ARCH REINSURANCE LTD. AND SUBSIDIARIES

(a wholly-owned subsidiary of Arch Capital Group Ltd.)

Consolidated Financial Statements

December 31, 2017 and 2016

INDEX TO FINANCIAL STATEMENTS

Report of Independent Auditors

To the Board of Directors of Arch Reinsurance Limited:

We have audited the accompanying consolidated financial statements of Arch Reinsurance Limited and its subsidiaries (the "Company"), which comprise the consolidated balance sheets as of December 31, 3017, and December 31, 3016, and the related consolidated statements of income, comprehensive income, changes in shareholder's equity and cash flows for the years then ended.

Management's Responsibility for the Consolidated Financial Statements

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

Auditors' Responsibility

Our responsibility is to express an opinion on the consolidated financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the consolidated financial statements are free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the consolidated financial statements. The procedures selected depend on our judgment, including the assessment of the risks of material misstatement of the consolidated financial statements, whether due to fraud or error. In making those risk assessments, we consider internal control relevant to the Company's preparation and fair presentation of the consolidated financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Arch Reinsurance Limited and its subsidiaries as of December 31,2017 and December 31, 2016 , and the results of their operations and their cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

PricewaterhouseCoopers LLP

New York, New York
April 9, 2018

ARCH REINSURANCE LTD. AND SUBSIDIARIES
CONSOLIDATED BALANCE SHEETS
(U.S. dollars in thousands, except share data)

	December 31,	
	2017	**2016**
Assets		
Investments:		
Fixed maturities available for sale, at fair value (amortized cost: $13,869,460 and $13,522,671)	$ 13,876,003	$ 13,426,577
Short-term investments available for sale, at fair value (amortized cost: $1,372,415 and $609,266)	1,372,502	609,393
Collateral received under securities lending, at fair value (amortized cost: $476,605 and $762,554)	476,615	762,565
Equity securities available for sale, at fair value (cost: $416,010 and $475,085)	495,804	518,041
Other investments available for sale, at fair value (cost: $198,163 and $149,077)	264,989	167,970
Investments accounted for using the fair value option	4,216,237	3,421,220
Investments accounted for using the equity method	1,041,322	811,273
Total investments	21,743,472	19,717,039
Cash	529,376	776,552
Accrued investment income	113,108	124,423
Securities pledged under securities lending, at fair value (amortized cost: $463,181 and $746,409)	464,917	744,980
Premiums receivable	1,135,249	1,072,435
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	2,540,142	2,114,138
Contractholder receivables	1,978,414	1,717,436
Ceded unearned premiums	926,611	859,567
Deferred acquisition costs	535,824	447,560
Receivable for securities sold	205,536	58,284
Goodwill and intangible assets	652,215	780,958
Other assets	1,008,153	863,506
Total assets	$ 31,833,017	$ 29,276,878
Liabilities		
Reserve for losses and loss adjustment expenses	$ 11,383,792	$ 10,200,960
Unearned premiums	3,622,314	3,406,870
Reinsurance balances payable	323,496	300,407
Contractholder payables	1,978,414	1,717,436
Collateral held for insured obligations	240,183	301,406
Senior notes	1,435,831	1,435,301
Revolving credit agreement borrowings	816,132	656,650
Securities lending payable	476,605	762,554
Payable for securities purchased	449,186	76,183
Other liabilities	773,321	821,500
Total liabilities	21,499,274	19,679,267
Commitments and Contingencies		
Redeemable noncontrolling interests	205,922	205,553
Shareholder's Equity		
Common shares ($1.00 par, shares authorized: 2,625,000, issued: 2,560,423)	2,560	2,560
Additional paid-in capital	4,059,566	4,022,769
Retained earnings	5,106,666	4,628,940
Accumulated other comprehensive income (loss), net of deferred income tax	115,618	(114,065)
Total shareholder's equity available to Arch	9,284,410	8,540,204
Non-redeemable noncontrolling interests	843,411	851,854
Total shareholder's equity	10,127,821	9,392,058
Total liabilities, noncontrolling interests and shareholder's equity	$ 31,833,017	$ 29,276,878

See Notes to Consolidated Financial Statements

ARCH REINSURANCE LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF INCOME
(U.S. dollars in thousands, except share data)

	Year Ended December 31,	
	2017	**2016**
Revenues		
Net premiums written	$ 4,961,373	$ 4,031,391
Change in unearned premiums	(116,841)	(146,569)
Net premiums earned	4,844,532	3,884,822
Net investment income	465,566	364,717
Net realized gains	146,818	138,819
Other-than-temporary impairment losses	(7,138)	(30,794)
Less investment impairments recognized in other comprehensive income, before taxes	—	352
Net impairment losses recognized in earnings	(7,138)	(30,442)
Other underwriting income	30,253	57,173
Equity in net income of investment funds accounted for using the equity method	142,286	48,475
Other income (loss)	(2,089)	(981)
Total revenues	5,620,228	4,462,583
Expenses		
Losses and loss adjustment expenses	2,967,446	2,185,599
Acquisition expenses	775,458	667,639
Other operating expenses	706,069	658,498
Amortization of intangible assets	125,591	18,963
Interest expense	94,798	43,254
Net foreign exchange (gains) losses	115,733	(36,602)
Total expenses	4,785,095	3,537,351
Income before income taxes	835,133	925,232
Income taxes:		
Current tax (benefit) expense	(45,339)	49,306
Deferred tax expense (benefit)	171,761	(19,147)
Income tax expense	126,422	30,159
Net income	$ 708,711	$ 895,073
Net (income) loss attributable to noncontrolling interests	(10,431)	(131,439)
Net income available to Arch	$ 698,280	$ 763,634

See Notes to Consolidated Financial Statements

ARCH REINSURANCE LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(U.S. dollars in thousands)

	Year Ended December 31,	
	2017	2016
Comprehensive Income		
Net income	$ 708,711	$ 895,073
Other comprehensive income (loss), net of deferred income tax		
Unrealized appreciation (decline) in value of available-for-sale investments:		
Unrealized holding gains (losses) arising during period	252,875	(20,938)
Portion of other-than-temporary impairment losses recognized in other comprehensive income, net of deferred income tax	—	(352)
Reclassification of net realized gains, net of income taxes, included in net income	(67,863)	(56,350)
Foreign currency translation adjustments	44,141	(19,992)
Comprehensive income	937,864	797,441
Net (income) loss attributable to noncontrolling interests	(10,431)	(131,439)
Other comprehensive (income) loss attributable to noncontrolling interests	530	68
Comprehensive income available to Arch	$ 927,963	$ 666,070

See Notes to Consolidated Financial Statements

ARCH REINSURANCE LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDER'S EQUITY
(U.S. dollars in thousands)

	Year Ended December 31,	
	2017	2016
Common shares		
Balance at beginning and end of year	2,560	2,560
Additional paid-in capital		
Balance at beginning of year	4,022,769	2,443,993
Capital contributions from parent	—	1,536,203
Amortization of share-based compensation	36,797	36,549
Other	—	6,024
Balance at end of year	4,059,566	4,022,769
Retained earnings		
Balance at beginning of year	4,628,940	4,062,160
Cumulative effect of an accounting change	(230)	—
Balance at beginning of year, as adjusted	4,628,710	4,062,160
Net income	708,711	895,073
Net (income) loss attributable to noncontrolling interests	(10,431)	(131,439)
Dividends paid to parent	(220,324)	(196,854)
Balance at end of year	5,106,666	4,628,940
Accumulated other comprehensive income (loss)		
Balance at beginning of year	(114,065)	(16,502)
Unrealized appreciation (decline) in value of available-for-sale investments, net of deferred income tax:		
Balance at beginning of year	(27,579)	50,061
Unrealized holding gains (losses) arising during period, net of reclassification adjustment, net of deferred income tax	185,012	(77,288)
Portion of other-than-temporary impairment losses recognized in other comprehensive income, net of deferred income tax	—	(352)
Balance at end of year	157,433	(27,579)
Foreign currency translation adjustments, net of deferred income tax:		
Balance at beginning of year	(86,486)	(66,563)
Foreign currency translation adjustments	44,141	(19,991)
Foreign currency translation adjustments attributable to noncontrolling interests	530	68
Balance at end of year	(41,815)	(86,486)
Balance at end of year	115,618	(114,065)
Total shareholder's equity available to Arch	9,284,410	8,540,204
Non-redeemable noncontrolling interests	843,411	851,854
Total shareholder's equity	$ 10,127,821	$ 9,392,058

See Notes to Consolidated Financial Statements

ARCH REINSURANCE LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(U.S. dollars in thousands)

	Year Ended December 31,	
	2017	2016
Operating Activities		
Net income	$ 708,711	$ 895,073
Adjustments to reconcile net income to net cash provided by operating activities:		
Net realized gains	(174,517)	(178,495)
Net impairment losses recognized in earnings	7,138	30,442
Equity in net income or loss of investment funds accounted for using the equity method and other income or loss	(80,021)	5,824
Amortization of intangible assets	125,591	18,963
Share-based compensation	36,823	36,549
Changes in:		
Reserve for losses and loss adjustment expenses, net of unpaid losses and loss adjustment expenses recoverable	614,534	372,244
Unearned premiums, net of ceded unearned premiums	116,837	146,569
Premiums receivable	(31,405)	(49,719)
Deferred acquisition costs	(78,378)	(38,597)
Reinsurance balances payable	8,529	24,362
Other items, net	(102,439)	180,555
Net Cash Provided By Operating Activities	1,151,403	1,443,770
Investing Activities		
Purchases of fixed maturity investments	(36,806,913)	(35,532,810)
Purchases of equity securities	(1,021,016)	(665,702)
Purchases of other investments	(2,020,624)	(1,389,406)
Proceeds from sales of fixed maturity investments	35,686,779	34,559,966
Proceeds from sales of equity securities	1,056,401	751,728
Proceeds from sales, redemptions and maturities of other investments	1,528,617	1,149,328
Proceeds from redemptions and maturities of fixed maturity investments	907,417	755,007
Net settlements of derivative instruments	(28,563)	(17,068)
Net purchases of short-term investments	(640,689)	(121,335)
Change in cash collateral related to securities lending	12,540	(155,248)
Acquisitions, net of cash	(27,709)	(1,991,260)
Purchases of fixed assets	(20,802)	(14,119)
Other	108,822	(29,504)
Net Cash Used For Investing Activities	(1,265,740)	(2,700,423)
Financing Activities		
Proceeds from borrowings	253,415	1,386,741
Repayments of borrowings	(97,000)	(219,171)
Change in securities lending collateral	(12,540)	155,248
Capital contribution from parent	—	434,899
Dividends paid to redeemable noncontrolling interests	(17,989)	(17,989)
Other	(51,893)	1,875
Dividends paid to parent	(220,324)	(196,854)
Net Cash Provided By (Used For) Financing Activities	(146,331)	1,544,749
Effects of exchange rate changes on foreign currency cash	13,492	(21,114)
Increase (decrease) in cash	(247,176)	266,982
Cash beginning of year	776,552	509,570
Cash end of year	$ 529,376	$ 776,552
Income taxes paid	$ 52,188	$ 50,200
Interest paid	$ 93,910	$ 39,602
Non-cash contribution of capital from parent	$ —	$ 1,101,304

See Notes to Consolidated Financial Statements

1. General

Arch Reinsurance Ltd. ("Arch Re Bermuda") is a Bermuda limited liability company, incorporated in May 2001 in Bermuda, and is a wholly owned subsidiary of Arch Capital Group Ltd. ("Arch Capital"), a Bermuda exempted public limited liability company. Under The Insurance Act 1978, as amended, and related regulations of Bermuda (the "Insurance Act"), Arch Re Bermuda is registered as a Class 4 insurer and Class C long-term insurer and is licensed to underwrite both general and long-term business on an insurance and reinsurance basis. Arch Re Bermuda and its subsidiaries (collectively, the "Company") provide insurance, reinsurance and mortgage insurance on a worldwide basis.

Operations

Insurance Operations. The Company's insurance operations are conducted in Bermuda, the United States, Europe, Canada, Australia and South Africa. The insurance operations in Bermuda are conducted through Arch Insurance (Bermuda), a division of Arch Re Bermuda, and Alternative Re Limited. In the U.S., the Company's principal insurance subsidiaries are Arch Insurance Company ("Arch Insurance"), Arch Specialty Insurance Company ("Arch Specialty"), Arch Excess & Surplus Insurance Company ("Arch E&S") and Arch Indemnity Insurance Company ("Arch Indemnity"). Arch Insurance is an admitted insurer in 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands and Guam. Arch Specialty is an approved excess and surplus lines insurer in 49 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands and an admitted insurer in one state. Arch Indemnity is an admitted insurer in 49 states and the District of Columbia. Arch E&S, which is not currently writing business, is an approved excess and surplus lines insurer in 47 states and the District of Columbia and an admitted insurer in one state. The headquarters for the insurance group's U.S. support operations (excluding underwriting units) is in Jersey City, New Jersey. The insurance group has offices throughout the U.S., including four regional offices located in Alpharetta, Georgia, Chicago, Illinois, New York, New York and San Francisco, California and additional branch offices.

The insurance group's operations in Canada are conducted through Arch Insurance Canada Ltd. ("Arch Insurance Canada"), a Canada domestic company which is authorized in all Canadian provinces and territories. Arch Insurance Canada is headquartered in Toronto, Ontario. The insurance group's operations in Europe are conducted on two platforms, Arch Insurance Company (Europe) Limited ("AICE") and Arch Syndicate 2012 (the U.K. insurance operations are collectively referred to as "Arch Insurance Europe"). Arch Insurance Europe conducts its operations from London, England. AICE eligible by virtue of the U.S. Nonadmitted and Reinsurance Reform Act of 2010 ("NRRA") as an excess and surplus lines insurer in 50 states and listed in 27 states and the District of Columbia and also has branches in Germany, Italy, Spain and Denmark. Arch Underwriting at Lloyd's Ltd ("AUAL") is the managing agent of Arch Syndicate 2012 and is responsible for the daily management of Arch Syndicate 2012. Arch Syndicate 2012 provides access to Lloyd's extensive distribution network and worldwide licenses.Arch Underwriting at Lloyd's (Australia) Pty Ltd, based in Sydney, Australia, and Arch Underwriting Managers at Lloyd's (South Africa) (Pty) Limited, based in Johannesburg, South Africa, are Lloyd's services companies which underwrite exclusively for Arch Syndicate 2012. Arch Underwriting Agency (Australia) Pty. Ltd. is an Australian agency which also underwrites for Arch Syndicate 2012 and third parties.

Reinsurance Operations. The Company's reinsurance operations are conducted on a worldwide basis through the following reinsurance subsidiaries: Arch Re Bermuda, Arch Reinsurance Company ("Arch Re U.S."), Arch Reinsurance Europe Underwriting Designated Activity Company ("Arch Re Europe") and Gulf Re. Arch Re Bermuda is headquartered in Hamilton, Bermuda. Arch Re U.S. is licensed or is an accredited or otherwise approved reinsurer in 50 states and the District of Columbia and the provinces of Ontario and Quebec in Canada with its principal U.S. office in Morristown, New Jersey. Treaty operations in Canada are conducted through the Canadian branch of Arch Re U.S. ("Arch Re Canada"). Arch Re U.S. is also an admitted insurer in Guam. The property facultative reinsurance operations are conducted primarily through Arch Re U.S. with certain executive functions conducted through Arch Re Facultative Underwriters Inc. located in Farmington, Connecticut. The property facultative reinsurance operations have offices throughout the U.S., Canada and in Europe. Arch Re Europe, licensed and authorized as a non-life reinsurer and a life reinsurer, is headquartered in Dublin, Ireland with branch offices in Zurich and London. In February 2017, Arch Underwriters (Gulf) Limited ("Arch Underwriters Gulf") was licensed as an Insurance Manager by the Dubai Financial Services Authority. Arch Underwriters Gulf is based in the Dubai International Financial Centre and provides underwriting, administrative and support services to Arch Re Bermuda and certain employees and certain administrative support services to Gulf Re.

Mortgage Operations. The Company's mortgage operations include U.S. and international mortgage insurance and reinsurance operations as well as GSE credit risk sharing transactions. The Company's mortgage group includes direct mortgage insurance in the U.S. primarily provided by Arch Mortgage Insurance Company and United Guaranty Residential

Insurance Company (together, "Arch MI U.S."), as well as through Arch Mortgage Guaranty Company; mortgage reinsurance by Arch Re Bermuda to mortgage insurers on both a proportional and non-proportional basis globally; direct mortgage insurance in Europe provided by Arch MI Europe and in Hong Kong by Arch MI Asia Limited; and various GSE credit risk-sharing products provided primarily by Arch Re Bermuda.

On January 30, 2014, the Company completed the acquisition of CMG Mortgage Insurance Company from its owners, PMI Mortgage Insurance Co., in Rehabilitation ("PMI") and CMFG Life Insurance Company ("CUNA Mutual") and acquired PMI mortgage insurance platform and related assets. CMG Mortgage Insurance Company was renamed "Arch Mortgage Insurance Company" and entered the U.S. mortgage insurance market place. Arch Mortgage Insurance Company is licensed and operates in all 50 states, the District of Columbia and Puerto Rico.

On December 31, 2016, the Company completed the acquisition of United Guaranty Corporation, a North Carolina corporation ("UGC"), and its primary operating subsidiary, United Guaranty Residential Insurance Company, which is licensed and operates in all 50 states and the District of Columbia. Arch Mortgage Insurance Company and United Guaranty Residential Insurance Company have each been approved as an eligible mortgage insurer by Fannie Mae and Freddie Mac, subject to maintaining certain ongoing requirements ("eligible mortgage insurer"). Arch Mortgage Guaranty Company, an affiliate of Arch Mortgage Insurance Company, offers direct mortgage insurance to U.S. mortgage lenders with respect to mortgages that lenders intend to retain in portfolio or include in non-agency securitizations. Arch Mortgage Guaranty Company, which is licensed in all 50 states, insures mortgages that are not intended to be sold to the GSEs, and it is therefore not approved by either GSE as an eligible mortgage insurer.

Arch MI Europe is licensed and authorized by the Central Bank of Ireland ("CBOI") to operate on a pan-European basis under the European Freedom of Services Act. Arch MI Europe is headquartered in Dublin, Ireland. Arch Underwriters Europe Limited ("Arch Underwriters Europe"), an Irish company authorized as an insurance and reinsurance intermediary by the CBOI, acts on behalf of Arch MI Europe and Arch Re Europe with branch offices in Italy, Switzerland, the U.K., Finland and Cyprus.

Other Operations. In 2014, the Company sponsored, along with HPS Investment Partners, LLC (formerly Highbridge Principal Strategies, LLC ("HPS"), Watford Re, a then newly-formed multi-line Bermuda reinsurance company. The Company acts as Watford Re's reinsurance underwriting manager and HPS, manages Watford Re's non-investment grade credit portfolios, and Arch Investment Management Ltd. ("AIM"), a wholly-owned subsidiary of Arch Capital, manages Watford Re's investment grade portfolios, each under separate long term services agreements. Watford Re's strategy is to combine a diversified reinsurance business with a disciplined investment strategy comprised primarily of non-investment grade credit assets. Watford Re has its own management and board of directors and is responsible for the overall profitability of its results (see Note 4).

In January 2017, the Company and Kelso & Company ("Kelso") sponsored Premia Re. Premia Re's strategy is to reinsure or acquire companies or reserve portfolios in the non-life property and casualty insurance and reinsurance run-off market. Arch Re Bermuda and certain Arch co-investors invested $100.0 million and acquired approximately 25% of Premia Re as well as warrants to purchase additional common equity. Affiliates of Kelso invested $300.0 million and acquired the balance of Premia Re as well as warrants to purchase additional common equity. Arch Re Bermuda is providing a 25% whole account quota share reinsurance treaty on business written by Premia Re, and subsidiaries of Arch Capital are providing certain administrative and support services to Premia Re, in each case pursuant to separate multi-year agreements. Arch Re Bermuda has appointed two directors to serve on the seven person board of directors of Premia Re.

The Company has reclassified the presentation of certain prior year information to conform to the current presentation. Such reclassifications had no effect on the Company's net income, shareholders' equity or cash flows. Tabular amounts are in U.S. Dollars in thousands, except share amounts, unless otherwise noted.

2. Business Acquired

Arch MI Asia Limited

On July 1, 2017, the Company completed its previously announced acquisition of AIG United Guaranty Insurance (Asia) Limited (renamed "Arch MI Asia Limited") following the payment of $40.0 million to AIG. Arch MI Asia Limited compliments the Company's existing private mortgage insurance businesses, which have operations in the United States, Europe and Australia.

The purchase price was allocated to the acquired assets and liabilities of Arch MI Asia Limited based on estimated fair values on the acquisition date. The Company recognized other intangible assets of $2.3 million and goodwill of $0.8 million. The

goodwill balance is primarily attributed to Arch MI Asia Limited's assembled workforce and access to the mortgage insurance market. None of the goodwill recognized is expected to be deductible for income tax purposes.

United Guaranty Corporation

On December 31, 2016, the Company's U.S.-based subsidiaries completed the acquisition of all of the issued and outstanding shares of capital stock of UGC pursuant to the Stock Purchase Agreement with AIG entered into on August 15, 2016 ("Stock Purchase Agreement"). The acquisition under the Stock Purchase Agreement is referred to herein as the "UGC acquisition." The UGC acquisition expanded the scale of the Company's existing mortgage insurance business by combining UGC's position as the market leader in the U.S. private mortgage insurance industry with the Company's financial strength and history of innovation.

The aggregate purchase price paid by the Company was $3.26 billion, consisting of cash consideration of $2.16 billion and convertible non-voting common equivalent preferred shares of Arch Capital with a fair value of $1.1 billion, which were distributed by Arch Capital to the Company as a non-cash contribution. In connection with the UGC acquisition, the 50% quota share reinsurance agreement between United Guaranty Residential Insurance Company and three subsidiaries of AIG relating to policy years 2014, 2015 and 2016 was amended to terminate on a run-off basis as of 12:01 a.m. on January 1, 2017.

The following table summarizes the fair value of net assets acquired and allocation of purchase price, measured as of the acquisition date:

	Total	Useful Life
Purchase price		
Cash paid	$ 2,159,524	
Convertible non-voting common equivalent preferred shares (1)	1,101,304	
Total purchase price (a)	$ 3,260,828	
Assets acquired		
Cash	$ 187,715	
Investments, at fair value	3,404,267	
Accrued investment income	33,770	
Premiums receivable	34,545	
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	27,280	
Ceded unearned premiums	302,090	
Intangible asset -- acquired insurance contracts	350,000	9 years
Intangible asset -- distribution relationships	115,000	20 years
Intangible asset -- operating platform	15,000	5 years
Intangible asset -- insurance licenses	27,000	Indefinite
Other assets acquired	133,222	
Total assets acquired	4,629,889	
Liabilities acquired		
Reserves for losses and loss adjustment expenses	$ 577,268	
Unearned premiums	837,175	
Reinsurance balances payable	49,295	
Other liabilities acquired	94,081	
Total liabilities acquired	1,557,819	
Net assets acquired (b)	$ 3,072,070	
Goodwill (a)-(b)	$ 188,758	

(1) Based upon a formula set forth in the Stock Purchase Agreement, AIG received 1,276,282 of Arch Capital's convertible non-voting common equivalent preferred shares, each of which is convertible into 10 shares of Arch Capital fully paid non-assessable common stock. Arch Capital has determined that, based on a review of the terms, features and rights of Arch Capital's non-voting common equivalent preferred shares compared to the rights of Arch Capital's common shareholders, the underlying 12,762,820 common shares that the convertible securities convert to were common share equivalents at the time of their issuance.

UGC, based in Greensboro, North Carolina, operates its U.S. business through its primary operating subsidiaries, United Guaranty Residential Insurance Company, which is licensed and operates in all 50 states, the District of Colombia and Puerto Rico, and UGMIC, which is licensed in 48 states and the District of Columbia.

The Company recognized goodwill of $188.8 million that is primarily attributed to UGC's assembled workforce, access to the mortgage insurance market and additional synergies to be realized in the future. Under U.S. tax principles, the UGC acquisition was structured as a deemed asset acquisition under Internal Revenue Code Section 338(h)(10). As an asset acquisition, the tax bases in the acquired assets were adjusted to fair market value. Any remaining purchase price was allocated to intangible assets and goodwill, which are amortizable over 15 years. The Company estimated that $126.9 million of goodwill along with each of the identified intangible assets was expected to be deductible for tax purposes at December 31, 2016. The Company includes the operations of UGC in its mortgage operations.

Supplemental Pro Forma Information. The following table presents unaudited pro forma consolidated information for the years ended December 31, 2016 and 2015 and assumes the UGC acquisition occurred on January 1, 2015. The pro forma financial information is presented for informational purposes only and does not necessarily reflect the results that would have occurred had the acquisition taken place on January 1, 2015, nor is it necessarily indicative of future results. Significant adjustments used to determine the pro forma results below include amortization of intangible assets and financing adjustments related to the Company's issuance of senior notes, revolving credit agreement borrowings and preferred shares, and the corresponding income tax effects. Non-recurring transaction costs have been included in the unaudited pro forma results in the 2015 period.

	Unaudited Pro Forma Year Ended December 31,	
	2016	2015
Total revenues	$ 5,311,729	$ 4,840,084
Net income available to Arch common shareholders	$ 913,882	$ 718,463

3. Significant Accounting Policies

(a) Basis of Presentation

The consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Arch Re Bermuda and its subsidiaries, including Arch Re U.S., Arch Capital Group (U.S.) Inc. ("Arch-U.S."), Arch Insurance, Arch Specialty, Arch E&S, Arch Indemnity, Arch Insurance Canada, Arch Re Europe, Arch Mortgage Insurance Company, United Guaranty Residential Insurance Company, Arch Mortgage Guaranty Company, Arch MI Europe, AICE, Arch Syndicate 2012, Gulf Re and Watford Re. All significant intercompany transactions and balances have been eliminated in consolidation. The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates and assumptions.

The preparation of financial statements in conformity with GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ materially from those estimates and assumptions. The Company's principal estimates include:

- The reserve for losses and loss adjustment expenses;
- Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses, including the provision for uncollectible amounts;
- Estimates of written and earned premiums;
- The valuation of the investment portfolio and assessment of other-than-temporary impairments ("OTTI");
- The valuation of purchased intangible assets;
- The assessment of goodwill and intangible assets for impairment; and
- the valuation of deferred tax assets.

(b) Premium Revenues and Related Expenses

Insurance. Insurance premiums written are generally recorded at the policy inception and are primarily earned on a pro rata basis over the terms of the policies for all products, usually 12 months. Premiums written include estimates in the Company's

programs, specialty lines, lenders products business and for participation in involuntary pools. Such premium estimates are derived from multiple sources which include the historical experience of the underlying business, similar business and available industry information. Unearned premium reserves represent the portion of premiums written that relates to the unexpired terms of in-force insurance policies.

Reinsurance. Reinsurance premiums written include amounts reported by brokers and ceding companies, supplemented by the Company's own estimates of premiums where reports have not been received. The determination of premium estimates requires a review of the Company's experience with the ceding companies, familiarity with each market, the timing of the reported information, an analysis and understanding of the characteristics of each line of business, and management's judgment of the impact of various factors, including premium or loss trends, on the volume of business written and ceded to the Company. On an ongoing basis, the Company's underwriters review the amounts reported by these third parties for reasonableness based on their experience and knowledge of the subject class of business, taking into account the Company's historical experience with the brokers or ceding companies. In addition, reinsurance contracts under which the Company assumes business generally contain specific provisions which allow the Company to perform audits of the ceding company to ensure compliance with the terms and conditions of the contract, including accurate and timely reporting of information. Based on a review of all available information, management establishes premium estimates where reports have not been received. Premium estimates are updated when new information is received and differences between such estimates and actual amounts are recorded in the period in which estimates are changed or the actual amounts are determined.

