5,427)
Embedded derivatives in:			
Modified coinsurance or funds withheld arrangements	Investment related gains (losses), net	23,044	49,078
Indexed annuity products	Interest credited	(13,133)	(20,104)
Variable annuity products	Investment related gains (losses), net	(6,205)	7,988
Total non-hedging derivatives		\$ (5,255)	\$ 31,535

Type of Non-hedging Derivative	Income Statement Location of Gain (Loss)	Gain (Loss) for the nine months ended September 30,	
		2017	2016
Interest rate swaps	Investment related gains (losses), net	\$ 12,318	\$ 108,149
Financial futures	Investment related gains (losses), net	(28,107)	(30,285)
Foreign currency forwards	Investment related gains (losses), net	577	6,584
CPI swaps	Investment related gains (losses), net	211	(624)
Credit default swaps	Investment related gains (losses), net	15,374	13,536
Equity options	Investment related gains (losses), net	(34,757)	(19,576)
Longevity swaps	Other revenues	7,180	11,402
Mortality swaps	Other revenues	(921)	222
Subtotal		(28,125)	89,408
Embedded derivatives in:			
Modified coinsurance or funds withheld arrangements	Investment related gains (losses), net	106,854	33,795
Indexed annuity products	Interest credited	(35,490)	(20,730)
Variable annuity products	Investment related gains (losses), net	16,518	(83,089)
Total non-hedging derivatives		\$ 59,757	\$ 19,384

Types of Derivatives Used by the Company

Interest Rate Swaps

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

Financial Futures

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

Equity Options

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

Consumer Price Index Swaps

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

Foreign Currency Swaps

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

Foreign Currency Forwards

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

Forward Bond Purchase Commitments

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

Credit Default Swaps

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

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 September 30, 2017 and December 31, 2016 (dollars in thousands):

Rating Agency Designation of Referenced Credit Obligations ⁽¹⁾	September 30, 2017			December 31, 2016		
	Estimated Fair Value of Credit Default Swaps	Maximum Amount of Future Payments under Credit Default Swaps ⁽²⁾	Weighted Average Years to Maturity ⁽³⁾	Estimated Fair Value of Credit Default Swaps	Maximum Amount of Future Payments under Credit Default Swaps ⁽²⁾	Weighted Average Years to Maturity ⁽³⁾
AAA/AA+/AA/AA-/A+/A/A-						
Single name credit default swaps	\$ 2,975	\$ 155,500	3.2	\$ 1,726	\$ 150,500	3.8
Subtotal	2,975	155,500	3.2	1,726	150,500	3.8
BBB+/BBB/BBB-						
Single name credit default swaps	4,209	368,200	3.2	1,426	347,200	3.7
Credit default swaps referencing indices	56	416,000	4.2	6,295	416,000	5.0
Subtotal	4,265	784,200	3.7	7,721	763,200	4.4
BB+/BB/BB-						
Single name credit default swaps	21	5,000	1.7	(477)	9,000	3.5
Subtotal	21	5,000	1.7	(477)	9,000	3.5
Total	\$ 7,261	\$ 944,700	3.6	\$ 8,970	\$ 922,700	4.3

(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.

The Company also purchases credit default swaps to reduce its risk against a drop in bond prices due to credit concerns of certain bond issuers. If a credit event, as defined by the contract, occurs, the Company is able to put the bond back to the counterparty at par.

Longevity Swaps

The Company enters into longevity swaps in the form of out-of-the-money options, which provide protection against changes in mortality improvement to retirement plans and insurers of such plans. With a longevity swap transaction, the Company agrees with another party to exchange a proportion of a notional value. The proportion is determined by the difference between a predefined benefit, and the realized benefit plus the future expected benefit, calculated by reference to a population index for a fixed premium.

Mortality Swaps

Mortality swaps are used by the Company to hedge risk from changes in mortality experience associated with its reinsurance of life insurance risk. The Company agrees with another party to exchange, at specified intervals, a proportion of a notional value determined by the difference between a predefined expected and realized claim amount on a designated index of reinsured lives, for a fixed percentage (premium) each term.

Synthetic Guaranteed Investment Contracts

The Company sells fee-based synthetic guaranteed investment contracts to retirement plans which include investment-only, stable value contracts. The assets are owned by the trustees of such plans, who invest the assets under the terms of investment guidelines to which the Company agrees. The contracts contain a guarantee of a minimum rate of return on participant balances supported by the underlying assets, and a guarantee of liquidity to meet certain participant-initiated plan cash flow requirements. These contracts are reported as derivatives and recorded at fair value.

Embedded Derivatives

The Company has certain embedded derivatives which are required to be separated from their host contracts and reported as derivatives. Host contracts include reinsurance treaties structured on a modified coinsurance ("modco") or funds withheld basis. Additionally, the Company reinsures equity-indexed annuity and variable annuity contracts with benefits that are considered

embedded derivatives, including guaranteed minimum withdrawal benefits, guaranteed minimum accumulation benefits, and guaranteed minimum income benefits. The changes in fair values of embedded derivatives on equity-indexed annuities described below relate to changes in the fair value associated with capital market and other related assumptions. The Company's utilization of a credit valuation adjustment ("CVA") did not have a material effect on the change in fair value of its embedded derivatives for the three and nine months ended September 30, 2017 and 2016.

The related gains (losses) and the effect on net income after amortization of deferred acquisition costs ("DAC") and income taxes for the three and nine months ended September 30, 2017 and 2016 are reflected in the following table (dollars in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Embedded derivatives in modco or funds withheld arrangements included in investment related gains	\$ 23,044	\$ 49,078	\$ 106,854	\$ 33,795
After the associated amortization of DAC and taxes, the related amounts included in net income	7,515	9,653	36,300	1,683
Embedded derivatives in variable annuity contracts included in investment related gains	(6,205)	7,988	16,518	(83,089)
After the associated amortization of DAC and taxes, the related amounts included in net income	(1,074)	2,595	30,785	(63,415)
Amounts related to embedded derivatives in equity-indexed annuities included in benefits and expenses	(13,133)	(20,104)	(35,490)	(20,730)
After the associated amortization of DAC and taxes, the related amounts included in net income	(9,737)	(13,397)	(38,059)	(9,979)

Credit Risk

The Company manages its credit risk related to over-the-counter ("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 credit exposure of the Company's OTC derivative transactions is represented by the contracts with a positive fair value (market value) at the reporting date. To reduce credit exposures, the Company seeks to (i) enter into OTC derivative transactions pursuant to master netting agreements that provide for a netting of payments and receipts with a single counterparty, and (ii) enter into agreements that allow the use of credit support annexes, which are bilateral rating-sensitive agreements that require collateral postings at established threshold levels. Certain of the Company's OTC derivatives are cleared derivatives, which are bilateral transactions between the Company and a counterparty where the transactions are cleared through a clearinghouse, such that each derivative counterparty is only exposed to the default of the clearinghouse. These cleared transactions require initial and daily variation margin collateral postings and include certain interest rate swaps and credit default swaps entered into on or after June 10, 2013, related to guidelines implemented under the Dodd-Frank Wall Street Reform and Consumer Protection Act. Also, the Company enters into exchange-traded futures through regulated exchanges and these transactions are settled on a daily basis, thereby reducing credit risk exposure in the event of non-performance by counterparties to such financial instruments.

The Company enters into various collateral arrangements, which require both the posting and accepting of collateral in connection with its derivative instruments. Collateral agreements contain attachment thresholds that may vary depending on the posting party's ratings. Additionally, a decline in the Company's or the counterparty's credit ratings to specified levels could result in potential settlement of the derivative positions under the Company's agreements with its counterparties. The Company also has exchange-traded futures, which require the maintenance of a margin account. 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.

The Company's credit exposure related to derivative contracts is generally limited to the fair value at the reporting date plus or minus any collateral posted or held by the Company. The Company's credit exposure to mortality swaps is minimal, as they are fully collateralized by a counterparty. Information regarding the Company's credit exposure related to its over-the-counter derivative contracts, centrally cleared derivative contracts and margin account for exchange-traded futures, excluding mortality swaps, at September 30, 2017 and December 31, 2016 are reflected in the following table (dollars in thousands):

	September 30, 2017	December 31, 2016
Estimated fair value of derivatives in net asset position	\$ 151,009	\$ 236,985
Cash provided as collateral ⁽¹⁾	30,771	1,441
Securities pledged to counterparties as collateral ⁽²⁾	58,360	95,863
Cash pledged from counterparties as collateral ⁽³⁾	(174,120)	(254,498)
Securities pledged from counterparties as collateral ⁽⁴⁾	(17,782)	(16,913)
Initial margin for cleared derivatives ⁽²⁾	(58,360)	(73,571)
Net amount after application of master netting agreements and collateral	\$ (10,122)	\$ (10,693)
Margin account related to exchange-traded futures ⁽⁵⁾	\$ 7,832	\$ 9,687

(1) Consists of receivable from counterparty, included in other assets.

(2) Included in available-for-sale securities, primarily consists of U.S. Treasury and government agency securities.

(3) Included in cash and cash equivalents, with obligation to return cash collateral recorded in other liabilities.

(4) Consists of U.S. Treasury and government securities.

(5) Included in other assets.

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 which 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 those 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.

When inputs used to measure the fair value of an asset or liability fall within different levels of the hierarchy, the level within which the fair value measurement is categorized is based on the lowest level input that is significant to the fair value measurement in its entirety, except for fair value measurements using net asset value. For example, a Level 3 fair value measurement may include inputs that are observable (Levels 1 and 2) and unobservable (Level 3). Therefore, gains and losses for such assets and liabilities categorized within Level 3 may include changes in fair value that are attributable to both observable inputs (Levels 1 and 2) and unobservable inputs (Level 3).

Assets and Liabilities by Hierarchy Level

Assets and liabilities measured at fair value on a recurring basis as of September 30, 2017 and December 31, 2016 are summarized below (dollars in thousands):

September 30, 2017:

	Total	Fair Value Measurements Using:		
		Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities – available-for-sale:				
Corporate securities	\$ 22,535,830	\$ 615,433	\$ 20,648,377	\$ 1,272,020
Canadian and Canadian provincial governments	3,991,185	—	3,465,820	525,365
Residential mortgage-backed securities	1,679,305	—	1,561,310	117,995
Asset-backed securities	1,694,568	—	1,549,371	145,197
Commercial mortgage-backed securities	1,313,322	—	1,311,375	1,947
U.S. government and agencies	1,603,669	1,480,357	100,061	23,251
State and political subdivisions	661,031	—	619,519	41,512
Other foreign government supranational and foreign government-sponsored enterprises	2,902,832	319,147	2,578,057	5,628
Total fixed maturity securities – available-for-sale	36,381,742	2,414,937	31,833,890	2,132,915
Funds withheld at interest – embedded derivatives	84,325	—	—	84,325
Cash equivalents	332,186	332,186	—	—
Short-term investments	56,454	—	53,095	3,359
Other invested assets:				
Non-redeemable preferred stock	38,901	38,901	—	—
Other equity securities	74,030	74,030	—	—
Derivatives:				
Interest rate swaps	46,258	—	46,258	—
Foreign currency forwards	1,418	—	1,418	—
CPI swaps	230	—	230	—
Credit default swaps	6,903	—	6,903	—
Equity options	9,700	—	9,700	—
Foreign currency swaps	68,896	—	68,896	—
FVO contractholder-directed unit-linked investments	210,660	209,136	1,524	—
Total other invested assets	456,996	322,067	134,929	—
Other assets - longevity swaps	37,827	—	—	37,827
Total	\$ 37,349,530	\$ 3,069,190	\$ 32,021,914	\$ 2,258,426
Liabilities:				
Interest sensitive contract liabilities – embedded derivatives	\$ 989,940	\$ —	\$ —	\$ 989,940
Other liabilities:				
Derivatives:				
Interest rate swaps	8,953	—	8,953	—
Foreign currency forwards	10,287	—	10,287	—
CPI swaps	61	—	61	—
Credit default swaps	(512)	—	(512)	—
Equity options	(10,306)	—	(10,306)	—
Foreign currency swaps	11,740	—	11,740	—
Mortality swaps	1,683	—	—	1,683
Total	\$ 1,011,846	\$ —	\$ 20,223	\$ 991,623

December 31, 2016:

	Fair Value Measurements Using:			
	Total	Level 1	Level 2	Level 3
Assets:				
Fixed maturity securities – available-for-sale:				
Corporate securities	\$ 19,619,084	\$ 310,995	\$ 18,035,836	\$ 1,272,253
Canadian and Canadian provincial governments	3,644,046	—	3,168,081	475,965
Residential mortgage-backed securities	1,278,576	—	1,118,285	160,291
Asset-backed securities	1,429,344	—	1,210,064	219,280
Commercial mortgage-backed securities	1,363,654	—	1,342,509	21,145
U.S. government and agencies	1,468,302	1,345,755	98,059	24,488
State and political subdivisions	591,796	—	550,130	41,666
Other foreign government, supranational and foreign government-sponsored enterprises	2,698,823	276,729	2,409,225	12,869
Total fixed maturity securities – available-for-sale	32,093,625	1,933,479	27,932,189	2,227,957
Funds withheld at interest – embedded derivatives	(22,529)	—	—	(22,529)
Cash equivalents	338,601	338,601	—	—
Short-term investments	44,241	8,276	32,619	3,346
Other invested assets:				
Non-redeemable preferred stock	51,123	38,317	12,806	—
Other equity securities	224,238	224,238	—	—
Derivatives:				
Interest rate swaps	93,508	—	93,508	—
Credit default swaps	9,136	—	9,136	—
Equity options	26,070	—	26,070	—
Foreign currency swaps	100,394	—	100,394	—
FVO contractholder-directed unit-linked investments	190,120	188,891	1,229	—
Other	11,036	11,036	—	—
Total other invested assets	705,625	462,482	243,143	—
Other assets - longevity swaps	26,958	—	—	26,958
Total	\$ 33,186,521	\$ 2,742,838	\$ 28,207,951	\$ 2,235,732
Liabilities:				
Interest sensitive contract liabilities – embedded derivatives	\$ 990,308	\$ —	\$ —	\$ 990,308
Other liabilities:				
Derivatives:				
Interest rate swaps	24,374	—	24,374	—
Foreign currency forwards	5,070	—	5,070	—
CPI swaps	262	—	262	—
Credit default swaps	(5)	—	(5)	—
Equity options	(7,389)	—	(7,389)	—
Foreign currency swaps	(3,231)	—	(3,231)	—
Mortality swaps	2,462	—	—	2,462
Total	\$ 1,011,851	\$ —	\$ 19,081	\$ 992,770

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

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

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

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

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

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

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

When observable inputs are not available, the market standard valuation techniques for determining the estimated fair value of certain types of securities that trade infrequently, and therefore have little or no price transparency, rely on inputs that are significant to the estimated fair value that are not observable in the market or cannot be derived principally from or corroborated by observable market data. These unobservable inputs can be based in large part on management judgment or estimation, and cannot be supported by reference to market activity. Even though unobservable, these inputs are based on assumptions deemed appropriate given the circumstances and are believed to be consistent with what other market participants would use when pricing such securities.

The fair values of private placement securities are primarily determined using a discounted cash flow model. In certain cases these models primarily use observable inputs with a discount rate based upon the average of spread surveys collected from private market intermediaries who are active in both primary and secondary transactions, taking into account, among other factors, the credit quality and industry sector of the issuer and the reduced liquidity associated with private placements. Generally, these securities have been reflected within Level 3. For certain private fixed maturities, the discounted cash flow model may also incorporate significant unobservable inputs, which reflect the Company's own assumptions about the inputs market participants would use in pricing the security. To the extent management determines that such unobservable inputs are not significant to the price of a security, a Level 2 classification is made. Otherwise, a Level 3 classification is used.

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

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

The fair value of embedded derivatives associated with funds withheld reinsurance treaties is determined based upon a total return swap technique with reference to the fair value of the investments held by the ceding company that support the Company's funds withheld at interest asset with an adjustment for a CVA. The fair value of the underlying assets is generally based on market observable inputs using industry standard valuation techniques. The valuation also requires certain significant inputs, which are generally not observable and accordingly, the valuation is considered Level 3 in the fair value hierarchy, see "Level 3 Measurements and Transfers" below for a description.

Credit Valuation Adjustment – The Company uses a structural default risk model to estimate a CVA. The input assumptions are a combination of externally derived and published values (default threshold and uncertainty), market inputs (interest rate, equity price per share, debt per share, equity price volatility) and insurance industry data (Loss Given Default), adjusted for market recoverability.

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

Equity Securities – Equity securities consist principally of exchange-traded funds and preferred stock of publicly and privately traded companies. The fair values of publicly traded equity securities are primarily based on quoted market prices in active markets and are classified within Level 1 in the fair value hierarchy. The fair values of preferred equity securities, for which quoted market prices are not readily available, are based on prices obtained from independent pricing services and these securities are generally classified within Level 2 in the fair value hierarchy. Non-binding broker quotes for equity securities are generally based on significant unobservable inputs and are reflected as Level 3 in the fair value hierarchy.

FVO Contractholder-Directed Unit-Linked Investments – FVO contractholder-directed investments supporting unit-linked variable annuity type liabilities primarily consist of exchange-traded funds and, to a lesser extent, fixed maturity securities and cash and cash equivalents. The fair values of the exchange-traded securities are primarily based on quoted market prices in active markets and are classified within Level 1 of the hierarchy. The fair value of the fixed maturity contractholder-directed securities is determined on a basis consistent with the methodologies described above for fixed maturity securities and are classified within Level 2 of the hierarchy.

