

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549**

FORM 10-Q

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

For the quarterly period ended September 30, 2019

Or

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

Commission file number: 001-16209



ARCH CAPITAL GROUP LTD.

(Exact name of registrant as specified in its charter)

Bermuda

(State or other jurisdiction of incorporation or organization)

98-0374481

(I.R.S. Employer Identification No.)

Waterloo House, Ground Floor

100 Pitts Bay Road, Pembroke HM 08, Bermuda

(Address of principal executive offices)

(441) 278-9250

(Registrant's telephone number, including area code)

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

Title of each class	Trading Symbol (s)	Name of each exchange on which registered	
Common shares, \$0.0011 par value per share	ACGL	NASDAQ	Stock Market
Depository shares, each representing a 1/100 th interest in a 5.25% Series E preferred share	ACGLP	NASDAQ	Stock Market
Depository shares, each representing a 1/100 th interest in a 5.45% Series F preferred share	ACGLO	NASDAQ	Stock Market

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large Accelerated Filer ☒ Accelerated Filer ☐ Non-accelerated Filer ☐ Smaller reporting company ☐ Emerging growth company ☐

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

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

As of November 1, 2019, there were 405,308,162 common shares, \$0.0011 par value per share, of the registrant outstanding.

ARCH CAPITAL GROUP LTD.**INDEX TO FORM 10-Q**

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PART I. FINANCIAL INFORMATION

Cautionary Note Regarding Forward-Looking Statements

The Private Securities Litigation Reform Act of 1995 (“PSLRA”) provides a “safe harbor” for forward-looking statements. This report or any other written or oral statements made by or on behalf of us may include forward-looking statements, which reflect our current views with respect to future events and financial performance. All statements other than statements of historical fact included in or incorporated by reference in this report are forward-looking statements. Forward-looking statements, for purposes of the PSLRA or otherwise, can generally be identified by the use of forward-looking terminology such as “may,” “will,” “expect,” “intend,” “estimate,” “anticipate,” “believe” or “continue” and similar statements of a future or forward-looking nature or their negative or variations or similar terminology.

Forward-looking statements involve our current assessment of risks and uncertainties. Actual events and results may differ materially from those expressed or implied in these statements. Important factors that could cause actual events or results to differ materially from those indicated in such statements are discussed below and elsewhere in this report and in our periodic reports filed with the Securities and Exchange Commission (the “SEC”), and include:

- our ability to successfully implement our business strategy during “soft” as well as “hard” markets;
- acceptance of our business strategy, security and financial condition by rating agencies and regulators, as well as by brokers and our insureds and reinsureds;
- the integration of any businesses we have acquired or may acquire into our existing operations;
- our ability to maintain or improve our ratings, which may be affected by our ability to raise additional equity or debt financings, by ratings agencies’ existing or new policies and practices, as well as other factors described herein;
- general economic and market conditions (including inflation, interest rates, unemployment, housing prices, foreign currency exchange rates, prevailing credit terms and the depth and duration of a recession) and conditions specific to the reinsurance and insurance markets (including the length and magnitude of the current “soft” market) in which we operate;
- competition, including increased competition, on the basis of pricing, capacity (including alternative sources of capital), coverage terms, or other factors;
- developments in the world’s financial and capital markets and our access to such markets;
- our ability to successfully enhance, integrate and maintain operating procedures (including information technology) to effectively support our current and new business;
- the loss of key personnel;
- accuracy of those estimates and judgments utilized in the preparation of our financial statements, including those related to revenue recognition, insurance and other reserves, reinsurance recoverables, investment valuations, intangible assets, bad debts, income taxes, contingencies and litigation, and any determination to use the deposit method of accounting, which for a relatively new insurance and reinsurance company, like our company, are even more difficult to make than those made in a mature company since relatively limited historical information has been reported to us through September 30, 2019;
- greater than expected loss ratios on business written by us and adverse development on claim and/or claim expense liabilities related to business written by our insurance and reinsurance subsidiaries;
- severity and/or frequency of losses;
- claims for natural or man-made catastrophic events or severe economic events in our insurance, reinsurance and mortgage businesses could cause large losses and substantial volatility in our results of operations;
- the effect of climate change on our business;
- acts of terrorism, political unrest and other hostilities or other unforecasted and unpredictable events;
- availability to us of reinsurance to manage our gross and net exposures and the cost of such reinsurance;
- the failure of reinsurers, managing general agents, third party administrators or others to meet their obligations to us;
- the timing of loss payments being faster or the receipt of reinsurance recoverables being slower than anticipated by us;

- our investment performance, including legislative or regulatory developments that may adversely affect the fair value of our investments;
- changes in general economic conditions, including new or continued sovereign debt concerns in Eurozone countries or downgrades of U.S. securities by credit rating agencies, which could affect our business, financial condition and results of operations;
- the volatility of our shareholders' equity from foreign currency fluctuations, which could increase due to us not matching portions of our projected liabilities in foreign currencies with investments in the same currencies;
- changes in accounting principles or policies or in our application of such accounting principles or policies;
- changes in the political environment of certain countries in which we operate or underwrite business;
- a disruption caused by cyber-attacks or other technology breaches or failures on us or our business partners and service providers, which could negatively impact our business and/or expose us to litigation;
- statutory or regulatory developments, including as to tax matters and insurance and other regulatory matters such as the adoption of proposed legislation that would affect Bermuda-headquartered companies and/or Bermuda-based insurers or reinsurers and/or changes in regulations or tax laws applicable to us, our subsidiaries, brokers or customers, including the Tax Cuts and Jobs Act of 2017; and
- the other matters set forth under Item 1A "Risk Factors", Item 7 "Management's Discussion and Analysis of Financial Condition and Results of Operations" and other sections of our Annual Report on Form 10-K for the year ended December 31, 2018, as well as the other factors set forth in our other documents on file with the SEC, and management's response to any of the aforementioned factors.

All subsequent written and oral forward-looking statements attributable to us or persons acting on our behalf are expressly qualified in their entirety by these cautionary statements. The foregoing review of important factors should not be construed as exhaustive and should be read in conjunction with other cautionary statements that are included herein or elsewhere. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise.

ITEM 1. CONSOLIDATED FINANCIAL STATEMENTS

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Report of Independent Registered Public Accounting Firm

To the Board of Directors and Shareholders of Arch Capital Group Ltd.

Results of Review of Interim Financial Statements

We have reviewed the accompanying consolidated balance sheet of Arch Capital Group Ltd. and its subsidiaries (the “Company”) as of September 30, 2019, and the related consolidated statements of income, comprehensive income, and changes in shareholders’ equity for the three-month and nine-month periods ended September 30, 2019 and 2018, and the consolidated statements of cash flows for the nine-month periods ended September 30, 2019 and 2018, including the related notes (collectively referred to as the “interim financial statements”). Based on our reviews, we are not aware of any material modifications that should be made to the accompanying interim financial statements for them to be in conformity with accounting principles generally accepted in the United States of America.

We have previously audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States), the consolidated balance sheet of the Company as of December 31, 2018, and the related consolidated statements of income, comprehensive income, changes in shareholders’ equity, and cash flows for the year then ended (not presented herein), and in our report dated February 28, 2019, we expressed an unqualified opinion on those consolidated financial statements. In our opinion, the information set forth in the accompanying consolidated balance sheet as of December 31, 2018, is fairly stated, in all material respects, in relation to the consolidated balance sheet from which it has been derived.

Basis for Review Results

These interim financial statements are the responsibility of the Company’s management. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our review in accordance with the standards of the PCAOB. A review of interim financial information consists principally of applying analytical procedures and making inquiries of persons responsible for financial and accounting matters. It is substantially less in scope than an audit conducted in accordance with the standards of the PCAOB, the objective of which is the expression of an opinion regarding the financial statements taken as a whole. Accordingly, we do not express such an opinion.

/s/ PricewaterhouseCoopers LLP

New York, NY
November 8, 2019

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

	(Unaudited) September 30, 2019	December 31, 2018
Assets		
Investments:		
Fixed maturities available for sale, at fair value (amortized cost: \$16,146,333 and \$14,829,902)	\$ 16,470,523	\$ 14,699,010
Short-term investments available for sale, at fair value (amortized cost: \$752,207 and \$956,238)	751,989	955,880
Collateral received under securities lending, at fair value (amortized cost: \$430,255 and \$274,125)	430,263	274,133
Equity securities, at fair value	550,485	338,899
Investments accounted for using the fair value option	3,838,243	3,983,571
Investments accounted for using the equity method	1,575,832	1,493,791
Total investments	23,617,335	21,745,284
Cash	880,099	646,556
Accrued investment income	116,196	114,641
Securities pledged under securities lending, at fair value (amortized cost: \$419,297 and \$266,786)	420,415	268,395
Premiums receivable	1,618,186	1,299,150
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	3,168,195	2,919,372
Contractholder receivables	2,094,683	2,079,111
Ceded unearned premiums	1,168,258	975,469
Deferred acquisition costs	622,028	569,574
Receivable for securities sold	50,615	36,246
Goodwill and intangible assets	624,500	634,920
Other assets	1,192,093	929,611
Total assets	\$ 35,572,603	\$ 32,218,329
Liabilities		
Reserve for losses and loss adjustment expenses	\$ 12,389,384	\$ 11,853,297
Unearned premiums	4,243,372	3,753,636
Reinsurance balances payable	601,891	393,107
Contractholder payables	2,094,683	2,079,111
Collateral held for insured obligations	205,449	236,630
Senior notes	1,871,386	1,733,528
Revolving credit agreement borrowings	490,720	455,682
Securities lending payable	430,255	274,125
Payable for securities purchased	176,130	90,034
Other liabilities	1,007,524	911,500
Total liabilities	23,510,794	21,780,650
Commitments and Contingencies		
Redeemable noncontrolling interests	48,789	206,292
Shareholders' Equity		
Non-cumulative preferred shares	780,000	780,000
Common shares (\$0.0011 par, shares issued: 574,173,205 and 570,737,283)	638	634
Additional paid-in capital	1,864,468	1,793,781
Retained earnings	10,705,025	9,426,299
Accumulated other comprehensive income (loss), net of deferred income tax	211,714	(178,720)
Common shares held in treasury, at cost (shares: 168,942,674 and 168,282,449)	(2,403,749)	(2,382,167)
Total shareholders' equity available to Arch	11,158,096	9,439,827
Non-redeemable noncontrolling interests	854,924	791,560
Total shareholders' equity	12,013,020	10,231,387

Total liabilities, noncontrolling interests and shareholders' equity

\$ 35,572,603

\$ 32,218,329

See Notes to Consolidated Financial Statements

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

	(Unaudited) Three Months Ended September 30,		(Unaudited) Nine Months Ended September 30,	
	2019	2018	2019	2018
Revenues				
Net premiums written	\$ 1,613,457	\$ 1,333,553	\$ 4,583,614	\$ 4,044,993
Change in unearned premiums	(175,434)	(42,675)	(312,998)	(182,453)
Net premiums earned	1,438,023	1,290,878	4,270,616	3,862,540
Net investment income	161,488	144,024	473,475	406,416
Net realized gains (losses)	62,518	(51,705)	324,889	(239,314)
Other-than-temporary impairment losses	(1,163)	(492)	(2,521)	(1,124)
Less investment impairments recognized in other comprehensive income, before taxes	—	—	—	—
Net impairment losses recognized in earnings	(1,163)	(492)	(2,521)	(1,124)
Other underwriting income	3,326	5,823	18,104	15,046
Equity in net income of investment funds accounted for using the equity method	17,130	15,982	96,533	52,523
Other income	1,338	(726)	3,550	2,461
Total revenues	1,682,660	1,403,784	5,184,646	4,098,548
Expenses				
Losses and loss adjustment expenses	802,455	699,420	2,288,530	2,062,433
Acquisition expenses	211,120	201,602	619,057	595,816
Other operating expenses	196,512	161,098	596,589	512,294
Corporate expenses	17,061	14,335	53,274	52,159
Amortization of intangible assets	20,003	26,315	60,214	79,523
Interest expense	31,328	29,730	89,673	90,710
Net foreign exchange (gains) losses	(33,124)	(10,838)	(31,697)	(44,823)
Total expenses	1,245,355	1,121,662	3,675,640	3,348,112
Income before income taxes	437,305	282,122	1,509,006	750,436
Income tax expense	(38,116)	(33,356)	(128,474)	(78,939)
Net income	\$ 399,189	\$ 248,766	\$ 1,380,532	\$ 671,497
Net (income) loss attributable to noncontrolling interests	(6,736)	(21,358)	(70,597)	(50,020)
Net income available to Arch	392,453	227,408	1,309,935	621,477
Preferred dividends	(10,403)	(10,402)	(31,209)	(31,242)
Loss on redemption of preferred shares	—	—	—	(2,710)
Net income available to Arch common shareholders	\$ 382,050	\$ 217,006	\$ 1,278,726	\$ 587,525
Net income per common share and common share equivalent				
Basic	\$ 0.95	\$ 0.54	\$ 3.19	\$ 1.45
Diluted	\$ 0.92	\$ 0.53	\$ 3.11	\$ 1.42
Weighted average common shares and common share equivalents outstanding				
Basic	402,564,121	402,939,092	401,419,153	405,076,228
Diluted	413,180,201	411,721,214	410,807,402	413,993,192

See Notes to Consolidated Financial Statements

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

	(Unaudited) Three Months Ended September 30,		(Unaudited) Nine Months Ended September 30,	
	2019	2018	2019	2018
Comprehensive Income				
Net income	\$ 399,189	\$ 248,766	\$ 1,380,532	\$ 671,497
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	59,290	(53,308)	507,650	(305,256)
Reclassification of net realized (gains) losses, net of income taxes, included in net income (loss)	(38,743)	23,203	(104,309)	122,307
Foreign currency translation adjustments	(16,424)	2,063	(6,641)	(9,250)
Comprehensive income	403,312	220,724	1,777,232	479,298
Net (income) loss attributable to noncontrolling interests	(6,736)	(21,358)	(70,597)	(50,020)
Other comprehensive (income) loss attributable to noncontrolling interests	764	1,158	(6,266)	2,908
Comprehensive income available to Arch	<u>\$ 397,340</u>	<u>\$ 200,524</u>	<u>\$ 1,700,369</u>	<u>\$ 432,186</u>

See Notes to Consolidated Financial Statements

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
(U.S. dollars in thousands)

	(Unaudited) Three Months Ended September 30,		(Unaudited) Nine Months Ended September 30,	
	2019	2018	2019	2018
Non-cumulative preferred shares				
Balance at beginning of period	\$ 780,000	\$ 780,000	\$ 780,000	\$ 872,555
Preferred shares redeemed	—	—	—	(92,555)
Balance at end of period	780,000	780,000	780,000	780,000
Convertible non-voting common equivalent preferred shares				
Balance at beginning of period	—	—	—	489,627
Preferred shares converted to common shares	—	—	—	(489,627)
Balance at end of period	—	—	—	—
Common shares				
Balance at beginning of period	638	633	634	611
Common shares issued, net	—	—	4	22
Balance at end of period	638	633	638	633
Additional paid-in capital				
Balance at beginning of period	1,847,949	1,760,606	1,793,781	1,230,617
Preferred shares converted to common shares	—	—	—	489,608
Other changes	16,519	14,893	70,687	55,274
Balance at end of period	1,864,468	1,775,499	1,864,468	1,775,499
Retained earnings				
Balance at beginning of period	10,322,975	9,083,202	9,426,299	8,562,889
Cumulative effect of an accounting change	—	—	—	149,794
Balance at beginning of period, as adjusted	10,322,975	9,083,202	9,426,299	8,712,683
Net income	399,189	248,766	1,380,532	671,497
Net (income) loss attributable to noncontrolling interests	(6,736)	(21,358)	(70,597)	(50,020)
Preferred share dividends	(10,403)	(10,402)	(31,209)	(31,242)
Loss on redemption of preferred shares	—	—	—	(2,710)
Balance at end of period	10,705,025	9,300,208	10,705,025	9,300,208
Accumulated other comprehensive income (loss), net of deferred income tax				
Balance at beginning of period	206,827	(194,157)	(178,720)	118,044
Unrealized appreciation (decline) in value of available-for-sale investments, net of deferred income tax:				
Balance at beginning of period	261,627	(143,353)	(114,178)	157,400
Cumulative effect of an accounting change	—	—	—	(149,794)
Balance at beginning of period, as adjusted	261,627	(143,353)	(114,178)	7,606
Unrealized holding gains (losses) during period, net of reclassification adjustment	20,547	(30,105)	403,341	(182,949)
Unrealized holding gains (losses) during period attributable to noncontrolling interests	1,019	1,238	(5,970)	3,123
Balance at end of period	283,193	(172,220)	283,193	(172,220)
Foreign currency translation adjustments, net of deferred income tax:				
Balance at beginning of period	(54,800)	(50,804)	(64,542)	(39,356)
Foreign currency translation adjustments	(16,424)	2,063	(6,641)	(9,250)
Foreign currency translation adjustments attributable to noncontrolling interests	(255)	(80)	(296)	(215)
Balance at end of period	(71,479)	(48,821)	(71,479)	(48,821)
Balance at end of period	211,714	(221,041)	211,714	(221,041)
Common shares held in treasury, at cost				
Balance at beginning of period	(2,401,037)	(2,266,529)	(2,382,167)	(2,077,741)
Shares repurchased for treasury	(2,712)	(13,622)	(21,582)	(202,410)

Balance at end of period	(2,403,749)	(2,280,151)	(2,403,749)	(2,280,151)
Total shareholders' equity available to Arch	11,158,096	9,355,148	11,158,096	9,355,148
Non-redeemable noncontrolling interests	854,924	876,754	854,924	876,754
Total shareholders' equity	\$ 12,013,020	\$ 10,231,902	\$ 12,013,020	\$ 10,231,902

See Notes to Consolidated Financial Statements

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

	(Unaudited) Nine Months Ended September 30,	
	2019	2018
Operating Activities		
Net income	\$ 1,380,532	\$ 671,497
Adjustments to reconcile net income to net cash provided by operating activities:		
Net realized (gains) losses	(329,053)	224,757
Net impairment losses recognized in earnings	2,521	1,124
Equity in net income or loss of investment funds accounted for using the equity method and other income or loss	(38,912)	6,357
Amortization of intangible assets	60,214	79,523
Share-based compensation	54,432	45,806
Changes in:		
Reserve for losses and loss adjustment expenses, net of unpaid losses and loss adjustment expenses recoverable	377,074	68,245
Unearned premiums, net of ceded unearned premiums	312,998	182,453
Premiums receivable	(328,765)	(203,247)
Deferred acquisition costs	(38,606)	(36,074)
Reinsurance balances payable	214,902	83,696
Other items, net	(124,198)	(3,150)
Net cash provided by (used for) operating activities	1,543,139	1,120,987
Investing Activities		
Purchases of fixed maturity investments	(24,010,623)	(24,837,917)
Purchases of equity securities	(524,051)	(819,342)
Purchases of other investments	(1,014,925)	(1,543,332)
Proceeds from sales of fixed maturity investments	22,707,854	23,310,203
Proceeds from sales of equity securities	371,130	866,919
Proceeds from sales, redemptions and maturities of other investments	827,517	1,178,035
Proceeds from redemptions and maturities of fixed maturity investments	394,719	724,021
Net settlements of derivative instruments	92,423	765
Net sales of short-term investments	129,078	554,315
Change in cash collateral related to securities lending	6,990	137,073
Purchases of fixed assets	(27,635)	(19,050)
Other	(202,953)	58,227
Net cash provided by (used for) investing activities	(1,250,476)	(390,083)
Financing Activities		
Redemption of preferred shares	—	(92,555)
Purchases of common shares under share repurchase program	(2,871)	(184,529)
Proceeds from common shares issued, net	518	(12,029)
Proceeds from borrowings	200,083	167,259
Repayments of borrowings	(27,538)	(427,000)
Change in cash collateral related to securities lending	(6,990)	(137,073)
Change in third party investment in redeemable noncontrolling interests	(161,874)	—
Dividends paid to redeemable noncontrolling interests	(11,408)	(13,491)
Other	(5,207)	(6,084)
Preferred dividends paid	(31,209)	(31,242)
Net cash provided by (used for) financing activities	(46,496)	(736,744)
Effects of exchange rate changes on foreign currency cash and restricted cash	(8,335)	(11,625)
Increase (decrease) in cash and restricted cash	237,832	(17,465)
Cash and restricted cash, beginning of year	724,643	727,284

Cash and restricted cash, end of period

\$	962,475	\$	709,819
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See Notes to Consolidated Financial Statements

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

1. Basis of Presentation and Recent Accounting Pronouncements

General

Arch Capital Group Ltd. (“Arch Capital”) is a Bermuda public limited liability company which provides insurance, reinsurance and mortgage insurance on a worldwide basis through its wholly-owned subsidiaries. As used herein, the “Company” means Arch Capital and its subsidiaries. The Company’s consolidated financial statements include the results of Watford Holdings Ltd. and its wholly owned subsidiaries (“Watford”). Watford is a multi-line Bermuda reinsurance company. Watford’s own management and board of directors are responsible for its results and profitability. See [note 11](#).