Reinsurance premiums written are recorded based on the type of contracts the Company writes. Premiums on the Company's excess of loss and pro rata reinsurance contracts are estimated when the business is underwritten. For excess of loss contracts, premiums are recorded as written based on the terms of the contract. Estimates of premiums written under pro rata contracts are recorded in the period in which the underlying risks are expected to incept and are based on information provided by the brokers and the ceding companies. For multi-year reinsurance treaties which are payable in annual installments, generally, only the initial annual installment is included as premiums written at policy inception due to the ability of the reinsured to commute or cancel coverage during the term of the policy. The remaining annual installments are included as premiums written at each successive anniversary date within the multi-year term.

Reinstatement premiums for the Company's insurance and reinsurance operations are recognized at the time a loss event occurs, where coverage limits for the remaining life of the contract are reinstated under pre-defined contract terms. Reinstatement premiums, if obligatory, are fully earned when recognized. The accrual of reinstatement premiums is based on an estimate of losses and loss adjustment expenses, which reflects management's judgment.

Premium estimates are reviewed by management at least quarterly. Such review includes a comparison of actual reported premiums to expected ultimate premiums along with a review of the aging and collection of premium estimates. Based on management's review, the appropriateness of the premium estimates is evaluated, and any adjustment to these estimates is recorded in the period in which it becomes known. Adjustments to premium estimates could be material and such adjustments could directly and significantly impact earnings favorably or unfavorably in the period they are determined because the estimated premium may be fully or substantially earned. A significant portion of amounts included as premiums receivable, which represent estimated premiums written, net of commissions, are not currently due based on the terms of the underlying contracts.

Reinsurance premiums written, irrespective of the class of business, are generally earned on a pro rata basis over the terms of the underlying policies or reinsurance contracts. Contracts and policies written on a "losses occurring" basis cover claims that may occur during the term of the contract or policy, which is typically 12 months. Accordingly, the premium is earned evenly over the term. Contracts which are written on a "risks attaching" basis cover claims which attach to the underlying insurance policies written during the terms of such contracts. Premiums earned on such contracts usually extend beyond the original term of the reinsurance contract, typically resulting in recognition of premiums earned over a 24-month period. Certain of the Company's reinsurance contracts include provisions that adjust premiums or acquisition expenses based upon the experience under the contracts. Premiums written and earned, as well as related acquisition expenses, are recorded based upon the projected experience under such contracts.

The Company also writes certain reinsurance business that is intended to provide insurers with risk management solutions that complement traditional reinsurance. Under these contracts, the Company assumes a measured amount of insurance risk in exchange for an anticipated margin, which is typically lower than on traditional reinsurance contracts. The terms and conditions of these contracts may include additional or return premiums based on loss experience, loss corridors, sublimits and caps. Examples of such business include aggregate stop-loss coverages, financial quota share coverages and multi-year retrospectively rated excess of loss coverages. If these contracts are deemed to transfer risk, they are accounted for as reinsurance. Otherwise, such contracts are accounted for under the deposit method.

Mortgage. Mortgage guaranty insurance policies are contracts that are generally non-cancelable by the insurer, are renewable at a fixed price, and provide for payment of premiums on a monthly, annual or single basis. Upon renewal, the Company is not able to re-underwrite or re-price its policies. Consistent with industry accounting practices, premiums written on a monthly basis are earned as coverage is provided. Premiums written on an annual basis are amortized on a monthly pro rata basis over the year of coverage. Primary mortgage insurance premiums written on policies covering more than one year are referred to as single premiums. A portion of the revenue from single premiums is recognized in premiums earned in the current period, and the remaining portion is deferred as unearned premiums and earned over the estimated expiration of risk of the policy. If single premium policies related to insured loans are canceled due to repayment by the borrower and the policy is a non-refundable product, the remaining unearned premium related to each canceled policy is recognized as earned premium upon notification of the cancellation.

Unearned premiums represent the portion of premiums written that is applicable to the estimated unexpired risk of insured loans. A portion of premium payments may be refundable if the insured cancels coverage, which generally occurs when the loan is repaid, the loan amortizes to a sufficiently low amount to trigger a lender permitted or legally required cancellation, or the value of the property has increased sufficiently in accordance with the terms of the contract. Premium refunds reduce premiums earned in the consolidated statements of income. Generally, only unearned premiums are refundable. However, when the Company pays a claim on a delinquent loan, all servicer paid premiums received on the delinquent loan covering any period after the default date will be refunded, in accordance with the terms of the contract.

Acquisition Costs. Acquisition costs that are directly related and incremental to the successful acquisition or renewal of business are deferred and amortized based on the type of contract. The Company's insurance and reinsurance operations capitalize incremental direct external costs that result from acquiring a contract but do not capitalize salaries, benefits and other internal underwriting costs. For the Company's mortgage insurance operations, which include a substantial direct sales force, both external and certain internal direct costs are deferred and amortized. For property and casualty insurance and reinsurance contracts, deferred acquisition costs are amortized over the period in which the related premiums are earned. Consistent with mortgage insurance industry accounting practice, amortization of acquisition costs related to the mortgage insurance contracts for each underwriting year's book of business is recorded in proportion to estimated gross profits. Estimated gross profits are comprised of earned premiums and losses and loss adjustment expenses. For each underwriting year, the Company estimates the rate of amortization to reflect actual experience and any changes to persistency or loss development.

Deferred acquisition costs are carried at their estimated realizable value and take into account anticipated losses and loss adjustment expenses, based on historical and current experience, and anticipated investment income.

A premium deficiency occurs if the sum of anticipated losses and loss adjustment expenses, unamortized acquisition costs and maintenance costs exceed unearned premiums (including expected future premiums) and anticipated investment income. A premium deficiency reserve ("PDR") is recorded by charging any unamortized acquisition costs to expense to the extent required in order to eliminate the deficiency. If the premium deficiency exceeds unamortized acquisition costs then a liability is accrued for the excess deficiency.

To assess the need for a PDR on mortgage exposures, the Company develops loss projections based on modeled loan defaults related to its current policies in force. This projection is based on recent trends in default experience, severity and rates of defaulted loans moving to claim, as well as recent trends in the rate at which loans are prepaid. Evaluating the expected profitability of the Company's existing mortgage insurance business and the need for a PDR for its mortgage business involves significant reliance upon assumptions and estimates with regard to the likelihood, magnitude and timing of potential losses and premium revenues.

No premium deficiency charges were recorded by the Company during 2017 and 2016.

(c) Deposit Accounting

Certain assumed reinsurance contracts that are deemed not to transfer insurance risk, are accounted for using the deposit method of accounting. However, it is possible that the Company could incur financial losses on such contracts. Management exercises significant judgment in the assumptions used in determining whether assumed contracts should be accounted for as reinsurance contracts or deposit contracts. For those contracts that contain only significant underwriting risk, the estimated profit margin is deferred and amortized over the contract period and such amount is included in the Company's underwriting results. When the estimated profit margin is explicit, the margin is reflected as other underwriting income and any adverse financial results on such contracts are reflected as incurred losses. When the estimated profit margin is implicit, the margin is reflected as an offset to paid losses and any adverse financial results on such contracts are reflected as incurred losses. Additional judgments are required when applying the accounting guidance with respect to the revenue recognition criteria for contracts deemed to transfer only significant underwriting risk. For those contracts that contain only significant timing risk, an accretion rate is established at inception of the contract based on actuarial estimates whereby the deposit accounting liability is increased

to the estimated amount payable over the contract term. The accretion on the deposit is based on the expected rate of return required to fund the expected future payment obligations. Periodically the Company reassesses the estimated ultimate liability and the related expected rate of return. The accretion of the deposit accounting liability as well as changes to the estimated ultimate liability and the accretion rate would be reflected as part of interest expense in the Company's results of operations. Any negative accretion in a deposit accounting liability is shown in other underwriting income in the Company's results of operations.

(d) Retroactive Accounting

Retroactive reinsurance reimburses a ceding company for liabilities incurred as a result of past insurable events covered by the underlying policies reinsured. In certain instances, reinsurance contracts cover losses both on a prospective basis and on a retroactive basis and, accordingly, the Company bifurcates the prospective and retrospective elements of these reinsurance contracts and accounts for each element separately where practical. Underwriting income generated in connection with retroactive reinsurance contracts is deferred and amortized into income over the settlement period while losses are charged to income immediately. Subsequent changes in estimated amount or timing of cash flows under such retroactive reinsurance contracts are accounted for by adjusting the previously deferred amount to the balance that would have existed had the revised estimate been available at the inception of the reinsurance transaction, with a corresponding charge or credit to income.

(e) Reinsurance Ceded

In the normal course of business, the Company purchases reinsurance to increase capacity and to limit the impact of individual losses and events on its underwriting results by reinsuring certain levels of risk with other insurance enterprises or reinsurers. The Company uses pro rata, excess of loss and facultative reinsurance contracts. Reinsurance ceding commissions that represent a recovery of acquisition costs are recognized as a reduction to acquisition costs while the remaining portion is deferred. The accompanying consolidated statement of income reflects premiums and losses and loss adjustment expenses and acquisition costs, net of reinsurance ceded. See Note 7 for information on the Company's reinsurance usage. Reinsurance premiums ceded and unpaid losses and loss adjustment expenses recoverable are estimated in a manner consistent with that of the original policies issued and the terms of the reinsurance contracts. If the reinsurers are unable to satisfy their obligations under the agreements, the Company's insurance or reinsurance subsidiaries would be liable for such defaulted amounts.

(f) Cash

Cash includes cash equivalents, which are investments with original maturities of three months or less that are not managed by external or internal investment advisors.

(g) Investments

The Company currently classifies a substantial portion of its fixed maturity investments, equity securities and short-term investments as "available for sale" and, accordingly, they are carried at estimated fair value (also known as fair value) with the changes in fair value recorded as an unrealized gain or loss component of accumulated other comprehensive income in shareholders' equity. The fair value of fixed maturity securities and equity securities is generally determined from quotations received from nationally recognized pricing services, or when such prices are not available, by reference to broker or underwriter bid indications. Short-term investments comprise securities due to mature within one year of the date of issue. Short-term investments include certain cash equivalents which are part of investment portfolios under the management of external and internal investment managers.

The Company participates in a securities lending program as a mechanism for generating additional interest income on its fixed income portfolio. Under the security lending agreements, certain of its fixed income portfolio securities are loaned to third parties, primarily major brokerage firms, for short periods of time through a lending agent. Such securities have been reclassified as "Securities pledged under securities lending agreements, at fair value." The Company maintains legal control over the securities it lends, retains the earnings and cash flows associated with the loaned securities and receives a fee from the borrower for the temporary use of the securities. Collateral received is required at a rate of 102% or greater of the fair value of the loaned securities including accrued investment income and is monitored and maintained by the lending agent. Such collateral is reflected as "Collateral received under securities lending agreements, at fair value."

The Company's investment portfolio includes certain funds that, due to their ownership structure, are accounted for by the Company using the equity method. In applying the equity method, these investments are initially recorded at cost and are subsequently adjusted based on the Company's proportionate share of the net income or loss of the funds (which include changes in the fair value of the underlying securities in the funds). Such investments are generally recorded on a one to three month lag based on the availability of reports from the investment funds. Changes in the carrying value of such investments are recorded in net income as "Equity in net income (loss) of investment funds accounted for using the equity method." As

such, fluctuations in the carrying value of the investment funds accounted for using the equity method may increase the volatility of the Company's reported results of operations.

Other investments include funds and separately managed accounts with holdings in Asian and emerging markets, fixed maturities, term loans and other investment strategies. The fair value for certain of the Company's other investments are determined using net asset values ("NAVs") as advised by external fund managers. The NAV is based on the fund manager's valuation of the underlying holdings in accordance with the fund's governing documents. Certain of the funds are accounted for as available for sale equity securities, regardless of the nature of the investments held within the fund.

The Company elected to carry certain fixed maturity securities, equity securities and other investments at fair value under the fair value option afforded by accounting guidance regarding the fair value option for financial assets and liabilities. Changes in fair value of investments accounted for using the fair value option are included in "Net realized gains (losses)." The primary reasons for electing the fair value option were to address simplification and cost-benefit considerations.

The Company invests in limited partner interests and shares of limited liability companies. Such amounts are included in investments accounted for using the equity method, other investments available for sale and investments accounted for using the fair value option. These investments can often have characteristics of a variable interest entity ("VIE"). A VIE refers to entities that have characteristics such as (i) insufficient equity at risk to allow the entity to finance its activities without additional financial support or (ii) instances where the equity investors, as a group, do not have the characteristic of a controlling financial interest. If the Company is determined to be the primary beneficiary, it is required to consolidate the VIE. The primary beneficiary is defined as the variable interest holder that is determined to have the controlling financial interest as a result of having both (i) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (ii) the obligation to absorb losses or right to receive benefits from the VIE that could potentially be significant to the VIE. At inception of the VIE as well as on an ongoing basis, the Company determines whether it is the primary beneficiary based on an analysis of the Company's level of involvement in the VIE, the contractual terms, and the overall structure of the VIE. The Company's maximum exposure to loss with respect to these investments is limited to the investment carrying amounts reported in the Company's consolidated balance sheet and any unfunded commitment.

The Company performs quarterly reviews of its investments to determine whether declines in fair value below the cost basis are considered other-than-temporary in accordance with applicable accounting guidance regarding the recognition and presentation of other-than-temporary impairments ("OTTI"). The process of determining whether a security is other-than-temporarily impaired requires judgment and involves analyzing many factors. These factors include (i) an analysis of the liquidity, business prospects and overall financial condition of the issuer, (ii) the time period in which there was a significant decline in value, (iii) the significance of the decline and (iv) the analysis of specific credit events. The Company evaluates the unrealized losses of its equity securities by issuer and forecasts a reasonable period of time by which the fair value of the securities would increase and the Company would recover its cost. If the Company is unable to forecast a reasonable period of time in which to recover the cost of its equity securities, a net impairment loss in earnings equivalent to the entire unrealized loss is recognized.

When there are credit-related losses associated with debt securities for which the Company does not have an intent to sell and it is more likely than not that it will not be required to sell the security before recovery of its cost basis, the amount of the OTTI related to a credit loss is recognized in earnings and the amount of the OTTI related to other factors (*e.g.*, interest rates, market conditions, etc.) is recorded as a component of other comprehensive income (loss). The amount of the credit loss of an impaired debt security is the difference between the amortized cost and the greater of (i) the present value of expected future cash flows and (ii) the fair value of the security. In instances where no credit loss exists but it is more likely than not that the Company will have to sell the debt security prior to the anticipated recovery, the decline in fair value below amortized cost is recognized as an OTTI in earnings. In periods after the recognition of an OTTI on debt securities, the Company accounts for such securities as if they had been purchased on the measurement date of the OTTI at an amortized cost basis equal to the previous amortized cost basis less the OTTI recognized in earnings. For debt securities for which OTTI were recognized in earnings, the difference between the new amortized cost basis and the cash flows expected to be collected will be accreted or amortized into net investment income. See Note 8, "Investment Information—Other-Than-Temporary Impairments" for additional information.

Net investment income includes interest and dividend income together with amortization of market premiums and discounts and is net of investment management and custody fees. Anticipated prepayments and expected maturities are used in applying the interest method for certain investments such as mortgage and other asset-backed securities. When actual prepayments differ significantly from anticipated prepayments, the effective yield is recalculated to reflect actual payments to date and anticipated future payments. The net investment in such securities is adjusted to the amount that would have existed had the new effective yield been applied since the acquisition of the security. Such adjustments, if any, are included in net investment income when determined.

Investment gains or losses realized on the sale of investments, except for certain fund investments, are determined on a first-in, first-out basis and are reflected in net income. Investment gains or losses realized on the sale of certain fund investments are determined on an average cost basis. Unrealized appreciation or decline in the value of available for sale securities, which are carried at fair value, is excluded from net income and recorded as a separate component of accumulated other comprehensive income, net of applicable deferred income tax.

(h) Derivative Instruments

The Company recognizes all derivative instruments, including embedded derivative instruments, at fair value in its consolidated balance sheets. The Company employs the use of derivative instruments within its operations to mitigate risks arising from assets and liabilities held in foreign currencies as well as part of its overall investment strategy. For such instruments, changes in assets and liabilities measured at fair value are recorded as "Net realized gains" in the consolidated statements of income. In addition, the Company's derivative instruments include amounts related to underwriting activities where an insurance or reinsurance contract meets the accounting definition of a derivative instrument. For such contracts, changes in fair value are reflected in "Other underwriting income" in the consolidated statements of income as the underlying contract originates from the Company's underwriting operations. For 2017 and 2016, the Company did not designate any derivative instruments as hedges under the relevant accounting guidance. See Note 10 for information on the Company's derivative instruments.

(i) Reserves for Losses and Loss Adjustment Expenses

Insurance and Reinsurance. The reserve for losses and loss adjustment expenses consists of estimates of unpaid reported losses and loss adjustment expenses and estimates for losses incurred but not reported. The reserve for unpaid reported losses and loss adjustment expenses, established by management based on reports from ceding companies and claims from insureds, excludes estimates of amounts related to losses under high deductible policies, and represents the estimated ultimate cost of events or conditions that have been reported to or specifically identified by the Company. Such reserves are supplemented by management's estimates of reserves for losses incurred for which reports or claims have not been received. The Company's reserves are based on a combination of reserving methods, incorporating both Company and industry loss development patterns. The Company selects the initial expected loss and loss adjustment expense ratios based on information derived by its underwriters and actuaries during the initial pricing of the business, supplemented by industry data where appropriate. Such ratios consider, among other things, rate changes and changes in terms and conditions that have been observed in the market. These estimates are reviewed regularly and, as experience develops and new information becomes known, the reserves are adjusted as necessary. Such adjustments, if any, are reflected in income in the period in which they are determined. As actual loss information has been reported, the Company has developed its own loss experience and its reserving methods include other actuarial techniques. Over time, such techniques have been given further weight in its reserving process based on the continuing maturation of the Company's reserves. Inherent in the estimates of ultimate losses and loss adjustment expenses are expected trends in claims severity and frequency and other factors which may vary significantly as claims are settled. Accordingly, ultimate losses and loss adjustment expenses may differ materially from the amounts recorded in the accompanying consolidated financial statements. Losses and loss adjustment expenses are recorded on an undiscounted basis, except for excess workers' compensation and employers' liability business written by the Company's insurance operations.

Mortgage. The reserves for mortgage guaranty insurance losses and loss adjustment expenses are the estimated claim settlement costs on notices of default that have been received by the Company, as well as loan defaults that have been incurred but have not been reported by the lenders. Consistent with primary mortgage insurance industry accounting practice, the Company does not establish loss reserves for future claims on insured loans that are not currently in default (defined as two consecutive missed payments). The Company establishes loss reserves on a case-by-case basis when insured loans are identified as currently in default using estimated claim rates and average claim sizes for each report year, net of any salvage recoverable. The Company also reserves for defaults that have occurred but have not yet been reported to the Company prior to the close of an accounting period. To determine this reserve, the Company estimates the number of defaults not yet reported using historical information regarding late reported delinquencies and applies estimated claim rates and claim sizes for the estimated defaults not yet reported.

The establishment of reserves across the Company's operations is an inherently uncertain process, are necessarily based on estimates, and the ultimate net cost may vary from such estimates. The methods for making such estimates and for establishing the resulting liability are reviewed and updated using the most current information available. Any resulting adjustments, which may be material, are reflected in current operations.

(j) Contractholder Receivables and Payables and Collateral Held for Insured Obligations

Certain insurance policies written by the Company's insurance operations feature large deductibles, primarily in its construction and national accounts lines of business. Under such contracts, the Company is obligated to pay the claimant for the full amount of the claim. The Company is subsequently reimbursed by the policyholder for the deductible amount. These amounts are

included on a gross basis in the consolidated balance sheet in contractholder payables and contractholder receivables, respectively. In the event that the Company is unable to collect from the policyholder, the Company would be liable for such defaulted amounts. Collateral, primarily in the form of letters of credit, cash and trusts, is obtained from the policyholder to mitigate the Company's credit risk. In the instances where the company receives collateral in the form of cash, the company reflects it in "Collateral held for insured obligations."

(k) Foreign Exchange

Assets and liabilities of foreign operations whose functional currency is not the U.S. Dollar are translated at the prevailing exchange rates at each balance sheet date. Revenues and expenses of such foreign operations are translated at average exchange rates during the year. The net effect of the translation adjustments for foreign operations is included in accumulated other comprehensive income, net of applicable deferred income tax. Monetary assets and liabilities, such as premiums receivable and the reserve for losses and loss adjustment expenses, denominated in foreign currencies are revalued at the exchange rate in effect at the balance sheet date with the resulting foreign exchange gains and losses included in net income. Accounts that are classified as non-monetary, such as deferred acquisition costs and the unearned premium reserves, are not revalued. In the case of foreign currency denominated fixed maturity securities which are classified as "available for sale," the change in exchange rates between the local currency in which the investments are denominated and the Company's functional currency at each balance sheet date is included in unrealized appreciation or decline in value of securities, a component of accumulated other comprehensive income, net of applicable deferred income tax.

(l) Income Taxes

Deferred income taxes reflect the expected future tax consequences of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and amounts used for income tax purposes. A valuation allowance is recorded if it is more likely than not that some or all of a deferred tax asset may not be realized. The Company considers future taxable income and feasible tax planning strategies in assessing the need for a valuation allowance. In the event the Company determines that it will not be able to realize all or part of its deferred income tax assets in the future, an adjustment to the deferred income tax assets would be charged to income in the period in which such determination is made. In addition, if the Company subsequently assesses that the valuation allowance is no longer needed, a benefit would be recorded to income in the period in which such determination is made. See Note 12 for more information.

The Company recognizes a tax benefit where it concludes that it is more likely than not that the tax benefit will be sustained on audit by the taxing authority based solely on the technical merits of the associated tax position. If the recognition threshold is met, the Company recognizes a tax benefit measured at the largest amount of the tax benefit that, in the Company's judgment, is greater than 50% likely to be realized. The Company records interest and penalties related to unrecognized tax benefits in the provision for income taxes.

(m) Share-Based Payment Arrangements

The Company applies a fair value based measurement method in accounting for its share-based payment arrangements with eligible employees and directors. Compensation expense is estimated based on the fair value of the award at the grant date and is recognized in net income over the requisite service period with a corresponding increase in shareholders' equity. No value is attributed to awards that employees forfeit because they fail to satisfy vesting conditions. The Company's share-based payment arrangements generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date. The share-based compensation expense associated with such awards that have graded vesting features and vest based on service conditions only is calculated on a straight-line basis over the requisite service period for the entire award. For awards granted to retirement-eligible employees where no service is required for the employee to retain the award, the grant date fair value is immediately recognized as compensation expense at the grant date because the employee is able to retain the award without continuing to provide service. For employees near retirement eligibility, attribution of compensation cost is over the period from the grant date to the retirement eligibility date. In November 2012, the Company issued off-cycle share-based awards, which cliff vested on the fifth anniversary of the grant date. The expense for such grant was amortized on a straight-line basis over the five-year requisite service period. These charges had no impact on the Company's cash flows or total shareholders' equity. See Note 3(p) and Note 18 for information relating to the Company's share-based payment awards.

(n) Guaranty Fund and Other Related Assessments

Liabilities for guaranty fund and other related assessments in the Company's insurance and reinsurance operations are accrued when the Company receives notice that an amount is payable, or earlier if a reasonable estimate of the assessment can be made.

(o) Goodwill and Intangible Assets

Goodwill represents the excess of the purchase price of an acquisition over the fair value of the net assets acquired and is assigned to the applicable reporting unit at acquisition. Goodwill is evaluated for impairment on an annual basis. Impairment tests may be performed more frequently if the facts and circumstances indicate a possible impairment. In performing impairment tests, the Company may first assess qualitative factors to determine whether it is more likely than not (that is, more than a 50% probability) that the fair value of a reporting unit exceeds its carrying amount as a basis for determining whether it is necessary to perform the two-step goodwill impairment test described in the accounting guidance.

Indefinite-lived intangible assets, such as insurance licenses are evaluated for impairment similar to goodwill. Finite-lived intangible assets and liabilities include the value of acquired insurance and reinsurance contracts, which are estimated based on the present value of future expected cash flows and amortized in proportion to the estimated profits expected to be realized. Other finite-lived intangible assets or liabilities, including favorable or unfavorable contracts, are amortized over their useful lives. Finite-lived intangible assets and liabilities are periodically reviewed for indicators of impairment. An impairment is recognized when the carrying amount is not recoverable from its undiscounted cash flows and is measured as the difference between the carrying amount and fair value.

If goodwill or intangible assets are impaired, such assets are written down to their fair values with the related expense recorded in the Company's results of operations. See Note 16 for information relating to the Company's goodwill and intangible assets.

(p) Recent Accounting Pronouncements

Recently Issued Accounting Standards Adopted

The Company adopted Financial Accounting Standards Board ("FASB") Accounting Standard Update ("ASU") 2016-09, "Compensation - Stock Compensation (Topic 718) - *Improvements to Employee Share-Based Payment Accounting,"* effective January 1, 2017. This ASU was issued in the 2016 first quarter to improve and simplify the accounting for employee share-based payment transactions. This ASU provides simplifications with respect to income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows for these types of transactions. With respect to the forfeiture accounting policy election, the Company has elected to account for forfeitures as they occur, which did not result in a material cumulative effect adjustment. With respect to the change in presentation in the statement of cash flows related to excess tax benefits, the Company has applied the guidance prospectively and prior periods have not been adjusted.

The Company adopted ASU 2017-04, "Intangibles - Goodwill and Other (Topic 350): Simplifying the Test for Goodwill Impairment," prospectively effective October 1, 2017. The ASU provides updated guidance that eliminates the requirement to calculate the implied fair value of goodwill (*i.e.*, step 2 of the current goodwill impairment test) to measure a goodwill impairment charge. Instead, entities will record an impairment charge by comparing a reporting unit's fair value with its carrying amount and recognizing an impairment charge for the excess of the carrying amount over estimated fair value (*i.e.*, step 1 of the current goodwill impairment test). The adoption of this ASU did not have a material effect on the Company's results of operations, financial position or liquidity.

Recently Issued Accounting Standards Not Yet Adopted

ASU 2014-09, "Revenue from Contracts with Customers (Topic 606)," was issued in the 2014 second quarter and updated through various ASUs in 2016. This ASU (and as updated in 2016) creates a new comprehensive revenue recognition standard that will serve as a single source of revenue guidance for all companies in all industries. The guidance applies to all companies that either enter into contracts with customers to transfer goods or services or enter into contracts for the transfer of non-financial assets, unless those contracts are within the scope of other standards, such as insurance contracts or financial instruments. The ASU also requires enhanced disclosures about revenue. The ASU is effective in the 2018 first quarter and the Company intends on adopting the ASU using the modified retrospective method, whereby the cumulative effect of adoption will be recognized as an adjustment to retained earnings at the date of initial application. The Company does not expect that the cumulative effect adjustment as a result of the adoption of this ASU will be material, mostly because the accounting for insurance contracts is outside of the scope of ASU 2014-09.