Derivative Assets and Derivative Liabilities – All of the derivative instruments utilized by the Company, except for longevity and mortality swaps, are classified within Level 2 on the fair value hierarchy. These derivatives are principally valued using an income approach. Valuations of interest rate contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, London Interbank Offered Rate (“LIBOR”) basis curves, and repurchase rates. Valuations of foreign currency contracts, are based on present value techniques, which utilize significant inputs that may include the swap yield curve, LIBOR basis curves, currency spot rates, and cross currency basis curves. Valuations of credit contracts are based on present value techniques, which utilize significant inputs that may include the swap yield curve, credit curves, and recovery rates. Valuations of equity market contracts, are based on present value techniques, which utilize significant inputs that may include the swap yield curve, spot equity index levels, and dividend yield curves. Valuations of equity market contracts, option-based, are based on option pricing models, which utilize significant inputs that may include the swap yield curve, spot equity index levels, dividend yield curves, and equity volatility. The Company does not currently have derivatives, except for longevity and mortality swaps, included in Level 3 measurement.

Longevity and Mortality Swaps – The Company utilizes a discounted cash flow model to estimate the fair value of longevity and mortality swaps. The fair value of these swaps includes an accrual for premiums payable and receivable. Some inputs to the valuation model are generally observable, such as interest rates and actual population mortality experience. The valuation also requires significant inputs that are generally not observable and, accordingly, the valuation is considered Level 3 in the fair value hierarchy.

Level 3 Measurements and Transfers

As of September 30, 2017 and December 31, 2016, the Company classified approximately 5.9% and 6.9%, respectively, of its fixed maturity securities in the Level 3 category. These securities primarily consist of private placement corporate securities and bank loans as well as Canadian provincial strips with inactive trading markets. Additionally, the Company has included asset-backed securities with subprime exposure and mortgage-backed securities with below investment grade ratings in the Level 3 category due to market uncertainty associated with these securities and the Company’s utilization of unobservable information from third parties for the valuation of these securities.

The significant unobservable inputs used in the fair value measurement of the Company’s corporate, sovereign, government-backed, and other political subdivision investments are probability of default, liquidity premium and subordination premium. Significant increases (decreases) in any of those inputs in isolation would result in a significantly lower (higher) fair value measurement. Generally, a change in the assumption used for the probability of default is accompanied by a directionally similar change in the assumptions used for the liquidity premium and subordination premium. For securities with a fair value derived using the market comparable pricing valuation technique, liquidity premium is the only significant unobservable input.

The significant unobservable inputs used in the fair value measurement of the Company’s asset and mortgage-backed securities are prepayment rates, probability of default, liquidity premium and loss severity in the event of default. Significant increases (decreases) in any of those inputs in isolation would result in a significantly lower (higher) fair value measurement. Generally, a change in the assumption used for the probability of default is accompanied by a directionally similar change in the assumption used for the liquidity premium and loss severity and a directionally opposite change in the assumption used for prepayment rates.

The actuarial assumptions used in the fair value of embedded derivatives which include assumptions related to lapses, withdrawals, and mortality, are based on experience studies performed by the Company in combination with available industry information and are reviewed on a periodic basis, at least annually. The significant unobservable inputs used in the fair value measurement of embedded derivatives are assumptions associated with policyholder experience and selected capital market assumptions for equity-indexed and variable annuities. The selected capital market assumptions, which include long-term implied volatilities, are projections based on short-term historical information. Changes in interest rates, equity indices, equity volatility, CVA, and actuarial assumptions regarding policyholder experience may result in significant fluctuations in the value of embedded derivatives.

Fair value measurements associated with funds withheld reinsurance treaties are generally not materially sensitive to changes in unobservable inputs associated with policyholder experience. The primary drivers of change in these fair values are related to movements of credit spreads, which are generally observable. Increases (decreases) in market credit spreads tend to decrease (increase) the fair value of embedded derivatives. Increases (decreases) in the CVA assumption tend to decrease (increase) the magnitude of the fair value of embedded derivatives.

Fair value measurements associated with variable annuity treaties are sensitive to both capital markets inputs and policyholder experience inputs. Increases (decreases) in lapse rates tend to decrease (increase) the value of the embedded derivatives associated with variable annuity treaties. Increases (decreases) in the long-term volatility assumption tend to increase (decrease) the fair value of embedded derivatives. Increases (decreases) in the CVA assumption tend to decrease (increase) the magnitude of the fair value of embedded derivatives.

The actuarial assumptions used in the fair value of longevity and mortality swaps include assumptions related to the level and volatility of mortality. The assumptions are based on studies performed by the Company in combination with available industry information and are reviewed on a periodic basis, at least annually.

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 September 30, 2017 and December 31, 2016 (dollars in thousands):

	Estimated Fair Value		Valuation Technique	Unobservable Inputs	Range (Weighted Average)	
	September 30, 2017	December 31, 2016			September 30, 2017	December 31, 2016
Assets:						
Corporate securities	\$ 150,170	\$ 167,815	Market comparable securities	Liquidity premium	0-2% (1%)	0-2% (1%)
U.S. government and agencies	23,251	24,488	Market comparable securities	Liquidity premium	0-1% (1%)	0-1% (1%)
State and political subdivisions	4,544	4,670	Market comparable securities	Liquidity premium	1%	1%
Funds withheld at interest- embedded derivatives	84,325	(22,529)	Total return swap	Mortality	0-100% (3%)	0-100% (2%)
				Lapse	0-35% (10%)	0-35% (8%)
				Withdrawal	0-5% (4%)	0-5% (3%)
				CVA	0-5% (1%)	0-5% (1%)
				Crediting rate	2-4% (3%)	2-4% (2%)
Longevity swaps	37,827	26,958	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	821,821	805,672	Discounted cash flow	Mortality	0-100% (3%)	0-100% (2%)
				Lapse	0-35% (10%)	0-35% (8%)
				Withdrawal	0-5% (4%)	0-5% (3%)
				Option budget projection	2-4% (3%)	2-4% (2%)
Interest sensitive contract liabilities- embedded derivatives- variable annuities	168,119	184,636	Discounted cash flow	Mortality	0-100% (1%)	0-100% (2%)
				Lapse	0-25% (5%)	0-25% (6%)
				Withdrawal	0-7% (3%)	0-7% (3%)
				CVA	0-5% (1%)	0-5% (1%)
				Long-term volatility	0-27% (9%)	0-27% (14%)
Mortality swaps	1,683	2,462	Discounted cash flow	Mortality	0-100% (1%)	0-100% (1%)

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. Assets and liabilities transferred into Level 3 are due to a lack of observable market transactions and price information. Assets and liabilities are transferred out of Level 3 when circumstances change such that significant inputs can be corroborated with market observable data. This may be due to a significant increase in market activity for the asset or liability, a specific event, one or more significant input(s) becoming observable. Transfers out of Level 3 were 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 addition, certain transfers out of Level 3 were also due to ratings upgrades on mortgage-backed securities that had previously had below investment-grade ratings.

Transfers from Level 1 to Level 2 are due to the lack of observable market data when pricing these securities, while transfers from Level 2 to Level 1 are due to an increase in the availability of market observable data in an active market. There were no transfers between Level 1 and Level 2 during the three and nine months ended September 30, 2016. The following tables present the transfers between Level 1 and Level 2 during the three and nine months ended September 30, 2017 (dollars in thousands):

	2017	
	Transfers from Level 1 to Level 2	Transfers from Level 2 to Level 1
Three months ended September 30:		
Fixed maturity securities - available-for-sale:		
Corporate securities	\$ —	\$ —
Nine months ended September 30:		
Fixed maturity securities - available-for-sale:		
Corporate securities	\$ —	\$ 88,674

The tables below provide a summary of the changes in fair value of Level 3 assets and liabilities for the three and nine months ended September 30, 2017, as well as the portion of gains or losses included in income for the three and nine months ended September 30, 2017 attributable to unrealized gains or losses related to those assets and liabilities still held at September 30, 2017 (dollars in thousands):

	Fixed maturity securities - available-for-sale			
	Corporate securities	Canadian and Canadian provincial governments	Residential mortgage-backed securities	Asset-backed securities
Fair value, beginning of period	\$ 1,291,054	\$ 533,270	\$ 148,685	\$ 201,589
Total gains/losses (realized/unrealized)				
Included in earnings, net:				
Investment income, net of related expenses	(383)	3,460	(30)	160
Investment related gains (losses), net	396	—	44	—
Included in other comprehensive income	(2,700)	(11,365)	104	(101)
Purchases ⁽¹⁾	107,670	—	26,765	—
Sales ⁽¹⁾	(26,337)	—	(3,553)	—
Settlements ⁽¹⁾	(88,551)	—	(3,645)	(15,243)
Transfers into Level 3	3,844	—	15	36,994
Transfers out of Level 3	(12,973)	—	(50,390)	(78,202)
Fair value, end of period	\$ 1,272,020	\$ 525,365	\$ 117,995	\$ 145,197
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	\$ (394)	\$ 3,460	\$ (27)	\$ 156

For the three months ended September 30, 2017 (continued):

	Fixed maturity securities available-for-sale			
	Commercial mortgage-backed securities	U.S. government and agencies	State and political subdivisions	Other foreign government, supranational and foreign government-sponsored enterprises
Fair value, beginning of period	\$ 1,943	\$ 23,567	\$ 34,434	\$ 11,994
Total gains/losses (realized/unrealized)				
Included in earnings, net:				
Investment income, net of related expenses	—	(116)	26	(1)
Included in other comprehensive income	5	6	(208)	(7)
Purchases ⁽¹⁾	—	134	—	495
Settlements ⁽¹⁾	(1)	(340)	(35)	—
Transfers into Level 3	—	—	7,295	—
Transfers out of Level 3	—	—	—	(6,853)
Fair value, end of period	\$ 1,947	\$ 23,251	\$ 41,512	\$ 5,628
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	\$ —	\$ (116)	\$ 26	\$ (1)

For the three months ended September 30, 2017 (continued):

	Short-term Investments	Funds withheld at interest-embedded derivatives	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
	Fair value, beginning of period	\$ 3,548	\$ 61,281	\$ 33,349	\$ (974,631)
Total gains/losses (realized/unrealized)					
Included in earnings, net:					
Investment related gains (losses), net	—	23,044	—	(10,047)	—
Interest credited	—	—	—	(8,335)	—
Included in other comprehensive income	(3)	—	1,144	—	1
Other revenues	—	—	3,334	—	(132)
Purchases ⁽¹⁾	3,164	—	—	(18,736)	—
Settlements ⁽¹⁾	(114)	—	—	21,809	—
Transfers out of Level 3	(3,236)	—	—	—	—
Fair value, end of period	\$ 3,359	\$ 84,325	\$ 37,827	\$ (989,940)	\$ (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	—	23,044	—	(11,900)	—
Other revenues	—	—	3,334	—	(132)
Interest credited	—	—	—	(30,145)	—

For the nine months ended September 30, 2017:

	Fixed maturity securities - available-for-sale			
	Corporate securities	Canadian and Canadian provincial governments	Residential mortgage-backed securities	Asset-backed securities
Fair value, beginning of period	\$ 1,272,253	\$ 475,965	\$ 160,291	\$ 219,280
Total gains/losses (realized/unrealized)				
Included in earnings, net:				
Investment income, net of related expenses	(1,202)	9,731	(304)	1,689
Investment related gains (losses), net	7,592	—	524	—
Interest credited				
Included in other comprehensive income	(2,300)	39,669	2,716	6,802
Purchases ⁽¹⁾	257,671	—	72,582	45,215
Sales ⁽¹⁾	(49,511)	—	(18,624)	—
Settlements ⁽¹⁾	(234,552)	—	(15,084)	(60,966)
Transfers into Level 3	35,042	—	5,515	75,752
Transfers out of Level 3	(12,973)	—	(89,621)	(142,575)
Fair value, end of period	\$ 1,272,020	\$ 525,365	\$ 117,995	\$ 145,197
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	\$ (1,213)	\$ 9,731	\$ (155)	\$ 556
Investment related gains (losses), net	(2,788)	—	(346)	—

For the nine months ended September 30, 2017 (continued):

	Fixed maturity securities available-for-sale			
	Commercial mortgage-backed securities	U.S. government and agencies	State and political subdivisions	Other foreign government, supranational and foreign government-sponsored enterprises
Fair value, beginning of period	\$ 21,145	\$ 24,488	\$ 41,666	\$ 12,869
Total gains/losses (realized/unrealized)				
Included in earnings, net:				
Investment income, net of related expenses	709	(348)	(68)	(1)
Investment related gains (losses), net	(595)	—	—	—
Included in other comprehensive income	(57)	269	(228)	(210)
Other revenues	—	—	—	—
Purchases ⁽¹⁾	—	370	—	495
Sales ⁽¹⁾	(3,720)	—	—	—
Settlements ⁽¹⁾	(5,403)	(1,528)	(309)	(672)
Transfers into Level 3	—	—	7,295	—
Transfers out of Level 3	(10,132)	—	(6,844)	(6,853)
Fair value, end of period	\$ 1,947	\$ 23,251	\$ 41,512	\$ 5,628
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	\$ —	\$ (348)	\$ (68)	\$ (1)

For the nine months ended September 30, 2017 (continued):

	Short-term Investments	Funds withheld at interest- embedded derivatives	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
Fair value, beginning of period	\$ 3,346	\$ (22,529)	\$ 26,958	\$ (990,308)	\$ (2,462)
Total gains/losses (realized/unrealized)					
Included in earnings, net:					
Investment related gains (losses), net	—	106,854	—	9,005	—
Interest credited	—	—	—	(20,408)	—
Included in other comprehensive income	1	—	3,689	—	1
Other revenues	—	—	7,180	—	(922)
Purchases ⁽¹⁾	3,520	—	—	(51,276)	—
Settlements ⁽¹⁾	(272)	—	—	63,047	1,700
Transfers out of Level 3	(3,236)	—	—	—	—
Fair value, end of period	\$ 3,359	\$ 84,325	\$ 37,827	\$ (989,940)	\$ (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	—	106,854	—	2,934	—
Other revenues	—	—	7,180	—	(922)
Interest credited	—	—	—	(83,456)	—

(1) The amount reported within purchases, sales and settlements is the purchase price (for purchases) and the sales/settlement proceeds (for sales and settlements) based upon the actual date purchased or sold/settled. Items purchased and sold/settled in the same period are excluded from the rollforward. The Company had no issuances during the period.

The tables below provide a summary of the changes in fair value of Level 3 assets and liabilities for the three and nine months ended September 30, 2016, as well as the portion of gains or losses included in income for the three and nine months ended September 30, 2016 attributable to unrealized gains or losses related to those assets and liabilities still held at September 30, 2016 (dollars in thousands):

For the three months ended September 30, 2016:

	Fixed maturity securities - available-for-sale					
	Corporate securities	Canadian and Canadian provincial governments	Residential mortgage- backed securities	Asset-backed securities	Commercial mortgage- backed securities	U.S. government and agencies
Fair value, beginning of period	\$ 1,297,382	\$ 554,192	\$ 165,979	\$ 298,816	\$ 37,935	\$ 26,255
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses	(567)	3,085	(40)	173	304	(122)
Investment related gains (losses), net	17,917	—	—	—	—	—
Included in other comprehensive income	(19,635)	16,342	2,597	3,410	(94)	(135)
Purchases ⁽¹⁾	54,492	—	27,548	5,013	—	147
Sales ⁽¹⁾	(26,320)	—	—	—	—	—
Settlements ⁽¹⁾	(44,110)	—	(6,935)	(18,602)	(1)	(312)
Transfers into Level 3	—	—	1,544	28,285	—	—
Transfers out of Level 3	(23,255)	—	—	(93,444)	(637)	—
Fair value, end of period	\$ 1,255,904	\$ 573,619	\$ 190,693	\$ 223,651	\$ 37,507	\$ 25,833
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	\$ (489)	\$ 3,085	\$ (40)	\$ 173	\$ 304	\$ (122)

For the three months ended September 30, 2016 (continued):

	Fixed maturity securities available-for-sale					
	State and political subdivisions	Other foreign government, supranational and foreign government-sponsored enterprises	Funds withheld at interest-embedded derivatives	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
Fair value, beginning of period	\$ 35,246	\$ 13,706	\$ (91,981)	\$ 17,781	\$ (1,125,380)	\$ (1,997)
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses	10	—	—	—	—	—
Investment related gains (losses), net	—	—	49,078	—	7,988	—
Interest credited	—	—	—	—	(20,104)	—
Included in other comprehensive income	553	48	—	327	—	—
Other revenues	—	—	—	8,921	—	(400)
Purchases ⁽¹⁾	1,986	—	—	—	(11,853)	—
Sales ⁽¹⁾	—	—	—	—	—	—
Settlements ⁽¹⁾	(32)	(328)	—	—	19,225	329
Transfers into Level 3	—	—	—	—	—	—
Transfers out of Level 3	—	—	—	—	—	—
Fair value, end of period	\$ 37,763	\$ 13,426	\$ (42,903)	\$ 27,029	\$ (1,130,124)	\$ (2,068)
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	\$ 10	\$ —	\$ —	\$ —	\$ —	\$ —
Investment related gains (losses), net	—	—	49,078	—	3,969	—
Other revenues	—	—	—	8,921	—	(400)
Interest credited	—	—	—	—	(39,329)	—

For the nine months ended September 30, 2016:

	Fixed maturity securities - available-for-sale					
	Corporate securities	Canadian and Canadian provincial governments	Residential mortgage-backed securities	Asset-backed securities	Commercial mortgage-backed securities	U.S. government and agencies
Fair value, beginning of period	\$ 1,226,970	\$ 416,076	\$ 330,649	\$ 303,836	\$ 68,563	\$ 26,265
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses	(1,986)	9,136	(411)	599	1,437	(367)
Investment related gains (losses), net	(3,939)	—	(1,922)	1,101	(3,289)	—
Interest credited	—	—	—	—	—	—
Included in other comprehensive income	36,438	148,407	2,104	(4,324)	(2,453)	922
Other revenues	—	—	—	—	—	—
Purchases ⁽¹⁾	195,070	—	99,776	102,063	1,545	404
Sales ⁽¹⁾	(36,803)	—	(167,684)	(38,681)	(25,976)	—
Settlements ⁽¹⁾	(141,065)	—	(31,839)	(26,523)	(138)	(1,391)
Transfers into Level 3	10,206	—	1,544	53,081	—	—
Transfers out of Level 3	(28,987)	—	(41,524)	(167,501)	(2,182)	—
Fair value, end of period	\$ 1,255,904	\$ 573,619	\$ 190,693	\$ 223,651	\$ 37,507	\$ 25,833
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	\$ (1,917)	\$ 9,136	\$ 2	\$ 523	\$ 1,335	\$ (367)

For the nine months ended September 30, 2016 (continued):

	Fixed maturity securities available-for-sale					
	State and political subdivisions	Other foreign government, supranational and foreign government-sponsored enterprises	Funds withheld at interest-embedded derivatives	Other assets - longevity swaps	Interest sensitive contract liabilities embedded derivatives	Other liabilities - mortality swaps
Fair value, beginning of period	\$ 38,342	\$ 14,065	\$ (76,698)	\$ 14,996	\$ (1,070,584)	\$ (2,619)
Total gains/losses (realized/unrealized)						
Included in earnings, net:						
Investment income, net of related expenses	205	—	—	—	—	—
Investment related gains (losses), net	—	—	33,795	—	(83,089)	—
Interest credited	—	—	—	—	(20,730)	—
Included in other comprehensive income	1,725	336	—	631	—	—
Other revenues	—	—	—	11,402	—	222
Purchases ⁽¹⁾	1,986	—	—	—	(9,817)	—
Sales ⁽¹⁾	—	—	—	—	—	—
Settlements ⁽¹⁾	(290)	(975)	—	—	54,096	329
Transfers into Level 3	—	—	—	—	—	—
Transfers out of Level 3	(4,205)	—	—	—	—	—
Fair value, end of period	\$ 37,763	\$ 13,426	\$ (42,903)	\$ 27,029	\$ (1,130,124)	\$ (2,068)
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	\$ 205	\$ —	\$ —	\$ —	\$ —	\$ —
Investment related gains (losses), net	—	—	33,795	—	(92,842)	—
Other revenues	—	—	—	11,402	—	222
Interest credited	—	—	—	—	(74,826)	—

(1) The amount reported within purchases, sales and settlements is the purchase price (for purchases) and the sales/settlement proceeds (for sales and settlements) based upon the actual date purchased or sold/settled. Items purchased and sold/settled in the same period are excluded from the rollforward. The Company had no issuances during the period.