On January 1, 2019, the Company’s U.K. insurance operations entered into a transaction with The Ardonagh Group to acquire renewal rights for a U.K. commercial lines book of business, consisting of commercial property, casualty, motor, professional liability, personal accident and travel business.

Basis of Presentation

The interim consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America (“GAAP”). 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 materially from those estimates and assumptions. In the opinion of management, the accompanying unaudited interim consolidated financial statements reflect all adjustments (consisting of normally recurring accruals) necessary for a fair statement of results on an interim basis. The results of any interim period are not necessarily indicative of the results for a full year or any future periods.

Certain information and footnote disclosures normally included in financial statements prepared in accordance with GAAP have been condensed or omitted; however, management believes that the disclosures are adequate to make the information presented not misleading. This report should be read in conjunction with the Company’s Annual Report on Form 10-K for the year ended December 31, 2018 (“2018 Form 10-K”), including the Company’s audited consolidated financial statements and related notes.

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, comprehensive income, shareholders’ equity or cash flows. Tabular amounts are in U.S. Dollars in thousands, except share amounts, unless otherwise noted.

Recent Accounting Pronouncements

Recently Issued Accounting Standards Adopted

The Company adopted ASU 2016-02, “Leases (Topic 842)”, which provides a new comprehensive model for lease accounting. Topic 842 requires a lessee to recognize a liability to make lease payments (the lease liability) and a right-of-use asset representing its right to use the underlying asset for the lease term. The Company adopted the modified retrospective approach of this standard, that resulted in the recognition of a right-of-use asset of \$147.9 million as part of other assets and a lease liability of \$163.6 million as part of other liabilities in the consolidated balance sheet as of January 1, 2019. The Company de-recognized the liability for deferred rent that was required under the previous guidance.

In addition, the Company adopted ASU 2018-11, “Leases: Targeted Improvements (Topic 842),” which provides an additional (optional) transition method to adopt the new lease standard. The Company adopted the alternative transition method and elected to utilize a cumulative-effect adjustment to the opening balance of the retained earnings for the year of adoption. As such, the Company’s reporting for the comparative periods prior to the adoption continue to be presented in the financial statements in accordance with previous lease accounting guidance. The Company also adopted the practical expedients as a package which allows the Company to not reassess (1) whether any expired or existing contracts are or contain leases (2) the lease classification for any expired or existing leases (3) initial direct costs for any existing leases and (4) to account for the lease and non lease components as a single lease component. In addition to electing the practical expedients as a package, the Company elected to include hindsight to determine the lease term of existing leases, and made an accounting policy election to not apply the recognition requirements to short-term leases (lease term of less than twelve months). The cumulative effect adjustment to the opening balance of retained earnings was zero. The adoption of the updated guidance did not have a material effect on the Company’s results of operations or liquidity.

The Company adopted ASU 2018-07 “Improvements to Nonemployee Share-Based Payment Accounting,” which was issued in June 2018 to simplify the accounting for share-based payments granted to nonemployees for goods and services. Under this ASU, most of the guidance on such payments to nonemployees would be aligned with the requirements for share-based payments granted to employees. The ASU is effective for reporting periods beginning after December 15,

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2018. This guidance and the adoption of this provision did not have a material effect on the Company's financial position, results of operations or cash flows.

The Company adopted ASU 2018-02 "Income Statement-Reporting Comprehensive Income (Topic 220) - Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income," which 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. The adoption of this ASU did not have a material effect on the Company's results of operations, financial position or liquidity.

The Company adopted ASU 2017-08 "Receivables - Nonrefundable Fees and Other Costs (Subtopic 310-20), Premium Amortization on Purchased Callable Debt Securities," which was issued in March, 2017. This ASU shortens the amortization period for certain callable debt securities held at a premium and requires the premium to be amortized to the earliest call date. However, the new guidance does not require an accounting change for securities held at a discount whose discount continues to be amortized to maturity. The standard is effective for financial statements issued for fiscal years, and interim periods within those fiscal years, beginning after December 15, 2018, with early adoption permitted. The adoption of the guidance requires a modified retrospective approach with a cumulative-effect adjustment to retained earnings. The adoption of this ASU did not have a material effect on the Company's consolidated financial statements.

Recently Issued Accounting Standards Not Yet Adopted

For information regarding additional accounting standards that the Company has not yet adopted, see note 3(q), "Significant Accounting Policies—Recent Accounting Pronouncements," of the notes to consolidated financial statements in the Company's 2018 Form 10-K.

2. Share Transactions

Share Repurchases

The board of directors of Arch Capital has authorized the investment in Arch Capital's common shares through a share repurchase program. Since the inception of the share repurchase program, Arch Capital has repurchased 386.3 million common shares for an aggregate purchase price of \$3.97 billion. For the nine months ended September 30, 2019, Arch Capital repurchased 0.1 million shares under the share repurchase program with an aggregate purchase price of \$2.9 million. Arch Capital repurchased 6.9 million shares under the share repurchase program with an aggregate purchase price of \$184.5 million during the nine months ended September 30, 2018. At September 30, 2019, \$160.9 million of share repurchases were available under the program, which may be effected from time to time in open market or privately negotiated transactions. The timing and amount of the repurchase transactions under this program will depend on a variety of factors, including market conditions and corporate and regulatory considerations. [\(see note 16\).](#)

Conversion of Convertible Non-Voting Common Equivalent Preferred Shares

In March 2018, Arch Capital completed an underwritten public secondary offering of 17.0 million common shares (split adjusted) by American International Group, Inc. ("AIG") following transfer of 0.6 million Series D convertible non-voting common equivalent preferred shares ("Series D Preferred Shares"). Proceeds from the sale of common shares pursuant to the public offering were received by AIG. At September 30, 2019, no Series D Preferred Shares were outstanding.

Series C Preferred Shares

On January 2, 2018, Arch Capital redeemed all outstanding 6.75% Series C non-cumulative preferred shares. The preferred shares were redeemed at a redemption price equal to \$25 per share, plus all declared and unpaid dividends to (but excluding) the redemption date. In accordance with GAAP, following the redemption, original issuance costs related to such shares were removed from additional paid-in capital and recorded as a "loss on redemption of preferred shares." Such adjustment had no impact on total shareholders' equity or cash flows.

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3. Earnings Per Common Share

The following table sets forth the computation of basic and diluted earnings per common share:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Numerator:				
Net income	\$ 399,189	\$ 248,766	\$ 1,380,532	\$ 671,497
Amounts attributable to noncontrolling interests	(6,736)	(21,358)	(70,597)	(50,020)
Net income available to Arch	392,453	227,408	1,309,935	621,477
Preferred dividends	(10,403)	(10,402)	(31,209)	(31,242)
Loss on redemption of preferred shares	—	—	—	(2,710)
Net income available to Arch common shareholders	<u>\$ 382,050</u>	<u>\$ 217,006</u>	<u>\$ 1,278,726</u>	<u>\$ 587,525</u>
Denominator:				
Weighted average common shares outstanding	402,564,121	402,939,092	401,419,153	400,649,105
Series D preferred shares (1)	—	—	—	4,427,123
Weighted average common shares and common share equivalents outstanding — basic	402,564,121	402,939,092	401,419,153	405,076,228
Effect of dilutive common share equivalents:				
Nonvested restricted shares	1,895,972	1,619,286	1,637,015	1,568,044
Stock options (2)	8,720,108	7,162,836	7,751,234	7,348,920
Weighted average common shares and common share equivalents outstanding — diluted	<u>413,180,201</u>	<u>411,721,214</u>	<u>410,807,402</u>	<u>413,993,192</u>
Earnings per common share:				
Basic	<u>\$ 0.95</u>	<u>\$ 0.54</u>	<u>\$ 3.19</u>	<u>\$ 1.45</u>
Diluted	<u>\$ 0.92</u>	<u>\$ 0.53</u>	<u>\$ 3.11</u>	<u>\$ 1.42</u>

(1) Such shares are convertible non-voting common equivalent preferred shares issued in connection with the UGC acquisition. See [note 2](#).

(2) Certain stock options were not included in the computation of diluted earnings per share where the exercise price of the stock options exceeded the average market price and would have been anti-dilutive or where, when applying the treasury stock method to in-the-money options, the sum of the proceeds, including unrecognized compensation, exceeded the average market price and would have been anti-dilutive. For the 2019 third quarter and 2018 third quarter, the number of stock options excluded were 37,394 and 4,396,352, respectively. For the nine months ended September 30, 2019 and 2018 period, the number of stock options excluded were 2,198,115 and 5,481,584, respectively.

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4. Segment Information

The Company classifies its businesses into three underwriting segments — insurance, reinsurance and mortgage — and two other operating segments — ‘other’ and corporate (non-underwriting). The Company determined its reportable segments using the management approach described in accounting guidance regarding disclosures about segments of an enterprise and related information. The accounting policies of the segments are the same as those used for the preparation of the Company’s consolidated financial statements. Intersegment business is allocated to the segment accountable for the underwriting results.

The Company’s insurance, reinsurance and mortgage segments each have managers who are responsible for the overall profitability of their respective segments and who are directly accountable to the Company’s chief operating decision makers, the President and Chief Executive Officer of Arch Capital, and the Chief Financial Officer of Arch Capital. The chief operating decision makers do not assess performance, measure return on equity or make resource allocation decisions on a line of business basis. Management measures segment performance for its three underwriting segments based on underwriting income or loss. The Company does not manage its assets by underwriting segment, with the exception of goodwill and intangible assets, and, accordingly, investment income is not allocated to each underwriting segment.

The insurance segment consists of the Company’s insurance underwriting units which offer specialty product lines on a worldwide basis. Product lines include: construction and national accounts; excess and surplus casualty; lenders products; professional lines; programs; property, energy, marine and aviation; travel, accident and health; and other (consisting of alternative markets, excess workers' compensation and surety business).

The reinsurance segment consists of the Company’s reinsurance underwriting units which offer specialty product lines on a worldwide basis. Product lines include: casualty; marine and aviation; other specialty; property catastrophe; property excluding property catastrophe (losses on a single risk, both excess of loss and pro rata); and other (consisting of life reinsurance, casualty clash and other).

The mortgage segment includes the Company’s U.S. and international mortgage insurance and reinsurance operations as well as government sponsored enterprise (“GSE”) credit-risk sharing transactions. Arch Mortgage Insurance Company and United Guaranty Residential Insurance Company (combined “Arch MI U.S.”) are approved as eligible mortgage insurers by Federal National Mortgage Association (“Fannie Mae”) and Federal Home Loan Mortgage Corporation (“Freddie Mac”), each a GSE.

The corporate (non-underwriting) segment results include net investment income, other income (loss), corporate expenses, transaction costs and other, interest expense, items related to the Company’s non-cumulative preferred shares, net realized gains or losses, net impairment losses included in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses and income taxes. Such amounts exclude the results of the ‘other’ segment.

The ‘other’ segment includes the results of Watford (see [note 11](#)). For the ‘other’ segment, performance is measured based on net income or loss.

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The following tables summarize the Company's underwriting income or loss by segment, together with a reconciliation of underwriting income or loss to net income available to Arch common shareholders:

	Three Months Ended					
	September 30, 2019					
	Insurance	Reinsurance	Mortgage	Sub-Total	Other	Total
Gross premiums written (1)	\$ 1,005,874	\$ 662,572	\$ 375,092	\$ 2,043,292	\$ 249,960	\$ 2,181,121
Premiums ceded	(302,034)	(226,096)	(57,703)	(585,587)	(94,208)	(567,664)
Net premiums written	703,840	436,476	317,389	1,457,705	155,752	1,613,457
Change in unearned premiums	(98,504)	(72,621)	25,611	(145,514)	(29,920)	(175,434)
Net premiums earned	605,336	363,855	343,000	1,312,191	125,832	1,438,023
Other underwriting income (loss)	—	(1,208)	3,955	2,747	579	3,326
Losses and loss adjustment expenses	(422,782)	(270,379)	(13,080)	(706,241)	(96,214)	(802,455)
Acquisition expenses	(91,259)	(62,393)	(34,396)	(188,048)	(23,072)	(211,120)
Other operating expenses	(115,408)	(32,533)	(37,003)	(184,944)	(11,568)	(196,512)
Underwriting income (loss)	\$ (24,113)	\$ (2,658)	\$ 262,476	235,705	(4,443)	231,262
Net investment income				126,874	34,614	161,488
Net realized gains (losses)				81,177	(18,659)	62,518
Net impairment losses recognized in earnings				(1,163)	—	(1,163)
Equity in net income (loss) of investment funds accounted for using the equity method				17,130	—	17,130
Other income (loss)				1,338	—	1,338
Corporate expenses (2)				(15,066)	—	(15,066)
Transaction costs and other (2)				(1,995)	—	(1,995)
Amortization of intangible assets				(20,003)	—	(20,003)
Interest expense				(23,237)	(8,091)	(31,328)
Net foreign exchange gains (losses)				29,794	3,330	33,124
Income before income taxes				430,554	6,751	437,305
Income tax expense				(38,116)	—	(38,116)
Net income				392,438	6,751	399,189
Dividends attributable to redeemable noncontrolling interests				—	(6,600)	(6,600)
Amounts attributable to nonredeemable noncontrolling interests				—	(136)	(136)
Net income available to Arch				392,438	15	392,453
Preferred dividends				(10,403)	—	(10,403)
Net income available to Arch common shareholders				\$ 382,035	\$ 15	\$ 382,050
Underwriting Ratios						
Loss ratio	69.8%	74.3%	3.8%	53.8%	76.5%	55.8%
Acquisition expense ratio	15.1%	17.1%	10.0%	14.3%	18.3%	14.7%
Other operating expense ratio	19.1%	8.9%	10.8%	14.1%	9.2%	13.7%
Combined ratio	104.0%	100.3%	24.6%	82.2%	104.0%	84.2%
Goodwill and intangible assets	\$ 158,990	\$ —	\$ 457,860	\$ 616,850	\$ 7,650	\$ 624,500

- (1) Certain amounts included in the gross premiums written of each segment are related to intersegment transactions. Accordingly, the sum of gross premiums written for each segment does not agree to the total gross premiums written as shown in the table above due to the elimination of intersegment transactions in the total.
- (2) Certain expenses have been excluded from 'corporate expenses' and reflected in 'transaction costs and other.'

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Three Months Ended September 30, 2018						
	Insurance	Reinsurance	Mortgage	Sub-Total	Other	Total
Gross premiums written (1)	\$ 836,820	\$ 435,396	\$ 350,559	\$ 1,622,532	\$ 185,033	\$ 1,731,328
Premiums ceded	(259,968)	(123,705)	(57,226)	(440,656)	(33,356)	(397,775)
Net premiums written	576,852	311,691	293,333	1,181,876	151,677	1,333,553
Change in unearned premiums	(15,794)	(18,418)	7,591	(26,621)	(16,054)	(42,675)
Net premiums earned	561,058	293,273	300,924	1,155,255	135,623	1,290,878
Other underwriting income (loss)	—	1,387	3,733	5,120	703	5,823
Losses and loss adjustment expenses	(409,435)	(183,413)	(9,615)	(602,463)	(96,957)	(699,420)
Acquisition expenses	(88,255)	(50,367)	(33,361)	(171,983)	(29,619)	(201,602)
Other operating expenses	(90,081)	(29,936)	(31,122)	(151,139)	(9,959)	(161,098)
Underwriting income (loss)	\$ (26,713)	\$ 30,944	\$ 230,559	234,790	(209)	234,581
Net investment income				114,328	29,696	144,024
Net realized gains (losses)				(47,010)	(4,695)	(51,705)
Net impairment losses recognized in earnings				(492)	—	(492)
Equity in net income (loss) of investment funds accounted for using the equity method				15,982	—	15,982
Other income (loss)				(726)	—	(726)
Corporate expenses (2)				(13,244)	—	(13,244)
Transaction costs and other (2)				(1,091)	—	(1,091)
Amortization of intangible assets				(26,315)	—	(26,315)
Interest expense				(24,666)	(5,064)	(29,730)
Net foreign exchange gains (losses)				7,130	3,708	10,838
Income before income taxes				258,686	23,436	282,122
Income tax expense				(33,356)	—	(33,356)
Net income				225,330	23,436	248,766
Dividends attributable to redeemable noncontrolling interests				—	(4,599)	(4,599)
Amounts attributable to nonredeemable noncontrolling interests				—	(16,759)	(16,759)
Net income available to Arch				225,330	2,078	227,408
Preferred dividends				(10,402)	—	(10,402)
Net income available to Arch common shareholders				\$ 214,928	\$ 2,078	\$ 217,006
Underwriting Ratios						
Loss ratio	73.0%	62.5%	3.2%	52.1%	71.5%	54.2%
Acquisition expense ratio	15.7%	17.2%	11.1%	14.9%	21.8%	15.6%
Other operating expense ratio	16.1%	10.2%	10.3%	13.1%	7.3%	12.5%
Combined ratio	104.8%	89.9%	24.6%	80.1%	100.6%	82.3%
Goodwill and intangible assets	\$ 20,141	\$ —	\$ 538,871	\$ 559,012	\$ 7,650	\$ 566,662

- (1) Certain amounts included in the gross premiums written of each segment are related to intersegment transactions. Accordingly, the sum of gross premiums written for each segment does not agree to the total gross premiums written as shown in the table above due to the elimination of intersegment transactions in the total.
- (2) Certain expenses have been excluded from ‘corporate expenses’ and reflected in ‘transaction costs and other.’