ASU 2016-01, "Financial Instruments - Overall (Subtopic 825-10) - *Recognition and Measurement of Financial Assets and Financial Liabilities,*" was issued in the 2016 first quarter to enhance the reporting model for financial instruments and to provide improved financial information to readers of the financial statements. Among other provisions focused on improving the recognition and measurement of financial instruments, the ASU significantly changes the income statement impact of equity instruments and the recognition of changes in fair value of financial liabilities attributable to an entity's own credit risk when the fair value option is elected. The ASU requires equity instruments that do not result in consolidation and are not accounted for under the equity method to be measured at fair value with any changes in fair value recognized in net income

rather than other comprehensive income. The ASU is effective in the 2018 first quarter. Upon adoption of this ASU, the Company expects to record a cumulative effect adjustment of $149.8 million in retained earnings and an offsetting decrease in accumulated other comprehensive income. The adoption of this ASU is not expected to have a material impact on the Company's financial position, cash flows, or total comprehensive income, but will increase volatility in the Company's results of operations.

ASU 2016-16, “Income Taxes - Intra-Entity Transfers of Assets Other than Inventory (Topic 740),” was issued in the 2016 fourth quarter. This ASU requires entities to recognize current and deferred income tax resulting from an intra-entity asset transfer when the transfer occurs. Previously, recognition of income tax consequences under GAAP was not allowed until the asset had been sold to a third party. The ASU is effective in the 2018 first quarter. The Company does not expect that the cumulative effect adjustment as a result of the adoption of this ASU will be material.

ASU 2016-02, “Leases,” was issued in the 2016 first quarter pertaining to the accounting for leases by a lessee. The ASU requires that the lessee recognize an asset and a liability for leases with a lease term greater than 12 months regardless of whether the lease is classified as operating or financing. Under current accounting, operating leases are not reflected in the balance sheet. The ASU is effective for the 2019 first quarter, though early application is permitted, and should be applied on a modified retrospective basis. The Company is currently assessing the impact the implementation of this ASU will have on its consolidated financial statements. The Company's lease obligations under various non-cancelable operating lease agreements amounted to $169.0 million at December 31, 2017.

ASU 2016-13, “Financial Instruments - Credit Losses (Topic 326),” was issued in the 2016 second quarter. The ASU changes how entities will measure credit losses for most financial assets and certain other instruments that aren’t measured at fair value through net income. The ASU requires an entity to estimate its lifetime “expected credit loss” and record an allowance that, when deducted from the amortized cost basis of the financial asset, presents the net amount expected to be collected on the financial asset. The ASU is effective for the 2020 first quarter, though early application is permitted in the 2019 first quarter, and should be applied on a modified retrospective basis for the majority of the provisions. The Company is currently assessing the impact the implementation of this ASU will have on its consolidated financial statements.

ASU 2016-15, “Statement of Cash Flows - Classification of Certain Cash Receipts and Cash Payments (Topic 230),” was issued in the 2016 third quarter. The ASU addresses several clarifications on the presentation and classification of certain cash receipts and cash payments in the statement of cash flows. Among several other cash flow issues, the ASU specifically addresses the classification of debt prepayment or debt issuance costs, contingent consideration payments made after a business combination and distributions received from equity method investees. The ASU also provides a broader principle on identifying the type of activity of the cash flow item by focusing on the cash flow item’s nature and the predominant source or use of that item. The ASU is effective in the 2018 first quarter and should be applied retrospectively. Early adoption is permitted. The Company is assessing the impact the implementation of this ASU will have on the classification and presentation of its statements of cash flows.

ASU 2016-18, "Statement of Cash Flows (Topic 230) - *Restricted Cash*" requires that restricted cash and restricted cash equivalents be included with cash and cash equivalents in the reconciliation of beginning and ending cash on the statements of cash flows. As a result, transfers between cash and cash equivalents and restricted cash and restricted cash equivalents will no longer be presented on the statement of cash flows. The ASU is effective, with retrospective adoption, for interim and annual periods beginning after December 15, 2017, with early adoption permitted. The Company is currently assessing the impact the implementation of this ASU will have on its consolidated financial statements. The adoption of this ASU is not expected to have a material effect on the Company’s results of operations, financial position, comprehensive income or net cash provided from operating activities.

ASU 2018-02 “Income Statement-Reporting Comprehensive Income (Topic 220) - *Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income,”* was issued in February 2018 to allow the reclassification of the stranded tax effects in accumulated other comprehensive income (“AOCI”) resulting from the Tax Cuts and Jobs Act of 2017 (“Tax Cuts Act”). Current guidance requires the effect of a change in tax laws or rates on deferred tax balances to be reported in income from continuing operations in the accounting period that includes the period of enactment, even if the related income tax effects were originally charged or credited directly to AOCI. The amount of the reclassification would include the effect of the change in the U.S. federal corporate income tax rate on the gross deferred tax amounts and related valuation allowances, if any, at the date of the enactment of the Tax Cuts Act related to items in AOCI. The updated guidance is effective for reporting periods beginning after December 15, 2018 and is to be applied retrospectively to each period in which the effect of the Tax Cuts Act related to items remaining in AOCI are recognized or at the beginning of the period of adoption. Early adoption is permitted. The adoption of this ASU is not expected to have a material effect on the Company’s results of operations, financial position or liquidity.

4. Variable Interest Entity and Noncontrolling Interests

Variable interest entity

A VIE refers to an entity that has characteristics such as (i) insufficient equity at risk to allow the entity to finance its activities without additional financial support or (ii) instances where the equity investors, as a group, do not have characteristics of a controlling financial interest. The primary beneficiary of a VIE is defined as the variable interest holder that is determined to have the controlling financial interest as a result of having both (i) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (ii) the obligation to absorb losses or right to receive benefits from the VIE that could potentially be significant to the VIE. If a company is determined to be the primary beneficiary, it is required to consolidate the VIE in its financial statements.

Watford Holdings Ltd.

In March 2014, Watford Re raised approximately $1.1 billion of capital consisting of $907.3 million in common equity ($895.6 million net of issuance costs) and $226.6 million in preference equity ($219.2 million net of issuance costs and discount). The Company invested $100.0 million and acquired approximately 11% of Watford Holdings Ltd.'s common equity and a warrant to purchase additional common equity. Subsidiaries of the Company act as Watford Re's reinsurance and insurance underwriting managers. HPS Investment Partners, LLC (formerly Highbridge Principal Strategies, LLC) ("HPS") manages Watford Re's non-investment grade credit portfolios, and the Company manages Watford Re's investment grade portfolios, each under separate long term services agreements. In connection with the capital raise at Watford Re, warrants to purchase a total of 1.7 million common shares were issued to the Company and HPS. The warrants are only exercisable if Watford Re has consummated an initial public offering of its common shares or otherwise effected a listing of its common shares on a U.S. national securities exchange and certain targeted returns are achieved for existing common shareholders. The warrants expire on March 25, 2020. John Rathgeber, previously Vice Chairman of Arch Worldwide Reinsurance Group, is CEO of Watford Re. In addition, Marc Grandisson and Nicolas Papadopoulo, both officers of the Company, serve on the board of directors of Watford Re.

The Company concluded that Watford Re is a VIE due to both the reinsurance underwriting management services agreements with the Company and the investment management agreements with HPS and the Company. These agreements provide for services for an extended period of time with limited termination rights by Watford Re. In addition, these agreements allow for both the Company and HPS to participate in the favorable results of Watford Re in the form of performance fees. To determine if the Company is the primary beneficiary of Watford Re, the Company concluded that the most significant activity of Watford Re pertains to the insurance activities arising from the reinsurance underwriting management services agreement. As such, the Company concluded that it is the primary beneficiary of Watford Re and includes the results of Watford Re in its consolidated financial statements.

Because Watford Re is an independent company, the assets of Watford Re can be used only to settle obligations of Watford Re and Watford Re is solely responsible for its own liabilities and commitments. The Company's financial exposure to Watford Re is limited to its investment in Watford Re's common shares and counterparty credit risk (mitigated by collateral) arising from the reinsurance transactions.

The following table provides the carrying amount and balance sheet caption in which the assets and liabilities of Watford Re are reported:

	December 31,	
	2017	2016
Assets		
Investments accounted for using the fair value option	$ 2,426,066	$ 1,857,623
Cash	54,503	74,893
Accrued investment income	18,261	17,017
Premiums receivable	177,492	189,911
Reinsurance recoverable on unpaid and paid losses and LAE	42,777	24,420
Ceded unearned premiums	24,762	12,145
Deferred acquisition costs, net	85,961	86,379
Receivable for securities sold	36,374	1,326
Goodwill and intangible assets	7,650	7,650
Other assets	140,808	111,386
Total assets of consolidated VIE	$ 3,014,654	$ 2,382,750
Liabilities		
Reserves for losses and loss adjustment expenses	$ 798,262	$ 510,809
Unearned premiums	330,644	293,480
Reinsurance balances payable	18,424	12,289
Revolving credit agreement borrowings	441,132	256,650
Payable for securities purchased	42,501	42,922
Other liabilities	215,186	88,976
Total liabilities of consolidated VIE	$ 1,846,149	$ 1,205,126
Redeemable noncontrolling interests	$ 220,622	$ 220,253

The following table summarizes Watford Re's cash flow from operating, investing and financing activities.

	Year Ended December 31,	
	2017	2016
Total cash provided by (used for):		
Operating activities	$ 286,558	$ 288,006
Investing activities	(471,640)	(118,829)
Financing activities	162,152	(195,647)

Non-redeemable noncontrolling interests

The Company accounts for the portion of Watford Re's common equity attributable to third party investors in the shareholders' equity section of its consolidated balance sheets. The noncontrolling ownership in Watford Re's common shares was approximately 89% at December 31, 2017. The portion of Watford Re's income or loss attributable to third party investors is recorded in the consolidated statements of income in 'net (income) loss attributable to noncontrolling interests.'

The following table sets forth activity in the non-redeemable noncontrolling interests:

	December 31,	
	2017	2016
Balance, beginning of year	$ 851,854	$ 738,831
Amounts attributable to noncontrolling interests	(7,913)	113,091
Foreign currency translation adjustments	(530)	(68)
Balance, end of year	$ 843,411	$ 851,854

Redeemable noncontrolling interests

The Company accounts for redeemable noncontrolling interests in the mezzanine section of its consolidated balance sheet. Such redeemable noncontrolling interests relate to the 9,065,200 cumulative redeemable preference shares ("Watford Preference Shares") issued in late March 2014 with a par value of $0.01 per share and a liquidation preference of $25.00 per

share. The Watford Preference Shares were issued at a discounted amount of $24.50 per share. Holders of the Watford Preference Shares will be entitled to receive, if declared by Watford Re's board, quarterly cash dividends on the last day of March, June, September, and December. Dividends will accrue from the closing date to June 30, 2019 at a fixed rate of 8.5% per annum. From June 30, 2019 and subsequent, dividends will accrue based on a floating rate equal to the 3 month U.S. dollar LIBOR (with a 1% floor) plus a margin based on the difference between the fixed rate and the 5 year mid swap rate to the floating rate as set out on the Bloomberg Screen IRSB 18. The Watford Preference Shares may be redeemed by Watford Re on or after June 30, 2019 or at the option of the preferred shareholders at any time on or after June 30, 2034. Because the redemption features are not solely within the control of Watford Re, the Company accounts for the redeemable noncontrolling interests in the Watford Preference Shares in the mezzanine section of its consolidated balance sheets. Preferred dividends on the Watford Preference Shares, including the accretion of the discount and issuance costs, was $19.6 million for 2017 and 2016. Preferred dividends, including the accretion of the discount and issuance costs, are included in 'amounts attributable to noncontrolling interests' in the Company's consolidated statements of income.

The following table sets forth activity in the redeemable non-controlling interests:

	December 31,	
	2017	2016
Balance, beginning of year	$ 205,553	$ 205,182
Accretion of preference share issuance costs	369	371
Balance, end of year	$ 205,922	$ 205,553

The portion of Watford Re's income or loss attributable to third party investors is recorded in the consolidated statements of income in 'net (income) loss attributable to noncontrolling interests' as summarized in the table below:

	December 31,	
	2017	2016
Amounts attributable to non-redeemable noncontrolling interests	$ 7,913	$ (113,091)
Dividends attributable to redeemable noncontrolling interests	(18,344)	(18,349)
Net (income) loss attributable to noncontrolling interests	$ (10,431)	$ (131,440)

Bellemeade Re

UGC entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re I Ltd. in July 2015, with Bellemeade Re II Ltd. in May 2016 and the Company entered into an aggregate excess of loss reinsurance agreement with Bellemeade 2017-1 Ltd. in October 2017 (the "Bellemeade Agreements"), special purpose reinsurance companies domiciled in Bermuda. Bellemeade Re I Ltd. and Bellemeade Re II Ltd. each provided for up to approximately $300 million of aggregate excess of loss reinsurance coverage at inception for new delinquencies on portfolios of in-force policies issued while Bellemeade 2017-1 Ltd. provided for up to approximately $368.1 million of aggregate excess of loss reinsurance coverage at inception for new delinquencies on portfolios of in-force policies issued between January 1, 2017 and June 30, 2017. See Note 8 for further details. At the time the Bellemeade Agreements were entered into, the applicability of the accounting guidance was that addresses VIEs was evaluated. As a result of the evaluation of the Bellemeade Agreements, we concluded that Bellemeade Re I Ltd., Bellemeade Re II Ltd. and Bellemeade 2017-1 Ltd. are VIEs. However, given that the ceding insurers do not have the unilateral power to direct those activities that are significant to the economic performance of Bellemeade Re I Ltd., Bellemeade Re II Ltd. and Bellemeade 2017-1 Ltd., the Company does not consolidate such companies in its consolidated financial statements.

The following table presents total assets of Bellemeade Re I Ltd., Bellemeade Re II Ltd. and Bellemeade 2017-1 Ltd. as well as the Company's maximum exposure to loss associated with these VIEs:

		Maximum Exposure to Loss		
	Total VIE Assets	On-Balance Sheet	Off-Balance Sheet	Total
Bellemeade Re I Ltd.	$ 92,390	$ 471	$ 832	$ 1,303
Bellemeade Re II Ltd.	135,201	20	527	547
Bellemeade 2017-1 Ltd.	347,139	391	1,867	2,258
Total	$ 574,730	$ 882	$ 3,226	$ 4,108

5. Reserve for Losses and Loss Adjustment Expenses

The following table represents an analysis of losses and loss adjustment expenses and a reconciliation of the beginning and ending reserve for losses and loss adjustment expenses:

	Year Ended December 31,	
	2017	2016
Reserve for losses and loss adjustment expenses at beginning of year	$ 10,200,960	$ 9,196,422
Unpaid losses and loss adjustment expenses recoverable	2,083,575	1,900,009
Net reserve for losses and loss adjustment expenses at beginning of year	8,117,385	7,296,413
Net incurred losses and loss adjustment expenses relating to losses occurring in:		
Current year	3,205,428	2,455,563
Prior years	(237,982)	(269,964)
Total net incurred losses and loss adjustment expenses	2,967,446	2,185,599
Net losses and loss adjustment expense reserves of acquired business (1)	—	551,096
Foreign exchange (gains) losses	186,963	(102,367)
Net paid losses and loss adjustment expenses relating to losses occurring in:		
Current year	(505,424)	(445,700)
Prior years	(1,847,488)	(1,367,656)
Total net paid losses and loss adjustment expenses	(2,352,912)	(1,813,356)
Net reserve for losses and loss adjustment expenses at end of year	8,918,882	8,117,385
Unpaid losses and loss adjustment expenses recoverable	2,464,910	2,083,575
Reserve for losses and loss adjustment expenses at end of year	$ 11,383,792	$ 10,200,960

(1) The 2016 amount related to the acquisition of UGC.

2017 Prior Year Reserve Development

During 2017, the Company recorded estimated net favorable development on prior year loss reserves of $238.0 million, which consisted of $165.4 million from the reinsurance operations, $8.6 million from the insurance operations and $95.0 million from the mortgage operations, less adverse development of $31.0 million from the 'other' operations.

The reinsurance operation's net favorable development of $165.4 million, or 14.5 points of net earned premium, consisted of $101.0 million from short-tailed lines and $64.4 million of net favorable development from medium-tailed and long-tailed lines. Favorable development in short-tailed lines included $82.6 million from property catastrophe and property other than property catastrophe reserves, primarily from the 2009 to 2016 underwriting years (*i.e.*, losses attributable to contracts having an inception or renewal date within the given twelve-month period). The net reduction of loss estimates for the reinsurance operation's short-tailed lines primarily resulted from varying levels of reported and paid claims activity than previously anticipated which led to decreases in certain loss ratio selections during 2017. Net favorable development of $64.4 million in medium-tailed and long-tailed lines included reductions in casualty reserves of $43.7 million, primarily from the 2002 to 2013 underwriting years, and in marine and aviation reserves of $19.6 million, spread across most underwriting years.

The insurance operation's net favorable development of $8.6 million, or 4.0 points of net earned premium, consisted of $14.9 million of net favorable development from short-tailed lines and $11.8 million of net favorable development from long-tailed lines, partially offset by $18.1 million of net adverse development from medium-tailed lines. Favorable development in short-tailed lines predominantly consisted of $22.8 million of net favorable development in property lines, primarily from the 2011 to 2016 accident years (*i.e.*, the year in which a loss occurred), partially offset by $11.8 million of adverse development on travel, accident and health business from the 2014 to 2016 accident years. Net favorable development in long-tailed lines of $11.8 million included $10.0 million of net favorable development on executive assurance business, primarily from the 2013 accident year, and $8.3 million of net favorable development in casualty business, primarily from the 2007 to 2013 accident years. Net adverse development in medium-tailed lines of $18.1 million included $56.3 million of net adverse development in program business, primarily from the 2013 to 2015 accident years and primarily driven by a few inactive programs that

were non-renewed in 2015 and early in 2016, partially offset by $36.2 million of net favorable development in professional liability business, primarily from the 2010 to 2016 accident years.

The mortgage operation's net favorable development of $95.0 million, or 9.0 points of net earned premium, for 2017, included $89.3 million of favorable development on U.S. primary mortgage business. Such development was primarily driven by lower than expected claim emergence across most origination years and also reflected $33.8 million related to second lien and other portfolios, primarily due to subrogation recoveries.

2016 Prior Year Reserve Development

During 2016, the Company recorded estimated net favorable development on prior year loss reserves of $270.0 million, which consisted of $218.8 million from the reinsurance operations, $33.1 million from the insurance operations, $21.2 million from the mortgage operations less adverse development of $3.1 million from the 'other' operations.

The reinsurance operation's net favorable development of $218.8 million, or 20.7 points of net earned premium, consisted of $133.8 million from short-tailed lines and $85.0 million of net favorable development from medium-tailed and long-tailed lines. Favorable development in short-tailed lines included $113.6 million from property catastrophe and property other than property catastrophe reserves, primarily from the 2009 to 2015 underwriting years. The net reduction of loss estimates for the reinsurance operation's short-tailed lines primarily resulted from varying levels of reported and paid claims activity than previously anticipated which led to decreases in certain loss ratio selections during 2016. Net favorable development of $85.0 million in medium-tailed and long-tailed lines included reductions in casualty reserves of $86.1 million, primarily from the 2002 to 2013 underwriting years.

The insurance operation's net favorable development of $33.1 million, or 1.6 points of net earned premium, consisted of $8.7 million of net favorable development from short-tailed lines and $24.4 million of net favorable development from medium-tailed and long-tailed lines. Favorable development in short-tailed lines predominantly consisted of $17.2 million of net favorable development in property lines, primarily from the 2008 to 2014 accident years, partially offset by $11.1 million of adverse development on travel, accident and health business from the 2012 to 2015 accident years. Net favorable development in medium-tailed and long-tailed lines of $24.4 million included $53.8 million of net favorable development on professional lines, primarily from the 2008 to 2012 accident years, partially offset by $33.1 million of net adverse development in program business, primarily from the 2013 to 2015 accident years. The adverse development in program business was primarily driven by a few inactive programs that were non-renewed in 2015 and early in 2016.

The mortgage operation's net favorable development of $21.2 million, or 7.4 points of net earned premium, for 2016, included $18.5 million of favorable development on U.S. primary mortgage business, reflecting a decrease in the number of delinquent loans and a lower claim rate on such loans. Such development was primarily from the 2004 to 2008 and 2014 origination years. The mortgage operations also experienced net favorable development of $2.7 million on U.S. mortgage reinsurance business.

6. Short Duration Contracts

The Company's reserves for losses and loss adjustment expenses primarily relate to short-duration contracts with various characteristics (*e.g.*, type of coverage, geography, claims duration). The Company considered such information in determining the level of disaggregation for disclosures related to its short-duration contracts, as detailed in the table below:

Reportable operations	Level of disaggregation	Included lines of business
Insurance	Property energy, marine and aviation	Property energy, marine and aviation
	Third party occurrence business	Excess and surplus casualty (excluding contract binding); construction and national accounts; and other (including alternative market risks, excess workers' compensation and employer's liability insurance coverages)
	Third party claims-made business	Professional lines
	Multi-line and other specialty	Programs; contract binding (part of excess and surplus casualty); travel, accident and health; lenders products; and other (contract and commercial surety coverages)
Reinsurance	Casualty	Casualty
	Property catastrophe	Property catastrophe
	Property excluding property catastrophe	Property excluding property catastrophe
	Marine and aviation	Marine and aviation
	Other specialty	Other specialty
Mortgage	Direct mortgage insurance in the U.S.	Mortgage insurance on U.S. primary exposures

The Company determined the following to be insignificant for disclosure purposes: (i) amounts included in the 'other' operations (*i.e.*, Watford Re) as described in Note 4; (ii) certain mortgage business, including non-U.S. primary business, second lien and student loan exposures, global mortgage reinsurance and various GSE credit risk-sharing products; and (iii) certain reinsurance business, including casualty clash and non-traditional lines. Such amounts are included as reconciling items.

The Company is required to establish reserves for losses and loss adjustment expenses ("Loss Reserves") that arise from the business the Company underwrites. Loss Reserves for the insurance, reinsurance and mortgage operationss represent estimates of future amounts required to pay losses and loss adjustment expenses for insured or reinsured events which have occurred at or before the balance sheet date. Loss Reserves do not reflect contingency reserve allowances to account for future loss occurrences. Losses arising from future events will be estimated and recognized at the time the losses are incurred and could be substantial.

Insurance Operations

Loss Reserves for the insurance operations are comprised of (1) estimated amounts for (1) reported losses ("case reserves") and (2) incurred but not reported losses ("IBNR reserves"). Generally, claims personnel determine whether to establish a case reserve for the estimated amount of the ultimate settlement of individual claims. The estimate reflects the judgment of claims personnel based on general corporate reserving practices, the experience and knowledge of such personnel regarding the nature and value of the specific type of claim and, where appropriate, advice of counsel. The Company also contracts with a number of outside third party administrators in the claims process who, in certain cases, have limited authority to establish case reserves. The work of such administrators is reviewed and monitored by our claims personnel. Loss Reserves are also established to provide for loss adjustment expenses and represent the estimated expense of settling claims, including legal and other fees and the general expenses of administering the claims adjustment process. Periodically, adjustments to the case reserves may be made as additional information is reported or payments are made. IBNR reserves are established to provide for incurred claims which have not yet been reported at the balance sheet date as well as to adjust for any projected variance in case reserving. Actuaries estimate ultimate losses and loss adjustment expenses using various generally accepted actuarial methods applied to known losses and other relevant information. Like case reserves, IBNR reserves are adjusted as additional information becomes known or payments are made. The process of estimating reserves involves a considerable degree of judgment by management and, as of any given date, is inherently uncertain.

Ultimate losses and loss adjustment expenses are generally determined by extrapolation of claim emergence and settlement patterns observed in the past that can reasonably be expected to persist into the future. In forecasting ultimate losses and

loss adjustment expenses with respect to any line of business, past experience with respect to that line of business is the primary resource, developed through both industry and company experience, but cannot be relied upon in isolation. Uncertainties in estimating ultimate losses and loss adjustment expenses are magnified by the length of the time lag between when a claim actually occurs and when it is reported and settled. This time lag is sometimes referred to as the "claim-tail." During this period additional facts regarding coverages written in prior accident years, as well as about actual claims and trends, may become known and, as a result, may lead to adjustments of the related Loss Reserves. If the Company determines that an adjustment is appropriate, the adjustment is recorded in the accounting period in which such determination is made. Accordingly, should Loss Reserves need to be increased or decreased in the future from amounts currently established, future results of operations would be negatively or positively impacted respectively. The Company authorizes managing general agents, general agents and other producers to write program business on the Company's behalf within prescribed underwriting authorities. This delegated authority process introduces additional complexity to the actuarial determination of unpaid future losses and loss adjustment expenses. In order to monitor adherence to the underwriting guidelines given to such parties, the Company periodically performs underwriting and claims due diligence reviews.

In determining ultimate losses and loss adjustment expenses, the cost to indemnify claimants, provide needed legal defense and other services for insureds and administer the investigation and adjustment of claims are considered. These claim costs are influenced by many factors that change over time, such as expanded coverage definitions as a result of new court decisions, inflation in costs to repair or replace damaged property, inflation in the cost of medical services and legislated changes in statutory benefits, as well as by the particular, unique facts that pertain to each claim. As a result, the rate at which claims arose in the past and the costs to settle them may not always be representative of what will occur in the future. The factors influencing changes in claim costs are often difficult to isolate or quantify and developments in paid and incurred losses from historical trends are frequently subject to multiple and conflicting interpretations. Changes in coverage terms or claims handling practices may also cause future experience and/or development patterns to vary from the past. A key objective of actuaries in developing estimates of ultimate losses and loss adjustment expenses, and resulting IBNR reserves, is to identify aberrations and systemic changes occurring within historical experience and adjust for them so that the future can be projected more reliably. Because of the factors previously discussed, this process requires the substantial use of informed judgment and is inherently uncertain.

Although Loss Reserves are initially determined based on underwriting and pricing analyses, the Company's insurance operations applies several generally accepted actuarial methods, as discussed below, on a quarterly basis to evaluate the Loss Reserves, in addition to the expected loss method, in particular for Loss Reserves from more mature accident years (the year in which a loss occurred). Each quarter, as part of the reserving process, the operationss' actuaries reaffirm that the assumptions used in the reserving process continue to form a sound basis for the projection of liabilities. If actual loss activity differs substantially from expectations based on historical information, an adjustment to Loss Reserves may be supported. The Company places more or less reliance on a particular actuarial method based on the facts and circumstances at the time the estimates of Loss Reserves are made.

These methods generally fall into one of the following categories or are hybrids of one or more of the following categories:

- *Expected loss methods* - these methods are based on the assumption that ultimate losses vary proportionately with premiums. Expected loss and loss adjustment expense ratios are typically developed based upon the information derived by underwriters and actuaries during the initial pricing of the business, supplemented by industry data available from organizations, such as statistical bureaus and consulting firms, where appropriate. These ratios consider, among other things, rate increases and changes in terms and conditions that have been observed in the market. Expected loss methods are useful for estimating ultimate losses and loss adjustment expenses in the early years of long-tailed lines of business, when little or no paid or incurred loss information is available, and is commonly applied when limited loss experience exists for a company.