Nonrecurring Fair Value Measurements

The following table presents information for assets measured at estimated fair value on a nonrecurring basis during the periods presented and still held at the reporting date (for example, when there is evidence of impairment). The estimated fair values for these assets were determined using significant unobservable inputs (Level 3).

(dollars in thousands)	Carrying Value After Measurement		Net Investment Gains (Losses)			
	At September 30,		Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016	2017	2016
Mortgage loans ⁽¹⁾	\$ —	\$ 6,913	\$ —	\$ 747	\$ —	\$ 45
Limited partnership interests ⁽²⁾	4,656	4,460	(896)	—	(7,204)	(2,039)
Private equities ⁽³⁾	106	—	(531)	—	(531)	—

(1) Estimated fair values for impaired mortgage loans are based on internal valuation models using unobservable inputs or, if the loans are in foreclosure or are otherwise determined to be collateral dependent, are based on external appraisals of the underlying collateral.

(2) The impaired limited partnership interests presented above were accounted for using the cost method. Impairments on these cost method investments were recognized at estimated fair value determined using the net asset values of the Company's ownership interest as provided in the financial statements of the investees. The market for these investments has limited activity and price transparency.

(3) The fair value of the Company's private equity investments is based on external valuation models.

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 September 30, 2017 and December 31, 2016 (dollars in thousands). 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.

September 30, 2017:

	Carrying Value	Estimated Fair Value	Fair Value Measurement Using:				
			Level 1	Level 2	Level 3	NAV	
Assets:							
Mortgage loans on real estate	\$ 4,322,329	\$ 4,494,964	\$ —	\$ —	\$ 4,494,964	\$ —	
Policy loans	1,340,146	1,340,146	—	1,340,146	—	—	
Funds withheld at interest ⁽¹⁾	5,931,416	6,309,369	—	—	6,309,369	—	
Cash and cash equivalents ⁽²⁾	872,404	872,404	872,404	—	—	—	
Short-term investments ⁽²⁾	24,128	24,128	24,128	—	—	—	
Other invested assets ⁽²⁾	601,905	627,650	28,267	68,342	230,355	300,686	
Accrued investment income	420,111	420,111	—	420,111	—	—	
Liabilities:							
Interest-sensitive contract liabilities ⁽¹⁾	\$ 12,616,104	\$ 12,960,161	\$ —	\$ —	\$ 12,960,161	\$ —	
Long-term debt	2,778,480	2,997,791	—	—	2,997,791	—	
Collateral finance and securitization notes	796,825	708,342	—	—	708,342	—	

December 31, 2016:

	Carrying Value	Estimated Fair Value	Fair Value Measurement Using:				
			Level 1	Level 2	Level 3	NAV	
Assets:							
Mortgage loans on real estate	\$ 3,775,522	\$ 3,786,987	\$ —	\$ —	\$ 3,786,987	\$ —	
Policy loans	1,427,602	1,427,602	—	1,427,602	—	—	
Funds withheld at interest ⁽¹⁾	5,893,381	6,193,166	—	—	6,193,166	—	
Cash and cash equivalents ⁽²⁾	862,117	862,117	862,117	—	—	—	
Short-term investments ⁽²⁾	32,469	32,469	32,469	—	—	—	
Other invested assets ⁽²⁾	477,132	510,640	26,294	55,669	131,904	296,773	
Accrued investment income	347,173	347,173	—	347,173	—	—	
Liabilities:							
Interest-sensitive contract liabilities ⁽¹⁾	\$ 10,225,099	\$ 10,234,544	\$ —	\$ —	\$ 10,234,544	\$ —	
Long-term debt	3,088,635	3,186,173	—	—	3,186,173	—	
Collateral finance and securitization notes	840,700	745,805	—	—	745,805	—	

(1) Carrying values presented herein differ from those presented in the condensed consolidated balance sheets because certain items within the respective financial statement caption are embedded derivatives and are measured at fair value on a recurring basis.

(2) Carrying values presented herein differ from those presented in the condensed consolidated balance sheets because certain items within the respective financial statement caption are measured at fair value on a recurring basis.

Mortgage Loans on Real Estate – The fair value of mortgage loans on real estate is estimated by discounting cash flows, both principal and interest, using current interest rates for mortgage loans with similar credit ratings and similar remaining maturities. As such, inputs include current treasury yields and spreads, which are based on the credit rating and average life of the loan, corresponding to the market spreads. The valuation of mortgage loans on real estate is considered Level 3 in the fair value hierarchy.

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

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

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

Other Invested Assets – This primarily includes limited partnership interests accounted for using the cost method, structured loans, FHLB common stock, cash collateral and equity release mortgages. The fair value of limited partnership interests and other investments accounted for using the cost method is determined using the net asset value (“NAV”) of the Company’s ownership interest as provided in the financial statements of the investees. The fair value of structured loans is estimated based on a discounted cash flow analysis using discount rates applicable to each structured loan, this is considered Level 3 in the fair value hierarchy. The fair value of the Company’s common stock investment in the FHLB is considered to be the carrying value and it is considered Level 2 in the fair value hierarchy. The fair value of the Company’s cash collateral is considered to be the carrying value and considered to be Level 1 in the fair value hierarchy. The fair value of the Company’s equity release mortgage loan portfolio, considered Level 3 in the fair value hierarchy, is estimated by discounting cash flows, both principal and interest, using a risk free rate plus an illiquidity premium. The cash flow analysis considers future expenses, changes in property prices, and actuarial analysis of borrower behavior, mortality and morbidity.

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

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

Long-term Debt/Collateral Finance and Securitization Notes – The fair value of the Company’s long-term, debt and collateral finance and securitization notes is generally estimated by discounting future cash flows using market rates currently available for debt with similar remaining maturities and reflecting the credit risk of the Company, including inputs when available, from actively traded debt of the Company or other companies with similar credit quality. The valuation of long-term debt, and collateral finance and securitization notes are generally obtained from brokers and is considered Level 3 in the fair value hierarchy.

7. Segment Information

The accounting policies of the segments are the same as those described in the Summary of Significant Accounting Policies in Note 2 of the consolidated financial statements accompanying the 2016 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.

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 September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Revenues:				
U.S. and Latin America:				
Traditional	\$ 1,521,383	\$ 1,444,917	\$ 4,532,584	\$ 4,339,737
Financial Solutions	264,170	276,135	834,992	620,117
Total	1,785,553	1,721,052	5,367,576	4,959,854
Canada:				
Traditional	281,095	280,959	814,643	827,871
Financial Solutions	12,430	12,359	36,240	34,897
Total	293,525	293,318	850,883	862,768
Europe, Middle East and Africa:				
Traditional	360,972	289,070	1,024,978	880,346
Financial Solutions	77,041	99,752	230,435	248,485
Total	438,013	388,822	1,255,413	1,128,831
Asia Pacific:				
Traditional	561,660	427,647	1,628,419	1,299,417
Financial Solutions	16,932	19,037	55,368	56,153
Total	578,592	446,684	1,683,787	1,355,570
Corporate and Other	49,627	50,701	125,667	145,190
Total	\$ 3,145,310	\$ 2,900,577	\$ 9,283,326	\$ 8,452,213
Income (loss) before income taxes:				
U.S. and Latin America:				
Traditional	\$ 160,512	\$ 77,081	\$ 281,066	\$ 239,609
Financial Solutions	89,118	102,714	299,689	196,672
Total	249,630	179,795	580,755	436,281
Canada:				
Traditional	28,789	34,275	80,953	97,679
Financial Solutions	4,472	1,160	12,489	3,880
Total	33,261	35,435	93,442	101,559
Europe, Middle East and Africa:				
Traditional	15,421	8,515	40,751	14,233
Financial Solutions	30,953	43,786	91,776	96,679
Total	46,374	52,301	132,527	110,912
Asia Pacific:				
Traditional	26,564	19,822	121,574	95,464
Financial Solutions	(229)	7,549	11,020	16,029
Total	26,335	27,371	132,594	111,493
Corporate and Other	(15,438)	(7,302)	(51,997)	(11,842)
Total	\$ 340,162	\$ 287,600	\$ 887,321	\$ 748,403

Assets:	September 30, 2017	December 31, 2016
U.S. and Latin America:		
Traditional	\$ 18,707,824	\$ 18,140,825
Financial Solutions	16,101,746	13,712,106
Total	34,809,570	31,852,931
Canada:		
Traditional	4,177,125	3,846,682
Financial Solutions	88,609	85,405
Total	4,265,734	3,932,087
Europe, Middle East and Africa:		
Traditional	2,978,701	2,559,124
Financial Solutions	4,094,518	3,876,131
Total	7,073,219	6,435,255
Asia Pacific:		
Traditional	4,750,652	3,968,081
Financial Solutions	1,187,514	676,281
Total	5,938,166	4,644,362
Corporate and Other		
	6,607,342	6,233,244
Total	\$ 58,694,031	\$ 53,097,879

8. Commitments, Contingencies and Guarantees

Commitments

Funding of Investments

The Company's commitments to fund investments as of September 30, 2017 and December 31, 2016 are presented in the following table (dollars in thousands):

	September 30, 2017	December 31, 2016
Limited partnership interests and real estate joint ventures	\$ 349,157	\$ 332,169
Commercial mortgage loans	75,492	126,248
Bank loans and private placements	51,479	58,318
Equity release mortgages	156,777	130,324

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. Investments in limited partnership interests and real estate joint ventures are carried at cost or reported using the equity method and included in other invested assets in the condensed consolidated balance sheets. Bank loans and private placements are carried at fair value and included in fixed maturity securities available-for-sale. Equity release mortgages are carried at unpaid principal balances, net of any amortized premium or discount and valuation allowance and included in other invested assets.

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 September 30, 2017, 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 September 30, 2017 (dollars in millions):

Commitment Period:	Maximum Potential Obligation
2023	\$ 500.0
2033	450.0
2034	2,000.0
2035	1,314.2
2036	2,932.0
2037	5,750.0

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 for 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 September 30, 2017 and December 31, 2016 are reflected in the following table (dollars in thousands):

	September 30, 2017	December 31, 2016
Treaty guarantees	\$ 936,032	\$ 902,216
Treaty guarantees, net of assets in trust	810,870	780,786
Securities borrowing and repurchase arrangements	295,285	263,820
Financing arrangements	100,602	119,073
Lease obligations	1,895	2,428

9. Income Tax

Provision for income tax expense differed from the amounts computed by applying the U.S. federal income tax statutory rate of 35.0% to pre-tax income as a result of the following for the three and nine months ended September 30, 2017 and 2016 (dollars in thousands):

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Tax provision at U.S. statutory rate	\$ 119,057	\$ 100,660	\$ 310,562	\$ 261,941
Increase (decrease) in income taxes resulting from:				
Foreign tax rate differing from U.S. tax rate	(3,635)	(2,335)	(14,049)	(14,617)
Differences in tax bases in foreign jurisdictions	2,126	(7,078)	(14,633)	(21,567)
Deferred tax valuation allowance	(2,501)	4,411	11,627	13,698
Amounts related to tax audit contingencies	299	(3,979)	(873)	(175)
Corporate rate changes	(1,139)	—	(2,332)	—
Subpart F	64	1,779	1,390	3,212
Foreign tax credits	1,230	(1,934)	(834)	(2,655)
Equity compensation excess benefit	(2,762)	—	(7,226)	—
Return to provision adjustments	452	(1,996)	133	(2,227)
Other, net	(620)	(647)	(1,737)	(501)
Total provision for income taxes	\$ 112,571	\$ 88,881	\$ 282,028	\$ 237,109
Effective tax rate	33.1%	30.9%	31.8%	31.7%

The effective tax rate for the third quarter of 2017 was lower than the U.S. Statutory rate of 35.0% primarily as a result of income generated in non-U.S. jurisdictions with lower tax rates than the U.S. The first nine months of 2017 also includes a reduction related to differences in tax bases in foreign jurisdictions and a tax benefit from the filing of amended returns, which was partially offset with a valuation allowance established related to amended return filings. The third quarter of 2016 effective tax rate was lower than the U.S. Statutory rate of 35.0% primarily as a result of effectively settling an uncertain tax position during the quarter and adjustments related to the filing of the US Federal Income tax return. The first nine months of 2016 effective tax rate was lower than the U.S. Statutory rate of 35.0% primarily as a result of tax benefits from income in non-U.S. jurisdictions with lower tax rates than the U.S.

10. Employee Benefit Plans

The components of net periodic benefit costs, included in other operating expenses on the condensed consolidated statements of income, for the three and nine months ended September 30, 2017 and 2016 were as follows (dollars in thousands):

	Pension Benefits		Other Benefits	
	Three months ended September 30,		Three months ended September 30,	
	2017	2016	2017	2016
Service cost	\$ 2,699	\$ 2,479	\$ 465	\$ 131
Interest cost	1,314	1,168	459	408
Expected return on plan assets	(1,554)	(1,285)	—	—
Amortization of prior service cost	85	76	(675)	(467)
Amortization of prior actuarial loss	1,081	1,040	580	137
Settlements	256	—	—	—
Net periodic benefit cost	\$ 3,881	\$ 3,478	\$ 829	\$ 209

	Pension Benefits		Other Benefits	
	Nine months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Service cost	\$ 8,098	\$ 7,437	\$ 1,907	\$ 2,162
Interest cost	3,943	3,503	1,589	1,694
Expected return on plan assets	(4,662)	(3,854)	—	—
Amortization of prior service cost	254	229	(986)	(467)
Amortization of prior actuarial loss	3,244	3,121	1,494	1,370
Settlements	769	—	—	—
Net periodic benefit cost	\$ 11,646	\$ 10,436	\$ 4,004	\$ 4,759

The Company has made \$5.0 million in pension contributions during the first nine months of 2017 and expects to make total pension contributions between \$5.0 million and \$10.0 million in 2017.

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 September 30, 2017 and December 31, 2016, 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 September 30, 2017 and December 31, 2016, 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 September 30, 2017 and December 31, 2016 (dollars in thousands):

Reinsurer	A.M. Best Rating	September 30, 2017		December 31, 2016	
		Amount	% of Total	Amount	% of Total
Reinsurer A	A+	\$ 291,115	37.4	\$ 240,894	35.2%
Reinsurer B	A+	203,584	26.1	183,881	26.9
Reinsurer C	A+	65,528	8.4	68,832	10.1
Reinsurer D	A++	40,860	5.2	36,202	5.3
Reinsurer E	A+	40,387	5.2	35,484	5.2
Other reinsurers		137,644	17.7	118,679	17.3
Total		\$ 779,118	100.0%	\$ 683,972	100.0%

Included in the total reinsurance ceded receivables balance were \$268.1 million and \$242.0 million of claims recoverable, of which \$0.9 million and \$4.0 million were in excess of 90 days past due, as of September 30, 2017 and December 31, 2016, respectively.

12. 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.