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Nine Months Ended September 30, 2019						
	Insurance	Reinsurance	Mortgage	Sub-Total	Other	Total
Gross premiums written (1)	\$ 2,867,753	\$ 1,890,974	\$ 1,095,607	\$ 5,853,574	\$ 598,627	\$ 6,196,809
Premiums ceded	(914,751)	(627,120)	(149,358)	(1,690,469)	(178,118)	(1,613,195)
Net premiums written	1,953,002	1,263,854	946,249	4,163,105	420,509	4,583,614
Change in unearned premiums	(201,719)	(186,450)	72,436	(315,733)	2,735	(312,998)
Net premiums earned	1,751,283	1,077,404	1,018,685	3,847,372	423,244	4,270,616
Other underwriting income (loss)	—	4,393	11,867	16,260	1,844	18,104
Losses and loss adjustment expenses	(1,168,677)	(751,147)	(50,226)	(1,970,050)	(318,480)	(2,288,530)
Acquisition expenses	(265,177)	(173,504)	(98,722)	(537,403)	(81,654)	(619,057)
Other operating expenses	(338,327)	(102,197)	(116,697)	(557,221)	(39,368)	(596,589)
Underwriting income (loss)	\$ (20,898)	\$ 54,949	\$ 764,907	798,958	(14,414)	784,544
Net investment income				371,161	102,314	473,475
Net realized gains (losses)				318,722	6,167	324,889
Net impairment losses recognized in earnings				(2,521)	—	(2,521)
Equity in net income (loss) of investment funds accounted for using the equity method				96,533	—	96,533
Other income (loss)				3,550	—	3,550
Corporate expenses (2)				(47,911)	—	(47,911)
Transaction costs and other (2)				(5,363)	—	(5,363)
Amortization of intangible assets				(60,214)	—	(60,214)
Interest expense				(70,094)	(19,579)	(89,673)
Net foreign exchange gains (losses)				28,779	2,918	31,697
Income before income taxes				1,431,600	77,406	1,509,006
Income tax expense				(128,454)	(20)	(128,474)
Net income				1,303,146	77,386	1,380,532
Dividends attributable to redeemable noncontrolling interests				—	(15,778)	(15,778)
Amounts attributable to nonredeemable noncontrolling interests				—	(54,819)	(54,819)
Net income available to Arch				1,303,146	6,789	1,309,935
Preferred dividends				(31,209)	—	(31,209)
Net income available to Arch common shareholders				\$ 1,271,937	\$ 6,789	\$ 1,278,726
Underwriting Ratios						
Loss ratio	66.7%	69.7%	4.9%	51.2%	75.2%	53.6%
Acquisition expense ratio	15.1%	16.1%	9.7%	14.0%	19.3%	14.5%
Other operating expense ratio	19.3%	9.5%	11.5%	14.5%	9.3%	14.0%
Combined ratio	101.1%	95.3%	26.1%	79.7%	103.8%	82.1%

- (1) Certain amounts included in the gross premiums written of each segment are related to intersegment transactions. Accordingly, the sum of gross premiums written for each segment does not agree to the total gross premiums written as shown in the table above due to the elimination of intersegment transactions in the total.
- (2) Certain expenses have been excluded from 'corporate expenses' and reflected in 'transaction costs and other.'

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Nine Months Ended September 30, 2018						
	Insurance	Reinsurance	Mortgage	Sub-Total	Other	Total
Gross premiums written (1)	\$ 2,429,570	\$ 1,503,206	\$ 1,002,727	\$ 4,935,339	\$ 574,078	\$ 5,266,086
Premiums ceded	(752,413)	(455,682)	(154,230)	(1,362,161)	(102,263)	(1,221,093)
Net premiums written	1,677,157	1,047,524	848,497	3,573,178	471,815	4,044,993
Change in unearned premiums	(30,913)	(134,761)	23,147	(142,527)	(39,926)	(182,453)
Net premiums earned	1,646,244	912,763	871,644	3,430,651	431,889	3,862,540
Other underwriting income (loss)	—	2,490	10,464	12,954	2,092	15,046
Losses and loss adjustment expenses	(1,120,630)	(555,044)	(74,672)	(1,750,346)	(312,087)	(2,062,433)
Acquisition expenses	(264,094)	(148,828)	(87,665)	(500,587)	(95,229)	(595,816)
Other operating expenses	(274,735)	(101,185)	(108,622)	(484,542)	(27,752)	(512,294)
Underwriting income (loss)	\$ (13,215)	\$ 110,196	\$ 611,149	708,130	(1,087)	707,043
Net investment income				322,332	84,084	406,416
Net realized gains (losses)				(218,414)	(20,900)	(239,314)
Net impairment losses recognized in earnings				(1,124)	—	(1,124)
Equity in net income (loss) of investment funds accounted for using the equity method				52,523	—	52,523
Other income (loss)				2,461	—	2,461
Corporate expenses (2)				(43,330)	—	(43,330)
Transaction costs and other (2)				(8,829)	—	(8,829)
Amortization of intangible assets				(79,523)	—	(79,523)
Interest expense				(76,631)	(14,079)	(90,710)
Net foreign exchange gains (losses)				38,302	6,521	44,823
Income before income taxes				695,897	54,539	750,436
Income tax expense				(78,912)	(27)	(78,939)
Net income				616,985	54,512	671,497
Dividends attributable to redeemable noncontrolling interests				—	(13,769)	(13,769)
Amounts attributable to nonredeemable noncontrolling interests				—	(36,251)	(36,251)
Net income available to Arch				616,985	4,492	621,477
Preferred dividends				(31,242)	—	(31,242)
Loss on redemption of preferred shares				(2,710)	—	(2,710)
Net income available to Arch common shareholders				\$ 583,033	\$ 4,492	\$ 587,525
Underwriting Ratios						
Loss ratio	68.1%	60.8%	8.6%	51.0%	72.3%	53.4%
Acquisition expense ratio	16.0%	16.3%	10.1%	14.6%	22.0%	15.4%
Other operating expense ratio	16.7%	11.1%	12.5%	14.1%	6.4%	13.3%
Combined ratio	100.8%	88.2%	31.2%	79.7%	100.7%	82.1%

- (1) Certain amounts included in the gross premiums written of each segment are related to intersegment transactions. Accordingly, the sum of gross premiums written for each segment does not agree to the total gross premiums written as shown in the table above due to the elimination of intersegment transactions in the total.
- (2) Certain expenses have been excluded from 'corporate expenses' and reflected in 'transaction costs and other.'

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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:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Reserve for losses and loss adjustment expenses at beginning of period	\$ 12,230,316	\$ 11,424,337	\$ 11,853,297	\$ 11,383,792
Unpaid losses and loss adjustment expenses recoverable	3,024,797	2,651,749	2,814,291	2,464,910
Net reserve for losses and loss adjustment expenses at beginning of period	9,205,519	8,772,588	9,039,006	8,918,882
Net incurred losses and loss adjustment expenses relating to losses occurring in:				
Current year	855,352	779,043	2,419,044	2,257,670
Prior years	(52,897)	(79,623)	(130,514)	(195,237)
Total net incurred losses and loss adjustment expenses	802,455	699,420	2,288,530	2,062,433
Retroactive reinsurance transactions (1)	—	—	(225,500)	(420,404)
Net foreign exchange (gains) losses	(73,200)	(33,783)	(74,981)	(110,061)
Net paid losses and loss adjustment expenses relating to losses occurring in:				
Current year	(175,611)	(149,999)	(301,099)	(245,021)
Prior years	(399,948)	(396,695)	(1,366,741)	(1,314,298)
Total net paid losses and loss adjustment expenses	(575,559)	(546,694)	(1,667,840)	(1,559,319)
Net reserve for losses and loss adjustment expenses at end of period	9,359,215	8,891,531	9,359,215	8,891,531
Unpaid losses and loss adjustment expenses recoverable	3,030,169	2,662,790	3,030,169	2,662,790
Reserve for losses and loss adjustment expenses at end of period	\$ 12,389,384	\$ 11,554,321	\$ 12,389,384	\$ 11,554,321

(1) During the 2019 first quarter and 2018 second quarter, a subsidiary of the Company entered into two separate retroactive reinsurance transactions with third party reinsurers to reinsure run-off liabilities associated with certain U.S. insurance exposures.

Development on Prior Year Loss Reserves

2019 Third Quarter

During the 2019 third quarter, the Company recorded net favorable development on prior year loss reserves of \$52.9 million, which consisted of \$4.4 million of favorable development from the insurance segment, \$15.3 million from the reinsurance segment, \$33.0 million from the mortgage segment and \$0.2 million from the 'other' segment.

The insurance segment's net favorable development of \$4.4 million, or 0.7 loss ratio points, for the 2019 third quarter consisted of \$24.8 million of net favorable development in short-tailed lines and \$20.4 million of net adverse development in medium-tailed and long-tailed lines. Net favorable development in short-tailed lines primarily resulted from lenders products and property (including special risk other than marine) reserves across all accident years (*i.e.*, the year in which a loss occurred). Net adverse development in medium-tailed and long-tailed lines included \$6.3 million of adverse development in executive assurance reserves, primarily from the 2016 to 2018 accident years, \$4.9 million of adverse development on casualty reserves, primarily related to contract

binding business across most accident years, \$4.2 million of adverse development on program business, primarily from the 2018 accident year, and \$3.8 million in healthcare reserves, primarily from the 2016 to 2018 accident years.

The reinsurance segment's net favorable development of \$15.3 million, or 4.2 loss ratio points, for the 2019 third quarter consisted of \$35.2 million of net favorable development from short-tailed and medium-tailed lines and net adverse development of \$19.9 million from long-tailed lines. Net favorable development in short-tailed and medium lines reflected \$26.5 million of favorable development from property catastrophe and property other than property catastrophe reserves, primarily related to 2017 and 2018 catastrophic events, and favorable development on marine and aviation and other reserves across most underwriting years (*i.e.*, all premiums and losses attributable to contracts having an inception or renewal date within the given twelve-month period). Adverse development in long-tailed lines reflected an increase in reserves from casualty from various underwriting years.

The mortgage segment's net favorable development was \$33.0 million, or 9.6 loss ratio points, for the 2019 third quarter. The 2019 third quarter development was primarily driven by

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continued favorable claim rates on first lien business and subrogation recoveries on second lien business.

2018 Third Quarter

During the 2018 third quarter, the Company recorded net favorable development on prior year loss reserves of \$79.6 million, which consisted of \$5.9 million from the insurance segment, \$34.3 million from the reinsurance segment, \$38.6 million from the mortgage segment and \$0.7 million from the 'other' segment.

The insurance segment's net favorable development of \$5.9 million, or 1.1 loss ratio points, for the 2018 third quarter consisted of \$14.3 million of net favorable development in short-tailed lines and \$8.4 million of net adverse development in medium-tailed and long-tailed lines. Net favorable development in short-tailed lines primarily resulted from property (including special risk other than marine) reserves from the 2017 accident year (i.e., the year in which a loss occurred) while net adverse development in medium-tailed and long-tailed lines primarily resulted from \$16.4 million of adverse development on contract binding business, primarily from the 2015 to 2017 accident years. Such amounts were partially offset by \$8.0 million of net favorable development in other medium-tailed and short-tailed lines, including professional liability and surety business, across most accident years.

The reinsurance segment's net favorable development of \$34.3 million, or 11.7 loss ratio points, for the 2018 third quarter consisted of \$26.5 million from short-tailed lines and \$7.8 million from long-tailed and medium-tailed lines. Favorable development in short-tailed lines included \$15.9 million from property catastrophe and property other than property catastrophe reserves, across most underwriting years (i.e., all premiums and losses attributable to contracts having an inception or renewal date within the given twelve-month period), reflecting lower levels of reported and paid claims activity than previously anticipated which led to decreases in certain loss ratio selections during the period, and \$10.3 million from other specialty reserves, primarily from the 2016 underwriting year. Favorable development in long-tailed and medium-tailed lines reflected reductions in casualty reserves of \$7.9 million based on varying levels of reported and paid claims activity, primarily from the 2009 underwriting year.

The mortgage segment's net favorable development was \$38.6 million, or 12.8 loss ratio points, for the 2018 third quarter. The 2018 third quarter development was primarily driven by lower than expected claim rates on first lien business and subrogation recoveries on second lien business.

Nine Months Ended September 30, 2019

During the nine months ended September 30, 2019, the Company recorded net favorable development on prior year

loss reserves of \$130.5 million, which consisted of \$11.4 million from the insurance segment, \$26.3 million from the reinsurance segment, \$92.5 million from the mortgage segment and \$0.3 million from the 'other' segment.

The insurance segment's net favorable development of \$11.4 million, or 0.7 loss ratio points, for the 2019 period consisted of \$42.6 million of net favorable development in short-tailed lines, partially offset by \$31.2 million of net adverse development in medium-tailed and long-tailed lines. Net favorable development in short-tailed lines primarily resulted from lenders products and property (including special risk other than marine) reserves across all accident years, partially offset by net adverse development in travel business, primarily from the 2018 accident year. Net adverse development in medium-tailed and long-tailed lines reflected \$27.4 million of adverse development in program business, primarily from the 2018 accident year, and \$12.8 million of adverse development on casualty business, primarily from contract binding business across most accident years. Such amounts were partially offset by \$9.0 million of net favorable development in other medium-tailed and long-tailed lines, including professional liability, marine and surety business, across most accident years.

The reinsurance segment's net favorable development of \$26.3 million, or 2.4 loss ratio points, for the 2019 period consisted of \$37.1 million of net favorable development from short-tailed and medium-tailed lines, offset by \$10.8 million of net adverse development from long-tailed lines. Net favorable development in short-tailed lines reflected \$22.6 million from other specialty lines and \$9.5 million from property catastrophe reserves. Favorable development in medium-tailed lines reflected reductions in marine and aviation reserves of \$10.4 million across most underwriting years.

The mortgage segment's net favorable development was \$92.5 million, or 9.1 loss ratio points, for the 2019 period. The 2019 development was primarily driven by continued lower than expected claim rates on first lien business and subrogation recoveries on second lien business.

Nine Months Ended September 30, 2018

During the nine months ended September 30, 2018, the Company recorded net favorable development on prior year loss reserves of \$195.2 million, which consisted of \$14.1 million from the insurance segment, \$103.9 million from the reinsurance segment, \$74.9 million from the mortgage segment and \$2.3 million from the 'other' segment.

The insurance segment's net favorable development of \$14.1 million, or 0.9 loss ratio points, for the 2018 period consisted of \$37.0 million of net favorable development in short-tailed lines and \$16.4 million of net favorable development in long-tailed lines, partially offset by \$39.3 million of net adverse development in medium-tailed lines. Net favorable development in short-tailed lines primarily resulted from

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property (including special risk other than marine) reserves from the 2010 and 2017 accident years. Net favorable development in long-tailed lines reflected net reductions in executive assurance reserves of \$8.0 million, primarily from the 2008 accident year, and in healthcare reserves of \$8.1 million, primarily from the 2003 accident year. Net adverse development in medium-tailed lines reflected \$23.4 million of adverse development in program business, primarily driven by a few inactive programs that were non-renewed in prior periods and \$42.1 million of adverse development on contract binding business, primarily from the 2014 to 2017 accident years. Such amounts were partially offset by \$26.2 million of net favorable development in other medium-tailed lines, including professional liability and surety business, across most accident years.

The reinsurance segment's net favorable development of \$103.9 million, or 11.4 loss ratio points, for the 2018 period consisted of \$77.6 million from short-tailed lines and \$26.3 million from long-tailed and medium-tailed lines. Favorable development in short-tailed lines included \$56.4 million from property catastrophe and property other than property catastrophe reserves, across most underwriting years, reflecting lower levels of reported and paid claims activity than previously anticipated which led to decreases in certain loss ratio selections during the period, and \$10.7 million from other specialty reserves, across most underwriting years. Favorable development in long-tailed and medium-tailed lines reflected reductions in casualty reserves of \$16.0 million based on varying levels of reported and paid claims activity, primarily from the 2002 to 2010 underwriting years, and favorable development in marine reserves of \$10.8 million across most underwriting years.

The mortgage segment's net favorable development was \$74.9 million, or 8.6 loss ratio points, for the 2018 period. The 2018 development was primarily driven by lower than expected claim rates on first lien business and subrogation recoveries on second lien business.

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6. Investment Information

At September 30, 2019, total investable assets of \$24.30 billion included \$21.57 billion held by the Company and \$2.73 billion attributable to Watford.

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)
September 30, 2019					
Fixed maturities (1):					
Corporate bonds	\$ 6,269,993	\$ 198,742	\$ (18,420)	\$ 6,089,671	\$ —
Mortgage backed securities	544,033	11,185	(918)	533,766	(6)
Municipal bonds	653,346	27,095	(379)	626,630	—
Commercial mortgage backed securities	754,306	27,523	(158)	726,941	—
U.S. government and government agencies	5,127,290	67,957	(6,671)	5,066,004	—
Non-U.S. government securities	1,873,856	48,212	(52,767)	1,878,411	—
Asset backed securities	1,657,494	29,838	(5,931)	1,633,587	—
Total	16,880,318	410,552	(85,244)	16,555,010	(6)
Short-term investments	751,989	227	(445)	752,207	—
Total	\$ 17,632,307	\$ 410,779	\$ (85,689)	\$ 17,307,217	\$ (6)
December 31, 2018					
Fixed maturities (1):					
Corporate bonds	\$ 5,537,548	\$ 14,476	\$ (105,428)	\$ 5,628,500	\$ (69)
Mortgage backed securities	541,193	3,991	(3,216)	540,418	(6)
Municipal bonds	1,013,395	5,380	(11,891)	1,019,906	—
Commercial mortgage backed securities	729,442	2,650	(10,751)	737,543	—
U.S. government and government agencies	3,758,698	27,189	(8,474)	3,739,983	—
Non-U.S. government securities	1,771,338	14,477	(50,948)	1,807,809	—
Asset backed securities	1,600,896	8,060	(14,798)	1,607,634	—
Total	14,952,510	76,223	(205,506)	15,081,793	(75)
Short-term investments	955,880	36	(394)	956,238	—
Total	\$ 15,908,390	\$ 76,259	\$ (205,900)	\$ 16,038,031	\$ (75)

- (1) In securities lending transactions, the Company receives collateral in excess of the fair value of the fixed maturities 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."
- (2) Represents the total other-than-temporary impairments ("OTTI") recognized in accumulated other comprehensive income ("AOCI"). It does not include the change in fair value subsequent to the impairment measurement date. At September 30, 2019 the net unrealized loss related to securities for which a non-credit OTTI was recognized in AOCI was \$0.01 million, compared to net unrealized loss of \$0.04 million at December 31, 2018.