- *Historical incurred loss development methods* - these methods assume that the ratio of losses in one period to losses in an earlier period will remain constant in the future. These methods use incurred losses (*i.e.*, the sum of cumulative historical loss payments plus outstanding case reserves) over discrete periods of time to estimate future losses. Historical incurred loss development methods may be preferable to historical paid loss development methods because they explicitly take into account open cases and the claims adjusters' evaluations of the cost to settle all known claims. However, historical incurred loss development methods necessarily assume that case reserving practices are consistently applied over time. Therefore, when there have been significant changes in how case reserves are established, using incurred loss data to project ultimate losses may be less reliable than other methods.

- *Historical paid loss development methods* - these methods, like historical incurred loss development methods, assume that the ratio of losses in one period to losses in an earlier period will remain constant. These methods use historical loss payments over discrete periods of time to estimate future losses and necessarily assume that factors that have affected paid losses in the past, such as inflation or the effects of litigation, will remain constant in the future. Because historical paid loss development methods do not use incurred losses to estimate ultimate losses, they may be more reliable than the other methods that use incurred losses in situations where there are significant changes in how incurred losses are established by a company's claims adjusters. However, historical paid loss development methods are more leveraged (meaning that small changes in payments have a larger impact on estimates of ultimate losses) than actuarial methods that use incurred losses because cumulative loss payments take much longer to equal the expected ultimate losses than cumulative incurred amounts. In addition, and for similar reasons, historical paid loss development methods are often slow to react to situations when new or different factors arise than those that have affected paid losses in the past.

- *Adjusted historical paid and incurred loss development methods* - these methods take traditional historical paid and incurred loss development methods and adjust them for the estimated impact of changes from the past in factors such as inflation, the speed of claim payments or the adequacy of case reserves. Adjusted historical paid and incurred loss development methods are often more reliable methods of predicting ultimate losses in periods of significant change, provided the actuaries can develop methods to reasonably quantify the impact of changes. As such, these methods utilize more judgment than historical paid and incurred loss development methods.

- *Bornhuetter-Ferguson ("B-F") paid and incurred loss methods* - these methods utilize actual paid and incurred losses and expected patterns of paid and incurred losses, taking the initial expected ultimate losses into account to determine an estimate of expected ultimate losses. The B-F paid and incurred loss methods are useful when there are few reported claims and a relatively less stable pattern of reported losses.

- *Frequency-Severity methods* - These methods utilize actual paid and incurred claim experience, but break the data down into its component pieces: claim counts, often expressed as a ratio to exposure or premium (frequency), and average claim size (severity). The component pieces are projected to an ultimate level and multiplied together to result in an estimate of ultimate loss. These methods are especially useful when the severity of claims can be confined to a relatively stable range of estimated ultimate average claim value.

- *Additional analyses* - other methodologies are often used in the reserving process for specific types of claims or events, such as catastrophic or other specific major events. These include vendor catastrophe models, which are typically used in the estimation of Loss Reserves at the early stage of known catastrophic events before information has been reported to an insurer or reinsurer.

In the initial reserving process for short-tail insurance lines (consisting of property, energy, marine and aviation and other exposures including travel, accident and health and lenders products), the Company relies on a combination of the reserving methods discussed above. For catastrophe-exposed business, the reserving process also includes the usage of catastrophe models for known events and a heavy reliance on analysis of individual catastrophic events and management judgment. The development of losses on short-tail business can be unstable, especially for policies characterized by high severity, low frequency losses. As time passes, for a given accident year, additional weight is given to the paid and incurred B-F loss development methods and historical paid and incurred loss development methods in the reserving process. The Company makes a number of key assumptions in their reserving process, including that historical paid and reported development patterns are stable, catastrophe models provide useful information about our exposure to catastrophic events that have occurred and underwriters' judgment as to potential loss exposures can be relied on. The expected loss ratios used in the initial reserving process for short-tail business have varied over time due to changes in pricing, reinsurance structure, estimates of catastrophe losses, policy changes (such as attachment points, class and limits) and geographical distribution. As losses in short-tail lines are reported relatively quickly, expected loss ratios are selected for the current accident year based upon actual attritional loss ratios for earlier accident years, adjusted for rate changes, inflation, changes in reinsurance programs and expected attritional losses based on modeling. Furthermore, ultimate losses for short-tail business are known in a reasonably short period of time.

In the initial reserving process for medium-tail and long-tail insurance lines (consisting of third party occurrence business, third party claims made business, and other exposures including surety, programs and contract binding exposures), the Company primarily relies on the expected loss method. The development of the Company's medium-tail and long-tail business may be unstable, especially if there are high severity major events, as a portion of the Company's casualty business is in high excess layers. As time passes, for a given accident year, additional weight is given to the paid and incurred B-F loss development

methods and historical paid and incurred loss development methods in the reserving process. The Company makes a number of key assumptions in reserving for medium-tail and long-tail lines, including that the pricing loss ratio is the best estimate of the ultimate loss ratio at the time the policy is entered into, that the loss development patterns, which are based on a combination of company and industry loss development patterns and adjusted to reflect differences in the insurance operations's mix of business, are reasonable and that claims personnel and underwriters analyses of our exposure to major events are assumed to be the best estimate of exposure to the known claims on those events. The expected loss ratios used in the initial reserving process for medium-tail and long-tail business for recent accident years have varied over time, in some cases significantly, from earlier accident years. As the credibility of historical experience for earlier accident years increases, the experience from these accident years will be given a greater weighting in the actuarial analysis to determine future accident year expected loss ratios, adjusted for changes in pricing, loss trends, terms and conditions and reinsurance structure.

The following tables present information on the insurance operation's short-duration insurance contracts:

Property, energy, marine and aviation ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 342,098	$ 333,686	$ 314,637	$ 300,508	$ 299,861	$ 290,993	$ 285,126	$ 281,811	$ 285,067	$ 287,032	$ 1,973	4,381
2009		256,250	259,982	231,557	220,486	206,060	199,705	197,824	192,701	191,662	1,562	3,616
2010			198,659	188,515	152,886	140,554	129,278	129,624	128,199	126,563	1,300	3,656
2011				268,853	272,041	231,308	219,908	210,468	210,445	205,792	1,351	4,193
2012					232,056	231,903	204,993	198,706	197,277	193,321	5,663	4,230
2013						158,989	156,460	148,557	142,493	135,975	4,828	4,224
2014							148,814	145,829	149,054	138,940	21,416	3,845
2015								112,419	110,507	105,525	17,473	4,443
2016									105,111	102,473	10,023	5,848
2017										283,457	115,840	4,999
									Total	$ 1,770,740		
Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance												
2008	$ 50,328	$ 129,186	$ 200,305	$ 225,227	$ 256,437	$ 261,696	$ 263,747	$ 263,050	$ 263,329	$ 264,060		
2009		38,452	116,418	143,390	159,997	169,290	173,725	177,793	178,152	178,770		
2010			28,509	66,229	88,019	106,365	111,465	118,513	120,608	120,006		
2011				34,319	99,454	141,402	167,127	199,986	204,924	202,538		
2012					20,502	92,663	138,099	161,070	167,692	180,202		
2013						32,041	84,306	110,166	118,910	122,972		
2014							25,748	53,495	78,600	85,659		
2015								23,468	65,157	77,241		
2016									24,919	84,581		
2017										30,635		
									Total	1,346,664		
									All outstanding liabilities before 2008, net of reinsurance	5,898		
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$ 429,974		

Third party occurrence business ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 278,283	$ 282,364	$ 281,294	$ 279,642	$ 298,194	$ 303,315	$ 306,439	$ 302,951	$ 300,907	$ 309,202	$ 34,070	36,315
2009		273,205	268,831	270,615	271,924	275,531	276,737	267,700	263,175	261,663	43,633	51,319
2010			248,528	266,875	262,303	261,937	264,774	262,961	260,346	251,452	48,387	63,402
2011				261,257	268,249	283,774	288,999	282,716	286,277	280,762	61,506	71,823
2012					265,476	288,301	292,560	294,291	280,531	275,881	93,816	66,360
2013						293,920	309,790	318,836	316,113	298,195	118,746	67,103
2014							331,802	338,081	342,384	346,244	168,257	75,314
2015								360,217	395,234	401,768	228,728	76,796
2016									390,892	397,778	291,483	74,522
2017										418,036	380,920	61,461
									Total	$3,240,981		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 6,233	$ 21,705	$ 50,097	$ 85,737	$ 119,496	$ 165,098	$ 190,562	$ 204,324	$ 218,691	$ 234,190
2009		5,678	21,625	47,108	82,685	122,643	153,248	171,268	183,719	192,239
2010			6,848	27,000	50,500	81,261	117,939	137,677	158,050	171,928
2011				7,085	26,867	48,183	81,927	126,169	151,558	177,379
2012					7,079	31,827	62,392	89,182	117,305	141,642
2013						7,098	30,362	73,512	105,358	130,875
2014							9,476	40,863	72,525	113,952
2015								11,237	45,615	89,832
2016									11,702	44,207
2017										13,406
									Total	1,309,650
									All outstanding liabilities before 2008, net of reinsurance	98,833
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$2,030,164

Third party claims-made business ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 326,344	$ 380,158	$ 391,971	$ 397,864	$ 383,508	$ 394,166	$ 397,483	$ 385,827	$ 373,924	$ 365,413	$ 8,263	9,140
2009		288,072	323,359	313,043	311,581	306,875	306,889	309,987	306,203	304,159	9,205	10,910
2010			289,396	315,244	336,798	342,670	335,768	318,926	302,938	291,327	19,771	12,335
2011				284,961	327,623	319,230	313,824	319,354	300,172	292,332	34,161	11,712
2012					314,017	316,819	314,818	309,949	288,426	279,911	42,710	14,544
2013						299,609	317,560	321,195	319,418	299,194	75,577	13,994
2014							262,969	277,812	299,922	282,886	79,059	13,219
2015								257,183	279,590	281,031	132,145	13,323
2016									277,541	295,844	160,040	15,300
2017										274,527	224,115	12,371
									Total	$2,966,624		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 18,826	$ 74,174	$ 132,721	$ 175,437	$ 210,488	$ 235,920	$ 248,340	$ 286,493	$ 291,913	$ 292,598
2009		11,418	55,701	108,805	150,949	188,347	203,205	237,204	246,875	251,702
2010			13,971	71,297	128,921	164,107	199,653	216,353	231,200	241,035
2011				13,639	71,797	129,221	173,497	206,608	226,667	243,228
2012					17,531	68,125	119,653	162,636	186,520	212,019
2013						18,777	86,512	136,262	177,048	200,876
2014							13,702	62,817	129,095	174,852
2015								8,957	52,176	101,643
2016									10,644	68,904
2017										9,397
									Total	1,796,254
									All outstanding liabilities before 2008, net of reinsurance	94,246
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$1,264,616

Multi-line and other specialty ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 228,750	$ 246,842	$ 240,896	$ 237,743	$ 237,782	$ 232,710	$ 231,985	$ 228,847	$ 227,998	$ 226,269	$ 4,583	39,947
2009		287,455	297,410	292,302	286,205	277,500	278,581	273,199	270,529	262,856	4,718	40,158
2010			257,953	263,470	252,313	256,766	248,777	244,157	243,183	242,440	7,597	44,325
2011				272,539	285,840	284,566	285,771	286,014	284,299	280,741	10,045	54,533
2012					381,207	395,058	396,245	396,090	396,844	389,279	16,298	68,049
2013						400,828	416,785	412,528	435,766	448,309	24,100	85,508
2014							495,095	529,670	535,028	571,128	48,415	124,746
2015								526,703	545,738	555,746	80,967	139,767
2016									540,699	566,047	143,653	175,566
2017										574,401	296,812	156,337
									Total	$4,117,216		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 62,274	$ 119,634	$ 135,970	$ 165,075	$ 185,746	$ 194,954	$ 205,046	$ 209,195	$ 212,041	$ 215,400
2009		75,808	140,605	184,199	207,502	220,646	243,587	249,349	253,226	252,680
2010			62,874	118,378	151,587	186,890	207,073	215,542	221,494	227,939
2011				70,742	146,999	180,843	218,510	242,123	252,116	261,470
2012					98,509	220,377	282,856	319,491	343,797	361,402
2013						106,585	208,103	268,829	327,952	372,287
2014							137,388	274,923	356,986	445,002
2015								168,341	305,372	390,423
2016									197,384	354,907
2017										195,435
									Total	3,076,945
									All outstanding liabilities before 2008, net of reinsurance	41,039
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$1,081,310

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2017:

	Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Property, energy, marine and aviation	18.7%	35.9%	18.6%	9.7%	7.0%	3.7%	0.8%	(0.2)%	0.2%	0.3%
Third party occurrence business	2.6%	7.6%	10.2%	11.7%	12.5%	10.4%	8.1%	4.9 %	4.0%	5.0%
Third party claims-made business	4.6%	18.0%	18.6%	14.0%	10.3%	6.7%	6.3%	5.7 %	1.5%	0.2%
Multi-line and other specialty	28.0%	25.6%	13.6%	12.5%	7.8%	4.9%	3.1%	2.0 %	0.5%	1.5%

Reinsurance Operations

Loss Reserves for the Company's reinsurance operations are comprised of (1) case reserves, (2) additional case reserves ("ACRs") and (3) IBNR reserves. The Company receives reports of claims notices from ceding companies and records case reserves based upon the amount of reserves recommended by the ceding company. Case reserves may be supplemented by ACRs, which are often estimated by the Company's claims personnel ahead of official notification from the ceding company, or when judgment regarding the size or severity of the known event differs from the ceding company. In certain instances, the Company establishes ACRs even when the ceding company does not report any liability on a known event. In addition, specific claim information reported by ceding companies or obtained through claim audits can alert the Company to emerging trends such as changing legal interpretations of coverage and liability, claims from unexpected sources or classes of business, and significant changes in the frequency or severity of individual claims. Such information is often used in the process of estimating IBNR reserves. IBNR reserves are established to provide for incurred claims which have not yet been reported at the balance sheet date as well as to adjust for any projected variance in case reserving. Actuaries estimate ultimate losses and loss adjustment expenses using various generally accepted actuarial methods applied to known losses and other relevant information. Like case reserves, IBNR reserves are adjusted as additional information becomes known or payments are made. The process of estimating Loss Reserves involves a considerable degree of judgment by management and, as of any given date, is inherently uncertain.

The estimation of Loss Reserves for the reinsurance operations is subject to the same risk factors as the estimation of Loss Reserves for the insurance operations. In addition, the inherent uncertainties of estimating such reserves are even greater for reinsurers, due primarily to the following factors: (1) the claim-tail for reinsurers is generally longer because claims are first reported to the ceding company and then to the reinsurer through one or more intermediaries, (2) the reliance on

premium estimates, where reports have not been received from the ceding company, in the reserving process, (3) the potential for writing a number of reinsurance contracts with different ceding companies with the same exposure to a single loss event, (4) the diversity of loss development patterns among different types of reinsurance contracts, (5) the necessary reliance on the ceding companies for information regarding reported claims and (6) the differing reserving practices among ceding companies.

As with the insurance operations, the process of estimating Loss Reserves for the reinsurance operations involves a considerable degree of judgment by management and, as of any given date, is inherently uncertain. As discussed above, such uncertainty is greater for reinsurers compared to insurers. As a result, our reinsurance operations obtain information from numerous sources to assist in the process. Pricing actuaries from the reinsurance operations devote considerable effort to understanding and analyzing a ceding company's operations and loss history during the underwriting of the business, using a combination of ceding company and industry statistics. Such statistics normally include historical premium and loss data by class of business, individual claim information for larger claims, distributions of insurance limits provided, loss reporting and payment patterns, and rate change history. This analysis is used to project expected loss ratios for each treaty during the upcoming contract period.

As mentioned above, there can be a considerable time lag from the time a claim is reported to a ceding company to the time it is reported to the reinsurer. The lag can be several years in some cases and may be attributed to a number of reasons, including the time it takes to investigate a claim, delays associated with the litigation process, the deterioration in a claimant's physical condition many years after an accident occurs, the case reserving approach of the ceding company, etc. In the reserving process, the Company assumes that such lags are predictable, on average, over time and therefore the lags are contemplated in the loss reporting patterns used in their actuarial methods. This means that the reinsurance operations must rely on estimates for a longer period of time than does an insurance company. Backlogs in the recording of assumed reinsurance can also complicate the accuracy of loss reserve estimation. As of December 31, 2017 there were no significant backlogs related to the processing of assumed reinsurance information at our reinsurance operations.

The reinsurance operations relies heavily on information reported by ceding companies, as discussed above. In order to determine the accuracy and completeness of such information, underwriters, actuaries, and claims personnel often perform audits of ceding companies and regularly review information received from ceding companies for unusual or unexpected results. Material findings are usually discussed with the ceding companies. The Company sometimes encounters situations where they determine that a claim presentation from a ceding company is not in accordance with contract terms. In these situations, the Company attempts to resolve the dispute with the ceding company. Most situations are resolved amicably and without the need for litigation or arbitration. However, in the infrequent situations where a resolution is not possible, the Company will vigorously defend its position in such disputes.

Although Loss Reserves are initially determined based on underwriting and pricing analysis, the Company applies several generally accepted actuarial methods, as discussed above, on a quarterly basis to evaluate its Loss Reserves in addition to the expected loss method, in particular for reserves from more mature underwriting years (the year in which business is underwritten). Each quarter, as part of the reserving process, the Company's actuaries reaffirm that the assumptions used in the reserving process continue to form a sound basis for projection of liabilities. If actual loss activity differs substantially from expectations based on historical information, an adjustment to Loss Reserves may be supported. Estimated Loss Reserves for more mature underwriting years are now based more on actual loss activity and historical patterns than on the initial assumptions based on pricing indications. More recent underwriting years rely more heavily on internal pricing assumptions. The Company places more or less reliance on a particular actuarial method based on the facts and circumstances at the time the estimates of Loss Reserves are made.

In the initial reserving process for short-tail reinsurance lines (consisting of property excluding property catastrophe and property catastrophe exposures), the Company relies on a combination of the reserving methods discussed above. For known catastrophic events, the reserving process also includes the usage of catastrophe models and a heavy reliance on analysis which includes ceding company inquiries and management judgment. The development of property losses may be unstable, especially where there is high catastrophic exposure, may be characterized by high severity, low frequency losses for excess and catastrophe-exposed business and may be highly correlated across contracts. As time passes, for a given underwriting year, additional weight is given to the paid and incurred B-F loss development methods and historical paid and incurred loss development methods in the reserving process. The Company makes a number of key assumptions in reserving for short-tail lines, including that historical paid and reported development patterns are stable, catastrophe models provide useful information about our exposure to catastrophic events that have occurred and our underwriters' judgment and guidance received from ceding companies as to potential loss exposures may be relied on. The expected loss ratios used in the initial

reserving process for property exposures have varied over time due to changes in pricing, reinsurance structure, estimates of catastrophe losses, terms and conditions and geographical distribution. As losses in property lines are reported relatively quickly, expected loss ratios are selected for the current underwriting year incorporating the experience for earlier underwriting years, adjusted for rate changes, inflation, changes in reinsurance programs, expectations about present and future market conditions and expected attritional losses based on modeling. Due to the short-tail nature of property business, reported loss experience emerges quickly and ultimate losses are known in a reasonably short period of time.

In the initial reserving process for medium-tail and long-tail reinsurance lines (consisting of casualty, other specialty, marine and aviation and other exposures), the Company primarily relies on the expected loss method. The development of medium-tail and long-tail business may be unstable, especially if there are high severity major events, with business written on an excess of loss basis typically having a longer tail than business written on a pro rata basis. As time passes, for a given underwriting year, additional weight is given to the paid and incurred B-F loss development methods and historical paid and incurred loss development methods in the reserving process. Our reinsurance operations make a number of key assumptions in reserving for medium-tail and long-tail lines, including that the pricing loss ratio is the best estimate of the ultimate loss ratio at the time the contract is entered into, historical paid and reported development patterns are stable and claims personnel and underwriters analyses of our exposure to major events are assumed to be our best estimate of our exposure to the known claims on those events. The expected loss ratios used in our reinsurance operations' initial reserving process for medium-tail and long-tail contracts have varied over time due to changes in pricing, terms and conditions and reinsurance structure. As the credibility of historical experience for earlier underwriting years increases, the experience from these underwriting years will be used in the actuarial analysis to determine future underwriting year expected loss ratios, adjusted for changes in pricing, loss trends, terms and conditions and reinsurance structure.

The following tables present information on the reinsurance operation's short-duration insurance contracts:

Casualty ($000's)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 284,807	$ 291,045	$ 290,375	$ 284,525	$ 276,674	$ 274,953	$ 276,071	$ 272,057	$ 268,307	$ 266,449	$ 29,569	N/A
2009		267,280	287,553	305,904	285,865	280,815	270,122	253,577	239,120	235,781	33,749	N/A
2010			197,835	198,624	201,815	193,171	182,433	171,232	165,316	161,187	40,306	N/A
2011				154,704	158,216	152,135	147,428	143,138	140,183	134,058	32,068	N/A
2012					148,782	146,714	142,572	130,527	120,206	114,412	42,802	N/A
2013						170,464	163,691	159,723	153,317	141,024	58,572	N/A
2014							219,789	225,116	222,518	236,671	88,374	N/A
2015								225,118	223,789	232,755	103,595	N/A
2016									216,583	228,972	96,985	N/A
2017										267,312	180,407	N/A
									Total	$2,018,621		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 3,588	$ 22,929	$ 47,551	$ 73,955	$ 94,295	$ 132,406	$ 161,446	$ 183,398	$ 195,919	$ 207,737
2009		3,308	19,575	47,349	74,204	106,140	135,759	150,023	160,520	170,106
2010			2,231	21,547	39,251	54,476	72,794	83,458	94,554	102,576
2011				2,343	12,005	22,736	40,372	56,663	66,391	73,578
2012					1,373	8,929	15,733	27,176	38,676	50,266
2013						2,573	10,233	23,837	44,473	56,270
2014							3,992	16,242	41,257	64,223
2015								4,486	20,338	47,362
2016									5,721	25,707
2017										6,437
									Total	804,262
									All outstanding liabilities before 2008, net of reinsurance	265,408
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$1,479,767

Property catastrophe ($000's)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 148,631	$ 106,096	$ 121,101	$ 120,270	$ 120,667	$ 116,249	$ 114,856	$ 114,481	$ 114,295	$ 113,798	$ 231	N/A
2009		75,227	33,007	20,101	18,610	17,460	17,205	16,202	15,849	13,739	(158)	N/A
2010			97,686	50,159	41,827	41,840	46,192	46,592	46,400	46,656		N/A
2011				213,931	193,757	174,820	161,563	157,745	157,038	154,731		N/A
2012					150,630	123,381	108,710	102,178	99,931	99,113	165	N/A
2013						68,712	48,992	37,279	32,725	30,149	55	N/A
2014							46,408	31,865	26,147	23,222	701	N/A
2015								33,912	18,538	12,054	1,895	N/A
2016									24,918	18,217	2,427	N/A
2017										79,714	6,086	N/A
									Total	$ 591,393		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 52,629	$ 79,836	$ 89,405	$ 98,147	$ 108,720	$ 112,398	$ 113,113	$ 113,280	$ 113,338	$ 113,467
2009		10,132	13,647	13,526	15,105	15,370	15,374	15,400	15,417	13,634
2010			8,868	24,322	32,694	39,465	41,601	43,477	44,990	45,066
2011				62,695	87,958	120,806	136,072	141,788	144,417	146,563
2012					25,850	70,849	83,863	90,768	92,927	94,056
2013						12,320	19,497	24,597	26,570	28,427
2014							13,694	20,402	19,027	19,889
2015								(3,705)	(2,495)	1,989
2016									(7,176)	1,796
2017										28,864
									Total	493,751
									All outstanding liabilities before 2008, net of reinsurance	870
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$ 98,512

Property excluding property catastrophe ($000's)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 212,864	$ 187,495	$ 190,891	$ 196,239	$ 191,461	$ 188,574	$ 186,573	$ 186,114	$ 180,188	$ 178,940	$ 1,198	N/A
2009		216,844	193,877	171,389	164,633	163,873	161,800	158,856	149,305	148,511	1,092	N/A
2010			143,002	128,702	118,475	112,741	110,802	108,671	104,875	101,693	2,004	N/A
2011				206,719	179,368	166,857	163,226	159,084	157,774	155,510	4,243	N/A
2012					156,362	122,033	124,129	119,572	115,159	112,936	4,234	N/A
2013						115,913	77,266	70,923	66,552	64,834	5,034	N/A
2014							144,093	117,947	99,784	91,079	8,288	N/A
2015								214,620	189,004	184,637	18,164	N/A
2016									177,002	146,338	28,121	N/A
2017										260,425	80,297	N/A
									Total	$1,444,903		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 56,096	$ 125,684	$ 146,850	$ 161,523	$ 167,161	$ 173,245	$ 174,276	$ 174,095	$ 175,016	$ 176,443
2009		66,401	117,101	134,441	138,824	140,664	143,183	144,290	145,099	146,209
2010			37,942	76,757	88,591	93,782	96,011	97,169	97,814	98,248
2011				47,595	121,216	141,080	145,591	147,648	148,751	148,996
2012					26,093	78,296	93,524	102,211	103,210	103,850
2013						26,066	42,994	50,106	53,290	54,097
2014							23,585	63,045	71,983	76,939
2015								75,404	119,122	149,655
2016									33,347	95,680
2017										25,242
									Total	1,075,359
									All outstanding liabilities before 2008, net of reinsurance	4,472
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$ 374,016

Marine and aviation ($000's)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 132,706	$ 158,928	$ 165,593	$ 159,588	$ 155,884	$ 154,475	$ 152,625	$ 152,602	$ 150,668	$ 148,445	$ 719	N/A
2009		50,165	41,601	35,803	34,107	31,268	30,026	28,598	28,355	27,391	1,728	N/A
2010			40,978	42,314	38,537	35,445	33,544	31,928	31,177	30,336	678	N/A
2011				39,350	32,945	35,879	32,429	28,804	27,207	27,261	4,316	N/A
2012					59,050	58,926	55,131	52,375	51,169	49,815	7,966	N/A
2013						39,147	38,019	37,049	35,641	35,541	9,967	N/A
2014							31,179	29,418	27,630	25,929	8,391	N/A
2015								33,740	37,618	31,828	7,911	N/A
2016									27,368	22,766	14,599	N/A
2017										28,817	18,451	N/A
									Total	$ 428,129		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 11,284	$ 50,877	$ 83,413	$ 112,852	$ 128,381	$ 140,907	$ 143,208	$ 145,105	$ 145,538	$ 145,545
2009		6,921	16,313	19,457	22,594	22,698	23,041	23,648	24,151	24,251
2010			8,523	13,402	16,753	18,479	20,222	26,540	27,186	27,548
2011				4,421	12,122	16,530	19,234	15,957	16,631	21,985
2012					2,662	11,459	27,588	33,386	35,129	36,333
2013						5,043	13,980	18,713	21,709	22,724
2014							4,314	8,159	11,796	12,677
2015								9	13,431	19,043
2016									(7,326)	(1,680)
2017										1,661
									Total	310,087
									All outstanding liabilities before 2008, net of reinsurance	17,414
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$ 135,456

Other specialty ($000's)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2017	
	Year ended December 31,											
Accident year	2008 unaudited	2009 unaudited	2010 unaudited	2011 unaudited	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2008	$ 43,813	$ 37,434	$ 34,099	$ 30,237	$ 28,288	$ 30,217	$ 28,783	$ 28,669	$ 27,691	$ 27,418	$ 2,185	N/A
2009		61,515	50,560	45,378	39,257	37,133	35,141	36,397	36,874	37,888	2,734	N/A
2010			44,243	33,744	26,696	24,401	23,402	23,077	22,845	22,587	1,713	N/A
2011				114,407	99,156	94,970	93,396	91,617	90,215	89,611	3,001	N/A
2012					230,125	218,333	208,036	202,055	200,025	203,304	21,566	N/A
2013						259,466	232,696	222,481	218,827	220,073	28,371	N/A
2014							283,337	264,072	266,007	258,880	35,422	N/A
2015								218,258	209,337	207,514	39,024	N/A
2016									233,315	230,646	59,666	N/A
2017										294,469	131,878	N/A
									Total	$1,592,390		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2008	$ 5,324	$ 14,998	$ 21,037	$ 22,318	$ 22,985	$ 24,840	$ 24,207	$ 24,814	$ 24,867	$ 24,789
2009		9,440	27,981	30,885	30,764	30,756	30,652	31,172	31,977	32,113
2010			4,193	13,786	17,018	18,060	18,861	19,480	19,712	20,334
2011				29,027	58,746	71,240	75,942	79,549	81,396	83,732
2012					47,063	125,181	148,565	159,908	167,996	172,326
2013						58,851	122,477	149,149	165,824	175,813
2014							71,180	151,264	187,952	201,529
2015								57,095	119,284	144,104
2016									68,307	145,348
2017										80,549
									Total	1,080,637
									All outstanding liabilities before 2008, net of reinsurance	9,012
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$ 520,765

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2017:

	Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Casualty	1.7%	7.3%	9.7%	11.2%	10.5%	10.2%	7.3%	5.9%	4.4 %	4.4 %
Property catastrophe	27.2%	28.5%	13.5%	8.7%	4.6%	2.0%	1.4%	0.1%	(6.5)%	0.1 %
Property excluding property catastrophe	30.6%	37.8%	12.3%	5.3%	1.7%	1.5%	0.5%	0.3%	0.6 %	0.8 %
Marine and aviation	8.7%	25.5%	17.2%	10.1%	1.8%	7.1%	6.4%	1.4%	0.3 %	— %
Other specialty	25.7%	35.7%	13.5%	4.7%	3.1%	2.7%	0.7%	2.4%	0.3 %	(0.3)%

Mortgage Operations

The Company's mortgage operations includes (1) direct mortgage insurance in the U.S., (2) direct mortgage insurance in Europe, (3) global mortgage reinsurance and (4) various GSE credit risk-sharing products, with the latter three categories along with second lien and student loan exposures excluded on the basis of insignificance for the purposes of presenting disclosures related to short duration contracts.