Adoption of New Accounting Standards

Stock Compensation

In March 2016, the FASB updated the general accounting principal for Stock Compensation which changed how companies account for certain aspects of share-based payment awards to employees. The updated guidance requires excess tax benefits and deficiencies from share-based payment awards be recorded in income tax expense in the income statement. Previously, excess tax benefits and deficiencies were recognized in shareholders’ equity or deferred taxes on the balance sheet depending on the tax situation of the Company. In addition, the updated guidance also changes the accounting for forfeitures and statutory tax withholding requirements, as well as the classification in the statement of cash flows. The new standard generally requires a modified retrospective transition through a cumulative-effect adjustment as of the beginning of the period of adoption, with certain provisions requiring either a prospective or retrospective transition. The Company adopted the new guidance on January 1, 2017. Upon adoption, the Company recognized excess tax benefits of approximately \$17.7 million in deferred tax assets that were previously not recognized in a cumulative-effect adjustment increasing retained earnings by \$17.7 million. The Company also recorded excess tax benefits of approximately \$2.8 million and \$7.2 million in the provision for income taxes for the three and nine months ended September 30, 2017, respectively. The number of weighted average diluted shares outstanding were also adjusted to exclude excess tax benefits from the assumed proceeds in the diluted shares calculation resulting in an immaterial increase in the number of dilutive shares outstanding. The Company also elected to continue estimating forfeitures for purposes of recognizing share-based compensation. Other aspects of the adoption of the updated guidance did not have a material impact to the Company’s financial statements.

Future Adoption of New Accounting Standards

Financial Instruments

In January 2016, the FASB amended the general accounting principle for Financial Instruments, effective for the Company January 1, 2018. The amendment revises the accounting related to (1) the classification and measurement of investments in equity securities, (2) the presentation of certain fair value changes for financial liabilities measured at fair value, (3) certain disclosure requirements associated with the fair value of financial instruments. The new guidance should be applied by means of a cumulative-effect adjustment to the balance sheet as of the beginning of the fiscal year of adoption. The amendments related to equity securities without readily determinable fair values (including disclosure requirements) should be applied prospectively to equity investments that exist as of the date of adoption. The adoption of this amendment is not expected to have a material impact on the Company’s financial statements; however, it could result in net income volatility depending on the composition of the Company’s investment portfolio and changes in the fair value of equity securities.

In June 2016, the FASB amended the existing impairment guidance of Financial Instruments. The amendment 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. This guidance is effective for the Company January 1, 2020, with early adoption permitted. The 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 condensed consolidated financial statements.

Leases

In February 2016, the FASB issued guidance which will replace most existing lease accounting guidance. The 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. Lessees and lessors will use a modified retrospective transition approach, which includes a number of practical expedients. This guidance is effective for the Company January 1, 2019, with early adoption permitted. The Company is currently evaluating the impact of this amendment on its condensed consolidated financial statements.

Income Taxes

In October 2016, the FASB amended the general accounting principal for Income Taxes, effective for the Company January 1, 2018. The amendment requires entities to recognize the tax consequences of intercompany asset transfers, except for inventory, at the transaction date. Current GAAP prohibits entities from recognizing the income tax consequences from intercompany asset transfers. The seller defers any net tax effect, and the buyer is prohibited from recognizing a deferred tax asset on the difference between the newly created tax basis of the asset in its tax jurisdiction and its financial statement carrying amount as reported in the condensed consolidated financial statements. The amendment requires entities to recognize these tax consequences in the period in which the transfer occurred. There will be an immediate effect on earnings if the tax rates in the seller’s and buyer’s tax jurisdictions are different. This amendment will be applied using a modified retrospective transition method with a cumulative effect adjustment to retained earnings as of the beginning of the period of adoption. The adoption of this amendment will not have a material impact on the Company’s condensed consolidated financial statements.

Derivative and Hedging

In August 2017, the FASB updated the general accounting principal for Derivatives and Hedging. The 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. The updated guidance is effective for the Company January 1, 2019, with early adoption permitted. The Company is currently evaluating the impact of this amending on its condensed consolidated financial statements.

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 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 (28) other risks and uncertainties described in this document and in the Company's other filings with the 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 2016 Annual Report.

Overview

The Company is one of the leading life reinsurers in North America based on premiums and the amount of life reinsurance in force, providing traditional reinsurance and financial solutions to its clients. Traditional reinsurance includes individual and group life and health, disability, and critical illness reinsurance. Financial solutions includes longevity reinsurance, asset-intensive reinsurance, and financial reinsurance. 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.

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 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. 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 premium 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.

Consolidated Results of Operations

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
(Dollars in thousands, except per share data)				
Revenues:				
Net premiums	\$ 2,489,797	\$ 2,251,758	\$ 7,335,944	\$ 6,755,708
Investment income, net of related expenses	556,918	489,727	1,589,820	1,414,659
Investment related gains (losses), net	22,653	86,624	139,471	84,002
Other revenues	75,942	72,468	218,091	197,844
Total revenues	3,145,310	2,900,577	9,283,326	8,452,213
Benefits and Expenses:				
Claims and other policy benefits	2,100,680	1,993,064	6,371,188	5,877,330
Interest credited	126,099	116,848	349,068	300,602
Policy acquisition costs and other insurance expenses	365,424	300,962	1,064,645	940,406
Other operating expenses	168,417	152,556	481,279	469,875
Interest expense	36,836	43,063	108,590	96,201
Collateral finance and securitization expense	7,692	6,484	21,235	19,396
Total benefits and expenses	2,805,148	2,612,977	8,396,005	7,703,810
Income before income taxes	340,162	287,600	887,321	748,403
Provision for income taxes	112,571	88,881	282,028	237,109
Net income	\$ 227,591	\$ 198,719	\$ 605,293	\$ 511,294
Earnings per share:				
Basic earnings per share	\$ 3.53	\$ 3.10	\$ 9.39	\$ 7.95
Diluted earnings per share	\$ 3.47	\$ 3.07	\$ 9.23	\$ 7.87
Dividends declared per share	\$ 0.50	\$ 0.41	\$ 1.32	\$ 1.15

Consolidated income before income taxes increased \$52.6 million, or 18.3%, and \$138.9 million, or 18.6%, for the three and nine months ended September 30, 2017, respectively, as compared to the same periods in 2016. The increase in income for third quarter of 2017 was primarily due to improved mortality experience in the U.S. operations, increased investment income, new business growth in the Europe, Middle East and Africa (“EMEA”) and Asia Pacific operations and lower interest expense. The increase in income for the first nine months of 2017 was primarily due to improved mortality experience in the U.S., EMEA and Asia Pacific operations and increased investment income, partially offset by higher interest expense. The increases in investment income are discussed below and the changes in interest expense for the third quarter and first nine months are discussed within the Corporate and Other section. Foreign currency fluctuations resulted in an increase (decrease) in income before income taxes by \$2.0 million and \$(7.4) million for the third quarter and first nine months of 2017, as compared to the same periods in 2016.

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 annuity products. The combined changes in these three types of embedded derivatives, after adjustment for deferred acquisition costs and retrocession, resulted in a decrease in consolidated income before income taxes of \$8.9 million in the third quarter of 2017 and an increase of \$218.2 million in the first nine months of 2017, respectively, as compared to the same periods in 2016. This fluctuation does not affect current cash flows, crediting rates or spread performance on the underlying treaties. Therefore, management believes it is helpful to distinguish between the effects of changes in these embedded derivatives, net of related hedging activity and deferred acquisition costs, and the primary factors that drive profitability of the underlying treaties, namely investment income, fee income, and interest credited. The individual effect on income before income taxes for these three types of embedded derivatives is as follows:

- The change in the value of embedded derivatives related to reinsurance treaties written on a modco or funds withheld basis are subject to the general accounting principles for derivatives and hedging related to embedded derivatives. The unrealized gains and losses associated with these embedded derivatives, after adjustment for deferred acquisition costs, resulted in a decrease in income before income taxes of \$3.3 million in the third quarter of 2017 and an increase of \$53.3 million in the first nine months of 2017, as compared to the same periods in 2016.
- Changes in risk-free rates used in the fair value estimates of embedded derivatives associated with EIAs affect the amount of unrealized gains and losses the Company recognizes. The unrealized gains and losses associated with EIAs, after adjustment for deferred acquisition costs and retrocession, increased income before income taxes by \$0.1 million and \$20.0 million in the third quarter and first nine months of 2017, respectively, as compared to the same periods in 2016.
- The change in the Company’s liability for variable annuities associated with guaranteed minimum living benefits affects the amount of unrealized gains and losses the Company recognizes. The unrealized gains and losses associated with guaranteed minimum living benefits, after adjustment for deferred acquisition costs, resulted in a decrease in income before income taxes of \$5.7 million in the third quarter of 2017 and an increase of \$144.9 million in the first nine months of 2017, as compared to the same periods in 2016. After consideration of the change in fair value of freestanding derivatives used to hedge this liability, income before income taxes decreased by \$2.2 million in the third quarter of 2017 and increased by \$6.9 million in the first nine months of 2017, as compared to the same periods in 2016.

Consolidated net premiums increased \$238.0 million, or 10.6%, and \$580.2 million, or 8.6%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016, primarily due to growth in life reinsurance in force. Foreign currency fluctuations resulted in an increase (decrease) in net premiums of \$18.3 million and \$(17.3) million for the third quarter and first nine months of 2017, as compared to the same periods in 2016. Consolidated assumed life insurance in force increased to \$3,297.9 billion as of September 30, 2017 from \$3,082.8 billion as of September 30, 2016 due to new business production and in force transactions. The Company added new business production, measured by face amount of insurance in force, of \$90.7 billion and \$81.3 billion during the third quarter of 2017 and 2016, respectively, and \$304.8 billion and \$296.4 billion during the first nine months of 2017 and 2016, respectively. Foreign currency fluctuations contributed \$43.6 billion to the increase in assumed life insurance in force from September 30, 2016. Management believes industry consolidation, regulatory changes and the established practice of reinsuring mortality and morbidity risks should continue to provide opportunities for growth, albeit at rates less than historically experienced in some markets.

Consolidated investment income, net of related expenses, increased \$67.2 million, or 13.7%, and \$175.2 million, or 12.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. Market value changes related to the Company’s funds withheld at interest investment associated with the reinsurance of certain EIAs increased (decreased) investment income by \$(1.3) million and \$73.3 million in the third quarter and first nine months of 2017, respectively, as compared to the same periods in 2016. The effect on investment income of the EIA’s market value changes is substantially offset by a corresponding change in interest credited to policyholder account balances resulting in an insignificant effect on net income.

Also contributing to the increase in investment income is a larger average invested asset base, excluding spread related business, partially offset by a decrease in the average investment yield. Average invested assets at amortized cost, excluding spread related business, for the nine months ended September 30, 2017 totaled \$25.1 billion, a 9.4% increase over September 30, 2016. The

average yield earned on investments, excluding spread related business, was 4.81% and 4.43% for the third quarter of 2017 and 2016, respectively, and 4.61% and 4.53% for the first nine months ended September 30, 2017 and 2016, 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. The third quarter of 2017, in particular, benefited from a higher level of bond make-whole premiums and distributions from joint ventures and limited partnerships. A continued low interest rate environment is expected to put downward pressure on this yield in future reporting periods.

Total investment related gains (losses), net changed favorably (unfavorably) by \$(64.0) million and \$55.5 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. A significant portion of these variances in the third quarter and first nine months are due to changes in the value of embedded derivatives related to reinsurance treaties written on a modco or funds withheld basis, reflecting the impact of changes in interest rates and credit spreads on the calculation of fair value. During the third quarter and first nine months of 2017, the favorable (unfavorable) changes in the value of these embedded derivatives was \$(26.0) million and \$73.1 million respectively, as compared to the same periods in 2016. Impairments on fixed maturity securities decreased by \$13.7 million in the first nine months of 2017, as compared to the same period in 2016. 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 33.1% and 30.9% for the third quarter 2017 and 2016, respectively, and 31.8% and 31.7% for the first nine months of 2017 and 2016, respectively. The effective tax rate for the third quarter of 2017 was lower than the U.S. Statutory rate of 35% primarily as a result of income generated in non-U.S. jurisdictions with lower tax rates than the U.S. The first nine months of 2017 also includes a reduction related to differences in tax bases in foreign jurisdictions and a tax benefit from the filing of amended returns, which was partially offset with a valuation allowance established related to amended return filings. The effective tax rate for the third quarter of 2016 was lower than the U.S. Statutory rate of 35.0% primarily as a result of effectively settling an uncertain tax position during the quarter and adjustments related to the filing of the US Federal Income tax return. The first nine months of 2016 effective tax rate was lower than the U.S. Statutory rate of 35.0% primarily as a result of tax benefits from income in non-U.S. jurisdictions with lower tax rates than the U.S.

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 2016 Annual Report under "Management's Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Policies."

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 individual mortality-risk reinsurance and to a lesser extent, group, health and long-term care reinsurance. The Financial Solutions segment consists of Asset-Intensive and Financial Reinsurance. Asset-Intensive within the Financial Solutions segment provides coinsurance of annuities and corporate-owned life insurance policies and to a lesser extent also issues 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. Typically these transactions do not qualify as reinsurance under GAAP, due to the low-risk nature of the transactions, so only the related net fees are reflected in other revenues on the condensed consolidated statements of income.

For the three months ended September 30, 2017:

(dollars in thousands)

	Financial Solutions			Total U.S. and Latin America
	Traditional	Asset-Intensive	Financial Reinsurance	
Revenues:				
Net premiums	\$ 1,327,181	\$ 6,423	\$ —	\$ 1,333,604
Investment income, net of related expenses	191,904	188,176	2,984	383,064
Investment related gains (losses), net	(1,503)	12,832	—	11,329
Other revenues	3,801	26,899	26,856	57,556
Total revenues	1,521,383	234,330	29,840	1,785,553
Benefits and expenses:				
Claims and other policy benefits	1,118,401	11,959	—	1,130,360
Interest credited	20,673	94,120	—	114,793
Policy acquisition costs and other insurance expenses	189,291	54,441	5,674	249,406
Other operating expenses	32,506	6,684	2,174	41,364
Total benefits and expenses	1,360,871	167,204	7,848	1,535,923
Income before income taxes	\$ 160,512	\$ 67,126	\$ 21,992	\$ 249,630

For the three months ended September 30, 2016:

(dollars in thousands)

	Financial Solutions			Total U.S. and Latin America
	Traditional	Asset-Intensive	Financial Reinsurance	
Revenues:				
Net premiums	\$ 1,277,491	\$ 5,369	\$ —	\$ 1,282,860
Investment income, net of related expenses	167,898	167,683	1,038	336,619
Investment related gains (losses), net	(3,394)	59,661	—	56,267
Other revenues	2,922	23,417	18,967	45,306
Total revenues	1,444,917	256,130	20,005	1,721,052
Benefits and expenses:				
Claims and other policy benefits	1,131,507	18,927	—	1,150,434
Interest credited	20,628	86,742	—	107,370
Policy acquisition costs and other insurance expenses	184,766	56,497	3,492	244,755
Other operating expenses	30,935	5,232	2,531	38,698
Total benefits and expenses	1,367,836	167,398	6,023	1,541,257
Income before income taxes	\$ 77,081	\$ 88,732	\$ 13,982	\$ 179,795

For the nine months ended September 30, 2017:

(dollars in thousands)

	Financial Solutions				Total U.S. and Latin America
	Traditional	Asset-Intensive	Financial Reinsurance		
Revenues:					
Net premiums	\$ 3,966,842	\$ 18,186	\$ —	\$ 3,985,028	
Investment income, net of related expenses	554,612	553,286	6,501	1,114,399	
Investment related gains (losses), net	(192)	103,229	—	103,037	
Other revenues	11,322	76,324	77,466	165,112	
Total revenues	4,532,584	751,025	83,967	5,367,576	
Benefits and expenses:					
Claims and other policy benefits	3,538,958	53,998	—	3,592,956	
Interest credited	61,800	260,941	—	322,741	
Policy acquisition costs and other insurance expenses	556,476	176,305	17,234	750,015	
Other operating expenses	94,284	19,883	6,942	121,109	
Total benefits and expenses	4,251,518	511,127	24,176	4,786,821	
Income before income taxes	\$ 281,066	\$ 239,898	\$ 59,791	\$ 580,755	

For the nine months ended September 30, 2016:

(dollars in thousands)

	Financial Solutions				Total U.S. and Latin America
	Traditional	Asset-Intensive	Financial Reinsurance		
Revenues:					
Net premiums	\$ 3,819,280	\$ 17,250	\$ —	\$ 3,836,530	
Investment income, net of related expenses	515,159	462,579	6,031	983,769	
Investment related gains (losses), net	(6,376)	7,940	—	1,564	
Other revenues	11,674	70,806	55,511	137,991	
Total revenues	4,339,737	558,575	61,542	4,959,854	
Benefits and expenses:					
Claims and other policy benefits	3,400,614	58,267	—	3,458,881	
Interest credited	62,873	217,736	—	280,609	
Policy acquisition costs and other insurance expenses	544,129	113,919	9,145	667,193	
Other operating expenses	92,512	16,772	7,606	116,890	
Total benefits and expenses	4,100,128	406,694	16,751	4,523,573	
Income before income taxes	\$ 239,609	\$ 151,881	\$ 44,791	\$ 436,281	

Income before income taxes increased by \$69.8 million, or 38.8%, and \$144.5 million, or 33.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in income before income taxes for the third quarter was primarily due to strong mortality experience in the Traditional segment as well as higher variable investment income. The increase was offset somewhat by a decrease in investment related gains in the Financial Solutions segment. The increase in income before income taxes for the first nine months is the result of several factors, including changes in the value of the embedded derivatives associated with reinsurance treaties structured on a modco or funds withheld, an increase in investment related capital gains and additional variable investment income.

Traditional Reinsurance

The U.S. and Latin America Traditional segment provides life and health reinsurance to clients for a variety of products through yearly renewable term, coinsurance and modco agreements. These reinsurance arrangements may involve either facultative or automatic agreements.