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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
September 30, 2019						
Fixed maturities (1):						
Corporate bonds	\$ 538,471	\$ (11,128)	\$ 113,987	\$ (7,292)	\$ 652,458	\$ (18,420)
Mortgage backed securities	97,288	(905)	200	(13)	97,488	(918)
Municipal bonds	43,627	(379)	—	—	43,627	(379)
Commercial mortgage backed securities	47,219	(151)	1,872	(7)	49,091	(158)
U.S. government and government agencies	1,592,232	(6,531)	47,416	(140)	1,639,648	(6,671)
Non-U.S. government securities	1,214,128	(51,742)	47,576	(1,025)	1,261,704	(52,767)
Asset backed securities	375,936	(4,600)	48,743	(1,331)	424,679	(5,931)
Total	3,908,901	(75,436)	259,794	(9,808)	4,168,695	(85,244)
Short-term investments	43,007	(445)	—	—	43,007	(445)
Total	\$ 3,951,908	\$ (75,881)	\$ 259,794	\$ (9,808)	\$ 4,211,702	\$ (85,689)

December 31, 2018						
Fixed maturities (1):						
Corporate bonds	\$ 2,983,195	\$ (68,910)	\$ 1,234,865	\$ (36,518)	\$ 4,218,060	\$ (105,428)
Mortgage backed securities	84,296	(695)	109,009	(2,521)	193,305	(3,216)
Municipal bonds	233,081	(2,074)	408,155	(9,817)	641,236	(11,891)
Commercial mortgage backed securities	223,341	(2,831)	193,956	(7,920)	417,297	(10,751)
U.S. government and government agencies	635,049	(1,354)	391,102	(7,120)	1,026,151	(8,474)
Non-U.S. government securities	1,028,340	(35,524)	389,671	(15,424)	1,418,011	(50,948)
Asset backed securities	533,592	(8,832)	368,095	(5,966)	901,687	(14,798)
Total	5,720,894	(120,220)	3,094,853	(85,286)	8,815,747	(205,506)
Short-term investments	122,878	(394)	—	—	122,878	(394)
Total	\$ 5,843,772	\$ (120,614)	\$ 3,094,853	\$ (85,286)	\$ 8,938,625	\$ (205,900)

(1) In securities lending transactions, the Company receives collateral in excess of the fair value of the fixed maturities 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 September 30, 2019, on a lot level basis, approximately 1,980 security lots out of a total of approximately 9,260 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 \$3.0 million. At December 31, 2018, on a lot level basis, approximately 5,870 security lots out of a total of approximately 8,450 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 \$2.6 million.

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The contractual maturities of the Company's fixed maturities 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.

Maturity	September 30, 2019		December 31, 2018	
	Estimated Fair Value	Amortized Cost	Estimated Fair Value	Amortized Cost
Due in one year or less	\$ 545,056	\$ 538,903	\$ 276,682	\$ 279,135
Due after one year through five years	10,096,867	9,971,896	8,666,297	8,738,944
Due after five years through 10 years	3,075,318	2,952,478	2,919,232	2,951,582
Due after 10 years	207,244	197,439	218,768	226,537
	13,924,485	13,660,716	12,080,979	12,196,198
Mortgage backed securities	544,033	533,766	541,193	540,418
Commercial mortgage backed securities	754,306	726,941	729,442	737,543
Asset backed securities	1,657,494	1,633,587	1,600,896	1,607,634
Total (1)	\$ 16,880,318	\$ 16,555,010	\$ 14,952,510	\$ 15,081,793

- (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."

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 from the Company.

The Company receives collateral in the form of cash or securities. Cash collateral primarily consists of short term investments. At September 30, 2019, the fair value of the cash collateral received on securities lending was \$12.0 million and the fair value of security collateral received was \$418.2 million. At December 31, 2018, the fair value of the cash collateral received on securities lending was \$19.0 million, and the fair value of security collateral received was \$255.1 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
September 30, 2019					
U.S. government and government agencies	\$ 257,979	\$ —	\$ 156,541	\$ —	\$ 414,520
Corporate bonds	4,820	—	—	—	4,820
Equity securities	10,915	—	—	—	10,915
Total	\$ 273,714	\$ —	\$ 156,541	\$ —	\$ 430,255
Gross amount of recognized liabilities for securities lending in offsetting disclosure in note 8					\$ —
Amounts related to securities lending not included in offsetting disclosure in note 8					\$ 430,255
December 31, 2018					
U.S. government and government agencies	\$ 219,276	\$ —	\$ 32,583	\$ —	\$ 251,859
Corporate bonds	7,129	—	—	—	7,129
Equity securities	15,137	—	—	—	15,137
Total	\$ 241,542	\$ —	\$ 32,583	\$ —	\$ 274,125
Gross amount of recognized liabilities for securities lending in offsetting disclosure in note 8					\$ —
Amounts related to securities lending not included in offsetting disclosure in note 8					\$ 274,125

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Equity Securities, at Fair Value

At September 30, 2019, the Company held \$550.5 million of equity securities, at fair value, compared to \$338.9 million at December 31, 2018. Such holdings include publicly traded common stocks in the natural resources, energy, consumer staples and other sectors and exchange-traded funds.

Other Investments

The following table summarizes the Company's other investments which are included in investments accounted for using the fair value option, by strategy:

	September 30, 2019	December 31, 2018
Term loan investments (par value: \$1,434,328 and \$1,369,216)	\$ 1,330,886	\$ 1,282,287
Lending	624,699	524,112
Credit related funds	165,444	202,123
Energy	113,791	117,509
Investment grade fixed income	83,649	101,902
Infrastructure	49,602	45,371
Private equity	54,609	24,383
Real estate	17,440	14,252
Total	\$ 2,440,120	\$ 2,311,939

Investments Accounted For Using the Equity Method

The following table summarizes the Company's investments accounted for using the equity method, by strategy:

	September 30, 2019	December 31, 2018
Credit related funds	\$ 428,353	\$ 429,402
Equities	284,465	375,273
Real estate	265,502	232,647
Lending	200,112	125,041
Private equity	141,343	114,019
Infrastructure	149,005	113,748
Energy	107,052	103,661
Total	\$ 1,575,832	\$ 1,493,791

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 which are accounted for using the fair value option:

	September 30, 2019	December 31, 2018
Fixed maturities	\$ 908,802	\$ 1,245,562
Other investments	2,440,120	2,311,939
Short-term investments	390,980	322,177
Equity securities	98,341	103,893
Investments accounted for using the fair value option	\$ 3,838,243	\$ 3,983,571

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.' The Company has determined that it is not required to consolidate these investments because it is not the primary beneficiary of 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 line item:

	September 30, 2019	December 31, 2018
Investments accounted for using the equity method (1)	1,575,832	1,493,791
Investments accounted for using the fair value option (2)	189,186	162,398
Total	\$ 1,765,018	\$ 1,656,189

- (1) Aggregate unfunded commitments were \$1.44 billion at September 30, 2019, compared to \$1.22 billion at December 31, 2018.
- (2) Aggregate unfunded commitments were \$51.1 million at September 30, 2019, compared to \$117.5 million at December 31, 2018.

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Net Investment Income

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

	September 30,	
	2019	2018
<u>Three Months Ended</u>		
Fixed maturities	\$ 126,889	\$ 120,516
Term loans	24,236	21,903
Equity securities	3,992	3,165
Short-term investments	3,834	4,547
Other (1)	22,704	17,195
Gross investment income	181,655	167,326
Investment expenses	(20,167)	(23,302)
Net investment income	\$ 161,488	\$ 144,024
<u>Nine Months Ended</u>		
Fixed maturities	\$ 381,706	\$ 343,513
Term loans	73,582	62,430
Equity securities	11,348	10,510
Short-term investments	11,872	13,799
Other (1)	62,423	52,210
Gross investment income	540,931	482,462
Investment expenses	(67,456)	(76,046)
Net investment income	\$ 473,475	\$ 406,416

(1) Includes income distributions from investment funds and other items.

Net Realized Gains (Losses)

Net realized gains (losses) were as follows, excluding net impairment losses recognized in earnings:

	September 30,	
	2019	2018
<u>Three Months Ended</u>		
Available for sale securities:		
Gross gains on investment sales	\$ 73,685	\$ 10,990
Gross losses on investment sales	(30,561)	(34,879)
Change in fair value of assets and liabilities accounted for using the fair value option:		
Fixed maturities	(3,895)	(6,604)
Other investments	(21,778)	(7,950)
Equity securities	(1,231)	2,752
Short-term investments	(1,941)	(471)
Equity securities, at fair value:		
Net realized gains (losses) on sales during the period	5,217	(2,012)
Net unrealized gains (losses) on equity securities still held at reporting date	(1,206)	10,798
Derivative instruments (1)	42,893	(17,556)
Other (2)	1,335	(6,773)
Net realized gains (losses)	\$ 62,518	\$ (51,705)
<u>Nine Months Ended</u>		
Available for sale securities:		
Gross gains on investment sales	\$ 192,140	\$ 44,732
Gross losses on investment sales	(77,498)	(175,141)
Change in fair value of assets and liabilities accounted for using the fair value option:		
Fixed maturities	38,682	(47,082)
Other investments	(37,363)	(14,578)
Equity securities	9,449	10,650
Short-term investments	(2,613)	(758)
Equity securities, at fair value:		
Net realized gains (losses) on sales during the period	9,503	(13,298)
Net unrealized gains (losses) on equity securities still held at reporting date	58,562	(4,063)
Derivative instruments (1)	142,730	(23,665)
Other (2)	(8,703)	(16,111)
Net realized gains (losses)	\$ 324,889	\$ (239,314)

(1) See [note 8](#) 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 \$17.1 million of equity in net income related to investment funds accounted for using the equity method in the 2019 third quarter, compared to \$16.0 million for the 2018 third quarter, and \$96.5 million for the nine months ended September 30, 2019, compared to \$52.5 million for the 2018 period. 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.

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of the funds (which include changes in the market 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.

Net Impairment Losses Recognized in Earnings

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:

	September 30,	
	2019	2018
Three Months Ended		
Fixed maturities:		
Mortgage backed securities	\$ (284)	\$ (73)
Corporate bonds	(666)	(270)
Non-U.S. government securities	—	(149)
Asset backed securities	(213)	—
Net impairment losses recognized in earnings	\$ (1,163)	\$ (492)

Nine Months Ended

Fixed maturities:		
Mortgage backed securities	\$ (839)	\$ (196)
Corporate bonds	(1,256)	(631)
Non-U.S. government securities	—	(149)
Asset backed securities	(426)	(148)
Net impairment losses recognized in earnings	\$ (2,521)	\$ (1,124)

Net impairment losses recognized in earnings in the 2019 periods were primarily related to foreign currency fluctuations and other impairments on corporate bonds and other securities.

The Company believes that the minimal amount of OTTI included in accumulated other comprehensive income at September 30, 2019 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 September 30, 2019, 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:

	September 30,	
	2019	2018
Three Months Ended		
Balance at start of period	\$ 346	\$ 698
Credit loss impairments recognized on securities not previously impaired	—	—
Credit loss impairments recognized on securities previously impaired	—	—
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	—	(47)
Balance at end of period	\$ 346	\$ 651

Nine Months Ended

Balance at start of year	\$ 637	\$ 767
Credit loss impairments recognized on securities not previously impaired	—	—
Credit loss impairments recognized on securities previously impaired	—	—
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	(291)	(116)
Balance at end of period	\$ 346	\$ 651

Restricted Assets

The Company is required to maintain assets on deposit, which primarily consist of fixed maturities, with various regulatory authorities to support its underwriting operations. The Company's subsidiaries maintain assets in trust accounts as collateral for 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 16, "Commitments and Contingencies," of the notes to consolidated financial statements in the Company's 2018 Form 10-K. The following table details the value of the Company's restricted assets:

	September 30, 2019	December 31, 2018
Assets used for collateral or guarantees:		
Affiliated transactions	\$ 4,629,369	\$ 4,623,483
Third party agreements	2,605,587	2,181,682
Deposits with U.S. regulatory authorities	788,295	689,114
Deposits with non-U.S. regulatory authorities	71,800	59,624
Total restricted assets	\$ 8,095,051	\$ 7,553,903

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In addition, Watford maintains a secured credit facility to provide borrowing capacity for investment purposes and a total return swap agreement and maintains assets pledged as collateral for such purposes. The Company does not guarantee or provide credit support for Watford, and the Company's financial exposure to Watford is limited to its investment in Watford's senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from reinsurance transactions. As of September 30, 2019 and December 31, 2018, Watford held \$1.06 billion and \$1.30 billion, respectively, in pledged assets to collateralize the credit facility mentioned above.

Reconciliation of Cash and Restricted Cash

The following table details reconciliation of cash and restricted cash within the Consolidated Balance Sheets:

	September 30, 2019	December 31, 2018
Cash	\$ 880,099	\$ 646,556
Restricted cash (included in 'other assets')	\$ 82,376	\$ 78,087
Cash and restricted cash	\$ 962,475	\$ 724,643

7. 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. The Company did not adjust any of the prices obtained from the independent pricing sources at September 30, 2019.

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 \$22.21 billion of financial assets and liabilities measured at fair value at September 30, 2019,

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approximately \$187.9 million, or 0.9%, were priced using non-binding broker-dealer quotes. Of the \$20.41 billion of financial assets and liabilities measured at fair value at December 31, 2018, approximately \$217.9 million, or 1.1%, 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. 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 the nine months ended September 30, 2019, the Company transferred \$25.8 million of corporate bonds from Level 2 to Level 3 based on a review of the pricing of such securities, as described above.
- 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. 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.
- 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

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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. During the nine months ended September 30, 2019, the Company transferred \$5.5 million of asset-backed securities 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. A small number of securities are included in Level 3 due to the lack of an available independent price source for such securities. As the significant inputs used to price these securities are unobservable, the fair value of such securities are classified as Level 3. During nine months ended September 30 2019, the Company transferred \$107.4 million of equity securities from Level 2 to Level 3 based on a review of the pricing of such securities, as described above.

Other investments

The Company determined that exchange-traded investments in mutual funds 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. 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. A small number of securities are included in Level 3 due to the lack of an available independent price source for such securities. During the nine months ended September 30, 2019, the Company transferred \$31.6 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 acquisition of CMG Mortgage Insurance Company and its affiliated mortgage insurance companies 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.

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The following table presents the Company's financial assets and liabilities measured at fair value by level at September 30, 2019:

	Estimated Fair Value	Estimated Fair Value Measurements Using:		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<u>Assets measured at fair value (1):</u>				
Available for sale securities:				
Fixed maturities:				
Corporate bonds	\$ 6,269,993	\$ —	\$ 6,261,248	\$ 8,745
Mortgage backed securities	544,033	—	543,761	272
Municipal bonds	653,346	—	653,346	—
Commercial mortgage backed securities	754,306	—	754,306	—
U.S. government and government agencies	5,127,290	5,005,512	121,778	—
Non-U.S. government securities	1,873,856	—	1,873,856	—
Asset backed securities	1,657,494	—	1,652,045	5,449
Total	16,880,318	5,005,512	11,860,340	14,466
Short-term investments	751,989	720,518	31,471	—
Equity securities, at fair value	561,105	514,380	11,402	35,323
Derivative instruments (4)	51,647	—	51,647	—
Fair value option:				
Corporate bonds	619,779	—	597,000	22,779
Non-U.S. government bonds	61,755	—	61,755	—
Mortgage backed securities	15,512	—	15,512	—
Municipal bonds	1,140	—	1,140	—
Asset backed securities	208,620	—	208,620	—
U.S. government and government agencies	1,996	1,886	110	—
Short-term investments	390,980	376,033	14,947	—
Equity securities	98,340	41,333	735	56,272
Other investments	1,411,420	41,316	1,284,661	85,443
Other investments measured at net asset value (2)	1,028,700			
Total	3,838,242	460,568	2,184,480	164,494
Total assets measured at fair value	\$ 22,083,301	\$ 6,700,978	\$ 14,139,340	\$ 214,283
<u>Liabilities measured at fair value:</u>				
Contingent consideration liabilities	\$ (7,344)	\$ —	\$ —	\$ (7,344)
Securities sold but not yet purchased (3)	(65,736)	—	(65,736)	—
Derivative instruments (4)	(53,740)	—	(53,740)	—
Total liabilities measured at fair value	\$ (126,820)	\$ —	\$ (119,476)	\$ (7,344)

- (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 [note 6](#), "—Securities Lending Agreements."
- (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 8](#).

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The following table presents the Company's financial assets and liabilities measured at fair value by level at December 31, 2018:

	Estimated Fair Value	Estimated Fair Value Measurements Using:		
		Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
<u>Assets measured at fair value (1):</u>				
Available for sale securities:				
Fixed maturities:				
Corporate bonds	\$ 5,537,548	\$ —	\$ 5,529,407	\$ 8,141
Mortgage backed securities	541,193	—	540,884	309
Municipal bonds	1,013,395	—	1,013,395	—
Commercial mortgage backed securities	729,442	—	729,438	4
U.S. government and government agencies	3,758,698	3,657,181	101,517	—
Non-U.S. government securities	1,771,338	—	1,771,338	—
Asset backed securities	1,600,896	—	1,600,896	—
Total	14,952,510	3,657,181	11,286,875	8,454
Equity securities	353,794	321,927	31,867	—
Short-term investments	955,880	875,881	79,999	—
Derivative instruments (4)	73,893	—	73,893	—
Fair value option:				
Corporate bonds	852,585	—	846,827	5,758
Non-U.S. government bonds	79,066	—	79,066	—
Mortgage backed securities	16,731	—	16,731	—
Municipal bonds	7,144	—	7,144	—
Asset backed securities	178,790	—	178,790	—
U.S. government and government agencies	111,246	111,138	108	—
Short-term investments	322,177	278,579	43,598	—
Equity securities	103,893	48,827	55,066	—
Other investments	1,254,220	39,107	1,152,408	62,705
Other investments measured at net asset value (2)	1,057,719			
Total	3,983,571	477,651	2,379,738	68,463
Total assets measured at fair value	\$ 20,319,648	\$ 5,332,640	\$ 13,852,372	\$ 76,917
<u>Liabilities measured at fair value:</u>				
Contingent consideration liabilities	\$ (66,665)	\$ —	\$ —	\$ (66,665)
Securities sold but not yet purchased (3)	(7,790)	—	(7,790)	—
Derivative instruments (4)	(20,664)	—	(20,664)	—
Total liabilities measured at fair value	\$ (95,119)	\$ —	\$ (28,454)	\$ (66,665)

- (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 [note 6](#), "—Securities Lending Agreements."
- (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 8](#).

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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:

	Assets						Liabilities
	Available For Sale		Fair Value Option			Fair Value	Contingent Consideration Liabilities
	Structured Securities (1)	Corporate Bonds	Corporate Bonds	Other Investments	Equity Securities	Equity Securities	
Three Months Ended September 30, 2019							
Balance at beginning of period	\$ 290	\$ 7,642	\$ 26,103	\$ 95,273	\$ 56,145	\$ 51,212	\$ (7,825)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	—	—	(1,227)	(411)	127	(26)	(79)
Included in other comprehensive income	—	(301)	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	—	—	3,713	—	12,119	—
Issuances	—	—	—	—	—	—	—
Sales	—	—	(2,097)	(80)	—	(27,982)	—
Settlements	(18)	(456)	—	—	—	—	560
Transfers in and/or out of Level 3	5,449	1,860	—	(13,052)	—	—	—
Balance at end of period	\$ 5,721	\$ 8,745	\$ 22,779	\$ 85,443	\$ 56,272	\$ 35,323	\$ (7,344)
Three Months Ended September 30, 2018							
Balance at beginning of period	\$ 376	\$ 8,773	\$ 11,335	\$ 58,214	\$ —	\$ —	\$ (63,930)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	—	(1)	(503)	(1,459)	—	—	(1,711)
Included in other comprehensive income	2	(32)	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	—	—	6,250	—	—	—
Issuances	—	—	—	—	—	—	—
Sales	—	—	—	(74)	—	—	—
Settlements	(33)	(456)	(1,226)	—	—	—	—
Transfers in and/or out of Level 3	—	—	—	—	—	—	—
Balance at end of period	\$ 345	\$ 8,284	\$ 9,606	\$ 62,931	\$ —	\$ —	\$ (65,641)
Nine Months Ended September 30, 2019							
Balance at beginning of year	\$ 313	\$ 8,141	\$ 5,758	\$ 62,705	\$ —	\$ —	\$ (66,665)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	1,757	—	(1,566)	(11,727)	127	(26)	(1,410)
Included in other comprehensive income	5	(317)	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	429	—	3,713	—	12,119	—
Issuances	—	—	—	—	—	—	(548)
Sales	(1,757)	—	(5,332)	(228)	—	(27,982)	—
Settlements	(46)	(1,368)	—	(600)	—	—	61,279
Transfers in and/or out of Level 3	5,449	1,860	23,919	31,580	56,145	51,212	—
Balance at end of period	\$ 5,721	\$ 8,745	\$ 22,779	\$ 85,443	\$ 56,272	\$ 35,323	\$ (7,344)
Nine Months Ended September 30, 2018							
Balance at beginning of year	\$ 5,927	\$ 9,460	\$ 12,217	\$ 59,167	\$ —	\$ —	\$ (60,996)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	4	(1)	(1,115)	(1,838)	—	—	(4,645)
Included in other comprehensive income	(6)	(200)	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	393	—	6,250	—	—	—
Issuances	—	—	—	—	—	—	—

Sales	(5,003)	—	—	(148)	—	—	—
Settlements	(577)	(1,368)	(1,496)	(500)	—	—	—
Transfers in and/or out of Level 3	—	—	—	—	—	—	—
Balance at end of period	<u>\$ 345</u>	<u>\$ 8,284</u>	<u>\$ 9,606</u>	<u>\$ 62,931</u>	<u>\$ —</u>	<u>\$ —</u>	<u>\$ (65,641)</u>

- (1) Includes asset backed securities, mortgage backed securities and commercial mortgage backed securities.
(2) Gains or losses were included in net realized gains (losses).