For direct mortgage insurance business, the Company establishes case reserves for loans that have been reported as delinquent by loan servicers as well as those that are delinquent but not reported (IBNR reserves). The Company's U.S. mortgage insurance operations also reserve for the expenses of adjusting claims related to these delinquencies. The trigger that creates a case reserve estimate is that an insured loan is reported to us as being two payments in arrears. The actuarial reviews and documentation created in the reserving process are completed in accordance with generally accepted actuarial standards. The selected assumptions reflect the actuary's judgment based on historical data and experience combined with information concerning current underwriting, economic, judicial, regulatory and other influences on ultimate claim settlements.

Because the reserving process requires the Company to forecast future conditions, it is inherently uncertain and requires significant judgment and estimation. The use of different estimates would result in the establishment of different reserve levels. Additionally, changes in accounting estimates are likely to occur from period to period as economic conditions change and the ultimate liability may vary significantly from the estimates used. Major risk factors include (but are not limited to) changes in home prices and borrower equity, which can limit the borrower's ability to sell the property and satisfy the outstanding loan balance, and changes in unemployment, which can affect the borrower's income and ability to make mortgage payments.

The lead methodology used by the Company is a frequency-severity method based on the inventory of pending delinquencies. Each month the loan servicers report the delinquency status of each insured loan. Using the frequency-severity method allows the Company to take advantage of its knowledge of the number of delinquent loans and the coverage provided ("risk size") on those loans by directly relating the reserves to these amounts. The delinquencies are grouped into homogeneous cohorts for analysis, reflecting product type and age of delinquency. A claim rate is then developed for each cohort which represents the frequency with which the delinquencies become claims. The claim rates are based on an analysis of the patterns of emerging cure counts and claim counts, the foreclosure status of the pending delinquencies, the product and geographical mix of the delinquencies and our view of future economic and claim conditions, which include trends in home prices and unemployment. Claim rates can vary materially by age of delinquency, depending on the mix of delinquencies and economic conditions.

Claim size estimates are determined by examining the risk sizes on the delinquent loans and estimating the portion of risk that will be paid, as well as any expenses. This is done based on a review of historical development patterns, an assessment of economic conditions and the level of equity the borrowers may have in their homes, as well as considering economic conditions and loss mitigation opportunities. Mortgage insurance is generally not subject to large claim sizes, as with some other lines of insurance. A claim size over $250,000 is rare, and this helps reduce the volatility of claim size estimates. The claim rate and claim size assumptions generate case reserves for the population of reported delinquencies. The reserve for unreported delinquencies (included in IBNR reserves) is estimated by looking at historical patterns of reporting. Claim rates and claim sizes can then be assigned to estimated unreported delinquencies using assumptions made in the establishment of case reserves.

Mortgage insurance Loss Reserves are short-tail, in the sense that the vast majority of delinquencies are resolved within two years of being reported. While reserves are initially analyzed by reserve cohort, as described above, they are also rolled up

by underwriting year to ensure that reserve assumptions are consistent with the performance of the underwriting year. The accuracy of prior reserve assumptions is also checked in hindsight to determine if adjustments are needed.

Loss Reserves for the Company's mortgage reinsurance business and GSE credit-risk sharing transactions are comprised of case reserves and IBNR reserves. The Company's mortgage reinsurance operations receive reports of delinquent loans and claims notices from ceding companies and record case reserves based upon the amount of reserves recommended by the ceding company. In addition, specific claim and delinquency information reported by ceding companies is used in the process of estimating IBNR reserves.

The tables below include the acquired business of UGC across all periods presented. Due to the length of time for which claims incurred typically remain outstanding prior to payment and the Company's formation of the mortgage operations in 2014, the Company determined that six accident years was sufficient for its current disclosures. The following table presents information on the mortgage operations's short-duration insurance contracts:

Direct mortgage insurance business in the U.S. ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance							December 31, 2017	
	Year ended December 31,							
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of paid claims
2012	520,835	480,592	475,317	469,238	467,296	459,467	538	14,929
2013		469,311	419,668	411,793	405,809	395,693	639	9,249
2014			316,095	297,151	279,434	266,027	969	5,932
2015				222,790	197,238	198,001	2,014	3,910
2016					183,556	170,532	3,915	2,004
2017						179,376	27,163	227
					Total	$ 1,669,096		
Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance								
2012	(106,065)	186,605	327,605	395,695	426,024	441,577		
2013		41,447	203,957	308,956	353,189	373,909		
2014			20,099	129,159	201,925	233,879		
2015				16,159	92,431	151,222		
2016					11,462	72,201		
2017						8,622		
						1,281,410		
All outstanding liabilities before 2012, net of reinsurance						56,299		
						$ 443,985		

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2017:

Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
U.S. Primary	2.4%	44.0%	28.6%	12.7%	5.9%	3.4%

Other Operations

Loss Reserves for the 'other' operations (*i.e.*, Watford Re) are comprised of case reserves, ACRs and IBNR reserves. For all business assumed by Watford Re, the Company acts as reinsurance underwriting manager, provides actuarial and risk management services and recommends a level of Loss Reserves to Watford Re. The Company does not guarantee or provide credit support for Watford Re, and the Company's financial exposure to Watford Re is limited to its investment in Watford Re's common and preferred shares and counterparty credit risk (mitigated by collateral) arising from the reinsurance transactions. The estimation of Loss Reserves for Watford Re is subject to the same risk factors as the estimation of Loss Reserves for the Company's insurance, reinsurance and mortgage operations as described earlier. Watford Re performs its own reserve reviews and sets its reserves independently. As noted previously, the Company determined that amounts in the 'other' operations are insignificant for the purposes of these footnote disclosures.

For the year ended December 31, 2017, the Company did not make any significant changes in its methodologies or assumptions as described above (a) to determine the presented amounts of IBNR reserves, (b) for expected development on case reserves.

The Company measures claim frequency information on an individual claim count basis. Claim counts are provided for the insurance and mortgage operations, where reliable information is available. For insurance business, any claim which is reported to the Company is included in the count, even if it is subsequently settled without liability to the Company. The Company does not include claim count information for losses from U.S. insurance pool business where individual loss information is unavailable and impracticable to obtain. For mortgage business, only delinquencies which subsequently become claims are included in the claim count. For reinsurance business, claim counts are not provided. A significant amount of the Company's reinsurance business is written on a proportional basis, for which individual loss information is typically unavailable and impracticable to obtain.

For the year ended December 31, 2017, the Company did not make any significant changes in its methodologies or assumptions as described above to calculate the cumulative claim frequency.

The following table represents a reconciliation of the disclosures of net incurred and paid loss development tables to the reserve for losses and loss adjustment expenses at December 31, 2017:

	December 31, 2017
Net outstanding liabilities	
Insurance	
Property, energy, marine and aviation	$ 429,974
Third party occurrence business	2,030,164
Third party claims-made business	1,264,616
Multi-line and other specialty	1,081,310
Reinsurance	
Casualty	1,479,767
Property catastrophe	98,512
Property excluding property catastrophe	374,016
Marine and aviation	135,456
Other specialty	520,765
Mortgage	
U.S. primary	443,985
Other short duration lines not included in disclosures	887,624
Total for short duration lines	**8,746,189**
Unpaid losses and loss adjustment expenses recoverable	
Insurance	
Property, energy, marine and aviation	345,188
Third party occurrence business	980,850
Third party claims-made business	681,664
Multi-line and other specialty	138,586
Reinsurance	
Casualty	433,139
Property catastrophe	208,417
Property excluding property catastrophe	54,473
Marine and aviation	25,506
Other specialty	76,962
Mortgage	
U.S. primary	27,448
Other short duration lines not included in disclosures	26,605
Intercompany eliminations	(539,519)
Total for short duration lines	**2,459,319**
Lines other than short duration	26,744
Discounting	(20,016)
Unallocated claims adjustment expenses	171,556
	178,284
Total gross reserves for losses and loss adjustment expenses	**$ 11,383,792**

7. Reinsurance

In the normal course of business, the Company's insurance subsidiaries cede a portion of their premium through pro rata and excess of loss reinsurance agreements on a treaty or facultative basis. The Company's reinsurance subsidiaries participate in "common account" retrocessional arrangements for certain pro rata treaties. Such arrangements reduce the effect of individual or aggregate losses to all companies participating on such treaties, including the reinsurers, such as the Company's reinsurance subsidiaries, and the ceding company. In addition, the Company's reinsurance subsidiaries may purchase retrocessional coverage as part of their risk management program. Reinsurance recoverables are recorded as assets, predicated on the reinsurers' ability to meet their obligations under the reinsurance agreements. If the reinsurers are unable to satisfy their obligations under the agreements, the Company's insurance or reinsurance subsidiaries would be liable for such defaulted amounts.

The effects of reinsurance on the Company's written and earned premiums and losses and loss adjustment expenses with unaffiliated reinsurers were as follows:

	Year Ended December 31,	
	2017	2016
Premiums Written		
Direct	$ 4,447,457	$ 3,337,690
Assumed	1,920,968	1,864,444
Ceded	(1,407,052)	(1,170,743)
Net	$ 4,961,373	$ 4,031,391
Premiums Earned		
Direct	$ 4,379,131	$ 3,192,653
Assumed	1,856,573	1,730,884
Ceded	(1,391,172)	(1,038,715)
Net	$ 4,844,532	$ 3,884,822
Losses and Loss Adjustment Expenses		
Direct	$ 2,568,327	$ 1,976,853
Assumed	1,442,077	847,038
Ceded	(1,042,958)	(638,292)
Net	$ 2,967,446	$ 2,185,599

The Company monitors the financial condition of its reinsurers and attempts to place coverages only with substantial, financially sound carriers. At December 31, 2017, approximately 69.9% of the Company's reinsurance recoverables on paid and unpaid losses (not including ceded unearned premiums) of $2.54 billion were due from carriers which had an A.M. Best rating of "A-" or better while 30.1% were from companies not rated, a substantial portion of which was collateralized through reinsurance trusts or letters of credit. The largest reinsurance recoverables from any one carrier was approximately 2.2% of the Company's total shareholders' equity at December 31, 2017. At December 31, 2016, approximately 75.7% of the Company's reinsurance recoverables on paid and unpaid losses (not including ceded unearned premiums) of $2.11 billion were due from carriers which had an A.M. Best rating of "A-" or better while 24.2% were from companies not rated, a substantial portion of which was collateralized through reinsurance trusts or letters of credit. The largest reinsurance recoverables from any one carrier was approximately 2.4% of the Company's total shareholders' equity at December 31, 2016. Although the Company has not experienced any material credit losses to date, an inability of its reinsurers or retrocessionaires to meet their obligations to it over the relevant exposure periods for any reason could have a material adverse effect on its financial condition and results of operations.

On July 29, 2015, UGC entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re, a special purpose reinsurance company domiciled in Bermuda, at inception for new delinquencies on a portfolio of in-force policies issued between January 1, 2009 and March 31, 2013 through a mortgage insurance-linked notes offering by Bellemeade Re I Ltd.

On May 9, 2016, UGC entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re at inception for new delinquencies on a portfolio of in-force policies issued in 2008 and prior years through a mortgage insurance-linked notes offering by Bellemeade Re II Ltd.

On October 25, 2017, the Company entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re at inception for new delinquencies on a portfolio of in-force policies issued between January 1, 2017 and June 30, 2017 through a mortgage insurance-linked notes offering by Bellemeade 2017-1 Ltd.

The following table summarizes the respective coverages and retentions at December 31, 2017:

	Initial Coverage at Issuance	Coverage at December 31, 2017	First Layer Retention
Bellemeade Re I	$ 300,000	$ 92,390	$ 129,900
Bellemeade Re II	300,000	135,201	646,900
Bellemeade 2017-1	368,100	347,139	165,700

For the respective coverage periods, the ceding insurers will retain the first layer of the respective aggregate losses and the special purpose reinsurance companies will provide second layer coverage up to the outstanding coverage amount. The ceding insurers will then retain losses in excess of the outstanding coverage limit. The aggregate excess of loss reinsurance coverage decreases over a ten-year period as the underlying covered mortgages amortize.

8. Investment Information

At December 31, 2017, total investable assets of $21.98 billion included $19.54 billion managed by the Company and $2.44 billion attributable to Watford Re.

Available For Sale Investments

The following table summarizes the fair value and cost or amortized cost of the Company's securities classified as available for sale:

	Estimated Fair Value	Gross Unrealized Gains	Gross Unrealized Losses	Cost or Amortized Cost	OTTI Unrealized Losses (2)
December 31, 2017					
Fixed maturities (1):					
Corporate bonds	$ 4,434,439	$ 30,943	$ (32,340)	$ 4,435,836	$ (73)
Mortgage backed securities	316,141	1,640	(2,561)	317,062	(15)
Municipal bonds	2,158,840	20,285	(12,308)	2,150,863	—
Commercial mortgage backed securities	545,817	2,131	(4,268)	547,954	—
U.S. government and government agencies	3,484,257	2,188	(28,769)	3,510,838	—
Non-U.S. government securities	1,612,754	48,764	(17,321)	1,581,311	—
Asset backed securities	1,780,143	5,147	(8,614)	1,783,610	—
Total	14,332,391	111,098	(106,181)	14,327,474	(88)
Equity securities (1)	504,333	88,739	(5,583)	421,177	—
Other investments	264,989	66,946	(120)	198,163	—
Short-term investments	1,372,502	650	(563)	1,372,415	—
Total	$ 16,474,215	$ 267,433	$ (112,447)	$ 16,319,229	$ (88)
December 31, 2016					
Fixed maturities (1):					
Corporate bonds	$ 4,392,373	$ 27,606	$ (46,905)	$ 4,411,672	$ (2,285)
Mortgage backed securities	490,093	4,794	(8,357)	493,656	(3,323)
Municipal bonds	3,713,434	8,554	(29,154)	3,734,034	(201)
Commercial mortgage backed securities	536,051	2,876	(6,508)	539,683	—
U.S. government and government agencies	2,804,540	9,319	(24,437)	2,819,658	—
Non-U.S. government securities	1,096,440	19,036	(56,872)	1,134,276	—
Asset backed securities	1,123,987	6,897	(6,526)	1,123,616	(22)
Total	14,156,918	79,082	(178,759)	14,256,595	(5,831)
Equity securities (1)	532,680	62,627	(17,517)	487,570	—
Other investments	167,970	21,358	(2,465)	149,077	—
Short-term investments	609,393	273	(145)	609,265	—
Total	$ 15,466,961	$ 163,340	$ (198,886)	$ 15,502,507	$ (5,831)

(1) In securities lending transactions, the Company receives collateral in excess of the fair value of the securities pledged. For purposes of this table, the Company has excluded the collateral received and reinvested and included the securities pledged. See "—Securities Lending Agreements."

(2) Represents the total OTTI recognized in accumulated other comprehensive income ("AOCI"). It does not include the change in fair value subsequent to the impairment measurement date. At December 31, 2017, the net unrealized gain related to securities for which a non-credit OTTI was recognized in AOCI was $0.3 million, compared to a net unrealized loss of $2.8 million at December 31, 2016.

The following table summarizes, for all available for sale securities in an unrealized loss position, the fair value and gross unrealized loss by length of time the security has been in a continual unrealized loss position:

	Less than 12 Months		12 Months or More		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
December 31, 2017						
Fixed maturities (1):						
Corporate bonds	$ 2,320,716	$ (25,411)	$ 279,082	$ (6,929)	$ 2,599,798	$ (32,340)
Mortgage backed securities	221,113	(1,715)	28,380	(846)	249,493	(2,561)
Municipal bonds	1,030,389	(8,438)	132,469	(3,870)	1,162,858	(12,308)
Commercial mortgage backed securities	225,164	(1,899)	57,291	(2,369)	282,455	(4,268)
U.S. government and government agencies	2,646,415	(26,501)	111,879	(2,268)	2,758,294	(28,769)
Non-U.S. government securities	1,218,514	(15,546)	93,530	(1,775)	1,312,044	(17,321)
Asset backed securities	1,111,246	(5,915)	209,207	(2,699)	1,320,453	(8,614)
Total	8,773,557	(85,425)	911,838	(20,756)	9,685,395	(106,181)
Equity securities (1)	166,562	(5,583)	—	—	166,562	(5,583)
Other investments	15,025	(120)	—	—	15,025	(120)
Short-term investments	109,528	(563)	—	—	109,528	(563)
Total	$ 9,064,672	$ (91,691)	$ 911,838	$ (20,756)	$ 9,976,510	$ (112,447)
December 31, 2016						
Fixed maturities (1):						
Corporate bonds	$ 1,700,813	$ (43,011)	$ 46,902	$ (3,894)	$ 1,747,715	$ (46,905)
Mortgage backed securities	402,699	(8,134)	6,105	(223)	408,804	(8,357)
Municipal bonds	1,513,308	(28,504)	29,636	(650)	1,542,944	(29,154)
Commercial mortgage backed securities	231,374	(6,331)	5,635	(177)	237,009	(6,508)
U.S. government and government agencies	1,888,018	(24,437)	—	—	1,888,018	(24,437)
Non-U.S. government securities	807,598	(56,872)	—	—	807,598	(56,872)
Asset backed securities	627,557	(5,465)	65,723	(1,061)	693,280	(6,526)
Total	7,171,367	(172,754)	154,001	(6,005)	7,325,368	(178,759)
Equity securities (1)	269,381	(17,517)	—	—	269,381	(17,517)
Other investments	39,299	(2,465)	—	—	39,299	(2,465)
Short-term investments	29,146	(145)	—	—	29,146	(145)
Total	$ 7,509,193	$ (192,881)	$ 154,001	$ (6,005)	$ 7,663,194	$ (198,886)

(1) In securities lending transactions, the Company receives collateral in excess of the fair value of the securities pledged. For purposes of this table, the Company has excluded the collateral received under securities lending, at fair value and included the securities pledged under securities lending, at fair value. See "—Securities Lending Agreements."

At December 31, 2017, on a lot level basis, approximately 3,830 security lots out of a total of approximately 7,450 security lots were in an unrealized loss position and the largest single unrealized loss from a single lot in the Company's fixed maturity portfolio was $1.3 million. At December 31, 2016, on a lot level basis, approximately 3,540 security lots out of a total of approximately 7,240 security lots were in an unrealized loss position and the largest single unrealized loss from a single lot in the Company's fixed maturity portfolio was $4.6 million.

The contractual maturities of the Company's fixed maturities and fixed maturities pledged under securities lending agreements are shown in the following table. Expected maturities, which are management's best estimates, will differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without call or prepayment penalties.

	December 31, 2017		December 31, 2016	
Maturity	Estimated Fair Value	Amortized Cost	Estimated Fair Value	Amortized Cost
Due in one year or less	$ 550,711	$ 548,771	$ 560,830	$ 557,675
Due after one year through five years	7,436,153	7,434,801	6,158,148	6,211,099
Due after five years through 10 years	3,369,635	3,369,750	4,676,847	4,710,017
Due after 10 years	333,791	325,526	610,962	620,849
	11,690,290	11,678,848	12,006,787	12,099,640
Mortgage backed securities	316,141	317,062	490,093	493,656
Commercial mortgage backed securities	545,817	547,954	536,051	539,683
Asset backed securities	1,780,143	1,783,610	1,123,987	1,123,616
Total	$ 14,332,391	$ 14,327,474	$ 14,156,918	$ 14,256,595

Securities Lending Agreements

The Company enters into securities lending agreements with financial institutions to enhance investment income whereby it loans certain of its securities to third parties, primarily major brokerage firms, for short periods of time through a lending agent. The Company maintains legal control over the securities it lends, retains the earnings and cash flows associated with the loaned securities and receives a fee from the borrower for the temporary use of the securities. An indemnification agreement with the lending agent protects the Company in the event a borrower becomes insolvent or fails to return any of the securities on loan to the Company.

The Company receives collateral in the form of cash or securities. Cash collateral primarily consists of short-term investments. At December 31, 2017, the fair value of the cash collateral received on securities lending was $199.9 million and the fair value of security collateral received was $276.7 million. At December 31, 2016, the fair value of the cash collateral received on securities lending was $212.4 million and the fair value of security collateral received was $550.1 million.

The Company's securities lending transactions were accounted for as secured borrowings with significant investment categories as follows:

	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Less than 30 Days	30-90 Days	90 Days or More	Total
December 31, 2017					
U.S. government and government agencies	$ 343,425	$ 20,309	$ 76,086	$ —	$ 439,820
Corporate bonds	28,003	—	—	—	28,003
Equity securities	8,782	—	—	—	8,782
Total	$ 380,210	$ 20,309	$ 76,086	$ —	$ 476,605
Gross amount of recognized liabilities for securities lending in offsetting disclosure in Note 11					$ —
Amounts related to securities lending not included in offsetting disclosure in Note 11					$ 476,605
December 31, 2016					
U.S. government and government agencies	$ 556,015	$ 31,244	$ 126,093	$ 5,140	$ 718,492
Corporate bonds	29,078	—	—	—	29,078
Equity securities	14,984	—	—	—	14,984
Total	$ 600,077	$ 31,244	$ 126,093	$ 5,140	$ 762,554
Gross amount of recognized liabilities for securities lending in offsetting disclosure in Note 10					$ —
Amounts related to securities lending not included in offsetting disclosure in Note 10					$ 762,554

Other Investments

The following table summarizes the Company's other investments, including available for sale and fair value option components:

	December 31, 2017	December 31, 2016
Available for sale securities:		
Asian and emerging markets	$ 135,140	$ 84,778
Investment grade fixed income	53,878	33,923
Credit related funds	18,365	7,469
Other	57,606	41,800
Total available for sale	264,989	167,970
Fair value option:		
Term loan investments (par value: $1,223,453 and $1,208,537)	1,200,882	1,190,799
Mezzanine debt funds	252,160	127,943
Credit related funds	175,422	218,298
Investment grade fixed income	102,347	75,468
Asian and emerging markets	258,541	178,568
Other (1)	147,029	129,717
Total fair value option	2,136,381	1,920,793
Total	$ 2,401,370	$ 2,088,763

(1) Includes fund investments with strategies in mortgage servicing rights, transportation and infrastructure assets and other.

Certain of the Company's other investments are in investment funds for which the Company has the option to redeem at agreed upon values as described in each investment fund's subscription agreement. Depending on the terms of the various subscription agreements, investments in investment funds may be redeemed daily, monthly, quarterly or on other terms. Two common redemption restrictions which may impact the Company's ability to redeem these investment funds are gates and lockups. A gate is a suspension of redemptions which may be implemented by the general partner or investment manager of the fund in order to defer, in whole or in part, the redemption request in the event the aggregate amount of redemption requests exceeds a predetermined percentage of the investment fund's net assets which may otherwise hinder the general partner or investment manager's ability to liquidate holdings in an orderly fashion in order to generate the cash necessary to fund extraordinarily large redemption payouts. A lockup period is the initial amount of time an investor is contractually required to hold the security before having the ability to redeem. If the investment funds are eligible to be redeemed, the time to redeem such fund can take weeks or months following the notification.

Fair Value Option

The following table summarizes the Company's assets and liabilities which are accounted for using the fair value option:

	December 31, 2017	December 31, 2016
Fixed maturities	$ 1,642,855	$ 1,099,116
Other investments	2,136,381	1,920,793
Short-term investments	297,426	373,669
Equity securities	139,575	27,642
Investments accounted for using the fair value option	$ 4,216,237	$ 3,421,220

Limited Partnership Interests

In the normal course of its activities, the Company invests in limited partnerships as part of its overall investment strategy. Such amounts are included in 'investments accounted for using the equity method' and 'investments accounted for using the fair value option.' Based on the new accounting guidance for consolidation, the Company determined that these limited partnership interests represented variable interests in the funds because the general partner did not have a significant interest in the funds. The Company's maximum exposure to loss with respect to these investments is limited to the investment carrying amounts reported in the Company's consolidated balance sheet and any unfunded commitment.

The following table summarizes investments in limited partnership interests where the Company has a variable interest by balance sheet item:

	December 31,	
	2017	2016
Investments accounted for using the equity method (1)	$ 1,041,321	$ 800,970
Investments accounted for using the fair value option (2)	130,471	90,804
Total	$ 1,171,792	$ 891,774

(1) Aggregate unfunded commitments were $1,020.1 million at December 31, 2017, compared to $776.6 million at December 31, 2016.
(2) Aggregate unfunded commitments were $100.4 million at December 31, 2017, compared to $16.7 million at December 31, 2016.

Net Investment Income

The components of net investment income were derived from the following sources:

	Year Ended December 31,	
	2017	2016
Fixed maturities	$ 385,921	$ 295,502
Equity securities (dividends)	11,752	12,536
Short-term investments	10,720	5,377
Other (1)	154,113	132,777
Gross investment income	562,506	446,192
Investment expenses	(96,940)	(81,475)
Net investment income	$ 465,566	$ 364,717

(1) Includes dividends and other distributions from investment funds, term loan investments, funds held balances, cash balances and other.