Income before income taxes for the U.S. and Latin America Traditional segment increased by \$83.4 million, or 108.2%, and \$41.5 million, or 17.3%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in the third quarter is primarily due to favorable mortality experience as compared to same period in 2016 and higher variable investment income. The favorable mortality experience was driven by both a lower number and average size of large claims. The increase in income for the first nine months was primarily due to higher variable investment.

Net premiums increased \$49.7 million, or 3.9%, and \$147.6 million, or 3.9%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were primarily due to expected organic premium growth. The segment added new individual life business production, measured by face amount of insurance in force of \$24.8 billion and \$19.7 billion for the third quarter and \$75.1 billion and \$93.0 billion for the first nine months of 2017 and 2016, respectively.

Net investment income increased \$24.0 million, or 14.3%, and \$39.5 million, or 7.7%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were primarily due to higher variable investment income. Investment related gains (losses), net increased \$1.9 million and \$6.2 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Claims and other policy benefits as a percentage of net premiums (“loss ratios”) were 84.3% and 88.6% for the third quarter and 89.2% and 89.0%, for the nine months ended September 30, 2017 and 2016, respectively. The decrease in the loss ratio for the third quarter of 2017, as compared to the same period in 2016 was primarily due to favorable mortality experience, specifically the lower number and average size of large claims. For the first nine months of 2017, as compared to the same period in 2016, mortality experience was relatively consistent.

Interest credited expense decreased \$1.1 million, or 1.7%, for the nine months ended September 30, 2017, as compared to the same period in 2016. 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 14.3% and 14.5% for the third quarter and 14.0% and 14.2% for the nine months ended September 30, 2017 and 2016, 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, as a percentage of net premiums remained constant at 2.4% and 2.4% for the third quarter and 2.4% and 2.4% first nine months of 2017 and 2016, 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.

(dollars in thousands)

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Revenues:				
Total revenues	\$ 234,330	\$ 256,130	\$ 751,025	\$ 558,575
Less:				
Embedded derivatives – modco/funds withheld treaties	24,539	52,540	107,039	40,174
Guaranteed minimum benefit riders and related free standing derivatives	(17,058)	(12,647)	(20,935)	(24,710)
Revenues before certain derivatives	226,849	216,237	664,921	543,111
Benefits and expenses:				
Total benefits and expenses	167,204	167,398	511,127	406,694
Less:				
Embedded derivatives – modco/funds withheld treaties	11,481	34,226	51,008	31,206
Guaranteed minimum benefit riders and related free standing derivatives	(5,379)	(3,135)	(6,565)	(3,439)
Equity-indexed annuities	481	549	(13,603)	6,449
Benefits and expenses before certain derivatives	160,621	135,758	480,287	372,478
Income before income taxes:				
Income before income taxes	67,126	88,732	239,898	151,881
Less:				
Embedded derivatives – modco/funds withheld treaties	13,058	18,314	56,031	8,968
Guaranteed minimum benefit riders and related free standing derivatives	(11,679)	(9,512)	(14,370)	(21,271)
Equity-indexed annuities	(481)	(549)	13,603	(6,449)
Income before income taxes and certain derivatives	\$ 66,228	\$ 80,479	\$ 184,634	\$ 170,633

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 nine months ended September 30, 2017 and 2016.

The change in fair value of the embedded derivatives - modco/funds withheld treaties increased income before income taxes by \$13.1 million and \$18.3 million for the third quarter and \$56.0 million and \$9.0 million for the nine months ended September 30, 2017 and 2016, respectively. The increases in income for the third quarter of 2016 and 2017 were primarily due to tightening credit spreads. The increase in income for the nine months ended September 30, 2017 was primarily due to tightening credit spreads. The decrease in income for the nine months ended September 30, 2016 was primarily due to shifts in the yield curve.

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 nine months ended September 30, 2017 and 2016.

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 \$11.7 million and \$9.5 million for the third quarter and \$14.4 million and \$21.3 million for the nine months ended September 30, 2017 and 2016, respectively. The decrease in income for all periods was primarily due to the annual update of best estimate actuarial assumptions to account for lower policyholder lapse experience.

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 increased (decreased) income before income taxes by \$(0.5) million and \$(0.5) million for the third quarter and \$13.6 million and \$(6.4) million for the nine months ended September 30, 2017 and 2016, respectively. The decreases in income for the third quarter of 2017 and 2016 were primarily due to shifts in the yield curve. The increase in income for the first nine months of 2017 was primarily due to declining long-term interest rates. The decrease in income for the first nine months of 2016 was primarily due to increasing short-term interest rates.

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 decreased by \$14.3 million and increased by \$14.0 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in the third quarter was primarily due to lower investment related gains (losses), net of the corresponding impact to deferred acquisition costs, associated with coinsurance and funds withheld portfolios, which was partially offset by favorable policyholder experience in payout annuities. Funds withheld capital gains (losses) are reported in investment income. The increase in the first nine months was primarily due to favorable policyholder experience in payout annuities and higher variable investment income.

Revenue before certain derivatives increased by \$10.6 million and \$121.8 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in the third quarter was primarily due to the impact to investment income from a new coinsurance transaction in 2017 which was partially offset by lower investment related gains (losses) associated with coinsurance and funds withheld portfolios. The increase in the first nine months was primarily due to the change in fair value of equity options associated with the reinsurance of certain EIAs and higher investment related gains (losses) associated with coinsurance and funds withheld portfolios. The effect on investment income related to equity options is substantially offset by a corresponding change in interest credited.

Benefits and expenses before certain derivatives increased by \$24.9 million and \$107.8 million for the three and nine months ended September 30, 2017, as compared to the same period in 2016. The increase in the third quarter was primarily due to the impact to interest credited of a new coinsurance transaction in 2017 and the corresponding impact to deferred acquisition costs from investment related gains (losses) in coinsurance and funds withheld portfolios. The increase in the first nine months was primarily due to higher interest credited associated with the reinsurance of EIAs and the corresponding impact to deferred acquisition costs from investment related gains (losses) in coinsurance and funds withheld portfolios. The effect on interest credited related to equity options is substantially offset by a corresponding change in investment income.

The invested asset base supporting this segment increased to \$15.5 billion as of September 30, 2017 from \$13.2 billion as of September 30, 2016. The increase in the asset base was due primarily to the aforementioned new coinsurance transaction in 2017. As of September 30, 2017, \$4.1 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 increased \$8.0 million, or 57.3%, and \$15.0 million, or 33.5%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were primarily due to growth in new transactions and organic growth on existing transactions which was partially offset by the termination of certain agreements.

At September 30, 2017 and 2016, the amount of reinsurance assumed from client companies, as measured by pre-tax statutory surplus, risk based capital and other financial structures was \$12.6 billion and \$7.9 billion, respectively. The increase was primarily due to new transactions, 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.

Canada Operations

The Company conducts reinsurance business in Canada primarily through RGA Canada, which assists clients with capital management activity and mortality and morbidity risk management. The Canada operations are primarily engaged in Traditional reinsurance, which consists mainly of traditional individual life reinsurance, as well as 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 September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total Canada	Traditional	Financial Solutions	Total Canada
Revenues:						
Net premiums	\$ 225,841	\$ 9,874	\$ 235,715	\$ 231,154	\$ 9,946	\$ 241,100
Investment income, net of related expenses	51,593	1,120	52,713	45,239	1,037	46,276
Investment related gains (losses), net	2,380	—	2,380	3,832	—	3,832
Other revenues	1,281	1,436	2,717	734	1,376	2,110
Total revenues	281,095	12,430	293,525	280,959	12,359	293,318
Benefits and expenses:						
Claims and other policy benefits	193,978	7,170	201,148	175,618	10,567	186,185
Interest credited	6	—	6	8	—	8
Policy acquisition costs and other insurance expenses	50,023	221	50,244	61,019	285	61,304
Other operating expenses	8,299	567	8,866	10,039	347	10,386
Total benefits and expenses	252,306	7,958	260,264	246,684	11,199	257,883
Income before income taxes	\$ 28,789	\$ 4,472	\$ 33,261	\$ 34,275	\$ 1,160	\$ 35,435

(dollars in thousands)

	Nine months ended September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total Canada	Traditional	Financial Solutions	Total Canada
Revenues:						
Net premiums	\$ 662,983	\$ 28,598	\$ 691,581	\$ 686,724	\$ 29,089	\$ 715,813
Investment income, net of related expenses	140,929	3,515	144,444	134,121	1,649	135,770
Investment related gains (losses), net	8,821	—	8,821	7,757	—	7,757
Other revenues	1,910	4,127	6,037	(731)	4,159	3,428
Total revenues	814,643	36,240	850,883	827,871	34,897	862,768
Benefits and expenses:						
Claims and other policy benefits	566,227	21,888	588,115	524,497	29,005	553,502
Interest credited	15	—	15	17	—	17
Policy acquisition costs and other insurance expenses	143,302	571	143,873	178,178	1,002	179,180
Other operating expenses	24,146	1,292	25,438	27,500	1,010	28,510
Total benefits and expenses	733,690	23,751	757,441	730,192	31,017	761,209
Income before income taxes	\$ 80,953	\$ 12,489	\$ 93,442	\$ 97,679	\$ 3,880	\$ 101,559

Income before income taxes decreased by \$2.2 million, or 6.1%, and \$8.1 million, or 8.0%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in income for the third quarter and first nine months is primarily due to unfavorable traditional individual life mortality experience compared to favorable experience in the same periods in 2016, partially offset by favorable experience on longevity business in the current year. Foreign currency exchange fluctuations in the Canadian dollar resulted in an increase in income before income taxes of \$1.7 million and \$1.6 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Traditional Reinsurance

Income before income taxes for the Canada Traditional segment decreased by \$5.5 million, or 16.0%, and \$16.7 million, or 17.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in income before income taxes for the third quarter and first nine months is primarily due to unfavorable traditional individual life mortality experience compared to favorable experience in the same periods in 2016. Foreign currency exchange fluctuations in the Canadian dollar resulted in an increase in income before income taxes of \$1.5 million and \$1.4 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums decreased \$5.3 million, or 2.3%, and \$23.7 million, or 3.5%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in net premiums were primarily due to an anticipated decrease in creditor premiums of \$21.0 million and \$60.4 million for the third quarter and first nine months, respectively. These decreases were partially offset by an increase in traditional individual life business premiums from annually increasing premium rates on yearly renewable term treaties and favorable foreign currency exchange fluctuation. Foreign currency exchange fluctuations in the Canadian dollar resulted in an increase in net premiums of approximately \$9.0 million and \$7.0 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net investment income increased \$6.4 million, or 14.0%, and \$6.8 million, or 5.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases in investment income for the third quarter and the first nine months were primarily the result of an increase in the invested asset base due to growth in the underlying business volume and an increase in investment yields from a higher level of variable investment income. Foreign currency exchange fluctuation in the Canadian dollar resulted in an increase in net investment income of approximately \$2.1 million and \$1.7 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Other revenues increased by \$0.5 million and \$2.6 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in other revenues for the third quarter of 2017 is primarily due to foreign currency exchange fluctuations. The increase in other revenues for the first nine months of 2017 is primarily due to fee income from the recapture of a previously assumed block of individual life business during the second quarter of 2017.

Loss ratios for this segment were 85.9% and 76.0% for the third quarter and 85.4% and 76.4% for the nine months ended September 30, 2017 and 2016, respectively. The increases in the loss ratio for the three and nine months of 2017, as compared to the same periods in 2016, are due to unfavorable traditional life mortality experience compared to favorable experience in the same periods in 2016 and a decrease in creditor business premiums. Loss ratios for the traditional individual life mortality business were 99.5% and 94.4% for the third quarter and 98.7% and 93.4% for the first nine months ended September 30, 2017 and 2016, 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 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 77.7% and 73.7% for the third quarter and 77.7% and 73.5% for the nine months ended September 30, 2017 and 2016, respectively.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 22.1% and 26.4% for the third quarter and 21.6% and 25.9% for the nine months ended September 30, 2017 and 2016, 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. The decrease for the third quarter and first nine months reflects a lower level of creditor business which typically has a higher level of acquisition costs. 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 \$1.7 million, or 17.3%, and \$3.4 million, or 12.2%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016, primarily due to a decrease in corporate overhead expenses. Other operating expenses as a percentage of net premiums were 3.7% and 4.3% for the third quarter and 3.6% and 4.0% for the nine month periods ended September 30, 2017 and 2016, respectively.

Financial Solutions Reinsurance

Income before income taxes increased by \$3.3 million and \$8.6 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases in income for both the three and nine month periods are primarily due to favorable experience on longevity business in the current-year periods. Foreign currency exchange fluctuations in the Canadian dollar resulted in an increase in income before income taxes of \$0.2 million for both the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums decreased \$0.1 million, or 0.7%, and \$0.5 million, or 1.7%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. Foreign currency exchange fluctuations in the Canadian dollar resulted in an increase in net premiums of approximately \$0.4 million for both the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net investment income increased \$0.1 million and \$1.9 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016 primarily due to an increase in the invested asset base.

Claims and other policy benefits decreased \$3.4 million, or 32.1%, and \$7.1 million, or 24.5%, for the three and nine months ended September 30, 2017 as compared to the same periods in 2016. The decreases for the third quarter and first nine months are primarily due to favorable experience on longevity business.

Europe, Middle East and Africa Operations

The Europe, Middle East and Africa (“EMEA”) segment includes business generated by its offices principally in the United Kingdom (“UK”), South Africa, France, Germany, Ireland, Italy, the Netherlands, Poland, Spain and the United Arab Emirates (“UAE”). 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 September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total EMEA	Traditional	Financial Solutions	Total EMEA
Revenues:						
Net premiums	\$ 344,211	\$ 39,294	\$ 383,505	\$ 275,514	\$ 47,018	\$ 322,532
Investment income, net of related expenses	14,727	30,892	45,619	13,067	33,187	46,254
Investment related gains (losses), net	—	1,192	1,192	—	8,159	8,159
Other revenues	2,034	5,663	7,697	489	11,388	11,877
Total revenues	360,972	77,041	438,013	289,070	99,752	388,822
Benefits and expenses:						
Claims and other policy benefits	285,071	35,648	320,719	241,763	45,805	287,568
Interest credited	—	2,475	2,475	—	5,540	5,540
Policy acquisition costs and other insurance expenses	35,751	327	36,078	14,133	(304)	13,829
Other operating expenses	24,729	7,638	32,367	24,659	4,925	29,584
Total benefits and expenses	345,551	46,088	391,639	280,555	55,966	336,521
Income before income taxes	\$ 15,421	\$ 30,953	\$ 46,374	\$ 8,515	\$ 43,786	\$ 52,301

(dollars in thousands)

	Nine months ended September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total EMEA	Traditional	Financial Solutions	Total EMEA
Revenues:						
Net premiums	\$ 979,733	\$ 119,809	\$ 1,099,542	\$ 838,810	\$ 126,108	\$ 964,918
Investment income, net of related expenses	41,032	88,602	129,634	38,556	95,288	133,844
Investment related gains (losses), net	7	8,225	8,232	5	8,623	8,628
Other revenues	4,206	13,799	18,005	2,975	18,466	21,441
Total revenues	1,024,978	230,435	1,255,413	880,346	248,485	1,128,831
Benefits and expenses:						
Claims and other policy benefits	846,476	108,381	954,857	745,342	126,252	871,594
Interest credited	—	6,297	6,297	—	8,914	8,914
Policy acquisition costs and other insurance expenses	66,263	1,070	67,333	46,465	226	46,691
Other operating expenses	71,488	22,911	94,399	74,306	16,414	90,720
Total benefits and expenses	984,227	138,659	1,122,886	866,113	151,806	1,017,919
Income before income taxes	\$ 40,751	\$ 91,776	\$ 132,527	\$ 14,233	\$ 96,679	\$ 110,912

Income before income taxes decreased by \$5.9 million, or 11.3%, and increased by \$21.6 million, or 19.5%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in income for the third quarter was primarily due to lower payout annuity income partially offset by favorable mortality experience. The increase in income before income taxes for the first nine months was primarily due to favorable individual mortality and longevity experience. Foreign currency exchange fluctuations resulted in an increase (decrease) in income before income taxes of \$0.8 million and \$(8.5) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Traditional Reinsurance

Income before income taxes increased by \$6.9 million, or 81.1%, and \$26.5 million, or 186.3%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in income for the third quarter was primarily due to favorable mortality experience. The increases in income before income taxes for the first nine months was primarily due to business growth and favorable individual mortality experience partially offset by unfavorable morbidity experience. Foreign currency exchange fluctuations resulted in an increase (decrease) in income before income taxes of \$0.7 million and \$(0.5) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums increased \$68.7 million, or 24.9%, and \$140.9 million, or 16.8%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in the three and nine months was primarily due to increased business volumes, most notably in the UAE, Italy and South Africa related to new treaties in 2017 and favorable growth from existing treaties. Foreign currency exchange fluctuations increased (decreased) net premiums by approximately \$7.3 million and \$(27.8) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

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 \$49.0 million and \$49.5 million for the third quarter and \$144.2 million and \$157.0 million for the first nine months of 2017 and 2016, respectively.

Net investment income increased \$1.7 million, or 12.7%, and \$2.5 million, or 6.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were primarily due to an increase in the invested asset base related to increased business volumes. Foreign currency exchange fluctuations resulted in an increase (decrease) in net investment income of approximately \$0.4 million and \$(0.8) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Loss ratios for this segment were 82.8% and 87.7% for the third quarter and 86.4% and 88.9% for the first nine months ended September 30, 2017 and 2016, respectively. The decreases in loss ratios were primarily due to changes in the mix of business in the third quarter of 2017 reflecting increased volumes of new business with lower loss ratios, but with higher commissions. These higher commissions are reflected in the increases of 2017 policy acquisition cost ratios below.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 10.4% and 5.1% for the third quarter and 6.8% and 5.5% for the first nine months ended September 30, 2017 and 2016, respectively. The increases in policy acquisition cost ratios are due primarily to changes in the mix of business in the third quarter of 2017 reflecting increased volumes of new business with higher commissions.