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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 September 30, 2019, due to their respective short maturities. As these financial instruments are not actively traded, their respective fair values are classified within Level 2.

At September 30, 2019, the Company's senior notes were carried at their cost, net of debt issuance costs, of \$1.87 billion and had a fair value of \$2.35 billion. At December 31, 2018, the Company's senior notes were carried at their cost, net of debt issuance costs, of \$1.73 billion and had a fair value of \$1.88 billion. 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 values of the senior notes are classified within Level 2.

8. 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)
September 30, 2019			
Futures contracts (2)	\$ 15,148	\$ (20,515)	\$ 3,987,260
Foreign currency forward contracts (2)	5,316	(8,616)	965,348
TBAs (3)	54,961	—	53,229
Other (2)	31,183	(24,609)	3,983,466
Total	<u>\$ 106,608</u>	<u>\$ (53,740)</u>	
December 31, 2018			
Futures contracts (2)	\$ 51,800	\$ (2,115)	\$ 3,153,518
Foreign currency forward contracts (2)	8,147	(7,796)	1,008,907
TBAs (3)	8,292	—	8,132
Other (2)	13,946	(10,753)	2,213,981
Total	<u>\$ 82,185</u>	<u>\$ (20,664)</u>	

- (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.'
- (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 September 30, 2019 or December 31, 2018.

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. Contractual close-out netting reduces derivatives credit exposure from gross to net exposure. The remaining derivatives included in the table above were not subject to a master netting agreement.

At September 30, 2019, asset derivatives and liability derivatives of \$105.5 million and \$52.7 million, respectively, were subject to a master netting agreement, compared to \$80.4 million and \$18.9 million, respectively, at December 31, 2018. The remaining derivatives included in the preceding table were not subject to a master netting agreement.

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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:

Derivatives not designated as hedging instruments:	September 30,	
	2019	2018
Three Months Ended		
Net realized gains (losses):		
Futures contracts	\$ 46,194	\$ (15,399)
Foreign currency forward contracts	2,044	(5,458)
TBAs	269	(3)
Other	(5,614)	3,304
Total	\$ 42,893	\$ (17,556)
Nine Months Ended		
Net realized gains (losses):		
Futures contracts	\$ 140,503	\$ (10,609)
Foreign currency forward contracts	(17,030)	(13,074)
TBAs	507	(100)
Other	18,750	118
Total	\$ 142,730	\$ (23,665)

9. Commitments and Contingencies

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 \$1.90 billion at September 30, 2019, compared to \$1.77 billion at December 31, 2018.

Interest Paid

Interest paid on the Company's senior notes and other borrowings were \$68.6 million for the nine months ended September 30, 2019, consistent with \$67.6 million for the 2018 period.

Letter of Credit and Revolving Credit Facilities

In September 2019, Watford entered into an unsecured letter of credit agreement. Watford has access to a \$100 million letter of credit facility expiring on September 20, 2020. The Company does not guarantee or provide credit support for Watford, and the Company's financial exposure to Watford is limited to its investment in Watford's senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from the reinsurance transactions.

10. Leases

In the ordinary course of business, the Company renews and enters into new leases for office property and equipment. At the lease inception date, the Company determines whether a contract contains a lease and its classification as a finance or operating lease. Primarily all of the Company's leases are classified as operating leases. The Company's operating leases have remaining lease terms of up to 11 years, some of which include options to extend the lease term. The Company considers these options when determining the lease term and measuring its lease liability and right-of-use asset. In addition, the Company's lease agreements do not contain any material residual value guarantees or material restrictive covenants.

Short-term operating leases with an initial term of twelve months or less were excluded on the Company's consolidated balance sheet and represent an inconsequential amount of operating lease expense.

As most leases do not provide an implicit rate, the Company uses its incremental borrowing rate based on the information available at the lease commencement date in determining the present value of lease payments.

Additional information regarding the Company's operating leases is as follows:

	September 30, 2019
Three Months Ended	
Operating lease costs	\$ 7,751
Cash payments included in the measurement of lease liabilities reported in operating cash flows	\$ 8,031
Right-of-use assets obtained in exchange for new lease liabilities	\$ 2,897
Right-of-use assets (1)	\$ 131,424
Operating lease liability (1)	\$ 147,326
Weighted average discount rate	3.9%
Weighted average remaining lease term	6.3 years
Nine Months Ended	
Operating lease costs	\$ 22,611
Cash payments included in the measurement of lease liabilities reported in operating cash flows	\$ 22,616
Right-of-use assets obtained in exchange for new lease liabilities	\$ 7,009
Right-of-use assets (1)	\$ 131,424
Operating lease liability (1)	\$ 147,326
Weighted average discount rate	3.9%
Weighted average remaining lease term	6.3 years

- (1) The right-of-use assets are included in 'other assets' while the operating lease liability is included in 'other liabilities.'

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The following table presents the contractual maturities of the Company's operating lease liabilities at September 30, 2019:

Years Ending December 31,

2019 (remainder)	\$ 1,693
2020	31,541
2021	30,392
2022	27,096
2023	22,290
2024 and thereafter	55,080
Total undiscounted lease liability	\$ 168,092
Less: present value adjustment	(20,767)
Operating lease liability	\$ 147,325

At December 31, 2018, 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 was as follows:

2019	\$ 31,088
2020	30,491
2021	29,351
2022	26,068
2023	21,408
2024 and thereafter	54,745
Total	\$ 193,151

11. Variable Interest Entities and Noncontrolling Interests

Watford

In March 2014, the Company invested \$100.0 million and acquired 2,500,000 common shares, approximately 11% of Watford's outstanding common equity, and a warrant to purchase up to 975,503 additional common shares. The warrants expire on March 31, 2020. The exercise price of the warrants is determined on the date of exercise based on certain targeted returns for existing common shareholders. Watford's common shares are listed on the Nasdaq Select Global Market under the ticker symbol "WTRE".

On July 2, 2019, Watford completed an offering of \$175.0 million in aggregate principal amount of its 6.5% senior notes, due July 2, 2029 ("Watford Senior Notes"). Interest on the Watford Senior Notes will be paid semi-annually in arrears on each January 2 and July 2, commencing January 2, 2020. The \$172.4 million net proceeds from the offering were used to redeem a portion of Watford's outstanding preference shares ("Watford Preference Shares"). The Company purchased \$35.0 million in aggregate principal amount of the Watford Senior Notes.

Watford is considered a VIE and the Company concluded that it is the primary beneficiary of Watford. As such, the results of Watford are included in the Company's consolidated financial statements.

The Company does not guarantee or provide credit support for Watford, and the Company's financial exposure to Watford is limited to its investment in Watford's senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from reinsurance transactions.

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

	September 30, 2019	December 31, 2018
Assets		
Investments accounted for using the fair value option	\$ 2,048,295	\$ 2,312,003
Fixed maturities available for sale, at fair value	678,094	393,351
Equity securities, at fair value	43,488	32,206
Cash	80,390	63,529
Accrued investment income	18,277	19,461
Premiums receivable	302,265	227,301
Reinsurance recoverable on unpaid and paid losses and LAE	144,437	86,445
Ceded unearned premiums	129,909	61,587
Deferred acquisition costs	67,241	80,858
Receivable for securities sold	25,283	24,507
Goodwill and intangible assets	7,650	7,650
Other assets	66,165	63,959
Total assets of consolidated VIE	\$ 3,611,494	\$ 3,372,857
Liabilities		
Reserve for losses and loss adjustment expenses	\$ 1,164,945	\$ 1,032,760
Unearned premiums	454,148	390,114
Reinsurance balances payable	79,264	21,034
Revolving credit agreement borrowings	490,720	455,682
Senior notes	172,350	—
Payable for securities purchased	40,586	60,142
Other liabilities (1)	196,431	302,524
Total liabilities of consolidated VIE	\$ 2,598,444	\$ 2,262,256
Redeemable noncontrolling interests	\$ 52,281	\$ 220,992

(1) Includes certain borrowings related to investing activities.

For the nine months ended September 30, 2019, Watford generated \$177.2 million of cash provided by operating activities, \$181.2 million of cash used for investing activities and \$22.2 million of cash provided by financing activities, compared to \$174.3 million of cash provided by operating activities, \$208.3 million of cash used for investing activities and \$24.2 million of cash used for financing activities for the nine months ended September 30, 2018.

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Non-redeemable noncontrolling interests

The Company accounts for the portion of Watford's common equity attributable to third party investors in the shareholders' equity section of its consolidated balance sheets. The noncontrolling ownership in Watford's common shares was approximately 89% at September 30, 2019. The portion of Watford'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:

	September 30,	
	2019	2018
Three Months Ended		
Balance, beginning of period	\$ 855,347	\$ 861,153
Additional paid in capital attributable to noncontrolling interests	205	—
Amounts attributable to noncontrolling interests	136	16,759
Other comprehensive income (loss) attributable to noncontrolling interests	(764)	(1,158)
Balance, end of period	\$ 854,924	\$ 876,754
Nine Months Ended		
Balance, beginning of year	\$ 791,560	\$ 843,411
Additional paid in capital attributable to noncontrolling interests	2,279	—
Amounts attributable to noncontrolling interests	54,819	36,251
Other comprehensive income (loss) attributable to noncontrolling interests	6,266	(2,908)
Balance, end of period	\$ 854,924	\$ 876,754

Redeemable noncontrolling interests

The Company accounts for redeemable noncontrolling interests in the mezzanine section of its consolidated balance sheets in accordance with applicable accounting guidance. Such redeemable noncontrolling interests relate to the 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. Preferred dividends, including the accretion of the discount and issuance costs, are included in 'net (income) loss attributable to noncontrolling interests' in the Company's consolidated statements of income.

On August 1, 2019, Watford redeemed 6,919,998 of its 9,065,200 issued and outstanding Watford Preference Shares. The Watford Preference Shares were redeemed at a total redemption price of \$25.19748 per share, inclusive of all declared and unpaid dividends, with accumulation of any undeclared dividends on or after June 30, 2019. In addition, the Company received \$11.5 million pursuant to the redemption of Watford Preference Shares.

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

	September 30,	
	2019	2018
Three Months Ended		
Balance, beginning of period	\$ 206,475	\$ 206,105
Redemption of noncontrolling interests	(157,709)	—
Accretion of preference share issuance costs	23	94
Balance, end of period	\$ 48,789	\$ 206,199

Nine Months Ended		
Balance, beginning of year	\$ 206,292	\$ 205,922
Redemption of noncontrolling interests	(157,709)	—
Accretion of preference share issuance costs	206	277
Balance, end of period	\$ 48,789	\$ 206,199

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

	September 30,	
	2019	2018
Three Months Ended		
Amounts attributable to non-redeemable noncontrolling interests	\$ (136)	\$ (16,759)
Dividends attributable to redeemable noncontrolling interests	(6,600)	(4,599)
Net (income) loss attributable to noncontrolling interests	\$ (6,736)	\$ (21,358)
Nine Months Ended		
Amounts attributable to non-redeemable noncontrolling interests	\$ (54,819)	\$ (36,251)
Dividends attributable to redeemable noncontrolling interests	(15,778)	(13,769)
Net (income) loss attributable to noncontrolling interests	\$ (70,597)	\$ (50,020)

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
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Bellemeade Re

The Company has entered into various aggregate excess of loss mortgage reinsurance agreements with various special purpose reinsurance companies domiciled in Bermuda (the “Bellemeade Agreements”). At the time the Bellemeade Agreements were entered into, the applicability of the accounting guidance that addresses VIEs was evaluated. As a result of the evaluation of the Bellemeade Agreements, the Company concluded that these entities are VIEs. However, given that the ceding insurers do not have the unilateral power to direct those activities that are significant to their economic performance, the Company does not consolidate such entities in its consolidated financial statements.

The following table presents the total assets of the Bellemeade entities, as well as the Company’s maximum exposure to loss associated with these VIEs, calculated as the maximum historical observable spread between the one month LIBOR, the basis for the contractual payments to bond holders, and short term invested trust asset yields.

Bellemeade Entities (Issue Date)		Maximum Exposure to Loss						
		On-Balance Sheet (Asset) Liability	Off-Balance Sheet	Total				
Sep 30, 2019								
Bellemeade 2015-1 Ltd. (Jul-15)	\$	6,046	\$	—	\$	2	\$	2
Bellemeade 2017-1 Ltd. (Oct-17)		249,737		(345)		3,526		3,181
Bellemeade 2018-1 Ltd. (Apr-18)		362,603		(1,351)		7,035		5,684
Bellemeade 2018-2 Ltd. (Aug-18)		507,534		(829)		3,395		2,566
Bellemeade 2018-3 Ltd. (Oct-18)		488,430		(916)		4,600		3,684
Bellemeade 2019-1 Ltd. (Mar-19)		293,595		(210)		4,533		4,323
Bellemeade 2019-2 Ltd. (Apr-19)		621,022		(367)		15,161		14,794
Bellemeade 2019-3 Ltd. (July-19)		700,920		(468)		11,888		11,420
Total	\$	3,229,887	\$	(4,486)	\$	50,140	\$	45,654
Dec 31, 2018								
Bellemeade 2015-1 Ltd. (Jul-15)	\$	43,246	\$	112	\$	498	\$	610
Bellemeade 2017-1 Ltd. (Oct-17)		304,373		165		1,312		1,477
Bellemeade 2018-1 Ltd. (Apr-18)		374,460		132		3,539		3,671
Bellemeade 2018-2 Ltd. (Aug-18)		653,278		874		4,005		4,879
Bellemeade 2018-3 Ltd. (Oct-18)		506,110		469		1,836		2,305
Total	\$	1,881,467	\$	1,752	\$	11,190	\$	12,942

See [note 16](#).

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12. Other Comprehensive Income (Loss)

The following tables present details about amounts reclassified from accumulated other comprehensive income and the tax effects allocated to each component of other comprehensive income (loss):

Details About AOCI Components	Consolidated Statement of Income Line Item That Includes Reclassification	Amounts Reclassified from AOCI			
		Three Months Ended		Nine Months Ended	
		September 30,		September 30,	
		2019	2018	2019	2018
Unrealized appreciation on available-for-sale investments					
	Net realized gains (losses)	\$ 43,124	\$ (23,888)	\$ 114,642	\$ (130,409)
	Other-than-temporary impairment losses	(1,163)	(492)	(2,521)	(1,124)
	Total before tax	41,961	(24,380)	112,121	(131,533)
	Income tax (expense) benefit	(3,218)	1,177	(7,812)	9,226
	Net of tax	\$ 38,743	\$ (23,203)	\$ 104,309	\$ (122,307)

	Before Tax Amount	Tax Expense (Benefit)	Net of Tax Amount
Three Months Ended September 30, 2019			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	\$ 70,449	\$ 11,159	\$ 59,290
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	—	—	—
Less reclassification of net realized gains (losses) included in net income	41,961	3,218	38,743
Foreign currency translation adjustments	(16,507)	(83)	(16,424)
Other comprehensive income (loss)	\$ 11,981	\$ 7,858	\$ 4,123

Three Months Ended September 30, 2018			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	\$ (57,812)	\$ (4,504)	\$ (53,308)
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	—	—	—
Less reclassification of net realized gains (losses) included in net income	(24,380)	(1,177)	(23,203)
Foreign currency translation adjustments	2,167	104	2,063
Other comprehensive income (loss)	\$ (31,265)	\$ (3,223)	\$ (28,042)

Nine Months Ended September 30, 2019			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	\$ 573,513	\$ 65,863	\$ 507,650
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	—	—	—
Less reclassification of net realized gains (losses) included in net income	112,121	7,812	104,309
Foreign currency translation adjustments	(6,454)	187	(6,641)
Other comprehensive income (loss)	\$ 454,938	\$ 58,238	\$ 396,700

Nine Months Ended September 30, 2018			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	\$ (335,789)	\$ (30,533)	\$ (305,256)
Portion of other-than-temporary impairment losses recognized in other comprehensive income (loss)	—	—	—
Less reclassification of net realized gains (losses) included in net income	(131,533)	(9,226)	(122,307)
Foreign currency translation adjustments	(9,102)	148	(9,250)
Other comprehensive income (loss)	\$ (213,358)	\$ (21,159)	\$ (192,199)

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13. Guarantor Financial Information

The following tables present condensed financial information for Arch Capital, Arch Capital Group (U.S.) Inc. (“Arch-U.S.”), a 100% owned subsidiary of Arch Capital, and Arch Capital’s other subsidiaries. The senior notes of Arch-U.S. due November 1, 2043 are fully and unconditionally guaranteed by Arch Capital.