Net Realized Gains (Losses)

Net realized gains (losses) were as follows, excluding the other-than-temporary impairment provisions discussed below:

	Year Ended December 31,	
	2017	2016
Available for sale securities:		
Gross gains on investment sales	$ 286,415	$ 309,880
Gross losses on investment sales	(203,873)	(214,443)
Change in fair value of assets and liabilities accounted for using the fair value option:		
Fixed maturities	29,451	47,890
Other investments	51,124	58,687
Equity securities	18,707	366
Short term investments	272	93
Derivative instruments (1)	(7,356)	(22,612)
Other (2)	(27,922)	(41,042)
Net realized gains	$ 146,818	$ 138,819

(1) See Note 10 for information on the Company's derivative instruments.
(2) Includes the re-measurement of contingent consideration liability amounts.

Equity in Net Income (Loss) of Investment Funds Accounted For Using the Equity Method

The Company recorded equity in net income related to investment funds accounted for using the equity method of $142.3 million for 2017, compared to $48.5 million for 2016 and $25.5 million for 2015. In applying the equity method, investments are initially recorded at cost and are subsequently adjusted based on the Company's proportionate share of the net income or loss of the funds (which include changes in the fair value of the underlying securities in the funds). Such investments are generally recorded on a one to three month lag based on the availability of reports from the investment funds.

Other-Than-Temporary Impairments

The Company performs quarterly reviews of its available for sale investments in order to determine whether declines in fair value below the amortized cost basis were considered other-than-temporary in accordance with applicable guidance.

The following table details the net impairment losses recognized in earnings by asset class:

	Year Ended December 31,	
	2017	2016
Fixed maturities:		
Mortgage backed securities	$ (1,488)	$ (964)
Corporate bonds	(2,884)	(5,674)
Non-U.S. government securities	(376)	(823)
Asset backed securities	—	(14,736)
U.S. government and government agencies	(426)	—
Municipal bonds	(375)	(726)
Total	(5,549)	(22,923)
Equity securities	(1,422)	(3,990)
Other investments	(167)	(3,529)
Net impairment losses recognized in earnings	$ (7,138)	$ (30,442)

A description of the methodology and significant inputs used to measure the amount of net impairment losses recognized in earnings in 2017 is as follows:

- Corporate bonds – the Company reviewed the business prospects, credit ratings, estimated loss given default factors, foreign currency impacts and information received from asset managers and rating agencies for certain corporate bonds. Impairment losses were primarily from foreign currency impacts;

- Mortgage backed securities – the Company utilized underlying data provided by asset managers, cash flow projections and additional information from credit agencies in order to determine an expected recovery value for each security. Impairment losses primarily reflected the Company's decision to liquidate a portfolio of mortgage backed securities in April 2017. The Company recorded impairment losses on securities in such portfolio that were in an unrealized loss position at March 31, 2017;

- Equity securities – the Company utilized information received from asset managers on common stocks, including the business prospects, recent events, industry and market data and other factors. Impairment losses were primarily on equities which were in an unrealized loss position for a significant length of time.

The Company believes that the OTTI included in accumulated other comprehensive income at December 31, 2017 on the securities which were considered by the Company to be impaired was due to market and sector-related factors (*i.e.*, not credit losses). At December 31, 2017, the Company did not intend to sell these securities, or any other securities which were in an unrealized loss position, and determined that it is more likely than not that the Company will not be required to sell such securities before recovery of their cost basis.

The following table provides a roll forward of the amount related to credit losses recognized in earnings for which a portion of an OTTI was recognized in accumulated other comprehensive income:

	Year Ended December 31,	
	2017	2016
Balance at start of year	$ 13,138	$ 26,875
Credit loss impairments recognized on securities not previously impaired	31	2,186
Credit loss impairments recognized on securities previously impaired	210	582
Reductions for increases in cash flows expected to be collected that are recognized over the remaining life of the security	—	—
Reductions for securities sold during the period	(12,612)	(16,505)
Balance at end of year	$ 767	$ 13,138

Restricted Assets

primarily consist of fixed maturities, with various regulatory authorities to support its insurance and reinsurance operations. The Company's insurance and reinsurance subsidiaries maintain assets in trust accounts as collateral for insurance and reinsurance transactions with affiliated companies and also have investments in segregated portfolios primarily to provide collateral or guarantees for letters of credit to third parties. See Note 14 for further details.

The following table details the value of the Company's restricted assets:

	December 31,	
	2017	2016
Assets used for collateral or guarantees:		
Affiliated transactions	$ 4,323,726	$ 3,871,971
Third party agreements	1,674,304	1,513,079
Deposits with U.S. regulatory authorities	616,987	472,890
Deposits with non-U.S. regulatory authorities	55,895	44,399
Total restricted assets	$ 6,670,912	$ 5,902,339

9. Fair Value

Accounting guidance regarding fair value measurements addresses how companies should measure fair value when they are required to use a fair value measure for recognition or disclosure purposes under GAAP and provides a common definition of fair value to be used throughout GAAP. It defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly fashion between market participants at the measurement date. In addition, it establishes a three-level valuation hierarchy for the disclosure of fair value measurements. The valuation hierarchy is based upon the transparency of inputs to the valuation of an asset or liability as of the measurement date. The level in the hierarchy within which a given fair value measurement falls is determined based on the lowest level input that is significant to the measurement (Level 1 being the highest priority and Level 3 being the lowest priority).

The levels in the hierarchy are defined as follows:

Level 1: Inputs to the valuation methodology are observable inputs that reflect quoted prices (unadjusted) for *identical* assets or liabilities in *active markets*

Level 2: Inputs to the valuation methodology include quoted prices for similar assets and liabilities in active markets, and inputs that are observable for the asset or liability, either directly or indirectly, for substantially the full term of the financial instrument

Level 3: Inputs to the valuation methodology are unobservable and significant to the fair value measurement

Following is a description of the valuation methodologies used for securities measured at fair value, as well as the general classification of such securities pursuant to the valuation hierarchy. The Company reviews its securities measured at fair value and discusses the proper classification of such investments with investment advisers and others.

The Company determines the existence of an active market based on its judgment as to whether transactions for the financial instrument occur in such market with sufficient frequency and volume to provide reliable pricing information. The independent pricing sources obtain market quotations and actual transaction prices for securities that have quoted prices in active markets. The Company uses quoted values and other data provided by nationally recognized independent pricing sources as inputs into its process for determining fair values of its fixed maturity investments. To validate the techniques or models used by pricing sources, the Company's review process includes, but is not limited to: (i) quantitative analysis (e.g., comparing the quarterly return for each managed portfolio to its target benchmark, with significant differences identified and investigated); (ii) a review of the average number of prices obtained in the pricing process and the range of resulting fair values; (iii) initial and ongoing evaluation of methodologies used by outside parties to calculate fair value; (iv) a comparison of the fair value estimates to the Company’s knowledge of the current market; (v) a comparison of the pricing services' fair values to other pricing services' fair values for the same investments; and (vi) periodic back-testing, which includes randomly selecting purchased or sold securities and comparing the executed prices to the fair value estimates from the pricing service. A price source hierarchy was maintained in order to determine which price source would be used (*i.e.*, a price obtained from a pricing service with more seniority in the hierarchy will be used over a less senior one in all cases). The hierarchy prioritizes pricing services based on availability and reliability and assigns the highest priority to index providers. Based on the above review, the Company will challenge any prices for a security or portfolio which are considered not to be representative of fair value. For a limited number of securities, the Company substituted prices from the independent pricing sources at December 31, 2017 and utilized prices received from broker-dealers.

In certain circumstances, when fair values are unavailable from these independent pricing sources, quotes are obtained directly from broker-dealers who are active in the corresponding markets. Such quotes are subject to the validation procedures noted above. Of the $20.8 billion of financial assets and liabilities measured at fair value at December 31, 2017, approximately $181.5 million, or 0.9%, were priced using non-binding broker-dealer quotes. Of the $19.1 billion of financial assets and liabilities measured at fair value at December 31, 2016, approximately $234.0 million, or 1.2%, were priced using non-binding broker-dealer quotes.

Fixed maturities

The Company uses the market approach valuation technique to estimate the fair value of its fixed maturity securities, when possible. The market approach includes obtaining prices from independent pricing services, such as index providers and pricing vendors, as well as to a lesser extent quotes from broker-dealers. The independent pricing sources obtain market quotations and actual transaction prices for securities that have quoted prices in active markets. Each source has its own

proprietary method for determining the fair value of securities that are not actively traded. In general, these methods involve the use of "matrix pricing" in which the independent pricing source uses observable market inputs including, but not limited to, investment yields, credit risks and spreads, benchmarking of like securities, broker-dealer quotes, reported trades and sector groupings to determine a reasonable fair value. The following describes the significant inputs generally used to determine the fair value of the Company's fixed maturity securities by asset class:

- U.S. government and government agencies — valuations provided by independent pricing services, with all prices provided through index providers and pricing vendors. The Company determined that all U.S. Treasuries would be classified as Level 1 securities due to observed levels of trading activity, the high number of strongly correlated pricing quotes received on U.S. Treasuries and other factors. The fair values of U.S. government agency securities are generally determined using the spread above the risk-free yield curve. As the yields for the risk-free yield curve and the spreads for these securities are observable market inputs, the fair values of U.S. government agency securities are classified within Level 2.

- Corporate bonds — valuations provided by independent pricing services, substantially all through index providers and pricing vendors with a small amount through broker-dealers. The fair values of these securities are generally determined using the spread above the risk-free yield curve. These spreads are generally obtained from the new issue market, secondary trading and from broker-dealers who trade in the relevant security market. As the significant inputs used in the pricing process for corporate bonds are observable market inputs, the fair value of these securities are classified within Level 2. One security is included in Level 3 due to a low level of transparency on the inputs used in the pricing process.

- Mortgage-backed securities — valuations provided by independent pricing services, substantially all through pricing vendors and index providers with a small amount through broker-dealers. The fair values of these securities are generally determined through the use of pricing models (including Option Adjusted Spread) which use spreads to determine the expected average life of the securities. These spreads are generally obtained from the new issue market, secondary trading and from broker-dealers who trade in the relevant security market. The pricing services also review prepayment speeds and other indicators, when applicable. As the significant inputs used in the pricing process for mortgage-backed securities are observable market inputs, the fair value of these securities are classified within Level 2.

- Municipal bonds — valuations provided by independent pricing services, with all prices provided through index providers and pricing vendors. The fair values of these securities are generally determined using spreads obtained from broker-dealers who trade in the relevant security market, trade prices and the new issue market. As the significant inputs used in the pricing process for municipal bonds are observable market inputs, the fair value of these securities are classified within Level 2.

- Commercial mortgage-backed securities — valuations provided by independent pricing services, substantially all through index providers and pricing vendors with a small amount through broker-dealers. The fair values of these securities are generally determined through the use of pricing models which use spreads to determine the appropriate average life of the securities. These spreads are generally obtained from the new issue market, secondary trading and from broker-dealers who trade in the relevant security market. The pricing services also review prepayment speeds and other indicators, when applicable. As the significant inputs used in the pricing process for commercial mortgage-backed securities are observable market inputs, the fair value of these securities are classified within Level 2.

- Non-U.S. government securities — valuations provided by independent pricing services, with all prices provided through index providers and pricing vendors. The fair values of these securities are generally based on international indices or valuation models which include daily observed yield curves, cross-currency basis index spreads and country credit spreads. As the significant inputs used in the pricing process for non-U.S. government securities are observable market inputs, the fair value of these securities are classified within Level 2.

- Asset-backed securities — valuations provided by independent pricing services, substantially all through index providers and pricing vendors with a small amount through broker-dealers. The fair values of these securities are generally determined through the use of pricing models (including Option Adjusted Spread) which use spreads to determine the appropriate average life of the securities. These spreads are generally obtained from the new issue market, secondary trading and from broker-dealers who trade in the relevant security market. The pricing services also review prepayment speeds and other indicators, when applicable. As the significant inputs used in the pricing process for asset-backed securities are observable market inputs, the fair value of these securities are classified within Level 2. A small number of securities are included in Level 3 due to a low level of transparency on the inputs used in the pricing process.

During 2017, the Company transferred $17.6 million of fixed maturities from Level 2 to Level 3 based on a review of the pricing of such securities, as described above.

Equity securities

The Company determined that exchange-traded equity securities would be included in Level 1 as their fair values are based on quoted market prices in active markets. Other equity securities are included in Level 2 of the valuation hierarchy.

Other investments

The Company determined that exchange-traded investments would be included in Level 1 as their fair values are based on quoted market prices in active markets. Other investments also include term loan investments for which fair values are estimated by using quoted prices of term loan investments with similar characteristics, pricing models or matrix pricing. Such investments are generally classified within Level 2. A small number of securities are included in Level 3 due to a low level of transparency on the inputs used in the pricing process. The fair values for certain of the Company's other investments are determined using net asset values as advised by external fund managers. The net asset value is based on the fund manager's valuation of the underlying holdings in accordance with the fund's governing documents. In accordance with applicable accounting guidance, certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. During 2017, the Company transferred $33.7 million of other investments from Level 2 to Level 3 based on a review of the pricing of such securities, as described above.

Derivative instruments

The Company's futures contracts, foreign currency forward contracts, interest rate swaps and other derivatives trade in the over-the-counter derivative market. The Company uses the market approach valuation technique to estimate the fair value for these derivatives based on significant observable market inputs from third party pricing vendors, non-binding broker-dealer quotes and/or recent trading activity. As the significant inputs used in the pricing process for these derivative instruments are observable market inputs, the fair value of these securities are classified within Level 2.

Short-term investments

The Company determined that certain of its short-term investments held in highly liquid money market-type funds, Treasury bills and commercial paper would be included in Level 1 as their fair values are based on quoted market prices in active markets. The fair values of other short-term investments are generally determined using the spread above the risk-free yield curve and are classified within Level 2.

Contingent consideration liabilities

Contingent consideration liabilities (included in 'other liabilities' in the consolidated balance sheets) include amounts related to the Company's 2014 acquisition of CMG Mortgage Insurance Company and its affiliated mortgage insurance companies (the "CMG Entities") and other acquisitions. Such amounts are remeasured at fair value at each balance sheet date with changes in fair value recognized in 'net realized gains (losses).' To determine the fair value of contingent consideration liabilities, the Company estimates future payments using an income approach based on modeled inputs which include a weighted average cost of capital. The Company determined that contingent consideration liabilities would be included within Level 3.

The following table presents the Company's financial assets and liabilities measured at fair value by level at December 31, 2017:

		Fair Value Measurement Using:		
	Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets measured at fair value:				
Available for sale securities:				
Fixed maturities (1):				
Corporate bonds	$ 4,434,439	$ —	$ 4,424,979	$ 9,460
Mortgage backed securities	316,141	—	315,754	387
Municipal bonds	2,158,840	—	2,158,840	—
Commercial mortgage backed securities	545,817	—	545,277	540
U.S. government and government agencies	3,484,257	3,408,902	75,355	—
Non-U.S. government securities	1,612,754	—	1,612,754	—
Asset backed securities	1,780,143	—	1,775,143	5,000
Total	14,332,391	3,408,902	10,908,102	15,387
Equity securities	504,333	498,182	6,151	—
Short-term investments	1,372,502	1,324,192	48,310	—
Other investments	76,427	74,611	1,816	—
Other investments measured at net asset value (2)	188,562			
Total other investments	264,989	74,611	1,816	—
Derivative instruments (4)	15,747	—	15,747	—
Fair value option:				
Corporate bonds	1,068,725	—	1,056,508	12,217
Non-U.S. government bonds	195,788	—	195,788	—
Mortgage backed securities	20,491	—	20,491	—
Municipal bonds	15,210	—	15,210	—
Commercial mortgage backed securities	11,997	—	11,997	—
Asset backed securities	99,354	—	99,354	—
U.S. government and government agencies	231,290	231,019	271	—
Short-term investments	297,426	40,166	257,260	—
Equity securities	139,576	67,440	72,136	—
Other investments	1,128,093	82,291	986,635	59,167
Other investments measured at net asset value (2)	1,008,287			
Total	4,216,237	420,916	2,715,650	71,384
Total assets measured at fair value	$ 20,706,199	$ 5,726,803	$ 13,695,776	$ 86,771
Liabilities measured at fair value:				
Contingent consideration liabilities	$ (60,996)	$ —	$ —	$ (60,996)
Securities sold but not yet purchased (3)	(34,375)	—	(34,375)	—
Derivative instruments (4)	(20,464)	—	(20,464)	—
Total liabilities measured at fair value	$ (115,835)	$ —	$ (54,839)	$ (60,996)

(1) In securities lending transactions, the Company receives collateral in excess of the fair value of the securities pledged. For purposes of this table, the Company has excluded the collateral received under securities lending, at fair value and included the securities pledged under securities lending, at fair value.

(2) In accordance with applicable accounting guidance, certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the consolidated balance sheets.

(3) Represents the Company's obligations to deliver securities that it did not own at the time of sale. Such amounts are included in "other liabilities" on the Company's consolidated balance sheets.

(4) See Note 10 for information on the Company's derivative instruments.

The following table presents the Company's financial assets and liabilities measured at fair value by level at December 31, 2016:

		Fair Value Measurement Using:		
	Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets measured at fair value:				
Available for sale securities:				
Fixed maturities (1):				
Corporate bonds	$ 4,392,373	$ —	$ 4,374,029	$ 18,344
Mortgage backed securities	490,093	—	490,093	—
Municipal bonds	3,713,434	—	3,713,434	—
Commercial mortgage backed securities	536,051	—	536,051	—
U.S. government and government agencies	2,804,540	2,691,575	112,965	—
Non-U.S. government securities	1,096,440	—	1,096,440	—
Asset backed securities	1,123,987	—	1,112,698	11,289
Total	14,156,918	2,691,575	11,435,710	29,633
Equity securities	532,680	529,695	2,985	—
Short-term investments	609,393	606,250	3,143	—
Other investments	112,313	112,313	—	—
Other investments measured at net asset value (2)	55,657			
Total other investments	167,970	112,313	—	—
Derivative instruments (3)	28,410	—	28,410	—
Fair value option:				
Corporate bonds	790,935	—	790,935	—
Non-U.S. government bonds	61,747	—	61,747	—
Mortgage backed securities	18,624	—	18,624	—
Asset backed securities	30,324	—	30,324	—
U.S. government and government agencies	197,486	197,486	—	—
Short-term investments	373,669	309,127	64,542	—
Equity securities	27,642	25,328	2,314	—
Other investments	1,226,242	80,706	1,120,536	25,000
Other investments measured at net asset value (2)	694,551			
Total	3,421,220	612,647	2,089,022	25,000
Total assets measured at fair value	$ 18,916,591	$ 4,552,480	$ 13,559,270	$ 54,633
Liabilities measured at fair value:				
Contingent consideration liabilities	$ (122,350)	$ —	$ —	$ (122,350)
Securities sold but not yet purchased (3)	(33,157)	—	(33,157)	—
Derivative instruments (4)	(26,049)	—	(26,049)	—
Total liabilities measured at fair value	$ (181,556)	$ —	$ (59,206)	$ (122,350)

(1) In securities lending transactions, the Company receives collateral in excess of the fair value of the securities pledged. For purposes of this table, the Company has excluded the collateral received under securities lending, at fair value and included the securities pledged under securities lending, at fair value.

(2) In accordance with applicable accounting guidance, certain investments that are measured at fair value using the net asset value per share (or its equivalent) practical expedient have not been classified in the fair value hierarchy. The fair value amounts presented in this table are intended to permit reconciliation of the fair value hierarchy to the amounts presented in the consolidated balance sheets.

(3) Represents the Company's obligations to deliver securities that it did not own at the time of sale. Such amounts are included in "other liabilities" on the Company's consolidated balance sheets.

(4) See Note 10 for information on the Company's derivative instruments.

The following table presents a reconciliation of the beginning and ending balances for all financial assets and liabilities measured at fair value on a recurring basis using Level 3 inputs for 2017 and 2016:

	Assets				Liabilities
	Available For Sale		Fair Value Option		
	Asset Backed Securities	Corporate Bonds	Other Investments	Total	Contingent Consideration Liabilities
Year Ended December 31, 2017					
Balance at beginning of year	$ 57,500	$ 16,368	$ —	$ 73,868	$ (96,048)
Total gains or (losses) (realized/unrealized)					
Included in earnings (1)	(14,730)	1,200	—	(13,530)	(26,912)
Included in other comprehensive income	—	—	—	—	74
Purchases, issuances, sales and settlements					
Purchases	—	776	—	776	—
Issuances	—	—	—	—	—
Sales	—	—	—	—	—
Settlements	(31,481)	—	—	(31,481)	536
Transfers in and/or out of Level 3	—	—	25,000	25,000	—
Balance at end of year	$ 11,289	$ 18,344	$ 25,000	$ 54,633	$ (122,350)
Year Ended December 31, 2016					
Balance at beginning of year	$ 57,500	$ —	$ —	$ 57,500	$ (61,845)
Total gains or (losses) (realized/unrealized)					
Included in earnings (1)	—	—	—	—	(33,135)
Included in other comprehensive income	—	—	—	—	—
Purchases, issuances, sales and settlements					
Purchases	—	—	—	—	—
Issuances	—	—	—	—	(1,068)
Sales	—	—	—	—	—
Settlements	—	—	—	—	—
Transfers in and/or out of Level 3	—	16,368	—	16,368	—
Balance at end of year	$ 57,500	$ 16,368	$ —	$ 73,868	$ (96,048)

(1) Gains or losses on asset backed securities were included in net impairment losses recognized in earnings while gains or losses on corporate bonds and contingent consideration liabilities were included in net realized gains (losses).

Financial Instruments Disclosed, But Not Carried, At Fair Value

The Company uses various financial instruments in the normal course of its business. The carrying values of cash, accrued investment income, receivable for securities sold, certain other assets, payable for securities purchased and certain other liabilities approximated their fair values at December 31, 2017, due to their respective short maturities. As these financial instruments are not actively traded, their respective fair values are classified within Level 2.

At December 31, 2017, the 2043 senior notes of Arch-U.S. were carried at their cost, net of debt issuance costs, of $494.6 million and had a fair value of $584.7 million. The 2026 senior notes of Arch Finance were carried at their cost, net of debt issuance costs, of $496.0 million and had a fair value of $520.9 million, while the 2046 senior notes were carried at their cost, net of debt issuance costs, of $445.2 million and had a fair value of $521.2 million. The fair values of the senior notes were obtained from a third party pricing service and are based on observable market inputs. As such, the fair value of the senior notes is classified within Level 2.

Fair Value Measurements on a Non-Recurring Basis

The Company measures the fair value of certain assets on a non-recurring basis, generally quarterly, annually, or when events or changes in circumstances indicate that the carrying amount of the assets may not be recoverable. These assets include investment funds accounted for using the equity method, certain other investments, goodwill and intangible assets, and long-lived assets.

The Company uses a variety of techniques to measure the fair value of these assets when appropriate, as described below:

Investments accounted for using the equity method. When the Company determines that the carrying value of these assets may not be recoverable, the Company records the assets at fair value with the loss recognized in income. In such cases, the Company measures the fair value of these assets using the techniques discussed above in "—Fair Value Measurements on a Recurring Basis."

Goodwill and Intangible Assets. The Company tests goodwill and intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount may not be recoverable, but at least annually for goodwill. When the Company determines goodwill and intangible assets may be impaired, the Company uses techniques including discounted expected future cash flows, to measure fair value.

Long-Lived Assets. The Company tests its long-lived assets for impairment whenever events or changes in circumstances indicate the carrying amount of a long-lived asset may not be recoverable.

10. Derivative Instruments

The Company's investment strategy allows for the use of derivative instruments. The Company's derivative instruments are recorded on its consolidated balance sheets at fair value. The Company utilizes exchange traded U.S. Treasury note, Eurodollar and other futures contracts and commodity futures to manage portfolio duration or replicate investment positions in its portfolios and the Company routinely utilizes foreign currency forward contracts, currency options, index futures contracts and other derivatives as part of its total return objective. In addition, certain of the Company's investments are managed in portfolios which incorporate the use of foreign currency forward contracts which are intended to provide an economic hedge against foreign currency movements.

In addition, the Company purchases to-be-announced mortgage backed securities ("TBAs") as part of its investment strategy. TBAs represent commitments to purchase a future issuance of agency mortgage backed securities. For the period between purchase of a TBA and issuance of the underlying security, the Company's position is accounted for as a derivative. The Company purchases TBAs in both long and short positions to enhance investment performance and as part of its overall investment strategy.

The following table summarizes information on the fair values and notional values of the Company's derivative instruments:

	Estimated Fair Value		
	Asset Derivatives	Liability Derivatives	Notional Value (1)
December 31, 2017			
Futures contracts (2)	$ 3,371	$ (1,542)	$1,452,497
Foreign currency forward contracts (2)	4,478	(4,381)	686,941
TBAs (3)	27,184	—	27,066
Other (2)	7,898	(14,541)	1,457,345
Total	$ 42,931	$ (20,464)	
December 31, 2016			
Futures contracts (2)	$ 360	$ (9,398)	$1,655,530
Foreign currency forward contracts (2)	9,354	(12,941)	1,186,386
TBAs (3)	—	—	—
Other (2)	20,287	(3,710)	1,014,863
Total	$ 30,001	$ (26,049)	

(1) Represents the absolute notional value of all outstanding contracts, consisting of long and short positions.
(2) The fair value of asset derivatives are included in 'other assets' and the fair value of liability derivatives are included in 'other liabilities.' Such amounts include risk in force on GSE credit-risk sharing transactions that are accounted for as derivatives.
(3) The fair value of TBAs are included in 'fixed maturities available for sale, at fair value.'

The Company did not hold any derivatives which were designated as hedging instruments at December 31, 2017 or 2016.

The Company's derivative instruments can be traded under master netting agreements, which establish terms that apply to all derivative transactions with a counterparty. In the event of a bankruptcy or other stipulated event of default, such agreements provide that the non-defaulting party may elect to terminate all outstanding derivative transactions, in which case all individual derivative positions (loss or gain) with a counterparty are closed out and netted and replaced with a single amount, usually referred to as the termination amount, which is expressed in a single currency. The resulting single net amount, where positive, is payable to the party "in-the-money" regardless of whether or not it is the defaulting party, unless the parties have agreed that only the non-defaulting party is entitled to receive a termination payment where the net amount is positive and is in its favor. Effectively, contractual close-out netting reduces the derivatives credit exposure from a gross to a net exposure. At December 31, 2017, $40.6 million and $19.6 million, respectively, of asset derivatives and liability derivatives were subject to a master netting agreement compared to $28.4 million and $26.0 million, respectively, at December 31, 2016. The remaining derivatives included in the table above were not subject to a master netting agreement.