Other operating expenses increased \$0.1 million, or 0.3%, and decreased \$2.8 million, or 3.8%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in the first nine months was primarily due to lower corporate overhead expense timing and the effect of foreign currency exchange fluctuations. Foreign currency exchange fluctuations resulted in an increase (decrease) in operating expenses of approximately \$0.8 million and \$(0.4) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. Other operating expenses as a percentage of net premiums totaled 7.2% and 9.0% for the third quarter and 7.3% and 8.9% for the first nine months ended September 30, 2017 and 2016, respectively.

Financial Solutions Reinsurance

Income before income taxes decreased by \$12.8 million, or 29.3%, and \$4.9 million, or 5.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in income before income taxes were primarily due to payout annuity experience normalizing after a particularly positive 2016, partly offset by favorable longevity business results. Foreign currency exchange fluctuations resulted in an increase (decrease) in income before income taxes totaling \$0.1 million and \$(7.9) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums decreased by \$7.7 million, or 16.4%, and \$6.3 million, or 5.0%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in net premiums were due to a new retrocession treaty, executed for risk management purposes effective in the first quarter of 2017, which cedes longevity risk to third parties, partially offset by an increase in premiums from new transactions. Foreign currency exchange fluctuations increased (decreased) net premiums by approximately \$0.1 million and \$(10.5) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net investment income decreased \$2.3 million, or 6.9%, and \$6.7 million, or 7.0%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in investment income for the third quarter was due to decreases in both investment yields and the invested asset base, while the decrease for the nine-month period was primarily due to foreign currency exchange fluctuations. Foreign currency exchange fluctuations resulted in an increase (decrease) in net investment income of approximately \$0.1 million and \$(7.3) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Other revenues decreased by \$5.7 million, or 50.3%, and \$4.7 million, or 25.3%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in other revenues were due to experience from a longevity swap normalizing after a particularly positive 2016.

Claims and other policy benefits decreased \$10.2 million, or 22.2%, and \$17.9 million, or 14.2%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in the third quarter and first nine months was primarily due to the aforementioned new longevity retrocession treaty that cedes longevity risk to third parties, net of an increase in claims and other policy benefits from new transactions. Foreign currency exchange fluctuations resulted in a decrease in claims and other policy benefits of approximately \$9.6 million for the nine months ended September 30, 2017, as compared to the same period in 2016.

Interest credited expense decreased by \$3.1 million, or 55.3%, and \$2.6 million, or 29.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. Interest credited in this segment relates to amounts credited to the contractholders of unit-linked products. This amount will fluctuate according to contractholder investment selections, equity returns and interest rates. The effect on interest credited related to unit-linked products is substantially offset by a corresponding change in investment income.

Other operating expenses increased \$2.7 million, or 55.1%, and \$6.5 million, or 39.6%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases are primarily due to increased administration costs related to longevity transactions and are offset partially by the effect of foreign currency exchange fluctuations. Foreign currency exchange fluctuations resulted in an increase (decrease) in operating expenses of approximately \$0.2 million and \$(1.0) million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

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, asset-intensive and certain disability and life blocks. Reinsurance agreements may be facultative or automatic agreements covering primarily individual risks and in some markets, group risks.

(dollars in thousands)

	Three months ended September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total Asia Pacific	Traditional	Financial Solutions	Total Asia Pacific
Revenues:						
Net premiums	\$ 536,931	\$ 19	\$ 536,950	\$ 404,451	\$ 743	\$ 405,194
Investment income, net of related expenses	23,858	10,556	34,414	21,273	5,827	27,100
Investment related gains (losses), net	—	758	758	—	6,108	6,108
Other revenues	871	5,599	6,470	1,923	6,359	8,282
Total revenues	561,660	16,932	578,592	427,647	19,037	446,684
Benefits and expenses:						
Claims and other policy benefits	442,358	6,110	448,468	365,115	3,777	368,892
Interest credited	—	7,026	7,026	—	3,308	3,308
Policy acquisition costs and other insurance expenses	55,891	653	56,544	4,157	1,482	5,639
Other operating expenses	36,847	3,372	40,219	38,553	2,921	41,474
Total benefits and expenses	535,096	17,161	552,257	407,825	11,488	419,313
Income (loss) before income taxes	\$ 26,564	\$ (229)	\$ 26,335	\$ 19,822	\$ 7,549	\$ 27,371

(dollars in thousands)

	Nine months ended September 30,					
	2017			2016		
	Traditional	Financial Solutions	Total Asia Pacific	Traditional	Financial Solutions	Total Asia Pacific
Revenues:						
Net premiums	\$ 1,557,590	\$ 2,094	\$ 1,559,684	\$ 1,233,222	\$ 4,936	\$ 1,238,158
Investment income, net of related expenses	68,105	24,662	92,767	61,601	18,086	79,687
Investment related gains (losses), net	—	11,525	11,525	14	14,322	14,336
Other revenues	2,724	17,087	19,811	4,580	18,809	23,389
Total revenues	1,628,419	55,368	1,683,787	1,299,417	56,153	1,355,570
Benefits and expenses:						
Claims and other policy benefits	1,221,091	14,170	1,235,261	977,860	15,487	993,347
Interest credited	—	15,595	15,595	—	9,474	9,474
Policy acquisition costs and other insurance expenses	180,007	4,111	184,118	116,432	4,436	120,868
Other operating expenses	105,747	10,472	116,219	109,661	10,727	120,388
Total benefits and expenses	1,506,845	44,348	1,551,193	1,203,953	40,124	1,244,077
Income before income taxes	\$ 121,574	\$ 11,020	\$ 132,594	\$ 95,464	\$ 16,029	\$ 111,493

Income before income taxes decreased by \$1.0 million, or 3.8%, and increased by \$21.1 million, or 18.9%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease in income before income taxes for the third quarter was due to an increase in policy lapses on a financial solutions closed block of business in Japan partially offset by favorable results in the traditional segment. The increase in income before income taxes for the first nine months was primarily due to higher income from offices in Asia driven by business growth, most notably in Hong Kong and Southeast Asia. The prior-year period also included poor claims experience in Australia. The third quarter of 2016 also included a higher level of benefit expense associated with the timing of client reporting on one large treaty in Hong Kong. Foreign currency exchange fluctuations resulted in a decrease to income before income taxes totaling approximately \$0.8 million and \$0.3 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Traditional Reinsurance

Income before income taxes increased by \$6.7 million, or 34.0%, and \$26.1 million, or 27.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases in income before income taxes are primarily due to higher income from offices in Asia driven by business growth. Foreign currency exchange fluctuations resulted in a decrease to income before income taxes totaling approximately \$1.0 million and \$0.4 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums increased by \$132.5 million, or 32.8%, and \$324.4 million, or 26.3%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were driven by both new and existing business written throughout the segment. Foreign currency exchange fluctuations resulted in an increase in net premiums of approximately \$1.0 million and \$14.2 million for the three and nine months of 2017, as compared to the same periods in 2016.

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 and Hong Kong. Net premiums earned from this coverage totaled \$158.6 million and \$100.6 million for the third quarter and \$474.8 million and \$312.3 million for the first nine months ended September 30, 2017 and 2016, respectively.

Net investment income increased \$2.6 million, or 12.2%, and \$6.5 million, or 10.6%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increases were primarily due to a higher invested asset base. Foreign currency exchange fluctuations resulted in an increase in net investment income of approximately \$0.5 million and \$1.3 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Other revenues decreased by \$1.1 million, or 54.7%, and \$1.9 million, or 40.5%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. These variances are primarily due to gains and losses related to foreign currency transactions.

Loss ratios for this segment were 82.4% and 90.3% for the third quarter and 78.4% and 79.3% for the first nine months ended September 30, 2017 and 2016, respectively. The decreases in the loss ratios for the third quarter and first nine months of 2017 were primarily due to improved claims experience in Australia compared to the prior year.

Policy acquisition costs and other insurance expenses as a percentage of net premiums were 10.4% and 1.0% for the third quarter and 11.6% and 9.4% for the nine months ended September 30, 2017 and 2016, respectively. The third quarter 2016 included the affect of adjustments associated with client reporting on one large treaty in Hong Kong. These percentages fluctuate due to timing of client company reporting, premium refunds, variations in the mixture of business and the relative maturity of the business. In addition, as the segment grows, renewal premiums, which have lower allowances than first-year premiums, represent a greater percentage of the total net premiums.

Other operating expenses decreased \$1.7 million, or 4.4%, and \$3.9 million, or 3.6%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016 mainly due to the timing of travel and consultant expenditures. Other operating expenses as a percentage of net premiums totaled 6.9% and 9.5% for the third quarter and 6.8% and 8.9% for the first nine months ended September 30, 2017 and 2016, respectively. The timing of premium flows and the level of costs associated with the entrance into and development of new markets within the segment may cause other operating expenses as a percentage of net premiums to fluctuate over periods of time.

Financial Solutions Reinsurance

Income before income taxes decreased by \$7.8 million and \$5.0 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases in income before income taxes are primarily due to lower income from higher lapses on policies of the aforementioned closed block of business in Japan. Foreign currency exchange fluctuations resulted in an increase in income before income taxes of approximately \$0.1 million for both the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net premiums decreased \$0.7 million or 97.4%, and \$2.8 million, or 57.6%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decreases for the third quarter and first nine months were due to higher lapses from policies of the aforementioned closed block of business in Japan. Foreign currency exchange fluctuations had a negligible effect on net premiums for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Net investment income increased \$4.7 million, or 81.2%, and \$6.6 million, or 36.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016 mainly due to growth in the invested asset base. Foreign currency exchange fluctuations resulted in an increase in net investment income of approximately \$0.2 million and \$0.4 million for the three and nine months ended September 30, 2017, as compared to the same periods in 2016.

Other revenues decreased by \$0.8 million, or 12.0%, and \$1.7 million, or 9.2%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. At September 30, 2017 and 2016, the amount of reinsurance assumed from client companies, as measured by pre-tax statutory surplus, risk based capital and other financial reinsurance structures was \$2.4 billion and \$1.0 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 \$2.3 million, or 61.8%, and decreased by \$1.3 million, or 8.5%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in the third quarter was primarily due to higher lapses from policies of the aforementioned closed block of business in Japan. The decrease in the first nine months is attributable to lower lapses from policies from a closed block of business in Japan.

Other operating expenses increased by \$0.5 million, or 15.4%, and decreased by \$0.3 million, or 2.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016, respectively. The timing of premium flows and the level of costs associated with the entrance into and development of new markets within the segment may cause other operating expenses to fluctuate over periods of time.

Corporate and Other

Corporate and Other revenues primarily include investment income from unallocated invested assets and investment related gains and losses. 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 related to debt, and the investment income and expense associated with the Company's collateral finance and securitization transactions. Additionally, Corporate and Other includes results from certain wholly-owned subsidiaries and joint ventures that, among other activities, develop and market technology solutions for the insurance industry.

(dollars in thousands)

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Revenues:				
Net premiums	\$ 23	\$ 72	\$ 109	\$ 289
Investment income, net of related expenses	41,108	33,478	108,576	81,589
Investment related gains (losses), net	6,994	12,258	7,856	51,717
Other revenues	1,502	4,893	9,126	11,595
Total revenues	49,627	50,701	125,667	145,190
Benefits and expenses:				
Claims and other policy benefits	(15)	(15)	(1)	6
Interest credited	1,799	622	4,420	1,588
Policy acquisition costs and other insurance income	(26,848)	(24,565)	(80,694)	(73,526)
Other operating expenses	45,601	32,414	124,114	113,367
Interest expense	36,836	43,063	108,590	96,201
Collateral finance and securitization expense	7,692	6,484	21,235	19,396
Total benefits and expenses	65,065	58,003	177,664	157,032
Income (loss) before income taxes	\$ (15,438)	\$ (7,302)	\$ (51,997)	\$ (11,842)

Loss before income taxes increased by \$8.1 million, or 111.4% and \$40.2 million, or 339.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase in loss before income taxes for the third quarter and the first nine months is primarily due to decreased net investment related gains, decreased other revenues and higher other operating expenses partially offset by increased investment income.

Total revenues decreased by \$1.1 million, or 2.1%, and \$19.5 million, or 13.4%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The decrease for the third quarter is primarily due to a \$5.3 million decrease in investment related gains (losses), net, largely caused by an increase in other-than-temporary impairments on fixed maturity securities and other impairment charges of \$3.2 million. The third quarter decrease was partially offset by a \$7.6 million increase in investment income related to an increase in unallocated invested assets and higher investment yields, primarily due to a higher level of variable investment income. The decrease for the first nine months is primarily due to a decrease of \$43.9 million in investment related gains (losses), net, mainly related to an increase in other-than-temporary impairments on fixed maturity securities and other impairment charges of \$12.9 million and a reduction in net gains on the sale of investments of \$25.2 million. The decrease for the first nine months was partially offset by an increase of \$27.0 million in investment income related to an increase in unallocated invested assets and higher investment yields, primarily due to a higher level of variable investment income.

Total benefits and expenses increased by \$7.1 million, or 12.2%, and \$20.6 million, or 13.1%, for the three and nine months ended September 30, 2017, as compared to the same periods in 2016. The increase of total benefits and expenses in the third quarter is primarily due to a \$13.2 million increase in other operating expenses, primarily related to compensation and consulting expenses, partially offset by a reduction in interest expense of \$6.2 million. The increase in total benefits and expenses in the first nine months was primarily due to an increase in interest expense and other operating expenses offset by an increase in other insurance income, related to the offset to capital charges allocated to the operating segments. The increase in interest expense in the first nine months is primarily due to the issuance of \$800.0 million in long-term debt in June 2016, which was partially offset by the repayment of \$300.0 million of long-term debt in 2017, and a lower reduction in tax-related interest expense primarily resulting from settlement with the taxing authority in 2016.

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 RGA, Inc. and its subsidiaries 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 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 interest rate environment in select markets, primarily the U.S. and Canada, continues to negatively affect the Company's earnings. However, the Company's average investment yield, excluding spread business, has begun to increase, which for the nine months ended September 30, 2017 was 4.61%, 8 basis points above the same period in 2016. The Company's insurance liabilities, in particular its annuity products, are sensitive to changing market factors. Gross unrealized gains on fixed maturity and equity securities available-for-sale increased from \$2,246.5 million at December 31, 2016 to \$2,651.5 million at September 30, 2017. Gross unrealized losses decreased from \$374.9 million at December 31, 2016 to \$163.2 million at September 30, 2017.

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 investment securities of \$2,651.5 million remain well in excess of gross unrealized losses of \$163.2 million as of September 30, 2017. 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 September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Interest expense	\$ 44,697	\$ 50,826	\$ 132,018	\$ 119,700
Capital contributions to subsidiaries	10,000	46,002	28,500	87,002
Dividends to shareholders	32,271	26,288	85,086	74,034
Interest and dividend income	23,635	227,819	75,916	283,712
Issuance of unaffiliated debt	—	—	—	799,984
			September 30, 2017	December 31, 2016
Cash and invested assets			\$ 862,480	\$ 1,443,755

See Item 15, Schedule II - "Condensed Financial Information of the Registrant" in the 2016 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 2016 Annual Report. Under current tax laws, should the Company repatriate such earnings, it may be subject to additional U.S. income taxes and foreign withholding taxes.

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 shareholders, as authorized by the board of directors. RGA's current share repurchase program, which was approved by the board of directors in January 2017, 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):

	Nine months ended September 30,	
	2017	2016
Dividends to shareholders	\$ 85,086	\$ 74,034
Repurchases of treasury stock	26,897	116,522
Total amount paid to shareholders	\$ 111,983	\$ 190,556
Number of shares repurchased	208,680	1,356,892
Average price per share	\$ 128.89	\$ 85.87

In October 2017, RGA's board of directors declared a quarterly dividend of \$0.50 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 \$3.5 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 \$100.0 million, bankruptcy proceedings, or any other event which results in the acceleration of the maturity of indebtedness. As of September 30, 2017 and December 31, 2016, the Company had \$2.8 billion and \$3.1 billion, respectively, in outstanding borrowings under its debt agreements and was in compliance with all covenants under those agreements. 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 a revolving credit facility that expires in September 2019. As of September 30, 2017, the Company had no cash borrowings outstanding and \$97.2 million in issued, but undrawn, letters of credit under this facility. As of September 30, 2017 and December 31, 2016, the average interest rate on short-term and long-term debt outstanding was 5.15% and 5.16%, respectively.

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 September 30, 2017, the Company maintained an \$850.0 million syndicated revolving credit facility and certain committed letter of credit facilities aggregating \$1,349.1 million. See Note 13 - "Debt" in the Notes to Consolidated Financial Statements in the 2016 Annual Report for further information about these facilities.

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 September 30, 2017, there were approximately \$133.4 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 September 30, 2017, \$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 concern 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 \$752.8 million as of September 30, 2017. The Company also has \$1.1 billion of funds available through collateralized borrowings from the FHLB as of September 30, 2017. As of September 30, 2017, 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, "Summary of Significant Accounting Policies" in Notes to Consolidated Financial Statements in the 2016 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.

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 nine months ended September 30,	
	2017	2016
	(Dollars in thousands)	
Sources:		
Net cash provided by operating activities	\$ 1,104,499	\$ 1,019,872
Proceeds from long-term debt issuance	—	799,984
Exercise of stock options, net	4,450	11,752
Change in cash collateral for derivative positions and other arrangements	—	24,749
Cash provided by changes in universal life and other investment type policies and contracts	438,774	487,808
Effect of exchange rate changes on cash	43,699	25,436
Total sources	1,591,422	2,369,601
Uses:		
Net cash used in investing activities	1,056,334	2,247,406
Dividends to stockholders	85,086	74,034
Repayment of collateral finance and securitization notes	56,637	60,971
Debt issuance costs	—	9,026
Principal payments of long-term debt	301,927	1,850
Purchases of treasury stock	41,360	121,896
Change in cash collateral for derivatives and other arrangements	46,206	—
Total uses	1,587,550	2,515,183
Net change in cash and cash equivalents	\$ 3,872	\$ (145,582)

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.