Condensed Consolidating Balance Sheet	September 30, 2019				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Assets					
Total investments	\$ 41	\$ 918,720	\$ 22,737,556	\$ (38,982)	\$ 23,617,335
Cash	12,696	72,727	794,676	—	880,099
Investments in subsidiaries	11,454,186	4,189,656	—	(15,643,842)	—
Due from subsidiaries and affiliates	106	2	1,899,559	(1,899,667)	—
Premiums receivable	—	—	2,446,539	(828,353)	1,618,186
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	—	—	8,490,131	(5,321,936)	3,168,195
Contractholder receivables	—	—	2,094,683	—	2,094,683
Ceded unearned premiums	—	—	2,149,492	(981,234)	1,168,258
Deferred acquisition costs	—	—	674,559	(52,531)	622,028
Goodwill and intangible assets	—	—	624,500	—	624,500
Other assets	21,336	25,586	1,875,817	(143,420)	1,779,319
Total assets	<u>\$ 11,488,365</u>	<u>\$ 5,206,691</u>	<u>\$ 43,787,512</u>	<u>\$ (24,909,965)</u>	<u>\$ 35,572,603</u>
Liabilities					
Reserve for losses and loss adjustment expenses	\$ —	\$ —	\$ 17,486,844	\$ (5,097,460)	\$ 12,389,384
Unearned premiums	—	—	5,224,606	(981,234)	4,243,372
Reinsurance balances payable	—	—	1,430,244	(828,353)	601,891
Contractholder payables	—	—	2,094,683	—	2,094,683
Collateral held for insured obligations	—	—	205,449	—	205,449
Senior notes	297,228	494,803	1,114,355	(35,000)	1,871,386
Revolving credit agreement borrowings	—	—	490,720	—	490,720
Due to subsidiaries and affiliates	8	542,103	1,357,556	(1,899,667)	—
Other liabilities	33,033	55,585	1,946,208	(420,917)	1,613,909
Total liabilities	<u>330,269</u>	<u>1,092,491</u>	<u>31,350,665</u>	<u>(9,262,631)</u>	<u>23,510,794</u>
Redeemable noncontrolling interests	—	—	52,281	(3,492)	48,789
Shareholders' Equity					
Total shareholders' equity available to Arch	11,158,096	4,114,200	11,529,642	(15,643,842)	11,158,096
Non-redeemable noncontrolling interests	—	—	854,924	—	854,924
Total shareholders' equity	<u>11,158,096</u>	<u>4,114,200</u>	<u>12,384,566</u>	<u>(15,643,842)</u>	<u>12,013,020</u>
Total liabilities, noncontrolling interests and shareholders' equity	<u>\$ 11,488,365</u>	<u>\$ 5,206,691</u>	<u>\$ 43,787,512</u>	<u>\$ (24,909,965)</u>	<u>\$ 35,572,603</u>

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
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Condensed Consolidating Balance Sheet	December 31, 2018				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Assets					
Total investments	\$ 104	\$ 452,674	\$ 21,307,206	\$ (14,700)	\$ 21,745,284
Cash	6,125	5,940	634,491	—	646,556
Investments in subsidiaries	9,735,256	3,999,243	—	(13,734,499)	—
Due from subsidiaries and affiliates	9	2	1,802,686	(1,802,697)	—
Premiums receivable	—	—	1,834,389	(535,239)	1,299,150
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	—	—	8,618,660	(5,699,288)	2,919,372
Contractholder receivables	—	—	2,079,111	—	2,079,111
Ceded unearned premiums	—	—	1,730,262	(754,793)	975,469
Deferred acquisition costs	—	—	618,535	(48,961)	569,574
Goodwill and intangible assets	—	—	634,920	—	634,920
Other assets	12,588	80,949	1,466,438	(211,082)	1,348,893
Total assets	\$ 9,754,082	\$ 4,538,808	\$ 40,726,698	\$ (22,801,259)	\$ 32,218,329
Liabilities					
Reserve for losses and loss adjustment expenses	\$ —	\$ —	\$ 17,345,142	\$ (5,491,845)	\$ 11,853,297
Unearned premiums	—	—	4,508,429	(754,793)	3,753,636
Reinsurance balances payable	—	—	928,346	(535,239)	393,107
Contractholder payables	—	—	2,079,111	—	2,079,111
Collateral held for insured obligations	—	—	236,630	—	236,630
Senior notes	297,150	494,723	941,655	—	1,733,528
Revolving credit agreement borrowings	—	—	455,682	—	455,682
Due to subsidiaries and affiliates	—	536,805	1,265,892	(1,802,697)	—
Other liabilities	17,105	26,270	1,699,768	(467,484)	1,275,659
Total liabilities	314,255	1,057,798	29,460,655	(9,052,058)	21,780,650
Redeemable noncontrolling interests	—	—	220,992	(14,700)	206,292
Shareholders' Equity					
Total shareholders' equity available to Arch	9,439,827	3,481,010	10,253,491	(13,734,501)	9,439,827
Non-redeemable noncontrolling interests	—	—	791,560	—	791,560
Total shareholders' equity	9,439,827	3,481,010	11,045,051	(13,734,501)	10,231,387
Total liabilities, noncontrolling interests and shareholders' equity	\$ 9,754,082	\$ 4,538,808	\$ 40,726,698	\$ (22,801,259)	\$ 32,218,329

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Condensed Consolidating Statement of Income and Comprehensive Income	Three Months Ended September 30, 2019				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Revenues					
Net premiums earned	\$ —	\$ —	\$ 1,438,023	\$ —	\$ 1,438,023
Net investment income	81	2,899	181,621	(23,113)	161,488
Net realized gains (losses)	—	1,880	66,683	(6,045)	62,518
Net impairment losses recognized in earnings	—	—	(1,163)	—	(1,163)
Other underwriting income	—	—	3,326	—	3,326
Equity in net income (loss) of investment funds accounted for using the equity method	—	600	16,530	—	17,130
Other income (loss)	(153)	—	1,491	—	1,338
Total revenues	(72)	5,379	1,706,511	(29,158)	1,682,660
Expenses					
Losses and loss adjustment expenses	—	—	802,455	—	802,455
Acquisition expenses	—	—	211,120	—	211,120
Other operating expenses	—	—	196,512	—	196,512
Corporate expenses	15,066	1,631	364	—	17,061
Amortization of intangible assets	—	—	20,003	—	20,003
Interest expense	5,539	12,019	36,712	(22,942)	31,328
Net foreign exchange (gains) losses	1	—	(25,405)	(7,720)	(33,124)
Total expenses	20,606	13,650	1,241,761	(30,662)	1,245,355
Income (loss) before income taxes	(20,678)	(8,271)	464,750	1,504	437,305
Income tax (expense) benefit	—	1,647	(39,763)	—	(38,116)
Income (loss) before equity in net income of subsidiaries	(20,678)	(6,624)	424,987	1,504	399,189
Equity in net income of subsidiaries	413,131	124,814	—	(537,945)	—
Net income	392,453	118,190	424,987	(536,441)	399,189
Net (income) loss attributable to noncontrolling interests	—	—	(6,906)	170	(6,736)
Net income available to Arch	392,453	118,190	418,081	(536,271)	392,453
Preferred dividends	(10,403)	—	—	—	(10,403)
Net income available to Arch common shareholders	\$ 382,050	\$ 118,190	\$ 418,081	\$ (536,271)	\$ 382,050
Comprehensive income available to Arch	\$ 397,340	\$ 138,832	\$ 427,238	\$ (566,070)	\$ 397,340

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Condensed Consolidating Statement of Income and Comprehensive Income	Three Months Ended September 30, 2018				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Revenues					
Net premiums earned	\$ —	\$ —	\$ 1,290,878	\$ —	\$ 1,290,878
Net investment income	2	1,202	165,289	(22,469)	144,024
Net realized gains (losses)	—	(64)	(51,641)	—	(51,705)
Net impairment losses recognized in earnings	—	—	(492)	—	(492)
Other underwriting income	—	—	5,823	—	5,823
Equity in net income (loss) of investment funds accounted for using the equity method	—	—	15,982	—	15,982
Other income (loss)	(195)	—	(531)	—	(726)
Total revenues	(193)	1,138	1,425,308	(22,469)	1,403,784
Expenses					
Losses and loss adjustment expenses	—	—	699,420	—	699,420
Acquisition expenses	—	—	201,602	—	201,602
Other operating expenses	—	—	161,098	—	161,098
Corporate expenses	15,170	446	(1,281)	—	14,335
Amortization of intangible assets	—	—	26,315	—	26,315
Interest expense	5,536	12,075	34,276	(22,157)	29,730
Net foreign exchange (gains) losses	—	—	(10,426)	(412)	(10,838)
Total expenses	20,706	12,521	1,111,004	(22,569)	1,121,662
Income (loss) before income taxes	(20,899)	(11,383)	314,304	100	282,122
Income tax (expense) benefit	—	2,276	(35,632)	—	(33,356)
Income (loss) before equity in net income of subsidiaries	(20,899)	(9,107)	278,672	100	248,766
Equity in net income of subsidiaries	248,307	92,906	—	(341,213)	—
Net income (loss)	227,408	83,799	278,672	(341,113)	248,766
Net (income) loss attributable to noncontrolling interests	—	—	(21,669)	311	(21,358)
Net income (loss) available to Arch	227,408	83,799	257,003	(340,802)	227,408
Preferred dividends	(10,402)	—	—	—	(10,402)
Net income (loss) available to Arch common shareholders	\$ 217,006	\$ 83,799	\$ 257,003	\$ (340,802)	\$ 217,006
Comprehensive income available to Arch	\$ 200,524	\$ 77,389	\$ 230,565	\$ (307,954)	\$ 200,524

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Condensed Consolidating Statement of Income and Comprehensive Income	Nine Months Ended September 30, 2019				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Revenues					
Net premiums earned	\$ —	\$ —	\$ 4,270,616	\$ —	\$ 4,270,616
Net investment income	165	9,425	532,031	(68,146)	473,475
Net realized gains (losses)	—	16,223	320,356	(11,690)	324,889
Net impairment losses recognized in earnings	—	—	(2,521)	—	(2,521)
Other underwriting income	—	—	18,104	—	18,104
Equity in net income (loss) of investment funds accounted for using the equity method	—	536	95,997	—	96,533
Other income (loss)	(634)	—	4,184	—	3,550
Total revenues	(469)	26,184	5,238,767	(79,836)	5,184,646
Expenses					
Losses and loss adjustment expenses	—	—	2,288,530	—	2,288,530
Acquisition expenses	—	—	619,057	—	619,057
Other operating expenses	—	—	596,589	—	596,589
Corporate expenses	46,666	5,912	696	—	53,274
Amortization of intangible assets	—	—	60,214	—	60,214
Interest expense	16,615	35,966	104,430	(67,338)	89,673
Net foreign exchange (gains) losses	3	—	(26,715)	(4,985)	(31,697)
Total expenses	63,284	41,878	3,642,801	(72,323)	3,675,640
Income (loss) before income taxes	(63,753)	(15,694)	1,595,966	(7,513)	1,509,006
Income tax (expense) benefit	—	3,491	(131,965)	—	(128,474)
Income (loss) before equity in net income of subsidiaries	(63,753)	(12,203)	1,464,001	(7,513)	1,380,532
Equity in net income of subsidiaries	1,373,688	410,115	—	(1,783,803)	—
Net income	1,309,935	397,912	1,464,001	(1,791,316)	1,380,532
Net (income) loss attributable to noncontrolling interests	—	—	(71,405)	808	(70,597)
Net income available to Arch	1,309,935	397,912	1,392,596	(1,790,508)	1,309,935
Preferred dividends	(31,209)	—	—	—	(31,209)
Net income available to Arch common shareholders	\$ 1,278,726	\$ 397,912	\$ 1,392,596	\$ (1,790,508)	\$ 1,278,726
Comprehensive income available to Arch	\$ 1,700,369	\$ 608,108	\$ 1,779,463	\$ (2,387,571)	\$ 1,700,369

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

	Nine Months Ended September 30, 2018				
Condensed Consolidating Statement of Income and Comprehensive Income	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Revenues					
Net premiums earned	\$ —	\$ —	\$ 3,862,540	\$ —	\$ 3,862,540
Net investment income	37	2,020	471,588	(67,229)	406,416
Net realized gains (losses)	29	(71)	(239,272)	—	(239,314)
Net impairment losses recognized in earnings	—	—	(1,124)	—	(1,124)
Other underwriting income	—	—	15,046	—	15,046
Equity in net income (loss) of investment funds accounted for using the equity method	—	—	52,523	—	52,523
Other income (loss)	2,066	—	395	—	2,461
Total revenues	2,132	1,949	4,161,696	(67,229)	4,098,548
Expenses					
Losses and loss adjustment expenses	—	—	2,062,433	—	2,062,433
Acquisition expenses	—	—	595,816	—	595,816
Other operating expenses	—	—	512,294	—	512,294
Corporate expenses	47,981	1,205	2,973	—	52,159
Amortization of intangible assets	—	—	79,523	—	79,523
Interest expense	16,609	36,014	104,359	(66,272)	90,710
Net foreign exchange (gains) losses	29	—	(37,347)	(7,505)	(44,823)
Total expenses	64,619	37,219	3,320,051	(73,777)	3,348,112
Income (loss) before income taxes	(62,487)	(35,270)	841,645	6,548	750,436
Income tax (expense) benefit	—	7,704	(86,643)	—	(78,939)
Income (loss) before equity in net income of subsidiaries	(62,487)	(27,566)	755,002	6,548	671,497
Equity in net income of subsidiaries	683,964	266,053	—	(950,017)	—
Net income	621,477	238,487	755,002	(943,469)	671,497
Net (income) loss attributable to noncontrolling interests	—	—	(50,976)	956	(50,020)
Net income available to Arch	621,477	238,487	704,026	(942,513)	621,477
Preferred dividends	(31,242)	—	—	—	(31,242)
Loss on redemption of preferred shares	(2,710)	—	—	—	(2,710)
Net income available to Arch common shareholders	\$ 587,525	\$ 238,487	\$ 704,026	\$ (942,513)	\$ 587,525
Comprehensive income available to Arch	\$ 432,186	\$ 153,992	\$ 522,448	\$ (676,440)	\$ 432,186

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Condensed Consolidating Statement of Cash Flows	Nine Months Ended September 30, 2019				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Operating Activities					
Net Cash Provided By (Used For) Operating Activities	\$ 42,221	\$ 525,712	\$ 1,554,406	\$ (579,200)	\$ 1,543,139
Investing Activities					
Purchases of fixed maturity investments	—	(868,773)	(23,313,996)	172,146	(24,010,623)
Purchases of equity securities	—	(74,502)	(520,292)	70,743	(524,051)
Purchases of other investments	—	(28,557)	(986,368)	—	(1,014,925)
Proceeds from the sales of fixed maturity investments	—	482,804	22,373,404	(148,354)	22,707,854
Proceeds from the sales of equity securities	—	7,441	434,432	(70,743)	371,130
Proceeds from the sales, redemptions and maturities of other investments	—	1,057	826,460	—	827,517
Proceeds from redemptions and maturities of fixed maturity investments	—	—	394,719	—	394,719
Net settlements of derivative instruments	—	—	92,423	—	92,423
Net (purchases) sales of short-term investments	63	31,605	97,410	—	129,078
Change in cash collateral related to securities lending	—	—	6,990	—	6,990
Contributions to subsidiaries	(2,121)	—	(70,125)	72,246	—
Issuance of intercompany loans	—	—	(53,828)	53,828	—
Purchases of fixed assets	(32)	—	(27,603)	—	(27,635)
Other	—	(10,000)	(192,953)	—	(202,953)
Net Cash Provided By (Used For) Investing Activities	(2,090)	(458,925)	(939,327)	149,866	(1,250,476)
Financing Activities					
Purchases of common shares under share repurchase program	(2,871)	—	—	—	(2,871)
Proceeds from common shares issued, net	518	—	72,246	(72,246)	518
Proceeds from intercompany borrowings	—	—	53,828	(53,828)	—
Proceeds from borrowings	—	—	235,083	(35,000)	200,083
Repayments of intercompany borrowings	—	—	—	—	—
Repayments of borrowings	—	—	(27,538)	—	(27,538)
Change in cash collateral related to securities lending	—	—	(6,990)	—	(6,990)
Change in third party investment in redeemable noncontrolling interests	—	—	(173,082)	11,208	(161,874)
Dividends paid to redeemable noncontrolling interests	—	—	(12,217)	809	(11,408)
Dividends paid to parent (1)	—	—	(578,391)	578,391	—
Other	—	—	(5,207)	—	(5,207)
Preferred dividends paid	(31,209)	—	—	—	(31,209)
Net Cash Provided By (Used For) Financing Activities	(33,562)	—	(442,268)	429,334	(46,496)
Effects of exchange rates changes on foreign currency cash and restricted cash	—	—	(8,335)	—	(8,335)
Increase (decrease) in cash and restricted cash	6,569	66,787	164,476	—	237,832
Cash and restricted cash, beginning of year	6,159	5,940	712,544	—	724,643
Cash and restricted cash, end of period	\$ 12,728	\$ 72,727	\$ 877,020	\$ —	\$ 962,475

(1) Dividends received by parent are included in net cash provided by (used for) operating activities.

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

Condensed Consolidating Statement of Cash Flows	Nine Months Ended September 30, 2018				
	Arch Capital (Parent Guarantor)	Arch-U.S. (Subsidiary Issuer)	Other Arch Capital Subsidiaries	Consolidating Adjustments and Eliminations	Arch Capital Consolidated
Operating Activities					
Net Cash Provided By (Used For) Operating Activities	\$ 222,097	\$ 176,851	\$ 1,622,248	\$ (900,209)	\$ 1,120,987
Investing Activities					
Purchases of fixed maturity investments	—	(214,449)	(25,229,184)	605,716	(24,837,917)
Purchases of equity securities	—	—	(819,342)	—	(819,342)
Purchases of other investments	—	—	(1,543,332)	—	(1,543,332)
Proceeds from the sales of fixed maturity investments	—	111,533	23,804,386	(605,716)	23,310,203
Proceeds from the sales of equity securities	—	—	866,919	—	866,919
Proceeds from the sales, redemptions and maturities of other investments	—	—	1,178,035	—	1,178,035
Proceeds from redemptions and maturities of fixed maturity investments	—	—	724,021	—	724,021
Net settlements of derivative instruments	—	—	765	—	765
Net (purchases) sales of short-term investments	96,397	(49,031)	506,949	—	554,315
Change in cash collateral related to securities lending	—	—	137,073	—	137,073
Contributions to subsidiaries	—	(2,500)	(29,646)	32,146	—
Purchases of fixed assets	(71)	—	(18,979)	—	(19,050)
Other	(4)	—	58,231	—	58,227
Net Cash Provided By (Used For) Investing Activities	96,322	(154,447)	(364,104)	32,146	(390,083)
Financing Activities					
Redemption of preferred shares	(92,555)	—	—	—	(92,555)
Purchases of common shares under share repurchase program	(184,529)	—	—	—	(184,529)
Proceeds from common shares issued, net	(12,029)	—	32,146	(32,146)	(12,029)
Proceeds from borrowings	—	—	167,259	—	167,259
Repayments of borrowings	—	—	(427,000)	—	(427,000)
Change in cash collateral related to securities lending	—	—	(137,073)	—	(137,073)
Dividends paid to redeemable noncontrolling interests	—	—	(14,447)	956	(13,491)
Dividends paid to parent (1)	—	—	(899,253)	899,253	—
Other	—	—	(6,084)	—	(6,084)
Preferred dividends paid	(31,242)	—	—	—	(31,242)
Net Cash Provided By (Used For) Financing Activities	(320,355)	—	(1,284,452)	868,063	(736,744)
Effects of exchange rates changes on foreign currency cash and restricted cash	—	—	(11,625)	—	(11,625)
Increase (decrease) in cash and restricted cash	(1,936)	22,404	(37,933)	—	(17,465)
Cash and restricted cash, beginning of year	10,048	30,380	686,856	—	727,284
Cash and restricted cash, end of period	\$ 8,112	\$ 52,784	\$ 648,923	\$ —	\$ 709,819

(1) Dividends received by parent are included in net cash provided by (used for) operating activities.