All realized and unrealized contract gains and losses on the Company's derivative instruments are reflected in net realized gains (losses) in the consolidated statements of income, as summarized in the following table:

	Year Ended December 31,	
Derivatives not designated as hedging instruments	**2017**	**2016**
Net realized gains (losses):		
Futures contracts	$ 9,318	$ (5,474)
Foreign currency forward contracts	(14,495)	(9,588)
TBAs	9	577
Other	(2,188)	(8,127)
Total	$ (7,356)	$ (22,612)

11. Other Comprehensive Income (Loss)

The following table presents the changes in each component of AOCI, net of noncontrolling interests:

	Unrealized Appreciation on Available-For-Sale Investments	Foreign Currency Translation Adjustments	Total
Year Ended December 31, 2017			
Beginning balance	$ (27,579)	$ (86,486)	$ (114,065)
Other comprehensive income (loss) before reclassifications	252,875	44,671	297,546
Amounts reclassified from accumulated other comprehensive income	(67,863)	—	(67,863)
Net current period other comprehensive income (loss)	185,012	44,671	229,683
Ending balance	$ 157,433	$ (41,815)	$ 115,618
Year Ended December 31, 2016			
Beginning balance	$ 50,061	$ (66,563)	$ (16,502)
Other comprehensive income (loss) before reclassifications	(21,290)	(19,923)	(41,213)
Amounts reclassified from accumulated other comprehensive income	(56,350)	—	(56,350)
Net current period other comprehensive income (loss)	(77,640)	(19,923)	(97,563)
Ending balance	$ (27,579)	$ (86,486)	$ (114,065)

The following table presents details about amounts reclassified from accumulated other comprehensive income:

Details About AOCI Components	Consolidated Statement of Income Line Item That Includes Reclassification	Amounts Reclassed from AOCI Year Ended December 31, 2017	2016
Unrealized appreciation on available-for-sale investments			
	Net realized gains	$ 82,542	$ 95,437
	Other-than-temporary impairment losses	(7,138)	(30,794)
	Total before tax	75,404	64,643
	Income tax expense	(7,541)	(8,293)
	Net of tax	$ 67,863	$ 56,350

Following are the related tax effects allocated to each component of other comprehensive income (loss):

	Before Tax Amount	Tax Expense (Benefit)	Net of Tax Amount
Year Ended December 31, 2017			
Unrealized appreciation (decline) in value of available-for-sale investments:			
Unrealized holding losses arising during period	$ 266,530	$ 13,655	$ 252,875
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	—	—	—
Less reclassification of net realized gains included in net income	75,404	7,541	67,863
Foreign currency translation adjustments	44,675	534	44,141
Other comprehensive income (loss)	$ 235,801	$ 6,648	$ 229,153
Year Ended December 31, 2016			
Unrealized appreciation (decline) in value of available-for-sale investments:			
Unrealized holding gains arising during period	$ (26,084)	$ (5,146)	$ (20,938)
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	(352)	—	(352)
Less reclassification of net realized gains included in net income	64,643	8,293	56,350
Foreign currency translation adjustments	(19,731)	261	(19,992)
Other comprehensive income (loss)	$ (110,810)	$ (13,178)	$ (97,632)

12. Income Taxes

Arch Re Bermuda is incorporated under the laws of Bermuda and, under current Bermuda law, is not obligated to pay any taxes in Bermuda based upon income or capital gains. The Company has received a written undertaking from the Minister of Finance in Bermuda under the Exempted Undertakings Tax Protection Act 1966 that, in the event that any legislation is enacted in Bermuda imposing any tax computed on profits, income, gain or appreciation on any capital asset, or any tax in the nature of estate duty or inheritance tax, such tax will not be applicable to Arch Capital or any of its operations until March 31, 2035. This undertaking does not, however, prevent the imposition of taxes on any person ordinarily resident in Bermuda or any company in respect of its ownership of real property or leasehold interests in Bermuda.

Arch Re Bermuda and its non-U.S. subsidiaries will be subject to U.S. federal income tax only to the extent that they derive U.S. source income that is subject to U.S. withholding tax or income that is effectively connected with the conduct of a trade or business within the U.S. and is not exempt from U.S. tax under an applicable income tax treaty with the U.S. Arch Re Bermuda and its non-U.S. subsidiaries will be subject to a withholding tax on dividends from U.S. investments and interest from certain U.S. payors (subject to reduction by any applicable income tax treaty). Arch Re Bermuda and its non-U.S. subsidiaries intend to conduct their operations in a manner that will not cause them to be treated as engaged in a trade or business in the United States and, therefore, will not be required to pay U.S. federal income taxes (other than U.S. excise taxes on insurance and reinsurance premium and withholding taxes on dividends and certain other U.S. source investment income). However, because there is uncertainty as to the activities which constitute being engaged in a trade or business within the United States, there can be no assurances that the U.S. Internal Revenue Service will not contend successfully that Arch Re Bermuda or its non-U.S. subsidiaries are engaged in a trade or business in the United States. If Arch Re Bermuda or

any of its non-U.S. subsidiaries were subject to U.S. income tax, Arch Re Bermuda's shareholders' equity and earnings could be materially adversely affected. Arch Re Bermuda has subsidiaries and branches that operate in various jurisdictions around the world that are subject to tax in the jurisdictions in which they operate. The significant jurisdictions in which Arch Re Bermuda's subsidiaries and branches are subject to tax include the United States, United Kingdom, Ireland, Canada, Switzerland, Australia and Denmark.

The components of income taxes attributable to operations were as follows:

	Year Ended December 31,	
	2017	2016
Current expense (benefit):		
United States	$ (51,030)	$ 38,961
Non-U.S.	5,691	10,345
	(45,339)	49,306
Deferred expense (benefit):		
United States	167,561	(14,418)
Non-U.S.	4,200	(4,729)
	171,761	(19,147)
Income tax expense (benefit)	$ 126,422	$ 30,159

The Company's income or loss before income taxes was earned in the following jurisdictions:

	Year Ended December 31,	
	2017	2016
Income (Loss) Before Income Taxes:		
Bermuda	$ 490,526	$ 873,554
United States	375,691	48,441
Other	(31,084)	3,237
Total	$ 835,133	$ 925,232

The expected tax provision computed on pre-tax income or loss at the weighted average tax rate has been calculated as the sum of the pre-tax income in each jurisdiction multiplied by that jurisdiction's applicable statutory tax rate. The 2017 statutory tax rates by jurisdiction were as follows: Bermuda (0.0%), United States (35.0%), United Kingdom (19.25%), Ireland (12.5%), Denmark (22%), Canada (26.5%), Gibraltar (10.0%), Australia (30.0%), Hong Kong (16.5%) and the Netherlands (20.0%).

A reconciliation of the difference between the provision for income taxes and the expected tax provision at the weighted average tax rate follows:

	Year Ended December 31,	
	2017	2016
Expected income tax expense (benefit) computed on pre-tax income at weighted average income tax rate	$ 123,953	$ 16,277
Addition (reduction) in income tax expense (benefit) resulting from:		
Tax-exempt investment income	(13,330)	(8,830)
Meals and entertainment	1,022	935
State taxes, net of U.S. federal tax benefit	1,168	902
Foreign branch taxes	5,674	5,496
Prior year adjustment	(576)	(4,644)
Foreign exchange gains & losses	(572)	223
Changes in applicable tax rate	5,401	1,209
Dividend withholding taxes	232	3,319
Change in valuation allowance	14,835	4,813
Contingent consideration	3,785	9,353
Share based compensation	(16,316)	—
Other	1,146	1,106
Income tax expense (benefit)	$ 126,422	$ 30,159

The effect of a change in tax laws or rates on deferred taxes assets and liabilities is recognized in income in the period in which such change is enacted. On December 22, 2017, the Tax Cuts Act was signed into law by the President of the United

States which significantly changes the U.S. tax law in many ways including a reduction of the U.S. federal income tax rate from 35% to 21% effective January 1, 2018. As a result of the Tax Cuts Act, the Company remeasured certain of its U.S. net deferred tax assets and liabilities.

On December 22, 2017, Staff Accounting Bulletin No. 118 ("SAB 118") was issued to address the application of GAAP in situations when a registrant does not have the necessary information available, prepared or analyzed in reasonable detail to complete the accounting for certain income tax effects of the Tax Cuts Act. Pursuant to the guidance within SAB 118, the Company's remeasurement of its deferred taxes included certain provisional effects associated with enactment of the Tax Cuts Act for which measurement could be reasonably estimated. Provisional amounts may be adjusted in 2018 during the measurement period in accordance with SAB 118 when additional information is obtained. Additional information that may affect the provisional amounts would include, completion of the Company's U.S. subsidiaries' 2017 tax return filings, and potential future guidance from the IRS with respect to the transitional adjustment pertaining to loss reserve discounting as well as the utilization of alternative minimum tax ("AMT") credits.

Deferred income tax assets and liabilities reflect temporary differences based on enacted tax rates between the carrying amounts of assets and liabilities for financial reporting and income tax purposes. Significant components of the Company's deferred income tax assets and liabilities were as follows:

	December 31,	
	2017	2016
Deferred income tax assets:		
Net operating loss	$ 32,525	$ 11,424
AMT credit carryforward	12,285	5,304
Discounting of net loss reserves	33,659	64,220
Deferred ceding commission	6,934	15,505
Net unearned premium reserve	47,682	71,760
Compensation liabilities	18,139	34,481
Foreign tax credit carryforward	6,610	6,421
Interest expense	3,815	2,678
Goodwill and intangible assets	3,688	9,269
Bad debt reserves	5,073	6,961
Net unrealized foreign exchange gains	464	1,308
Net unrealized decline of investments	1,602	7,384
Other, net	10,703	11,913
Deferred tax assets before valuation allowance	183,179	248,628
Valuation allowance	(30,570)	(16,957)
Deferred tax assets net of valuation allowance	152,609	231,671
Deferred income tax liabilities:		
Depreciation and amortization	(2,383)	(7,031)
Deposit accounting liability	(2,392)	(4,078)
Contingency reserve	(110,632)	(19,400)
Other, net	(1,061)	(1,228)
Total deferred tax liabilities	(116,468)	(31,737)
Net deferred income tax assets	$ 36,141	$ 199,934

The Company provides a valuation allowance to reduce certain deferred tax assets to an amount which management expects to more likely than not be realized. As of December 31, 2017, the Company's valuation allowance was $30.6 million, compared to $17.0 million at December 31, 2016. The valuation allowance in both periods was primarily attributable to (1) a full valuation on the Company's Canadian operations; (2) unutilized foreign tax credits; and (3) certain other deferred tax assets relating to carryforwards that have a limited use.

At December 31, 2017, the Company has net operating loss carryforwards in its U.K. operating subsidiaries of approximately $46.4 million. Additionally, the Company's U.K. operations have a foreign tax credit carryforward of $6.3 million at December 31, 2017. These operating losses and foreign tax credits can be carried forward without expiration. Due to uncertainty surrounding their future utilization, a valuation allowance of $14.8 million is in place. Beginning in 2017, the U.K. losses will be subject to usage restrictions that will limit the amount of carried forward losses which may be utilized in a given year. Such restrictions are not expected to limit the utilization of the Company's existing U.K. loss carryforwards that have been recognized in the financial statements.

At December 31, 2017, net operating loss carryforwards in Ireland were approximately $15.3 million. Although these losses may be carried forward indefinitely, an offsetting valuation allowance of $1.2 million exists given management's expectation that certain losses, which are specific to an individual Irish entity, will not be utilized in the future.

At December 31, 2017, net operating loss carryforwards in Australia were approximately $19.6 million. Although these losses may be carried forward indefinitely, subject to certain business and ownership continuity requirements, the associated net deferred tax asset of $5.9 million is fully offset by a valuation allowance of $5.9 million.

At December 31, 2017, net operating loss carryforwards in Hong Kong were approximately $9.5 million. Although these losses may be carried forward indefinitely the associated net deferred tax asset is offset by a valuation allowance of $1.5 million.

At December 31, 2017, net operating loss carryforwards in the U.S. were approximately $71.2 million. This includes $4.6 million net operating losses carryforwards from Watford Re. Watford Re's $1.0 million deferred tax asset is fully offset by a valuation allowance. The Company's net operating loss carryforwards are currently available to offset future taxable income of the Company's U.S. subsidiaries. Under applicable law, the U.S. net operating loss carryforwards expire between 2029 and 2037.

On January 30, 2014, the Company's U.S. mortgage operations underwent an ownership change for U.S. federal income tax purposes as a result of the Company's acquisition of the CMG Entities. As a result of this ownership change, a limitation has been imposed upon the utilization of approximately $10.8 million of the Company's existing U.S. net operating loss carryforwards. Utilization is limited to approximately $0.6 million per year in accordance with Section 382 of the Internal Revenue Code of 1986 as amended ("the Code"). Additionally, the Company has an U.S. alternative minimum tax ("AMT") credit carryforward in the amount of $12.3 million which in 2018, and pursuant to the Tax Cuts Act, will either be available to offset the Company's regular tax liability or refundable.

The Company's U.S. mortgage operations are eligible for a tax deduction, subject to certain limitations, under Section 832(e) of the Code for amounts required by state law or regulation to be set aside in statutory contingency reserves. The deduction is allowed only to the extent that the Company purchase non-interest bearing U.S. Mortgage Guaranty Tax and Loss Bonds ("T&L Bonds") issued by the U.S. Treasury Department in an amount equal to the tax benefit derived from deducting any portion of the statutory contingency reserves. T&L bonds are reflected in 'other assets' on the Company's balance sheet and totaled approximately $177.2 million at December 31, 2017, compared to $16.2 million at December 31, 2016.

Deferred income tax liabilities have not been accrued with respect to the undistributed earnings of the Company's U.S., U.K. and Ireland subsidiaries as it is the Company's intention that all such earnings will be indefinitely reinvested. If the earnings were to be distributed, as dividends or otherwise, such amounts may be subject to withholding tax in the jurisdiction of the paying entity. The Company no longer intends to indefinitely reinvest earnings from the Company's Canada subsidiary, however, no income or withholding taxes have been accrued as the Canada subsidiary does not have positive cumulative earnings and profits and therefore a distribution from this particular subsidiary would not be subject to income taxes or withholding taxes. Potential tax implications of repatriation from the Company's unremitted earnings that are indefinitely reinvested are driven by facts at the time of distribution. Therefore it is not practicable to estimate the income tax liabilities that might be incurred if such earnings were remitted. Distributions from the U.K. or Ireland would not be subject to withholding tax and no deferred income tax liability would need to be accrued.

The Company recognizes interest and penalties relating to unrecognized tax benefits in the provision for income taxes. As of December 31, 2017, the Company's total unrecognized tax benefits, including interest and penalties, were $2.0 million. If recognized, the full amount of the unrecognized tax benefit would generally decrease the current year annual effective tax rate. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31,	
	2017	2016
Balance at beginning of year	$ 2,008	$ 2,008
Additions based on tax positions related to the current year	—	—
Additions for tax positions of prior years	—	—
Balance at end of year	$ 2,008	$ 2,008

The Company or its subsidiaries or branches files income tax returns in the U.S. federal jurisdiction and various state, local and foreign jurisdictions. The Company's examination by the tax authorities in the U.S. for the 2009 through 2011 tax years closed with no change. The following table details open tax years that are potentially subject to examination by local tax authorities, in the following major jurisdictions:

Jurisdiction	Tax Years
United States	2014-2017
United Kingdom	2012-2017
Ireland	2013-2017
Canada	2013-2017
Switzerland	2011-2017
Denmark	2014-2017

As of December 31, 2017, the Company's current income tax recoverable (included in "Other assets") was $104.8 million.

13. Transactions with Related Parties

Kewsong Lee, a director of Arch Capital until November 2, 2017, resigned from Arch Capital's Board of Directors because of the expansion of his duties at The Carlyle Group ("Carlyle") following his promotion to co-CEO effective January 1, 2018. As part of its investment philosophy, the Company invests a portion of its investment portfolio in alternative investment funds. As of December 31, 2017, the total value of the Company's investments in funds or other investments managed by Carlyle was approximately $293.0 million, and the Company had aggregate unfunded commitments to funds managed by Carlyle of $468.8 million. The Company may make additional commitments to funds managed by Carlyle from time to time. During 2017, 2016 and 2015, the Company made aggregate capital contributions to funds managed by Carlyle of $131.8 million, $62.1 million and $116.5 million, respectively. During 2017, 2016 and 2015, the Company received aggregate cash distributions from funds managed by Carlyle of $55.6 million, $21.5 million and $44.6 million, respectively.

Certain directors and executive officers of the Company own common and preference shares of Watford Re. See Note 4 for information about Watford Re.

During 2017 and 2016, the Company incurred approximately $38.7 million and $16.6 million, respectively, of administrative and support service fees to a wholly owned subsidiary of Arch Capital, Arch Capital Services Inc., and its subsidiary, Arch International Services Inc. (collectively, "ACSI"). Such fees were incurred pursuant to the terms of specific administrative and support service agreements between Arch Re Bermuda and certain of its subsidiaries and ACSI, and are included in "Other Operating Expenses" in the consolidated statements of income.

During 2017 and 2016, the Company incurred approximately $11.6 million and $6.5 million for services that are provided by Arch Global Services Inc. and Arch Global Services (Cyprus) Ltd. (collectively, "Global Services"). Such fees were incurred pursuant to the terms of services agreements between Arch Re Bermuda and certain of its subsidiaries and entered into with Global Services, and are included in "Other Operating Expenses" in the consolidated statements of income.

During 2017 and 2016, the Company incurred approximately $25.6 million and $19.5 million, respectively, of investment service fees to AIM. Such fees are incurred pursuant to the terms of specific investment service agreements between Arch Re Bermuda and certain of its subsidiaries and AIM, and are included in "Net Investment Income" in the consolidated statements of income is net of these fees.

14. Commitments and Contingencies

Concentrations of Credit Risk

The creditworthiness of a counterparty is evaluated by the Company, taking into account credit ratings assigned by independent agencies. The credit approval process involves an assessment of factors, including, among others, the counterparty, country and industry credit exposure limits. Collateral may be required, at the discretion of the Company, on certain transactions based on the creditworthiness of the counterparty.

The areas where significant concentrations of credit risk may exist include unpaid losses and loss adjustment expenses recoverable, contractholder receivables, ceded unearned premiums, paid losses and loss adjustment expenses recoverable

net of reinsurance balances payable, investments and cash and cash equivalent balances. A credit exposure exists with respect to reinsurance recoverables as they may become uncollectible. The Company manages its credit risk in its reinsurance relationships by transacting with reinsurers that it considers financially sound and, if necessary, the Company may hold collateral in the form of funds, trust accounts and/or irrevocable letters of credit. This collateral can be drawn on for amounts that remain unpaid beyond specified time periods on an individual reinsurer basis. In addition, certain insurance policies written by the Company's insurance operations feature large deductibles, primarily in its construction and national accounts lines of business. Under such contracts, the Company is obligated to pay the claimant for the full amount of the claim. The Company is subsequently reimbursed by the policyholder for the deductible amount. These amounts are included on a gross basis in the consolidated balance sheet in contractholder payables and contractholder receivables, respectively. In the event that the Company is unable to collect from the policyholder, the Company would be liable for such defaulted amounts. Collateral, primarily in the form of letters of credit, cash and trusts, is obtained from the policyholder to mitigate the Company's credit risk. In the instances where the company receives collateral in the form of cash, the Company records a related liability in "Collateral held for insured obligations."

In addition, the Company underwrites a significant amount of its business through brokers and a credit risk exists should any of these brokers be unable to fulfill their contractual obligations with respect to the payments of insurance and reinsurance balances owed to the Company. The following table summarizes the percentage of the Company's gross premiums written generated from or placed by the largest brokers:

	Year Ended December 31,	
Broker	**2017**	**2016**
Aon Corporation and its subsidiaries	11.3%	14.4%
Marsh & McLennan Companies and its subsidiaries	10.7%	13.5%

No other broker and no one insured or reinsured accounted for more than 10% of gross premiums written for 2017 and 2016 .

Investment Commitments

The Company's investment commitments, which are primarily related to agreements entered into by the Company to invest in funds and separately managed accounts when called upon, were approximately $1.70 billion and $1.29 billion at December 31, 2017 and 2016, respectively.

Letter of Credit and Revolving Credit Facilities

As of December 31, 2017, Arch Capital and certain of its subsidiaries had a $350.0 million secured facility for letters of credit and $500.0 million unsecured facility for revolving loans and letters of credit (the "Credit Agreement"). Obligations of each borrower under the secured facility for letters of credit are secured by cash and eligible securities of such borrower held in collateral accounts. Subject to the receipt of commitments, the secured facility may be increased by up to an aggregate of $350.0 million, and the unsecured facility may be increased to an amount not to exceed $750.0 million. Arch Capital has a one-time option to convert any or all outstanding revolving loans of Arch Capital and/or Arch-U.S. to term loans with the same terms as the revolving loans except that any prepayments may not be reborrowed. Arch-U.S. guarantees the obligations of Arch Capital, and Arch Capital guarantees the obligations of Arch-U.S. Borrowings of revolving loans may be made at a variable rate based on LIBOR or an alternative base rate at the option of Arch Capital. Secured letters of credit are available for issuance on behalf of Arch Capital insurance and reinsurance subsidiaries. The Credit Agreement and related documents are structured such that each party that requests a letter of credit or borrowing does so only for itself and for only its own obligations.

The Credit Agreement contains customary representations, conditions to issuance of letters of credit and borrowings which include, among other things: (i) the maintenance of a debt to total capital ratio of not greater than 0.35 to 1; (ii) consolidated tangible net worth in excess of and consolidated tangible net worth in excess of $5.63 billion plus 25% of future aggregate net income (not including any future net losses) for each quarterly period ending after December 31, 2016 plus 25% of future aggregate net cash proceeds from the issuance of common or preferred equity (other than the proceeds of which are used to fund the repurchase or redemption of our preferred securities ("Refinanced Preferred Securities")), minus 70% of up to $750.0 million of the aggregate book value of any preferred securities of Arch Capital which are repurchased or redeemed by Arch Capital or its subsidiaries (other than Refinanced Preferred Securities); and (iii) that Arch Capital's principal insurance and reinsurance subsidiaries that are borrowers under the Credit Agreement maintain a financial strength rating of at least

a "B++" from A.M. Best or "BBB+" from S&P. In addition, certain of Arch Capital's subsidiaries which are party to the Credit Agreement are required to maintain minimum shareholders' equity levels. Commitments under the Amended Credit Agreement will expire on October 26, 2021, and all loans then outstanding under the Amended Credit Agreement must be repaid. Letters of credit issued under the Amended Credit Agreement will not have an expiration date later than October 26, 2022. Arch Capital and its subsidiaries which are party to the Credit Agreement were in compliance with all covenants contained in the Credit Agreement at December 31, 2017.

In addition, certain of Arch Capital's subsidiaries had outstanding letters of credit of $160.1 million, which were issued on a limited basis and for limited purposes (together with the secured portion of the Credit Agreement and these letter of credit facilities, the "LOC Facilities"). The principal purpose of the LOC Facilities is to issue, as required, evergreen standby letters of credit in favor of primary insurance or reinsurance counterparties with which certain of Arch Capital's subsidiaries has entered into reinsurance arrangements. This is required to ensure that such counterparties are permitted to take credit for reinsurance obtained in United States jurisdictions where such subsidiaries are not licensed or otherwise admitted as an insurer, as required under insurance regulations in the United States, and to comply with requirements of Lloyd's of London in connection with qualifying quota share and other arrangements. The amount of letters of credit issued is driven by, among other things, the timing and payment of catastrophe losses, loss development of existing reserves, the payment pattern of such reserves, the further expansion of business and the loss experience of such business. When issued, these letters of credit are secured by a portion of the investment portfolio. Arch Capital and its' subsidiaries which are party to the LOC Facilities were in compliance with all covenants contained in the LOC Facilities at December 31, 2017. At such date, approximately $388.0 million, and $375.0 million of borrowings were outstanding under the Credit Agreement. Under the $350.0 million secured letter of credit facility, Arch Capital's subsidiaries had $164.3 million of letters of credit outstanding and remaining capacity of $185.7 million at December 31, 2017.

Watford Re has access to a $100 million letter of credit facility expiring on May 19, 2018 and an $800 million secured credit facility expiring on June 4, 2018, that provides for borrowings and the issuance of letters of credit not to exceed $400 million. Borrowings of revolving loans may be made by Watford Re at a variable rate based on LIBOR or an alternative base rate at the option of Watford Re. At December 31, 2017, Watford Re had $109.5 million in outstanding letters of credit under the two facilities and $441.1 million of borrowings outstanding under the secured credit facility, backed by Watford Re's investment portfolio. Watford Re was in compliance with all covenants contained in both of its credit facilities at December 31, 2017. The Company does not guarantee or provide credit support for Watford Re, and the Company's financial exposure to Watford Re is limited to its investment in Watford Re's common and preferred shares and counterparty credit risk (mitigated by collateral) arising from the reinsurance transactions.

Contingent Consideration Liability

Pursuant to the Company's 2014 acquisition of the CMG Entities, the Company made a contingent consideration payment of $71.7 million in April 2017. The maximum remaining amount of contingent consideration payments is $68.2 million over the remaining earn-out period. To the extent that the adjusted book value of the CMG Entities drops below the cumulative amount paid by the Company, no additional payments would be due.

Leases and Purchase Obligations

At December 31, 2017, the future minimum rental commitments, exclusive of escalation clauses and maintenance costs and net of rental income, for all of the Company's operating leases are as follows:

2017	$ 26,419
2018	26,324
2019	25,807
2020	23,434
2021	20,015
Thereafter	34,649
Total	$ 156,648

All of these leases are for the rental of office space, with expiration terms that range from 2016 to 2025. Rental expense, net of income from subleases, was approximately $28.5 million and $22.2 million for 2017 and 2016, respectively.

At December 31, 2017, the Company has entered into capital lease agreements. The future lease payments for the Company's capital leases are expected to be $9.7 million, $5.6 million and $0.2 million for 2018, 2019 and 2020, respectively.

The Company has also entered into certain agreements which commit the Company to purchase goods or services, primarily related to software and computerized systems. Such purchase obligations were approximately $19.3 million and $15.7 million at December 31, 2017 and 2016, respectively.

Employment and Other Arrangements

At December 31, 2017, the Company has entered into employment agreements with certain of its executive officers. Such employment arrangements provide for compensation in the form of base salary, annual bonus, share-based awards, participation in the Company's employee benefit programs and the reimbursements of expenses.

Loans with Affiliates

Arch Capital depends on its available cash resources, liquid investments and dividends or other distributions from subsidiaries to make payments, including the payment of debt service obligations and operating expenses it may incur and any payments of dividends, redemption amounts or liquidation amounts with respect to preferred shares and common shares, and to fund the share repurchase program. During the course of 2017 and 2016, Arch Capital requested cash advances from Arch Re Bermuda. Arch Re Bermuda agreed to provide such cash advances to Arch Capital in the form of interest free loans which were repayable upon demand. Arch Re Bermuda advanced $220.3 million in 2017 and $196.9 million in 2016 to Arch Capital on such terms. The loan balances due to Arch Re Bermuda were subsequently forgiven and converted into dividend payments which reduced the outstanding loan balance due from Arch Capital at each balance sheet date to nil. In addition, Arch Capital Services Inc. issued demand notes to Arch-U.S during the course of 2014 and 2015. The total amount of demand notes outstanding was $35.0 million at December 31, 2017 and 2016.

15. Senior Notes

The Company's senior notes payable at December 31, 2017 and 2016 were as follows:

	Interest (Fixed)	Principal Amount	Carrying Amount at December 31, 2017	Carrying Amount at December 31, 2016
2043 notes (1)	5.144%	500,000	494,621	494,525
2026 notes (2)	4.011%	500,000	496,043	495,689
2046 notes (3)	5.031%	450,000	445,167	445,087
		$ 1,450,000	$ 1,435,831	$ 1,435,301

(1) Senior notes of Arch-U.S., a wholly-owned subsidiary of Arch Re Bermuda, issued on December 13, 2013 and due November 1, 2043 ("2043 notes"), fully and unconditionally guaranteed by Arch Capital. The 2043 notes are unsecured and unsubordinated obligations of Arch-U.S. and Arch Capital, respectively, and rank equally and ratably with the other unsecured and unsubordinated indebtedness of Arch-U.S. and Arch Capital, respectively. Interest payments on the 2043 notes are due on May 1st and November 1st of each year. Arch-U.S. may redeem the 2043 notes at any time and from time to time, in whole or in part, at a "make-whole" redemption price.