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 previously reported.

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 each major insurance product, 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.

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 \$1,285.2 million and \$1,277.4 million at September 30, 2017 and December 31, 2016, respectively. Cash and cash equivalents includes cash collateral received from derivative counterparties of \$174.1 million and \$254.5 million as of September 30, 2017 and December 31, 2016, respectively. This unrestricted cash collateral is included in cash and cash equivalents and the obligation to return it is included in other liabilities in the Company's condensed consolidated balance sheets. 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 \$67.9 million of FHLB common stock, which is included in other invested assets on the Company's condensed consolidated balance sheets. Membership provides the Company access to borrowing arrangements ("advances") and funding agreements, discussed below, with the FHLB. The Company did not have any advances from the FHLB at September 30, 2017 and December 31, 2016. The Company's average outstanding balance of advances was \$8.2 million and \$17.0 million during the third quarter and the first nine months of 2017, respectively, and was \$0.5 million and \$29.5 million during the third quarter and the first nine months of 2016, respectively. Interest on advances is reflected in interest expense on the Company's condensed consolidated statements of income.

In addition, the Company has also 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 \$1.4 billion and \$1.1 billion at September 30, 2017 and December 31, 2016, 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.

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 \$50.9 billion and \$46.0 billion at September 30, 2017 and December 31, 2016, respectively, as illustrated below (dollars in thousands):

	September 30, 2017		December 31, 2016	
		% of Total		% of Total
Fixed maturity securities, available-for-sale	\$ 36,381,742	71.5%	\$ 32,093,625	69.6%
Mortgage loans on real estate	4,322,329	8.5	3,775,522	8.2
Policy loans	1,340,146	2.6	1,427,602	3.1
Funds withheld at interest	6,020,336	11.8	5,875,919	12.8
Short-term investments	80,582	0.2	76,710	0.2
Other invested assets	1,532,523	3.0	1,591,940	3.5
Cash and cash equivalents	1,204,590	2.4	1,200,718	2.6
Total cash and invested assets	\$ 50,882,248	100.0%	\$ 46,042,036	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 September 30,			Nine months ended September 30,		
	2017	2016	Increase/ (Decrease)	2017	2016	Increase/ (Decrease)
Average invested assets at amortized cost	\$ 25,887,338	\$ 24,128,430	7.3%	\$ 25,136,119	\$ 22,982,245	9.4%
Net investment income	305,632	263,111	16.2%	863,724	777,157	11.1%
Investment yield (ratio of net investment income to average invested assets)	4.81%	4.43%	38 bps	4.61%	4.53%	8 bps

Investment yield increased for the three and nine months ended September 30, 2017 in comparison to the same period in the prior year primarily due to increased income from bond make-whole premiums and limited partnership and joint venture investments, both of which are included in other invested assets on the condensed consolidated balance sheets.

Fixed Maturity and Equity Securities Available-for-Sale

See "Fixed Maturity and Equity 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 fixed maturity and equity securities, and the other-than-temporary impairments in AOCI by sector as of September 30, 2017 and December 31, 2016.

The Company's fixed maturity securities are invested primarily in corporate bonds, mortgage- and asset-backed securities, and U.S. and foreign government securities. As of September 30, 2017 and December 31, 2016, approximately 95.7% and 95.0%, respectively, 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 61.9% and 61.1% of total fixed maturity securities as of September 30, 2017 and December 31, 2016, 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 September 30, 2017 and December 31, 2016.

As of September 30, 2017, the Company's investments in Canadian and Canadian provincial government securities represented 11.0% of the fair value of total fixed maturity securities compared to 11.4% of the fair value of total fixed maturity securities at December 31, 2016. 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 and Equity Securities Available-for-Sale" in Note 4 – "Investments" in the Notes to Condensed Consolidated Financial Statements for tables showing the various sectors as of September 30, 2017 and December 31, 2016.

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 those assigned by S&P. In instances where a S&P rating is not available the Company references the rating provided by Moody's and in the absence of both the Company will assign equivalent ratings based on information from the NAIC. The NAIC assigns securities quality ratings and uniform valuations called "NAIC Designations" which are used by insurers when preparing their U.S. statutory filings. Structured securities (mortgage-backed and asset-backed 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 September 30, 2017 and December 31, 2016 was as follows (dollars in thousands):

NAIC Designation	Rating Agency Designation	September 30, 2017			December 31, 2016		
		Amortized Cost	Estimated Fair Value	% of Total	Amortized Cost	Estimated Fair Value	% of Total
1	AAA/AA/A	\$ 22,095,642	\$ 23,989,873	66.0%	\$ 19,813,653	\$ 21,369,081	66.5%
2	BBB	10,233,331	10,792,989	29.7	8,834,469	9,162,483	28.5
3	BB	1,107,086	1,143,449	3.1	944,839	955,735	3.0
4	B	360,643	374,478	1.0	414,087	411,138	1.3
5	CCC and lower	86,984	74,093	0.2	187,744	177,481	0.6
6	In or near default	6,282	6,860	—	16,995	17,707	0.1
	Total	\$ 33,889,968	\$ 36,381,742	100.0%	\$ 30,211,787	\$ 32,093,625	100.0%

The Company's fixed maturity portfolio includes structured securities. The following table shows the types of structured securities the Company held at September 30, 2017 and December 31, 2016 (dollars in thousands):

	September 30, 2017		December 31, 2016	
	Amortized Cost	Estimated Fair Value	Amortized Cost	Estimated Fair Value
Residential mortgage-backed securities:				
Agency	\$ 891,508	\$ 917,589	\$ 579,686	\$ 602,549
Non-agency	753,871	761,716	678,353	676,027
Total residential mortgage-backed securities	1,645,379	1,679,305	1,258,039	1,278,576
Commercial mortgage-backed securities	1,293,296	1,313,322	1,342,440	1,363,654
Asset-backed securities	1,680,918	1,694,568	1,443,822	1,429,344
Total	\$ 4,619,593	\$ 4,687,195	\$ 4,044,301	\$ 4,071,574

The residential mortgage-backed securities 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.

Asset-backed securities include credit card and automobile receivables, student loans, home equity loans and collateralized debt obligations (primarily collateralized loan obligations). The Company owns floating rate securities that represent approximately

14.0% and 12.9% of the total fixed maturity securities at September 30, 2017 and December 31, 2016, 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 which 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 and equity 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 – "Summary of Significant Accounting Policies" in the Notes to Consolidated Financial Statements in the 2016 Annual Report for additional information. The table below summarizes other-than-temporary impairments and changes in the mortgage loan provision for the three and nine months ended September 30, 2017 and 2016 (dollars in thousands).

	Three months ended September 30,		Nine months ended September 30,	
	2017	2016	2017	2016
Impairment losses on available-for-sale securities:				
Fixed maturity securities	\$ 390	\$ —	\$ 20,980	\$ 34,663
Equity securities	889	—	889	—
Other impairment losses	1,469	15	7,776	2,178
Change in mortgage loan provision	977	247	1,444	(67)
Total	\$ 3,725	\$ 262	\$ 31,089	\$ 36,774

The fixed maturity impairments for the three and nine months ended September 30, 2017 and 2016 were largely related to high-yield corporate securities. The equity impairments for the three and nine months ended September 30, 2017 were related to an equity position received as part of a debt restructuring. In addition, other impairment losses for the three and nine months ended September 30, 2017 and 2016 are primarily due to impairments on limited partnerships.

At September 30, 2017 and December 31, 2016, the Company had \$163.2 million and \$374.9 million, respectively, of gross unrealized losses related to its fixed maturity and equity securities. The distribution of the gross unrealized losses related to these securities is shown below.

	September 30, 2017	December 31, 2016
Sector:		
Corporate securities	59.6%	61.6%
Canadian and Canada provincial governments	1.5	0.9
Residential mortgage-backed securities	5.1	3.6
Asset-backed securities	3.1	6.4
Commercial mortgage-backed securities	3.3	2.1
State and political subdivisions	3.7	3.3
U.S. government and agencies	19.0	16.8
Other foreign government, supranational and foreign government-sponsored enterprises	4.7	5.3
Total	100.0%	100.0%
Industry:		
Finance	15.3%	20.1%
Asset-backed	3.1	6.4
Industrial	40.1	32.9
Mortgage-backed	8.4	5.7
Government	28.9	26.3
Utility	4.2	8.6
Total	100.0%	100.0%

See “Unrealized Losses for Fixed Maturity and Equity 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 fixed maturity and equity securities at September 30, 2017 and December 31, 2016, 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 and Equity 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 fixed maturity and equity 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 September 30, 2017 and December 31, 2016.

As of September 30, 2017 and December 31, 2016, the Company classified approximately 5.9% and 6.9%, 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, Canadian provincial strips, below investment grade mortgage-backed securities and subprime asset-backed securities 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, repurchase and repurchase/reverse repurchase programs.

Mortgage Loans on Real Estate

Mortgage loans represented approximately 8.5% and 8.2% of the Company’s cash and invested assets as of September 30, 2017 and December 31, 2016, respectively. The Company’s mortgage loan portfolio consists of U.S. and Canada based investments primarily in commercial offices, light industrial properties and retail locations. The mortgage loan portfolio is diversified by geographic region and property type. Additional information on geographic concentration and property type can be found under “Mortgage Loans on Real Estate” in Note 4 – “Investments” in the Notes to Condensed Consolidated Financial Statements.

As of September 30, 2017 and December 31, 2016, 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):

	September 30, 2017		December 31, 2016	
	Recorded Investment	% of Total	Recorded Investment	% of Total
U.S. Region:				
Pacific	\$ 1,304,056	30.1	\$ 1,112,636	29.4%
South Atlantic	858,474	19.8	782,509	20.7
Mountain	688,609	15.9	615,915	16.3
East North Central	529,007	12.2	422,512	11.2
West North Central	305,894	7.1	318,212	8.4
West South Central	359,680	8.3	317,194	8.4
Middle Atlantic	107,453	2.5	92,683	2.4
East South Central	97,379	2.2	57,216	1.5
New England	9,191	0.2	9,346	0.2
Subtotal - U.S.	4,259,743	98.3	3,728,223	98.5
Canada	74,254	1.7	54,984	1.5
Total	\$ 4,333,997	100.0%	\$ 3,783,207	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 2.6% and 3.1% of the Company’s cash and invested assets as of September 30, 2017 and December 31, 2016, 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.

Funds Withheld at Interest

Funds withheld at interest comprised approximately 11.8% and 12.8% of the Company’s cash and invested assets as of September 30, 2017 and December 31, 2016, 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. Additionally, under certain treaties 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 September 30, 2017 and December 31, 2016. Certain ceding companies maintain segregated portfolios for the benefit of the Company.

Other Invested Assets

Other invested assets include equity securities, limited partnership interests, joint ventures (other than operating joint ventures), structured loans, derivative contracts, FVO contractholder-directed unit-linked investments, FHLB common stock and equity release mortgages. Other invested assets represented approximately 3.0% and 3.5% of the Company’s cash and invested assets as of September 30, 2017 and December 31, 2016, respectively. 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 September 30, 2017 and December 31, 2016.

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 against risk of changes in the purchase price of securities, 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 September 30, 2017 and December 31, 2016.

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 net credit exposure related to its derivative contracts, excluding futures and mortality swaps, at September 30, 2017 and December 31, 2016, 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. Certain of the Company’s OTC derivatives are cleared derivatives, which are bilateral transactions between the Company and a counterparty where the transactions are cleared through a clearinghouse, such that each derivative counterparty is only exposed to the default of the clearinghouse. 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.

Enterprise Risk Management

RGA maintains a dedicated Enterprise Risk Management ("ERM") function that is responsible for analyzing and reporting the Company's risks on an aggregated basis; facilitating monitoring to ensure the Company's risks remain within its appetites and limits; and ensuring, on an ongoing basis, that RGA's ERM objectives are met. This includes ensuring proper risk controls are in place; risks are effectively identified, assessed, and managed; and key risks to which the Company is exposed are disclosed to appropriate stakeholders. The ERM function plays an important role in fostering the Company's risk management culture and practices.

Enterprise Risk Management Structure and Governance

The Board of Directors ("the Board") oversees enterprise risk through its standing committees. The Finance, Investments, and Risk Management ("FIRM") Committee of the Board oversees the management of the Company's ERM program and policies. The FIRM receives regular reports and assessments which describe the Company's key risk exposures and include quantitative and qualitative assessments and information about breaches, exceptions, and waivers.

The Company's Global Chief Risk Officer ("CRO") leads the dedicated ERM function. The CRO reports to the Chief Executive Officer ("CEO") and has direct access to the Board through the FIRM Committee with formal reporting occurring quarterly. The CRO is supported by a network of Business Unit Chief Risk Officers and Risk Management Officers throughout the business who are responsible for the analysis and management of risks within their scope. A Lead Risk Management Officer is assigned to each risk to take overall responsibility to monitor and assess the risk consistently across all markets.

In addition to leading the ERM function, the CRO also chairs the Company's Risk Management Steering Committee ("RMSC"), which is made up of senior management executives, including the CEO, the Chief Financial Officer ("CFO"), and the Chief Operating Officer, among others. The RMSC provides oversight for the Insurance, Market and Credit, Capital, and Operational risk committees and retains direct risk oversight responsibilities for the following:

- Company's global ERM framework, activities, and issues.
- Identification, assessments, and management of all known, new and emerging strategic risk exposures.
- Risk appetite statement, including the ongoing alignment of the risk appetite statement with the Company's strategy and capital plans.
- Review, revise and approve RGA group-level strategic risk limits consistent with the risk appetite statement

The Insurance, Market and Credit, Capital, and Operational risk committees have direct oversight accountability for their respective risks areas including the identification, assessments, and management of known, new and emerging risk exposures and the review and approval of RGA group-level risk limits

To ensure appropriate oversight of enterprise-wide risk management issues without unnecessary duplication, as well as to foster cross-committee communication and coordination regarding risk issues, risk committee chairs attend RMSC meetings. In addition to the risk committees, their sub-committees and working groups, some RGA operating entities have risk management committees that oversee relevant risks related to segment-level risk limits.

Enterprise Risk Management Framework

RGA's ERM framework provides a platform to assess the risk / return profiles of risks throughout the organization to enable enhanced decision making by business leaders. The ERM framework also guides the development and implementation of mitigation strategies to reduce exposures to these risks to acceptable levels.

RGA's ERM framework includes the following elements:

1. **Risk Culture:** Risk management is an integral part of the Company's culture and is embedded in RGA's business processes in accordance with RGA's risk philosophy. As the cornerstone of the ERM framework, a culture of prudent risk management reinforced by senior management plays a preeminent role in the effective management of risks assumed by RGA.
2. **Risk Appetite Statement:** A general and high level overview of the risk profile RGA aims to achieve to meet its strategic objectives. This statement is then supported by more granular risk limits guiding the businesses to achieve this Risk Appetite Statement.

3. **Risk Limits:** Risk Limits establish the maximum amount of defined risk that the Company is willing to assume to remain within the Company's overall risk appetite. These risks have been identified by the management of the Company as relevant to manage the overall risk profile of the Company while allowing achievement of strategic objectives.
4. **Risk Assessment Process:** RGA uses qualitative and quantitative methods to assess key risks through a portfolio approach, which analyzes established and emerging risks in conjunction with other risks.
5. **Business Specific Limits/Controls:** These limits/controls provide additional safeguards against undesired risk exposures and are embedded in business processes. Examples include maximum retention limits, pricing and underwriting reviews, per issuer limits, concentration limits, and standard treaty language.

Proactive risk monitoring and reporting enable early detection and mitigation of emerging risks. The RMSC and its subcommittees monitor adherence to risk limits through the ERM function, which reports regularly to the RMSC and FIRM Committee. The frequency of monitoring is tailored to the volatility assessment and relative priority of each risk. Risk escalation channels coupled with open communication lines enhance the mitigants explained above. The Company has devoted significant resources to developing its ERM program and expects to continue to do so in the future. Nonetheless, the Company's policies and procedures to identify, manage, and monitor risks may not be fully effective. Many of the Company's methods for managing risk are based on historical information, which may not be a good predictor of future risk exposures, such as the risk of a pandemic causing a large number of deaths. Management of operational, legal, and regulatory risk relies on policies and procedures which may not be fully effective under all scenarios.

Risk Categories

The Company groups its risks into the following categories: Insurance risk, Market and Credit risk, Capital risk, Operational risk and Strategic risk. Specific risk assessments and descriptions can be found below and in Item 1A - "Risk Factors" of the 2016 Annual Report.

Insurance Risk

Insurance risk is the risk of lower or negative earnings and potentially a reduction in enterprise value due to a greater amount of benefits and related expenses paid than expected, or from non-market related adverse policyholder or client behavior. The Company uses multiple approaches to managing insurance risk: active insurance risk assessment and pricing appropriately for the risks assumed, transferring undesired risks, and managing the retained exposure prudently. These strategies are explained below.

Insurance Risk Assessment and Pricing

The Company has developed extensive expertise in assessing insurance risks which ultimately forms an integral part of ensuring that it is compensated commensurately for the risks it assumes and that it does not overpay for the risks it transfers to third parties. This expertise includes a vast array of market and product knowledge supported by a large information database of historical experience which is closely monitored. Analysis and experience studies derived from this database help form the basis for the Company's pricing assumptions which are used in developing rates for new risks. If actual mortality or morbidity experience is materially adverse, some reinsurance treaties allow for increases to future premium rates.