ARCH CAPITAL GROUP LTD. AND SUBSIDIARIES
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS (UNAUDITED)

14. Income Taxes

The Company's income tax provision on income before income taxes resulted in an expense of 8.5% for the nine months ended September 30, 2019, compared to an expense of 10.5% for the 2018 period. The Company's effective tax rate, which is based upon the expected annual effective tax rate, may fluctuate from period to period based on the relative mix of income or loss reported by jurisdiction and the varying tax rates in each jurisdiction. For interim reporting purposes, the Company has calculated its annual effective tax rate for the full year of 2019 by treating excess tax benefits in the U.S. that arise from the accounting for stock based compensation as a discrete item. As such, this amount is not included when projecting the Company's full year annual effective tax rate but rather is accounted for at the U.S. Federal statutory rate of 21% after applying the projected full year annual effective tax rate to actual nine months results before the discrete item. The impact of the discrete item resulted in a benefit of 0.4% for the nine months ended September 30, 2019.

The Company had a net deferred tax liability of \$55.9 million at September 30, 2019, compared to a net deferred tax asset of \$22.5 million at December 31, 2018. The change is primarily a result of the appreciation of the Company's fixed maturities from December 31, 2018 to September 30, 2019. In addition, the Company paid \$47.1 million and recovered \$34.0 million of income taxes for the nine months ended September 30, 2019 and 2018, respectively.

15. 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 September 30, 2019, 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.

16. Subsequent Events

Bellemeade Re 2019-4 Ltd.

In October 2019, the Company's first-lien U.S. mortgage insurance subsidiaries entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re 2019-4 Ltd. ("Bellemeade 2019-4"), a special purpose reinsurance company domiciled in Bermuda. The Bellemeade 2019-4 agreement provides for up to \$577.3 million of aggregate excess of loss reinsurance coverage at inception in excess of \$162.4 million of aggregate losses for new delinquencies on a portfolio of in-force policies issued in the first half of 2019. The coverage

amount decreases over a ten-year period as the underlying covered mortgages amortize.

Bellemeade 2019-4 financed the coverage through the issuance of mortgage insurance-linked notes in an aggregate amount of approximately \$577.3 million to unrelated investors (the "Notes"). The maturity date of the Notes is October 25, 2029. The Notes will be redeemed prior to maturity upon the occurrence of a mandatory termination event or if the ceding insurers trigger a termination of the reinsurance agreement following the occurrence of an optional termination event. All of the proceeds paid to Bellemeade 2019-4 from the sale of the Notes were deposited into a reinsurance trust as security for Bellemeade 2019-4's obligations. At all times, funds in the reinsurance trust account are required to be invested in high credit quality money market funds.

Catastrophic Events

In the 2019 fourth quarter, Typhoon Hagibis, the ongoing wildfires in California and other catastrophic events may have an impact on the Company's financial results. It is too early to reasonably estimate losses for these events given the significant uncertainties and the early stage of the damage assessment process, among other factors.

Share Repurchases

At September 30, 2019, approximately \$160.9 million of share repurchases were available under Arch Capital's share repurchase program. From October 1 through October 31, 2019, the Company did not repurchase any common shares. On November 8, 2019, the board of directors of ACGL increased the aggregate purchase amount authorized under the share repurchase program to \$1.0 billion. Repurchases under this authorization may be effected from time to time in open market or privately negotiated transactions through December 31, 2021. The timing and amount of the repurchase transactions under this authorization will depend on a variety of factors, including market conditions and corporate and regulatory considerations.

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

The following is a discussion and analysis of our financial condition and results of operations. This should be read in conjunction with our consolidated financial statements included in Item 1 of this report and also our Management’s Discussion and Analysis of Financial Condition and Results of Operations contained in our Annual Report on Form 10-K for the year ended December 31, 2018 (“2018 Form 10-K”). In addition, readers should review “Risk Factors” set forth in Item 1A of Part I of our 2018 Form 10-K. Tabular amounts are in U.S. Dollars in thousands, except share amounts, unless otherwise noted.

Arch Capital Group Ltd. (“Arch Capital” and, together with its subsidiaries, “Arch”, “we” or “us”) is a Bermuda public limited liability company with approximately \$12.89 billion in capital at September 30, 2019 and, through operations in Bermuda, the United States, Europe, Canada, Australia and Hong Kong, writes insurance, reinsurance and mortgage insurance on a worldwide basis.

CURRENT OUTLOOK

Our objective is to achieve an average operating return on average equity of 15% or greater over the insurance cycle, which we believe to be an attractive return to our common shareholders given the risks we assume. We continue to look for opportunities to find acceptable books of business to underwrite without sacrificing underwriting discipline and continue to write a portion of our overall book in catastrophe-exposed business which has the potential to increase the volatility of our operating results.

Across all lines in our insurance business, renewal rates experienced a modest increase as net premiums grew in the 2019 third quarter. Reinsurance pricing tends to follow that of the primary insurance industry although catastrophe and large attritional losses, such as the Japanese typhoons this year, in the reinsurance market can disproportionately affect results and create opportunities. We believe that property facultative and marine businesses are examples of improving markets.

Our underwriting teams continue to execute a disciplined strategy by emphasizing small and medium-sized accounts over large accounts, shrinking premiums in more commoditized lines such as general liability and by utilizing reinsurance purchases to reduce volatility on large account, high capacity business. The spread between rate changes and loss trend continues to be a key variable in assessing expected returns and can be difficult to quantify precisely, particularly in specialty lines.

Our mortgage segment continues to experience generally favorable market conditions. Although pricing remains competitive in the U.S., borrower credit quality and the general economy remain strong. Our results continue to reflect our success in making high quality credit underwriting risk decisions and building customer relationships.

Arch remains committed to providing solutions across many offerings as the marketplace evolves, including the mortgage credit risk transfer programs initiated by government sponsored enterprises, or “GSEs,” in 2018. Such programs have continued to generate business. In addition, we completed Bellemeade risk transfers in March, April, July and October 2019, increasing our protection for mortgage tail risk.

FINANCIAL MEASURES

Management uses the following three key financial indicators in evaluating our performance and measuring the overall growth in value generated for Arch Capital’s common shareholders:

Book Value per Share

Book value per share represents total common shareholders’ equity available to Arch divided by the number of common shares outstanding. Management uses growth in book value per share as a key measure of the value generated for our common shareholders each period and believes that book value per share is the key driver of Arch Capital’s share price over time. Book value per share is impacted by, among other factors, our underwriting results, investment returns and share repurchase activity, which has an accretive or dilutive impact on book value per share depending on the purchase price.

Book value per share was \$25.61 at September 30, 2019, compared to \$24.64 at June 30, 2019 and \$21.15 at September 30, 2018. The 3.9% increase for the 2019 third quarter reflected strong underwriting results and the impact of a decrease in interest rates on our fixed income securities while the 21.1% increase over the trailing twelve months reflected strong underwriting results and investment returns.

Operating Return on Average Common Equity

Operating return on average common equity (“Operating ROAE”) represents annualized after-tax operating income available to Arch common shareholders divided by the average of beginning and ending common shareholders’ equity available to Arch during the period. After-tax operating income available to Arch common shareholders, a non-GAAP financial

measure as defined in Regulation G, represents net income available to Arch common shareholders, excluding net realized gains or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses, transaction costs and other, loss on redemption of preferred shares and income taxes. Management uses Operating ROAE as a key measure of the return generated to common shareholders. See “Comment on Non-GAAP Financial Measures.”

Our Operating ROAE was 10.3% for the 2019 third quarter, compared to 11.4% for the 2018 third quarter, and 12.0% for the nine months ended September 30, 2019, compared to 11.4% for the 2018 period. The 2019 and 2018 returns reflected favorable mortgage insurance underwriting performance, strong investment returns and a low level of catastrophic activity.

Total Return on Investments

Total return on investments includes investment income, equity in net income or loss of investment funds accounted for using the equity method, net realized gains and losses and the change in unrealized gains and losses generated by Arch’s investment portfolio. Total return is calculated on a pre-tax basis and before investment expenses, excludes amounts reflected in the ‘other’ segment, and reflects the effect of financial market conditions along with foreign currency fluctuations. In addition, total return incorporates the timing of investment returns during the periods. The following table summarizes our total return compared to the benchmark return against which we measured our portfolio during the periods. See “Comment on Non-GAAP Financial Measures.”

	Arch Portfolio	Benchmark Return
Pre-tax total return (before investment expenses):		
2019 Third Quarter	1.00 %	0.70 %
2018 Third Quarter	0.31 %	0.36 %
Nine Months Ended September 30, 2019	6.20 %	5.79 %
Nine Months Ended September 30, 2018	(0.19)%	(0.46)%

Total return for the 2019 periods reflected the impact of a decline in interest rates, which increased the total return on our investment grade fixed income portfolio, aided by favorable returns on equities.

The benchmark return index is a customized combination of indices intended to approximate a target portfolio by asset mix and average credit quality while also matching the approximate estimated duration and currency mix of our insurance and reinsurance liabilities. Although the estimated duration and average credit quality of this index will move as the duration and rating of its constituent securities change, generally we do

not adjust the composition of the benchmark return index except to incorporate changes to the mix of liability currencies and durations noted above. The benchmark return index should not be interpreted as expressing a preference for or aversion to any particular sector or sector weight. The index is intended solely to provide, unlike many master indices that change based on the size of their constituent indices, a relatively stable basket of investable indices. At September 30, 2019, the benchmark return index had an average credit quality of “Aa3” by Moody’s Investors Service (“Moody’s”), and an estimated duration of 2.97 years.

The benchmark return index included weightings to the following indices:

	%
ICE BoAML 1-10 Year AAA - A U.S. Corporate Index	21.00%
ICE BoAML 1-5 Year U.S. Treasury Index	15.00
ICE BoAML 3-5 Year Fixed Rate Asset Backed Securities Index	7.00
ICE BoAML 1-10 Year U.S. Municipal Securities Index	5.00
Bloomberg Barclays CMBS Invest Grade Aaa Total Return Index	5.00
MSCI ACWI Net Total Return USD Index	5.00
Hedge Fund Research HFRX Fixed Income Credit Index	5.00
Hedge Fund Research HFRX Equal Weighted Strategies	5.00
ICE BoAML 1-10 Year BBB U.S. Corporate Index	4.00
ICE BoAML German Government 1-10 Year Index	4.00
ICE BoAML U.S. Mortgage Backed Securities Index	4.00
ICE BoAML 0-3 Month U.S. Treasury Bill Index	4.00
ICE BoAML 1-5 Year U.K. Gilt Index	3.50
ICE BoAML 5-10 Year U.S. Treasury Index	3.00
ICE BoAML 1-5 Year Australian Governments Index	3.00
ICE BoAML U.S. High Yield Constrained Index	2.50
S&P Leveraged Loan Total Return Index	2.50
ICE BoAML 1-5 Year Canada Government Index	1.00
ICE BoAML 20+ Year Canada Government Index	0.50
Total	100.00%

COMMENT ON NON-GAAP FINANCIAL MEASURES

Throughout this filing, we present our operations in the way we believe will be the most meaningful and useful to investors, analysts, rating agencies and others who use our financial information in evaluating the performance of our company. This presentation includes the use of after-tax operating income available to Arch common shareholders, which is defined as net income available to Arch common shareholders, excluding net realized gains or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses, transaction costs and other, loss on redemption of preferred shares and income taxes, and the use of annualized operating return on average common equity. The presentation

of after-tax operating income available to Arch common shareholders and annualized operating return on average common equity are non-GAAP financial measures as defined in Regulation G. The reconciliation of such measures to net income available to Arch common shareholders and annualized return on average common equity (the most directly comparable GAAP financial measures) in accordance with Regulation G is included under “Results of Operations” below.

We believe that net realized gains or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses, transaction costs and other and loss on redemption of preferred shares in any particular period are not indicative of the performance of, or trends in, our business. Although net realized gains or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method and net foreign exchange gains or losses are an integral part of our operations, the decision to realize investment gains or losses, the recognition of the change in the carrying value of investments accounted for using the fair value option in net realized gains or losses, the recognition of net impairment losses, the recognition of equity in net income or loss of investment funds accounted for using the equity method and the recognition of foreign exchange gains or losses are independent of the insurance underwriting process and result, in large part, from general economic and financial market conditions. Furthermore, certain users of our financial information believe that, for many companies, the timing of the realization of investment gains or losses is largely opportunistic. In addition, net impairment losses recognized in earnings on our investments represent other-than-temporary declines in expected recovery values on securities without actual realization. The use of the equity method on certain of our investments in certain funds that invest in fixed maturity securities is driven by the ownership structure of such funds (either limited partnerships or limited liability companies). In applying the equity method, these investments are initially recorded at cost and are subsequently adjusted based on our proportionate share of the net income or loss of the funds (which include changes in the market value of the underlying securities in the funds). This method of accounting is different from the way we account for our other fixed maturity securities and the timing of the recognition of equity in net income or loss of investment funds accounted for using the equity method may differ from gains or losses in the future upon sale or maturity of such investments. Transaction costs and other include advisory, financing, legal, severance, incentive compensation and other transaction costs related to acquisitions. We believe that transaction costs and other, due to their non-recurring nature, are not indicative of the performance of, or trends in, our business performance. The loss on redemption of preferred shares related to the redemption of our Series C preferred shares in January 2018 and had no impact on shareholders' equity or cash flows. Due to these reasons, we exclude net realized gains

or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses, transaction costs and other and loss on redemption of preferred shares from the calculation of after-tax operating income available to Arch common shareholders.

We believe that showing net income available to Arch common shareholders exclusive of the items referred to above reflects the underlying fundamentals of our business since we evaluate the performance of and manage our business to produce an underwriting profit. In addition to presenting net income available to Arch common shareholders, we believe that this presentation enables investors and other users of our financial information to analyze our performance in a manner similar to how management analyzes performance. We also believe that this measure follows industry practice and, therefore, allows the users of financial information to compare our performance with our industry peer group. We believe that the equity analysts and certain rating agencies which follow us and the insurance industry as a whole generally exclude these items from their analyses for the same reasons.

Our segment information includes the presentation of consolidated underwriting income or loss and a subtotal of underwriting income or loss before the contribution from the ‘other’ segment. Such measures represent the pre-tax profitability of our underwriting operations and include net premiums earned plus other underwriting income, less losses and loss adjustment expenses, acquisition expenses and other operating expenses. Other operating expenses include those operating expenses that are incremental and/or directly attributable to our individual underwriting operations. Underwriting income or loss does not incorporate items included in our corporate (non-underwriting) segment. While these measures are presented in [note 4, “Segment Information,”](#) of the notes accompanying our consolidated financial statements, they are considered non-GAAP financial measures when presented elsewhere on a consolidated basis. The reconciliations of underwriting income or loss to income before income taxes (the most directly comparable GAAP financial measure) on a consolidated basis and a subtotal before the contribution from the ‘other’ segment, in accordance with Regulation G, is shown in [note 4, “Segment Information,”](#) to our consolidated financial statements.

We measure segment performance for our three underwriting segments based on underwriting income or loss. We do not manage our assets by underwriting segment, with the exception of goodwill and intangibles and, accordingly, investment income and other non-underwriting related items are not allocated to each underwriting segment. For the ‘other’ segment, performance is measured based on net income or loss.

Along with consolidated underwriting income, we provide a subtotal of underwriting income or loss before the contribution

from the ‘other’ segment. The ‘other’ segment includes the results of Watford Holdings Ltd. Watford Holdings Ltd. is the parent of Watford Re Ltd., a multi-line Bermuda reinsurance company (together with Watford Holdings Ltd., “Watford”). Pursuant to generally accepted accounting principles, Watford is considered a variable interest entity and we concluded that we are the primary beneficiary of Watford. As such, we consolidate the results of Watford in our consolidated financial statements, although we only own approximately 11% of Watford’s common equity. Watford’s own management and board of directors are responsible for its results and profitability. In addition, we do not guarantee or provide credit support for Watford. Since Watford is an independent company, the assets of Watford can be used only to settle obligations of Watford and Watford is solely responsible for its own liabilities and commitments. Our financial exposure to Watford is limited to our investment in Watford’s senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from the reinsurance transactions. We believe that presenting certain information excluding the ‘other’ segment enables investors and other users of our financial information to analyze our performance in a manner similar to how our management analyzes performance.

Our presentation of segment information includes the use of a current year loss ratio which excludes favorable or adverse development in prior year loss reserves. This ratio is a non-GAAP financial measure as defined in Regulation G. The reconciliation of such measure to the loss ratio (the most directly comparable GAAP financial measure) in accordance with Regulation G is shown on the individual segment pages. Management utilizes the current year loss ratio in its analysis of the underwriting performance of each of our underwriting segments.

Total return on investments includes investment income, equity in net income or loss of investment funds accounted for using the equity method, net realized gains and losses and the change in unrealized gains and losses generated by Arch’s investment portfolio. Total return is calculated on a pre-tax basis and before investment expenses, excludes amounts reflected in the ‘other’ segment, and reflects the effect of financial market conditions along with foreign currency fluctuations. In addition, total return incorporates the timing of investment returns during the periods. There is no directly comparable GAAP financial measure for total return. Management uses total return on investments as a key measure of the return generated to Arch common shareholders on the capital held in the business, and compares the return generated by our investment portfolio against benchmark returns which we measured our portfolio against during the periods.

RESULTS OF OPERATIONS

The following table summarizes our consolidated financial data, including a reconciliation of net income or loss available to Arch common shareholders to after-tax operating income or loss available to Arch common shareholders. Each line item reflects the impact of our approximate 11% ownership of Watford’s common equity.

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Net income available to Arch common shareholders	\$ 382,050	\$ 217,006	\$ 1,278,726	\$ 587,525
Net realized (gains) losses	(79,122)	47,528	(319,403)	220,718
Net impairment losses recognized in earnings	1,163	492	2,521	1,124
Equity in net (income) loss of investment funds accounted for using the equity method	(17,130)	(15,982)	(96,533)	(52,523)
Net foreign exchange (gains) losses	(30,160)	(7,539)	(29,100)	(39,021)
Transaction costs and other	1,995	1,091	5,363	8,829
Loss on redemption of preferred shares	—	—	—	2,710
Income tax expense (benefit) (1)	2,156	(316)	12,708	(9,343)
After-tax operating income available to Arch common shareholders	\$ 260,952	\$ 242,280	\$ 854,282	\$ 720,019
Beginning common shareholders’ equity	\$ 9,977,352	\$ 8,383,755	\$ 8,659,827	\$ 8,324,047
Ending common shareholders’ equity	10,378,096	8,575,148	10,378,096	8,575,148
Average common shareholders’ equity	\$ 10,177,724	\$ 8,479,452	\$ 9,518,962	\$ 8,449,598
Annualized return on average common equity %	15.0	10.2	17.9	9.3
Annualized operating return on average common equity %	10.3	11.4	12.0	11.4

- (1) Income tax expense (benefit) on net realized gains or losses, net impairment losses recognized in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses, transaction costs and other and loss on redemption of preferred shares reflects the relative mix reported by jurisdiction and the varying tax rates in each jurisdiction.

Segment Information

We classify our businesses into three underwriting segments — insurance, reinsurance and mortgage — and two other operating segments — corporate (non-underwriting) and ‘other.’ Our insurance, reinsurance and mortgage segments each have managers who are responsible for the overall profitability of their respective segments and who are directly accountable to our chief operating decision makers, the President and Chief Executive Officer of Arch Capital and the Chief Financial Officer of Arch Capital. The chief operating decision makers do not assess performance, measure return on equity or make resource allocation decisions on a line of business basis. Management measures segment performance for our three underwriting segments based on underwriting income or loss. We do not manage our assets by underwriting segment, with the exception of goodwill and intangible assets, and, accordingly, investment income is not allocated to each underwriting segment.