(2) Senior notes of Arch Capital Finance LLC ("Arch Finance"), a wholly-owned finance subsidiary of Arch Re Bermuda, issued on December 8, 2016 and due December 15, 2026 ("2026 notes"), fully and unconditionally guaranteed by Arch Capital. The 2026 notes are unsecured and unsubordinated obligations of Arch Finance and Arch Capital, respectively, and rank equally and ratably with the other unsecured and unsubordinated indebtedness of Arch Finance and Arch Capital, respectively. Interest payments on the 2026 notes are due on June 15th and December 15th of each year. Arch Finance may redeem the 2026 notes at any time and from time to time, in whole or in part, at a "make-whole" redemption price.

(3) Senior notes of Arch Finance issued on December 8, 2016 and due December 15, 2046 ("2046 notes"), fully and unconditionally guaranteed by Arch Capital. The 2046 notes are unsecured and unsubordinated obligations of Arch Finance and Arch Capital, respectively, and rank equally and ratably with the other unsecured and unsubordinated indebtedness of Arch Finance and Arch Capital, respectively. Interest payments on the 2046 notes are due on June 15th and December 15th of each year. Arch Finance may redeem the 2046 notes at any time and from time to time, in whole or in part, at a "make-whole" redemption price.

During 2017 and 2016, the Company made interest payments of $93.9 million and $39.6 million, respectively, related to its senior notes and other financing arrangements.

16. Goodwill and Intangible Assets

The following table shows an analysis of goodwill and intangible assets:

	Goodwill	Intangible assets with an indefinite life	Intangible assets with finite life	Total
Net balance at December 31, 2015	$ 15,536	$ 33,524	$ 48,471	$ 97,531
Acquisitions	188,758	34,650	480,035	703,443
Amortization	—	—	(18,963)	(18,963)
Foreign currency movements and other adjustment	(272)	—	(782)	(1,054)
Net balance at December 31, 2016	204,022	68,174	508,761	780,957
Acquisitions	806	—	2,300	3,106
Amortization	—	—	(125,591)	(125,591)
Foreign currency movements and other adjustment	(6,592)	—	335	(6,257)
Net balance at December 31, 2017	$ 198,236	$ 68,174	$ 385,805	$ 652,215
Gross balance at December 31, 2017	$ 205,192	$ 68,174	$ 618,087	$ 891,453
Accumulated amortization	—	—	(230,961)	(230,961)
Foreign currency movements and other adjustment	(6,956)	—	(1,321)	(8,277)
Net balance at December 31, 2017	$ 198,236	$ 68,174	$ 385,805	$ 652,215

The following table presents the components of intangible assets:

	Gross Balance	Accumulated Amortization	Foreign Currency Translation Adjustment and Other	Net Balance
December 31, 2017				
Acquired insurance contracts	$ 435,067	$ (182,947)	$ (150)	$ 251,970
Operating platform	44,900	(26,422)	—	18,478
Distribution relationships	146,597	(27,762)	(1,171)	117,664
Goodwill	205,192	—	(6,956)	198,236
Insurance licenses	68,174	—	—	68,174
Unfavorable service contract	(9,533)	6,997	—	(2,536)
Other	1,056	(827)	—	229
Total	$ 891,453	$ (230,961)	$ (8,277)	$ 652,215
December 31, 2016				
Acquired insurance contracts	$ 435,067	$ (72,771)	$ (150)	$ 362,146
Operating platform	44,900	(17,442)	—	27,458
Distribution relationships	145,311	(20,675)	(1,552)	123,084
Goodwill	204,386	—	(364)	204,022
Insurance licenses	68,174	—	—	68,174
Unfavorable service contract	(9,533)	5,762	—	(3,771)
Other	1,056	(616)	—	440
Total	$ 889,361	$ (105,742)	$ (2,066)	$ 781,553

The estimated remaining amortization expense for the Company's intangible assets with finite lives is as follows:

2018	$	105,679
2019		74,324
2020		46,485
2021		29,839
2022		23,945
2023 and thereafter		105,533
Total	$	385,805

The estimated remaining useful lives of these assets range from one to nineteen years at December 31, 2017.

On December 31, 2016, goodwill and intangible assets increased as a result of the completion of the UGC acquisition (see Note 2). The transaction was accounted for using the acquisition method under which the Company recorded the identifiable assets and liabilities at their acquisition date fair values, and recorded the excess of consideration transferred over the net assets acquired as goodwill and intangible assets. The Company's impairment reviews for goodwill and intangible assets did not result in the recognition of impairment losses for 2017 and 2016.

17. Shareholder's Equity

Authorized and Issued

The authorized share capital of the Company consists of 2,625,000 common shares, par value of $1.00 per share, at December 31, 2017 and 2016. The issued share capital of the Company consists of 2,560,423 common shares, par value of $1.00 per share at December 31, 2017 and 2016. During 2016, the Company received two contributions of capital from Arch Capital: (1) a $1.1 billion non-cash contribution of additional paid-in capital representing the fair value of convertible non-voting common equivalent preferred shares of Arch Capital (see note 2); and (2) $434.9 million of cash proceeds.

18. Share-Based Compensation

Long Term Incentive and Share Award Plans

The 2015 Long Term Incentive and Share Award Plan (the ("2015 Plan") became effective as of May 7, 2015 following approval by shareholders of Arch Capital. The purposes of the 2015 Plan are to advance the interests of Arch Capital and its shareholders by providing a means to attract, retain, and motivate employees and directors of Arch Capital and its subsidiaries. The 2015 Plan is intended to provide for competitive compensation opportunities, to encourage long-term service, to recognize individual contributions and reward achievement of performance goals, and to promote the creation of long-term value for shareholders by aligning the interests of such persons with those of shareholders. Officers, other employees and directors of Arch Capital and its subsidiaries will be eligible for grants of awards under the 2015 Plan. The 2015 Plan will terminate as to future awards on February 26, 2025.

The number of common shares reserved for grants of awards under the 2015 Plan, subject to anti-dilution adjustments in the event of certain changes in the Arch Capital's capital structure is 4,300,000. In addition, no more than 50% of such common shares may be issued in connection with full value awards (i.e., awards other than stock options or SARs) and no more than 2,000,000 common shares may be issued as incentive stock options under Section 422 of the Code. At December 31, 2017, 1,312,899 shares are available for future issuance.

The 2012 Long Term Incentive and Share Award Plan (the "2012 Plan") became effective as of May 9, 2012 (the "Effective Date") following approval by shareholders of Arch Capital. The 2012 Plan is intended to provide for competitive compensation opportunities, to encourage long-term service, to recognize individual contributions and reward achievement of performance goals and to promote the creation of long-term value for shareholders by aligning the interests of such persons with those of shareholders. The 2012 Plan provides for the grant to eligible employees and directors stock options, stock appreciation rights ("SARs"), restricted shares, restricted share units payable in common shares or cash, share awards in lieu of cash awards, dividend equivalents and other share-based awards. The 2012 Plan also provides Arch Capital's non-employee

directors with the opportunity to receive the annual retainer fee for Board service in common shares. The 2012 Plan will terminate as to future awards on February 28, 2022.

The number of common shares reserved for grants of awards under the 2012 Plan, subject to anti-dilution adjustments in the event of certain changes in Arch Capital's capital structure is 7,433,924 which is the sum of (i) 4,280,000 and (ii) 3,153,924 shares remaining available for grants under the 2007 Plan. In addition, no more than 50% of such common shares may be issued in connection with full value awards (*i.e.,* awards other than stock options or SARs) and no more than 2,000,000 common shares may be issued as incentive stock options under Section 422 of the Code. At December 31, 2017, 475,546 shares are available for grant under the 2012 Plan.

Upon shareholder approval on May 6, 2016, the Amended and Restated Arch Capital Group Ltd. 2007 Employee Share Purchase Plan (the "ESPP") became effective. After the amendment and restatement, a total of 1,563,259 common shares were reserved for issuance. The purpose of the ESPP is to give employees of Arch Capital and its subsidiaries an opportunity to purchase common shares through payroll deductions, thereby encouraging employees to share in the economic growth and success of Arch Capital and its subsidiaries. The ESPP is designed to qualify as an "employee share purchase plan" under Section 423 of the Code. At December 31, 2017, approximately 1,209,876 shares remain available for issuance.

The ESPP provides for consecutive six-month offering periods (or other periods of not more than 27 months as determined by the compensation committee) under which participating employees can elect to have up to 20% of their total compensation withheld and applied to the purchase of common shares of the Company at the end of the period. Unless otherwise determined by the compensation committee before an offering period commences, (1) the purchase price will be 85% of the fair market value of the common shares at the beginning of the offering period; and (2) the maximum number of common shares that may be purchased by an employee in any offering period is 3,000 shares. In addition, applicable Code limitations specify, in general, that a participant's right to purchase stock under the ESPP cannot accumulate at a rate in excess of $25,000 (based on the value at the beginning of the applicable offering periods) per calendar year.

Stock Option and Stock Appreciation Rights

Arch Capital generally issues stock options and SARs to eligible employees, with exercise prices equal to the fair market values of Arch Capital's Common Shares on the grant dates. Such grants generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date. In addition, in November 2012 Arch Capital issued off-cycle stock options and SARs to certain employees, which vested on the fifth anniversary of the grant date. Option awards and SARs have a 10 year contractual life. Refer to Note 3(m) for details related to the Company's accounting for stock options and SARs.

For purposes of determining estimated market value, Arch Capital has computed the estimated market values of share-based compensation related to stock options and SARs using the Black-Scholes option valuation model and has applied the assumptions set forth in the following table. As described above, stock options and SARs generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date. The expected life assumption (*i.e.*, the estimated period of time between the date an option or SAR is granted and the date the option or SAR is exercised) was based on an expected term analysis which incorporated Arch Capital's historical exercise experience. The estimate of expected volatility for stock options and SARs granted during 2017 is based on daily historical trading data of Arch Capital's common shares from September 20, 2002, the date marking the completion of Arch Capital's transition as a worldwide insurance and reinsurance company. For stock options and SARs granted during 2016, Arch Capital based its volatility estimate under the same method used for 2017, using the period from September 20, 2002 through the last day of the applicable period.

	Year Ended December 31,	
	2017	2016
Dividend yield	—%	—%
Expected volatility	21.3%	21.7%
Risk free interest rate	2.0%	1.4%
Expected option life	6.0 years	6.0 years

The Black-Scholes option pricing model requires the input of highly subjective assumptions. Because employee stock options and SARs have characteristics significantly different from those of traded options, and because changes in the subjective input assumptions can materially affect the fair value estimate, in management's opinion, the existing models may not provide a reliable single measure of the fair value of its employee stock options and SARs. In addition, management will continue to

assess the assumptions and methodologies used to calculate estimated fair value of share-based compensation. Circumstances may change and additional data may become available over time, which could result in changes to these assumptions and methodologies, and which could materially impact the Company's fair value determination.

A summary of stock option and SAR activity under Arch Capital's Long Term Incentive and Share Award Plans during 2017 is presented below:

	Year Ended December 31, 2017			
	Number of Options / SARs	Weighted Average Exercise Price	Weighted Average Contractual Term	Aggregate Intrinsic Value
Outstanding, beginning of year	3,133,885	$ 44.79		
Granted	344,373	$ 95.86		
Exercised	(479,821)	$ 38.77		
Forfeited or expired	(202,573)	$ 52.13		
Outstanding, end of year	2,795,864	$ 51.62	$ 5.29	$ 111,141
Exercisable, end of year	2,186,749	$ 42.76	$ 4.35	$ 104,992

The aggregate intrinsic value of stock options and SARs exercised represents the difference between the exercise price of the stock options and SARs and the closing market price of the Company's common shares on the exercise dates. During 2017, the Company received proceeds of $$3.7 million from the exercise of stock options and recognized a tax benefit of $6.4 million from the exercise of stock options and SARs.

	Year Ended December 31,	
	2017	2016
Weighted average grant date fair value	$ 24.59	$ 17.43
Aggregate intrinsic value of Options/SARs exercised	$ 26,372	$ 17,839

Restricted Common Shares and Restricted Units

Arch Capital also issues restricted share and unit awards to eligible employees, for which the fair value is equal to the fair market values of Arch Capital's common shares on the grant dates. Restricted share and unit awards generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date. In addition, in November 2012, Arch Capital issued off-cycle restricted share and unit awards to certain employees, which vested on the fifth anniversary of the grant date. Refer to Note 3(m) for details related to the Company's accounting for restricted share and unit awards.

A summary of unvested restricted share and unit activity under Arch Capital's Long Term Incentive and Share Award Plans for 2017 is presented below:

	Year Ended December 31, 2017	
	Restricted Common Shares	Restricted Unit Awards
Unvested Shares:		
Unvested balance, beginning of year	1,090,991	221,929
Granted	292,304	55,769
Vested	(784,792)	(150,637)
Forfeited	(89,397)	(26,432)
Unvested balance, end of year	509,106	100,629
Weighted Average Grant Date Fair Value:		
Unvested balance, beginning of year	$ 54.26	$ 55.58
Granted	$ 95.81	$ 95.97
Vested	$ 49.72	$ 51.85
Forfeited	$ 65.15	$ 52.98
Unvested balance, end of year	$ 83.64	$ 82.42

The following table presents the weighted average grant date fair value of restricted shares and restricted unit awards granted and the aggregate fair value of restricted shares and unit awards vesting in each year.

	Year Ended December 31,	
	2017	2016
Restricted shares and restricted unit awards granted	348,073	318,803
Weighted average grant date fair value	$ 95.84	$ 71.84
Aggregate fair value of vested restricted shares and units awards	$ 90,827	$ 29,814

The aggregate intrinsic value of restricted units outstanding at December 31, 2017 was $13.9 million, and the aggregate intrinsic value of restricted units vested and deferred was $4.8 million.

The issuance of share-based awards and amortization thereon has no effect on the Company's consolidated shareholders' equity.

Share-Based Compensation Expense

The following tables present pre-tax and after-tax share-based compensation expense recognized as well as the unrecognized compensation cost associated with unvested awards and the weighted average period over which it is expected to be recognized.

	Year Ended December 31,	
	2017	2016
Pre-Tax		
Stock options and SARs	$ 6,985	$ 7,011
Restricted share and unit awards	27,686	27,647
ESPP	2,135	1,892
Total	$ 36,806	$ 36,550
After-Tax		
Stock options and SARs	$ 5,003	$ 5,034
Restricted share and unit awards	19,818	19,830
ESPP	1,900	1,679
Total	$ 26,721	$ 26,543

	December 31, 2017	
	Stock Options and SARs	Restricted Common Shares and Units
Unrecognized compensation cost related to unvested awards	$ 7,646	$ 30,148
Weighted average recognition period (years)	1.32	1.32

19. Retirement Plans

For purposes of providing employees with retirement benefits, the Company maintains defined contribution retirement plans. Contributions are based on the participants' eligible compensation. For 2017 and 2016, the Company expensed approximately $36.8 million and $28.2 million, respectively, related to these retirement plans.

20. Legal Proceedings

The Company, in common with the insurance industry in general, is subject to litigation and arbitration in the normal course of its business. As of December 31, 2017, the Company was not a party to any litigation or arbitration which is expected by management to have a material adverse effect on the Company's results of operations and financial condition and liquidity.

21. Statutory Information

Arch Re Bermuda and its insurance and reinsurance subsidiaries are subject to insurance and/or reinsurance laws and regulations in the jurisdictions in which they operate. These regulations include certain restrictions on the amount of dividends or other distributions available to shareholders without prior approval of the insurance regulatory authorities. During 2017 and 2016, Arch Re Bermuda paid dividends to Arch Capital of $220.3 million and $196.9 million, respectively.

The actual and required statutory capital and surplus for Arch Re Bermuda and its principal operating subsidiaries at December 31, 2017 and 2016 was as follows:

	December 31, 2017		December 31, 2016	
	Actual (1)	Required (1)	Actual (1)	Required (1)
Statutory capital and surplus (1):				
Bermuda	$ 9,841,225	$ 3,761,939	$ 8,960,248	$ 3,077,684
Ireland	543,929	383,966	607,410	283,544
United States	4,850,148	1,816,919	4,660,855	1,811,938
United Kingdom	320,857	270,242	340,300	276,928
Canada	63,390	35,846	71,247	35,858

(1) Such amounts include ownership interests in affiliated insurance and reinsurance subsidiaries.

The statutory net income (loss) for Arch Re Bermuda and its principal operating subsidiaries for 2017 and 2016 was as follows:

	Year Ended December 31,	
	2017	2016
Statutory net income (loss):		
Bermuda	$ 881,665	$ 886,492
Ireland	(14,438)	26,935
United States	500,412	67,826
United Kingdom	(33,257)	(7,512)
Canada	158	621

Statutory accounting differs from U.S. GAAP in the reporting of certain items such as acquisition costs, deferred income taxes and investments.

Bermuda

Arch Re Bermuda is a Class 4 insurer and long-term insurer, while its subsidiary Watford Re is a Class 4 insurer. Under the Bermuda Insurance Act 1978 (the "Insurance Act"), these subsidiaries are required to maintain minimum statutory capital and surplus equal to the greater of a minimum solvency margin and the enhanced capital requirement as determined by the Bermuda Monetary Authority ("BMA"). The enhanced capital requirement is calculated based on the Bermuda Solvency Capital Requirement model, a risk-based model that takes into account the risk characteristics of different aspects of the company's business. At December 31, 2017 and 2016, all such requirements were met.

The ability of these subsidiaries to pay dividends is limited under Bermuda law and regulations. Under the Insurance Act, Arch Re Bermuda is restricted with respect to the payment of dividends. Arch Re Bermuda is prohibited from declaring or paying in any financial year dividends of more than 25% of its total statutory capital and surplus (as shown on its previous financial year's statutory balance sheet) unless it files, at least seven days before payment of such dividends, with the Bermuda Monetary Authority an affidavit stating that it will continue to meet the required margins following the declaration of those dividends. Accordingly, Arch Re Bermuda can pay approximately $2.17 billion to Arch Capital during 2018 without providing an affidavit to the BMA.

Ireland

Arch Re Bermuda has two Irish subsidiaries: Arch Re Europe, an authorized life and non-life reinsurer, and Arch MI Europe, an authorized non-life insurer. Irish authorized reinsurers and insurers, such as Arch Re Europe and Arch MI Europe, are also subject to the general body of Irish laws and regulations including the provisions of the Companies Act 2014. Arch Re Europe

and Arch MI Europe are subject to the supervision of the Central Bank of Ireland ("CBOI") and must comply with Irish insurance acts and regulations as well as with directions and guidance issued by the CBOI. These subsidiaries are required to maintain a minimum level of capital. At December 31, 2017 and 2016, these requirements were met.

The amount of dividends these subsidiaries are permitted to declare is limited to accumulated, realized profits, so far as not previously utilized by distribution or capitalization, less its accumulated, realized losses, so far as not previously written off in a reduction or reorganization of capital duly made. The solvency and capital requirements must still be met following any distribution. Dividends or distributions, if any, made by Arch Re Europe would result in an increase in available capital at Arch Re Bermuda.

United States

Arch Re Bermuda's U.S. insurance and reinsurance subsidiaries are subject to insurance laws and regulations in the jurisdictions in which they operate. The ability of such regulated insurance subsidiaries to pay dividends or make distributions is dependent on their ability to meet applicable regulatory standards. These regulations include restrictions that limit the amount of dividends or other distributions, such as loans or cash advances, available to shareholders without prior approval of the insurance regulatory authorities.

Dividends or distributions, if any, made by Arch Re U.S. would result in an increase in available capital at Arch-U.S.Arch Re U.S. can declare a maximum of approximately $128.8 million of dividends during 2018 subject to the approval of the Commissioner of the Delaware Department of Insurance.

Arch Mortgage Insurance Company and United Guaranty Residential Insurance Company have each been approved as an eligible mortgage insurer by Fannie Mae and Freddie Mac, subject to maintaining certain ongoing requirements ("eligible mortgage insurers"). In April 2015, the GSEs published comprehensive, revised requirements, known as the Private Mortgage Insurer Eligibility Requirements or "PMIERs." As clarified and revised by the Guidance Letters issued by the GSEs in December 2016 and March 2017, the PMIERs apply to eligible mortgage insurers, but do not apply to Arch Mortgage Guaranty Company, which is not GSE-approved.

The amount of assets required to satisfy the revised financial requirements of the PMIERs at any point in time will be affected by many factors, including macro-economic conditions, the size and composition of our eligible mortgage insurers' mortgage insurance portfolio at the point in time, and the amount of risk ceded to reinsurers that may be deducted in our calculation of "minimum required assets." Arch Re Bermuda's eligible mortgage insurers satisfied the PMIERs' financial requirements as of December 31, 2017.

Arch Re Bermuda's U.S. mortgage insurance subsidiaries are subject to detailed regulation by their domiciliary and primary regulators, the Wisconsin Office of the Commissioner of Insurance ("Wisconsin OCI") for Arch Mortgage Insurance Company and Arch Mortgage Guaranty Company, the North Carolina Department of Insurance ("NC DOI") for United Guaranty Residential Insurance Company, and by state insurance departments in each state in which they are licensed. As mandated by state insurance laws, mortgage insurers are generally mono-line companies restricted to writing a single type of insurance business, such as mortgage insurance business. Each company is subject to either Wisconsin or North Carolina statutory requirements as to payment of dividends. Generally, both Wisconsin and North Carolina law precludes any dividend before giving at least 30 days' notice to the Wisconsin OCI or NC DOI, as applicable, and prohibits paying any dividend unless it is fair and reasonable to do so. In addition, the state regulators and the GSEs limit or restrict our eligible mortgage insurers' ability to pay stockholder dividends or otherwise return capital to shareholders. Under North Carolina law, United Guaranty Residential Insurance Company can declare a maximum of approximately $302.7 million of dividends during 2018 subject to the approval of the NC DOI. In certain instances, approval by the GSEs would be required for dividends or other forms of return of capital to shareholders due to the requirements under PMIERs, including the minimum required assets imposed on our eligible mortgage insurers by the GSEs. Such dividend would result in an increase in available capital at Arch U.S. MI Holdings Inc., a subsidiary of Arch-U.S.

Mortgage insurance companies licensed in Wisconsin or North Carolina are required to establish contingency loss reserves for purposes of statutory accounting in an amount equal to at least 50% of net earned premiums. These amounts generally cannot be withdrawn for a period of 10 years and are separate liabilities for statutory accounting purposes, which affects the ability to pay dividends. However, with prior regulatory approval, a mortgage insurance company may make early withdrawals from the contingency reserve when incurred losses exceed 35% of net premiums earned in a calendar year.

Under Wisconsin and North Carolina law, as well as that of 14 other states, a mortgage insurer must maintain a minimum amount of statutory capital relative to its risk in force in order for the mortgage insurer to continue to write new business. While formulations of minimum capital vary in certain jurisdictions, the most common measure applied allows for a maximum risk-to-capital ratio of 25 to 1. Wisconsin and North Carolina both require a mortgage insurer to maintain a "minimum policyholder position" calculated in accordance with their respective regulations. Policyholders' position consists primarily of statutory policyholders' surplus plus the statutory contingency reserve, less ceded reinsurance. While the statutory contingency reserve is reported as a liability on the statutory balance sheet, for risk-to-capital ratio calculations, it is included as capital for purposes of statutory capital.

United Kingdom

The Prudential Regulation Authority ("PRA") and the Financial Conduct Authority ("FCA") regulate insurance and reinsurance companies and the FCA regulates firms carrying on insurance mediation activities operating in the U.K., both under the Financial Services and Markets Act 2000. Arch Re Bermuda's European insurance operations are conducted on two platforms: Arch Insurance Company Europe and Arch Syndicate 2012. Arch Syndicate 2012 has one member, Arch Syndicate Investments Ltd. ("ASIL") and is managed by Arch Underwriting at Lloyd's Ltd ("AUAL"). All U.K. companies are also subject to a range of statutory provisions, including the laws and regulations of the Companies Acts 2006 (as amended) (the "U.K. Companies Acts").

Arch Insurance Company Europe and AUAL (on behalf of itself, Arch Syndicate 2012 and ASIL) must maintain a margin of solvency at all times under the Solvency II Directive from the European Insurance and Occupational Pensions Authority. The regulations stipulate that insurers are required to maintain the minimum capital requirement and solvency capital requirement at all times. The capital requirements are calculated by reference to standard formulae defined in Solvency II. At December 31, 2017 and 2016, our subsidiaries were in compliance with these requirements.

As a corporate member of Lloyd's, ASIL is subject to the oversight of the Council of Lloyd's. The capital required to support a Syndicate's underwriting capacity, or funds at Lloyd's, is assessed annually and is determined by Lloyd's in accordance with the capital adequacy rules established by the PRA. Arch Re Bermuda has provided capital to support the underwriting of Arch Syndicate 2012 in the form of pledged assets. The amount which Arch Re Bermuda provides as funds at Lloyd's is not available for distribution. Lloyd's is supervised by the PRA and required to implement certain rules prescribed by the PRA under the Lloyd's Act of 1982 regarding the operation of the Lloyd's market. With respect to managing agents and corporate members, Lloyd's prescribes certain minimum standards relating to management and control, solvency and other requirements and monitors managing agents' compliance with such standards.

Under U.K. law, all U.K. companies are restricted from declaring a dividend to their shareholders unless they have "profits available for distribution." The calculation as to whether a company has sufficient profits is based on its accumulated realized profits minus its accumulated realized losses. U.K. insurance regulatory laws do not prohibit the payment of dividends, but the PRA or FCA, as applicable, requires that insurance companies and insurance intermediaries maintain certain solvency margins and may restrict the payment of a dividend by Arch Insurance Company Europe, AUAL and ASIL.

Canada

Arch Insurance Canada and the Canadian branch of Arch Re U.S. ("Arch Re Canada") are subject to federal, as well as provincial and territorial, regulation in Canada. The Office of the Superintendent of Financial Institutions ("OSFI") is the federal regulatory body that, under the Insurance Companies Act (Canada), regulates federal Canadian and non-Canadian insurance companies operating in Canada. Arch Insurance Canada and Arch Re Canada are subject to regulation in the provinces and territories in which they underwrite insurance/reinsurance, and the primary goal of insurance/reinsurance regulation at the provincial and territorial levels is to govern the market conduct of insurance/reinsurance companies. Arch Insurance Canada is licensed to carry on insurance business by OSFI and in each province and territory. Arch Re Canada is licensed to carry-on reinsurance business by OSFI and in the provinces of Ontario and Quebec.

Under the Insurance Companies Act (Canada), Arch Insurance Canada is required to maintain an adequate amount of capital in Canada, calculated in accordance with a test promulgated by OSFI called the Minimum Capital Test ("MCT"), and Arch Re Canada is required to maintain an adequate margin of assets over liabilities in Canada, calculated in accordance with a test promulgated by OSFI called the Branch Adequacy of Assets Test. Dividends or distributions, if any, made by Arch Insurance Canada would result in an increase in available capital at Arch Insurance Company (see "—United States" section).

22. Subsequent Events

The Company has evaluated subsequent events through April 9, 2018, the date the financial statements were available to be issued, and no events have occurred subsequent to the balance sheet date and before the date of evaluation that would require disclosure.