Misestimation of any key risk can threaten the long term viability of the enterprise. Further, the pricing process is a key operational risk and significant effort is applied to ensuring the appropriateness of pricing assumptions. Some of the safeguards the Company uses to ensure proper pricing are: experience studies, strict underwriting, sensitivity and scenario testing, pricing guidelines and controls, authority limits and internal and external pricing reviews. In addition, the ERM function provides pricing oversight which includes periodic pricing audits.

Risk Transfer

To minimize volatility in financial results and reduce the impact of large losses, the Company transfers some of its insurance risk to third parties using vehicles such as retrocession and catastrophe coverage.

Individual Exposure Retrocession

In the normal course of business, the Company seeks to limit its exposure to loss on any single insured and to recover a portion of claims paid by ceding reinsurance to other insurance enterprises (or retrocessionaires) under excess coverage and coinsurance contracts. In individual life markets, the Company retains a maximum of \$8.0 million of coverage per individual life. In certain limited situations the Company has retained more than \$8.0 million per individual life. The Company enters into agreements with other reinsurers to mitigate the residual risk related to the over-retained policies. Additionally, due to some lower face amount reinsurance coverages provided by the Company in addition to individual life, such as group life, disability and health, under certain circumstances, the Company could potentially incur claims totaling more than \$8.0 million per individual life.

Catastrophic Excess Loss Retrocession

The Company seeks to limit its exposure to loss on its assumed catastrophic excess of loss reinsurance agreements by ceding a portion of its exposure to multiple retrocessionaires through retrocession line slips or directly to retrocession markets. The Company's policy is to retain a maximum of \$20.0 million of catastrophic loss exposure per agreement and to retrocede up to \$30.0 million additional loss exposures to the retrocession markets. The Company limits its exposure on a country-by-country (and state-by-state in the U.S.) basis by managing its total exposure to all catastrophic excess of loss agreements bound within a given country to established maximum aggregate exposures. The maximum exposures are established and managed both on gross amounts issued prior to including retrocession and for amounts net of exposures retroceded.

Catastrophe Coverage

The Company accesses the markets each year for annual catastrophic coverages and reviews current coverage and pricing of current and alternate designs. The coverage may vary from year to year based on the Company's perceived value of such protection. The current policy covers events involving 8 or more insured deaths from a single occurrence and covers \$100.0 million of claims in excess of the Company's \$25.0 million deductible.

Managing Retained Exposure

The Company retains most of the inbound insurance risk. The Company manages the retained exposure proactively using various mitigating factors such as diversification and limits. Diversification is the primary mitigating factor of short term volatility risk, but it also mitigates adverse impacts of changes in long term trends and catastrophic events. The Company's insured populations are dispersed globally, diversifying the insurance exposure because factors that cause actual experience to deviate materially from expectations do not affect all areas uniformly and synchronously or in close sequence. A variety of limits mitigate retained insurance risk. Examples of these limits include geographic exposure limits, which set the maximum amount of business that can be written in a given country, and jumbo limits, which prevent excessive coverage on a given individual.

In the event that mortality or morbidity experience develops in excess of expectations, some reinsurance treaties allow for increases to future premium rates. Other treaties include experience refund provisions, which may also help reduce RGA's mortality risk.

RGA has various methods to manage its insurance risks, including access to the capital and reinsurance markets.

Market and Credit Risk

Market and Credit risk is the risk of lower or negative earnings and potentially a reduction in enterprise value due to changes in the market prices of asset and liabilities.

Interest Rate Risk

Interest Rate risk is risk that changes in the level and volatility of nominal interest rates affect the profitability, value or solvency position of the Company. This includes credit spread changes and inflation but excludes credit quality deterioration. This risk arises from many of the Company's primary activities, as the Company invests substantial funds in interest-sensitive assets, primarily fixed maturity securities, and also has certain interest-sensitive contract liabilities. A prolonged period where market yields are significantly below the book yields of the Company's asset portfolio puts downward pressure on portfolio book yields. The Company has been proactive in its investment strategies, reinsurance structures and overall asset-liability management practices to reduce the risk of unfavorable consequences in this type of environment.

The Company manages interest rate risk to optimize the return on the Company's capital and to preserve the value created by its business operations within certain constraints. For example, certain management and monitoring processes are designed to minimize the effect of sudden and/or sustained changes in interest rates on fair value, cash flows, and net interest income. The Company manages its exposure to interest rates principally by managing the relative matching of the cash flows of its liabilities and assets.

The Company's exposure to interest rate price risk and interest rate cash flow risk is reviewed on a quarterly basis. Interest rate price risk exposure is measured using interest rate sensitivity analysis to determine the change in fair value of the Company's financial instruments in the event of a hypothetical change in interest rates. Interest rate cash flow risk exposure is measured using interest rate sensitivity analysis to determine the Company's variability in cash flows in the event of a hypothetical change in interest rates.

In order to reduce the exposure to changes in fair values from interest rate fluctuations, the Company has developed strategies to manage the net interest rate sensitivity of its assets and liabilities. In addition, from time to time, the Company has utilized the swap market to manage the sensitivity of fair values to interest rate fluctuations.

Inflation can also have direct effects on the Company's assets and liabilities. The primary direct effect of inflation is the increase in operating expenses. A large portion of the Company's operating expenses consists of salaries, which are subject to wage increases at least partly affected by the rate of inflation.

The Company reinsures annuities with benefits indexed to the cost of living. Some of these benefits are hedged with a combination of CPI swaps and indexed bonds when material.

Long Term Care products have an inflation component linked to the future cost of such services. If health care costs increase at a much larger rate than what is prevalent in the nominal interest rates available in the markets, the Company may not earn enough investment yield to pay future claims on such products.

Foreign Currency Risk

Foreign currency risk is the risk of changes in level and volatility of currency exchange rates affect the profitability, value or solvency position of the Company. The Company manages its exposure to currency principally by currency matching invested assets with the underlying liabilities to the extent possible. The Company has in place net investment hedges for a portion of its investments in its Canadian operations to reduce excess exposure to these currencies. Translation differences resulting from translating foreign subsidiary balances to U.S. dollars are reflected in stockholders' equity on the condensed consolidated balance sheets.

The Company generally does not hedge the foreign currency exposure of its subsidiaries transacting business in currencies other than their functional currency (transaction exposure). However, the Company has entered into cross currency swaps to manage exposure to specific currencies. The majority of the Company's foreign currency transactions are denominated in Australian dollars, British pounds, Canadian dollars, Euros, Japanese yen, Korean won, and the South African rand. The maximum amount of assets held in a specific currency (with the exception of the U.S. dollar) is measured relative to risk targets and is monitored regularly.

Real Estate Risk

Real Estate risk is the risk that changes in the level and volatility of real estate market valuations may impact the profitability, value or solvency position of the Company. The Company has investments in direct real estate equity and debt instruments collateralized by real estate ("real estate loans"). Real estate equity risks include significant reduction in valuations, which could be caused by downturns in the broad economy or in specific geographic regions or sectors. In addition, real estate loan risks include defaults, borrower or tenant bankruptcy and reduced liquidity. Real estate loan risks are partially mitigated by the excess of the value of the property over the loan principle, which provides a buffer should the value of the real estate decrease. The Company manages its real estate loan risk by diversifying by property type and geography and through exposure limits.

Equity Risk

Equity risk is the risk that changes in the level and volatility of equity market valuations affect the profitability, value or solvency position of the company. This risk includes Variable Annuity and other equity linked exposures and asset related equity exposure. The Company assumes equity risk from alternative investments, fixed indexed annuities and variable annuities. The Company uses derivatives to hedge its exposure to movements in equity markets that have a direct correlation with certain of its reinsurance products.

Alternative Investments

Alternative investments are investments in non-traditional asset classes that primarily back the Company's capital and surplus. The Company generally restricts the alternative investments portfolio to non-liability supporting assets: that is, free surplus. Alternative investments generally encompass: hedge funds, emerging markets debt, distressed debt, commodities, infrastructure, tax credits, and equities, both public and private. The Company mitigates its exposure to alternative investments by limiting the size of the alternative investments holding and using per-issuer investment limits.

Fixed Indexed Annuities

The Company reinsures fixed indexed annuities ("FIAs"). Credits for FIAs are affected by changes in equity markets. Thus the fair value of the benefit is primarily a function of index returns and volatility. The Company hedges most of the underlying FIA equity exposure with derivatives.

Variable Annuities

The Company reinsures variable annuities including those with guaranteed minimum death benefits (“GMDB”), guaranteed minimum income benefits (“GMIB”), guaranteed minimum accumulation benefits (“GMAB”) and guaranteed minimum withdrawal benefits (“GMWB”). Strong equity markets, increases in interest rates and decreases in equity market volatility will generally decrease the fair value of the liabilities underlying the benefits. Conversely, a decrease in the equity markets along with a decrease in interest rates and an increase in equity market volatility will generally result in an increase in the fair value of the liabilities underlying the benefits, which has the effect of increasing reserves and lowering earnings. The Company maintains a customized dynamic hedging program that is designed to substantially mitigate the risks associated with income volatility around the change in reserves on guaranteed benefits, ignoring the Company’s own credit risk assessment. However, the hedge positions may not fully offset the changes in the carrying value of the guarantees due to, among other things, time lags, high levels of volatility in the equity and derivative markets, extreme swings in interest rates, unexpected contract holder behavior, and divergence between the performance of the underlying funds and hedging indices. These factors, individually or collectively, may have a material adverse effect on the Company’s net income, financial condition or liquidity. The table below provides a summary of variable annuity account values and the fair value of the guaranteed benefits as of September 30, 2017 and December 31, 2016.

(dollars in millions)	September 30, 2017	December 31, 2016
No guaranteed minimum benefits	\$ 940	\$ 731
GMDB only	180	58
GMIB only	23	5
GMAB only	25	28
GMWB only	1,361	1,334
GMDB / WB	340	335
Other	33	19
Total variable annuity account values	\$ 2,902	\$ 2,510
Fair value of liabilities associated with living benefit riders	\$ 168	\$ 185

Credit Risk

Credit risk, which includes default risk, is risk of loss due to credit quality deterioration of an individual financial asset, derivative or non-derivative contract or instrument. Credit quality deterioration may or may not be accompanied by a ratings downgrade. Generally, the credit exposure for an asset is limited to the fair value, net of any collateral received, at the reporting date.

Investment Credit Risk

Investment credit risk is credit risk related to invested assets. The Company manages investment credit risk using per-issuer investment limits. In addition to per-issuer limits, the Company also limits the total amounts of investments per rating category. An automated compliance system checks for compliance for all investment positions and sends warning messages when there is a breach. 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. Because futures are transacted 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 to such derivative instruments.

The Company enters into various collateral arrangements, which require both the posting and accepting of collateral in connection with its derivative instruments. Collateral agreements contain attachment thresholds that vary depending on the posting party’s financial strength ratings. Additionally, a decrease in the Company’s financial strength rating to a specified level results in potential settlement of the derivative positions under the Company’s agreements with its counterparties. A committee is responsible for setting rules and approving and overseeing all transactions requiring collateral. See “Credit Risk” in Note 5 - “Derivative Instruments” in the Notes to Condensed Consolidated Financial Statements for additional information on credit risk related to derivatives.

Counterparty Risk

Counterparty risk is the potential for the Company to incur losses due to a client, retrocessionaire, or partner becoming distressed or insolvent. This includes run-on-the-bank risk and collection risk.

Run-on-the-Bank

The risk that a client’s in force block incurs substantial surrenders and/or lapses due to credit impairment, reputation damage or other market changes affecting the counterparty. Substantially higher than expected surrenders and/or lapses could result in inadequate in force business to recover cash paid out for acquisition costs.

Collection Risk

For clients and retrocessionaires, this includes their inability to satisfy a reinsurance agreement because the right of offset is disallowed by the receivership court; the reinsurance contract is rejected by the receiver, resulting in a premature termination of the contract; and/or the security supporting the transaction becomes unavailable to RGA.

The Company manages counterparty risk by limiting the total exposure to a single counterparty and by only initiating contracts with creditworthy counterparties. In addition, some of the counterparties have set up trusts and letters of credit, reducing the Company's exposure to these counterparties.

Generally, RGA's insurance subsidiaries retrocede amounts in excess of their retention to certain other RGA insurance subsidiaries. External retrocessions are arranged through the Company's retrocession pools for amounts in excess of its retention. As of September 30, 2017, all retrocession pool members in this excess retention pool rated by the A.M. Best Company were rated "A-" or better. A rating of "A-" is the fourth highest rating out of sixteen possible ratings. For a majority of the retrocessionaires that were not rated, letters of credit or trust assets have been given as additional security. In addition, the Company performs annual financial and in force 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 material difficulty in collecting claims recoverable from retrocessionaires; however, no assurance can be given as to the future performance of such retrocessionaires or as to the recoverability of any such claims.

Aggregate Counterparty Limits

In addition to investment credit limits and counterparty limits, there are aggregate counterparty risk limits which include counterparty exposures from reinsurance, financing and investment activities at an aggregated level to control total exposure to a single counterparty. Counterparty risk aggregation is important because it enables the Company to capture risk exposures at a comprehensive level and under more extreme circumstances compared to analyzing the components individually.

All counterparty exposures are calculated on a quarterly basis, reviewed by management and monitored by the ERM function.

Capital Risk

Capital risk is the risk of lower or negative earnings and a potential reduction in enterprise value, and/or the ability to conduct business due to insufficient financial capacity. Collateral, financing, liquidity and tax risks are important to the operations of the Company and its ability to meet obligations with its clients, shareholders and regulators.

Operational Risk

Operational risk is the risk of lower or negative earnings and a potential reduction in enterprise value caused by the inadequacy or failure of internal processes, people and systems, or from the adverse impact of external events or actors. The Company regularly monitors the risks related to human capital, fraud, business conduct and governance, disruption of operations, business operations and privacy and security related matters. Operational risks are core to managing the Company's brand and market confidence as well as maintaining its ability to acquire and retain the appropriate expertise to execute and operate the business.

Strategic Risk

Strategic risk is the risk of lower or negative earnings and a potential reduction in enterprise value related to the planning, implementation, and management of the Company's business plans and strategies. This includes the risks associated with the global environment in which it operates; future law and regulation changes; political and sovereign risks; and relationships with key external parties.

New Accounting Standards

See Note 12 — "New Accounting Standards" in the Notes to Condensed Consolidated Financial Statements.

ITEM 3. Quantitative and Qualitative Disclosures About Market Risk

There has been no significant change in the Company's quantitative or qualitative aspects of market risk during the quarter ended September 30, 2017 from that disclosed in the 2016 Annual Report. See "Item 2 – Management's Discussion and Analysis of Financial Condition and Results of Operations – Market and Credit Risk", which is included herein, for additional information.

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 September 30, 2017, 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 2016 Annual Report.

ITEM 2. Unregistered Sales of Equity Securities and Use of ProceedsIssuer Purchases of Equity Securities

The following table summarizes RGA's repurchase activity of its common stock during the quarter ended September 30, 2017:

	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
July 1, 2017 - July 31, 2017	1,320	\$ 131.02	—	\$ 400,000,000
August 1, 2017 - August 31, 2017	25,841	\$ 140.23	—	\$ 400,000,000
September 1, 2017 - September 30, 2017	209,344	\$ 128.91	208,680	\$ 373,103,074

(1) RGA repurchased 208,680 shares of common stock under its share repurchase program for \$26.9 million during September 2017. The Company net settled - issuing 3,190, 65,078 and 2,648 shares from treasury and repurchasing from recipients 1,320, 25,841 and 664 shares in July, August and September, respectively, in settlement of income tax withholding requirements incurred by the recipients of an equity incentive award.

On January 26, 2017, 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. In connection with this authorization, the board of directors terminated the stock repurchase authority granted in 2016.

ITEM 6. Exhibits

See index to exhibits.

INDEX TO EXHIBITS

<u>Exhibit Number</u>	<u>Description</u>
3.1	Amended and Restated Articles of Incorporation, incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K filed November 25, 2008.
3.2	Amended and Restated Bylaws, incorporated by reference to Exhibit 3.1 of Current Report on Form 8-K filed July 18, 2014.
31.1	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.
31.2	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.
32.1	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.
32.2	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.
101.INS	XBRL Instance Document
101.SCH	XBRL Taxonomy Extension Schema Document
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document
101.LAB	XBRL Taxonomy Extension Label Linkbase Document
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document

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: November 2, 2017

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

Date: November 2, 2017

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

CEO CERTIFICATION

I, Anna Manning, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Reinsurance Group of America, Incorporated;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2017

/s/ Anna Manning
Anna Manning
President & Chief Executive Officer

CFO CERTIFICATION

I, Todd C. Larson, certify that:

1. I have reviewed this quarterly report on Form 10-Q of Reinsurance Group of America, Incorporated;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
 - (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
 - (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
 - (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
 - (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
 - (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
 - (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 2, 2017

/s/ Todd C. Larson

Todd C. Larson
Senior Executive Vice President
& Chief Financial Officer

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Reinsurance Group of America, Incorporated and subsidiaries, (the "Company"), for the quarterly period ended September 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the "Report"), Anna Manning, Chief Executive Officer of the Company, certifies, to her best knowledge and belief, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 2, 2017

/s/ Anna Manning

Anna Manning

President & Chief Executive Officer

CERTIFICATION PURSUANT TO 18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

In connection with the Quarterly Report on Form 10-Q of Reinsurance Group of America, Incorporated and subsidiaries, (the “Company”), for the quarterly period ended September 30, 2017, as filed with the Securities and Exchange Commission on the date hereof (the “Report”), Todd C. Larson, Chief Financial Officer of the Company, certifies, to his best knowledge and belief, pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

1. The Report fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934; and
2. The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 2, 2017

/s/ Todd C. Larson

Todd C. Larson

Chief Financial Officer

& Senior Executive Vice President