We determined our reportable segments using the management approach described in accounting guidance regarding disclosures about segments of an enterprise and related information. The accounting policies of the segments are the same as those used for the preparation of our consolidated financial statements. Intersegment business is allocated to the segment accountable for the underwriting results.

Insurance Segment

The following tables set forth our insurance segment’s underwriting results:

Three Months Ended September 30,			
	2019	2018	% Change
Gross premiums written	\$ 1,005,874	\$ 836,820	20.2
Premiums ceded	(302,034)	(259,968)	
Net premiums written	703,840	576,852	22.0
Change in unearned premiums	(98,504)	(15,794)	
Net premiums earned	605,336	561,058	7.9
Losses and loss adjustment expenses	(422,782)	(409,435)	
Acquisition expenses	(91,259)	(88,255)	
Other operating expenses	(115,408)	(90,081)	
Underwriting income (loss)	\$ (24,113)	\$ (26,713)	n/m

Underwriting Ratios			% Point Change
Loss ratio	69.8%	73.0%	(3.2)
Acquisition expense ratio	15.1%	15.7%	(0.6)
Other operating expense ratio	19.1%	16.1%	3.0
Combined ratio	104.0%	104.8%	(0.8)

Nine Months Ended September 30,			
	2019	2018	% Change
Gross premiums written	\$ 2,867,753	\$ 2,429,570	18.0
Premiums ceded	(914,751)	(752,413)	
Net premiums written	1,953,002	1,677,157	16.4
Change in unearned premiums	(201,719)	(30,913)	
Net premiums earned	1,751,283	1,646,244	6.4
Losses and loss adjustment expenses	(1,168,677)	(1,120,630)	
Acquisition expenses	(265,177)	(264,094)	
Other operating expenses	(338,327)	(274,735)	
Underwriting income (loss)	\$ (20,898)	\$ (13,215)	n/m

Underwriting Ratios			% Point Change
Loss ratio	66.7%	68.1%	(1.4)
Acquisition expense ratio	15.1%	16.0%	(0.9)
Other operating expense ratio	19.3%	16.7%	2.6
Combined ratio	101.1%	100.8%	0.3

The insurance segment consists of our insurance underwriting units which offer specialty product lines on a worldwide basis. Product lines include:

- *Construction and national accounts:* primary and excess casualty coverages to middle and large accounts in the construction industry and a wide range of products for middle and large national accounts, specializing in loss sensitive primary casualty insurance programs (including large deductible, self-insured retention and retrospectively rated programs).
- *Excess and surplus casualty:* primary and excess casualty insurance coverages, including middle market energy business, and contract binding, which primarily provides casualty coverage through a network of appointed agents to small and medium risks.
- *Lenders products:* collateral protection, debt cancellation and service contract reimbursement products to banks, credit unions, automotive dealerships and original equipment manufacturers and other specialty programs that pertain to automotive lending and leasing.
- *Professional lines:* directors’ and officers’ liability, errors and omissions liability, employment practices liability, fiduciary liability, crime, professional indemnity and other financial related coverages for corporate, private equity, venture capital, real estate investment trust, limited partnership, financial institution and not-for-profit clients of all sizes and medical professional and general liability insurance coverages for the healthcare industry. The business is predominately written on a claims-made basis.
- *Programs:* primarily package policies, underwriting workers’ compensation and umbrella liability business in support of desirable package programs, targeting program managers with unique expertise and niche products offering

general liability, commercial automobile, inland marine and property business with minimal catastrophe exposure.

- *Property, energy, marine and aviation:* primary and excess general property insurance coverages, including catastrophe-exposed property coverage, for commercial clients. Coverages for marine include hull, war, specie and liability. Aviation and stand alone terrorism are also offered.

- *Travel, accident and health:* specialty travel and accident and related insurance products for individual, group travelers, travel agents and suppliers, as well as accident and health, which provides accident, disability and medical plan insurance coverages for employer groups, medical plan members, students and other participant groups.

- *Other:* includes alternative market risks (including captive insurance programs), excess workers' compensation and employer's liability insurance coverages for qualified self-insured groups, associations and trusts, and contract and commercial surety coverages, including contract bonds (payment and performance bonds) primarily for medium and large contractors and commercial surety bonds for Fortune 1,000 companies and smaller transaction business programs.

Premiums Written.

The following tables set forth our insurance segment's net premiums written by major line of business:

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Professional Lines	\$ 137,569	19.5	\$ 113,100	19.6
Programs	120,039	17.1	103,928	18.0
Property, energy, marine and aviation	97,966	13.9	60,909	10.6
Construction and national accounts	98,522	14.0	71,888	12.5
Travel, accident and health	75,192	10.7	79,450	13.8
Excess and surplus casualty	62,843	8.9	44,829	7.8
Lenders products	31,005	4.4	25,995	4.5
Other	80,704	11.5	76,753	13.3
Total	\$ 703,840	100.0	\$ 576,852	100.0

2019 Third Quarter versus 2018 Third Quarter. Gross premiums written by the insurance segment in the 2019 third quarter were 20.2% higher than in the 2018 third quarter, while net premiums written were 22.0% higher. Approximately thirty percent of the growth in net premiums written resulted from our acquisition of renewal rights of a U.K. commercial lines book of business on January 1, 2019. The remainder was due to growth in existing accounts and rate increases across most lines of business.

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Professional Lines	\$ 388,482	19.9	\$ 341,187	20.3
Programs	329,882	16.9	300,662	17.9
Property, energy, marine and aviation	272,271	13.9	175,157	10.4
Construction and national accounts	254,765	13.0	236,700	14.1
Travel, accident and health	239,833	12.3	223,196	13.3
Excess and surplus casualty	166,474	8.5	126,793	7.6
Lenders products	75,793	3.9	70,269	4.2
Other	225,502	11.5	203,193	12.1
Total	\$ 1,953,002	100.0	\$ 1,677,157	100.0

Nine Months Ended September 30, 2019 versus 2018 period. Gross premiums written by the insurance segment for the nine months ended September 30, 2019 were 18.0% higher than in the 2018 period, while net premiums written were 16.4% higher than in the 2018 period. Growth in net premiums written primarily resulted from our acquisition of renewal rights of a U.K. commercial lines book of business on January 1, 2019, with the remainder reflecting growth in existing accounts and rate increases across most lines of business.

Net Premiums Earned.

The following tables set forth our insurance segment's net premiums earned by major line of business:

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Professional Lines	\$ 135,343	22.4	\$ 115,271	20.5
Programs	104,432	17.3	96,509	17.2
Property, energy, marine and aviation	80,246	13.3	53,857	9.6
Construction and national accounts	81,472	13.5	80,381	14.3
Travel, accident and health	81,952	13.5	81,405	14.5
Excess and surplus casualty	53,991	8.9	43,401	7.7
Lenders products (1)	(5,724)	(0.9)	24,254	4.3
Other	73,624	12.2	65,980	11.8
Total	\$ 605,336	100.0	\$ 561,058	100.0

(1) Reflects a change in earning patterns on certain business in the 2019 third quarter.

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Professional Lines	\$ 365,801	20.9	\$ 343,515	20.9
Programs	304,605	17.4	288,853	17.5
Property, energy, marine and aviation	208,879	11.9	153,300	9.3
Construction and national accounts	234,198	13.4	239,377	14.5
Travel, accident and health	237,163	13.5	222,994	13.5
Excess and surplus casualty	144,218	8.2	129,994	7.9
Lenders products (1)	41,078	2.3	70,231	4.3
Other	215,341	12.3	197,980	12.0
Total	\$ 1,751,283	100.0	\$ 1,646,244	100.0

(1) Reflects a change in earning patterns on certain business in the 2019 third quarter.

Net premiums written are primarily earned on a pro rata basis over the terms of the policies for all products, usually 12 months. Net premiums earned in the 2019 third quarter were 7.9% higher than in the 2018 third quarter. For the nine months ended September 30, 2019, net premiums earned were 6.4% higher than in the 2018 period. Net premiums earned reflect changes in net premiums written over the previous five quarters.

Losses and Loss Adjustment Expenses.

The table below shows the components of the insurance segment's loss ratio:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Current year	70.5 %	74.1 %	67.4 %	69.0 %
Prior period reserve development	(0.7)%	(1.1)%	(0.7)%	(0.9)%
Loss ratio	69.8 %	73.0 %	66.7 %	68.1 %

Current Year Loss Ratio.

The insurance segment's current year loss ratio in the 2019 third quarter was 3.6 points lower than in the 2018 third quarter and reflected 4.3 points of current year catastrophic activity, primarily related to Hurricane Dorian, compared to 5.8 points in the 2018 third quarter primarily related to Hurricane Florence. The insurance segment's current year loss ratio for the nine months ended September 30, 2019 was 1.6 points lower than in the 2018 period and reflected 1.6 points of current year catastrophic activity, compared to 2.5 points in the 2018 period. The balance of the change in the 2019 loss ratios resulted, in part, from changes in mix of business and the level of large attritional losses.

Prior Period Reserve Development.

The insurance segment's net favorable development was \$4.4 million, or 0.7 points, for the 2019 third quarter, compared to \$5.9 million, or 1.1 points, for the 2018 third quarter, and \$11.4 million, or 0.7 points, for the nine months ended September 30, 2019, compared to \$14.1 million, or 0.9 points, for the 2018 period. The 2019 third quarter loss ratio reflected a lower level of large attritional losses than in the 2018 third quarter. See [note 5, "Reserve for Losses and Loss Adjustment Expenses."](#) to our consolidated financial statements for information about the insurance segment's prior year reserve development.

Underwriting Expenses.

2019 Third Quarter versus 2018 Third Quarter. The insurance segment's underwriting expense ratio was 34.2% in the 2019 third quarter, compared to 31.8% in the 2018 third quarter. Operating expenses increased in the 2019 third quarter due to our 2019 acquisitions, which increased the operating expense ratio. The resulting increase in the expense ratio was partially offset by the growth in net premiums earned.

Nine Months Ended September 30, 2019 versus 2018 period. The insurance segment's underwriting expense ratio was 34.4% for the nine months ended September 30, 2019, compared to 32.7% for the 2018 period. Operating expenses increased for the nine months ended September 30, 2019 due to our 2019 acquisitions.

Reinsurance Segment

The following tables set forth our reinsurance segment's underwriting results:

	Three Months Ended September 30,		
	2019	2018	% Change
Gross premiums written	\$ 662,572	\$ 435,396	52.2
Premiums ceded	(226,096)	(123,705)	
Net premiums written	436,476	311,691	40.0
Change in unearned premiums	(72,621)	(18,418)	
Net premiums earned	363,855	293,273	24.1
Other underwriting income	(1,208)	1,387	
Losses and loss adjustment expenses	(270,379)	(183,413)	
Acquisition expenses	(62,393)	(50,367)	
Other operating expenses	(32,533)	(29,936)	
Underwriting income	\$ (2,658)	\$ 30,944	(108.6)
Underwriting Ratios			
Loss ratio	74.3%	62.5%	11.8
Acquisition expense ratio	17.1%	17.2%	(0.1)
Other operating expense ratio	8.9%	10.2%	(1.3)
Combined ratio	100.3%	89.9%	10.4

	Nine Months Ended September 30,		
	2019	2018	% Change
Gross premiums written	\$ 1,890,974	\$ 1,503,206	25.8
Premiums ceded	(627,120)	(455,682)	
Net premiums written	1,263,854	1,047,524	20.7
Change in unearned premiums	(186,450)	(134,761)	
Net premiums earned	1,077,404	912,763	18.0
Other underwriting income	4,393	2,490	
Losses and loss adjustment expenses	(751,147)	(555,044)	
Acquisition expenses	(173,504)	(148,828)	
Other operating expenses	(102,197)	(101,185)	
Underwriting income (loss)	\$ 54,949	\$ 110,196	(50.1)
			% Point Change
Underwriting Ratios			
Loss ratio	69.7%	60.8%	8.9
Acquisition expense ratio	16.1%	16.3%	(0.2)
Other operating expense ratio	9.5%	11.1%	(1.6)
Combined ratio	95.3%	88.2%	7.1

The reinsurance segment consists of our reinsurance underwriting units which offer specialty product lines on a worldwide basis. Product lines include:

- *Casualty*: provides coverage to ceding company clients on third party liability and workers' compensation exposures from ceding company clients, primarily on a treaty basis. Exposures include, among others, executive assurance, professional liability, workers' compensation, excess and umbrella liability, excess motor and healthcare business.
- *Marine and aviation*: provides coverage for energy, hull, cargo, specie, liability and transit, and aviation business, including airline and general aviation risks. Business written may also include space business, which includes coverages for satellite assembly, launch and operation for commercial space programs.
- *Other specialty*: provides coverage to ceding company clients for proportional motor and other lines, including surety, accident and health, workers' compensation catastrophe, agriculture, trade credit and political risk.
- *Property catastrophe*: provides protection for most catastrophic losses that are covered in the underlying policies written by reinsureds, including hurricane, earthquake, flood, tornado, hail and fire, and coverage for other perils on a case-by-case basis. Property catastrophe reinsurance provides coverage on an excess of loss basis when aggregate losses and loss adjustment expense from a single occurrence or aggregation of losses from a covered peril exceed the retention specified in the contract.
- *Property excluding property catastrophe*: provides coverage for both personal lines and commercial property exposures and principally covers buildings, structures, equipment and contents. The primary perils in this business include fire, explosion, collapse, riot, vandalism, wind, tornado,

flood and earthquake. Business is assumed on both a proportional and excess of loss treaty basis and on a facultative basis. In addition, facultative business is written which focuses on commercial property risks on an excess of loss basis.

- *Other*: includes life reinsurance business on both a proportional and non-proportional basis, casualty clash business and, in limited instances, non-traditional business which is intended to provide insurers with risk management solutions that complement traditional reinsurance.

Premiums Written.

The following tables set forth our reinsurance segment's net premiums written by major line of business:

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Casualty	\$ 178,802	41.0	\$ 98,788	31.7
Other specialty	94,072	21.6	105,535	33.9
Property excluding property catastrophe	118,671	27.2	83,222	26.7
Property catastrophe	23,597	5.4	9,053	2.9
Marine and aviation	10,181	2.3	6,011	1.9
Other	11,153	2.6	9,082	2.9
Total	\$ 436,476	100.0	\$ 311,691	100.0

2019 Third Quarter versus 2018 Third Quarter. Gross premiums written by the reinsurance segment in the 2019 third quarter were 52.2% higher than in the 2018 third quarter, while net premiums written were 40.0% higher. The growth in gross premiums written primarily reflected new business opportunities in casualty and property lines, partially offset by a decline in other specialty business, driven by reductions in motor and agriculture business. The growth in net premiums written is less than the growth in gross premiums written because a high proportion of the property business is subject to retrocessions.

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Casualty	\$ 425,311	33.7	\$ 297,077	28.4
Other specialty	363,723	28.8	399,608	38.1
Property excluding property catastrophe	317,461	25.1	246,268	23.5
Property catastrophe	73,574	5.8	51,730	4.9
Marine and aviation	41,758	3.3	26,084	2.5
Other	42,027	3.3	26,757	2.6
Total	\$ 1,263,854	100.0	\$ 1,047,524	100.0

Nine Months Ended September 30, 2019 versus 2018 period. Gross premiums written by the reinsurance segment for the nine months ended September 30, 2019 were 25.8% higher than in the 2018 period, while net premiums written were 20.7% higher than in the 2018 period. The growth in net premiums written is less than the growth in gross premiums written because a high

proportion of the property business is subject to retrocessions. The increase in net premiums written for the nine months ended September 30, 2019 reflected growth from select new business opportunities across most lines of business, partially offset by a decline in other specialty business.

Net Premiums Earned.

The following tables set forth our reinsurance segment's net premiums earned by major line of business:

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Casualty	\$ 116,242	31.9	\$ 77,496	26.4
Other specialty	112,349	30.9	108,311	36.9
Property excluding property catastrophe	90,358	24.8	71,358	24.3
Property catastrophe	22,617	6.2	18,190	6.2
Marine and aviation	11,798	3.2	8,672	3.0
Other	10,491	2.9	9,246	3.2
Total	\$ 363,855	100.0	\$ 293,273	100.0

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Casualty	\$ 311,030	28.9	\$ 231,877	25.4
Other specialty	370,443	34.4	361,676	39.6
Property excluding property catastrophe	259,629	24.1	210,961	23.1
Property catastrophe	59,886	5.6	52,293	5.7
Marine and aviation	35,355	3.3	28,150	3.1
Other	41,061	3.8	27,806	3.0
Total	\$ 1,077,404	100.0	\$ 912,763	100.0

Net 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. For the 2019 third quarter, net premiums earned were 24.1% higher than in the 2018 third quarter. For the nine months ended September 30, 2019, net premiums earned were 18.0% higher than in the 2018 period.

Other Underwriting Income (Loss).

Other underwriting income (loss) for the 2019 third quarter was a loss of \$1.2 million, compared to an income of \$1.4 million for the 2018 third quarter, and an income of \$4.4 million for the nine months ended September 30, 2019, compared to \$2.5 million of income for the 2018 period.

Losses and Loss Adjustment Expenses.

The table below shows the components of the reinsurance segment's loss ratio:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2019	2018	2019	2018
Current year	78.5 %	74.2 %	72.1 %	72.2 %
Prior period reserve development	(4.2)%	(11.7)%	(2.4)%	(11.4)%
Loss ratio	74.3 %	62.5 %	69.7 %	60.8 %

Current Year Loss Ratio.

The reinsurance segment's current year loss ratio in the 2019 third quarter was 4.3 points higher than in the 2018 third quarter and reflected 12.2 points of current year catastrophic activity, primarily related to Hurricane Dorian and Typhoon Faxai compared to 9.5 points in the 2018 third quarter, primarily related to Hurricane Florence and Typhoon Jebi. The reinsurance segment's current year loss ratio for the nine months ended September 30, 2019 was 0.1 points lower than in the 2018 period and reflected 5.3 points of current year catastrophic activity, compared to 4.0 points in the 2018 period. The balance of the change in the 2019 loss ratios resulted, in part, from changes in mix of business and the level of attritional losses.

Prior Period Reserve Development.

The reinsurance segment's net favorable development was \$15.3 million, or 4.2 points, for the 2019 third quarter, compared to \$34.3 million, or 11.7 points, for the 2018 third quarter, and \$26.3 million, or 2.4 points, for the nine months ended September 30, 2019, compared to \$103.9 million, or 11.4 points, for the 2018 period. See [note 5, "Reserve for Losses and Loss Adjustment Expenses."](#) to our consolidated financial statements for information about the reinsurance segment's prior year reserve development.

Underwriting Expenses.

2019 Third Quarter versus 2018 Third Quarter. The underwriting expense ratio for the reinsurance segment was 26.0% in the 2019 third quarter, compared to 27.4% in the 2018 third quarter, reflecting growth in net premiums earned and changes in mix of business.

Nine Months Ended September 30, 2019 versus 2018 period. The underwriting expense ratio for the reinsurance segment was 25.6% for the nine months ended September 30, 2019, compared to 27.4% for the 2018 period.

Mortgage Segment

Our mortgage operations include U.S. and international mortgage insurance and reinsurance operations as well as

participation in GSE credit risk-sharing transactions. Our mortgage group includes direct mortgage insurance in the U.S. primarily through Arch Mortgage Insurance Company and United Guaranty Residential Insurance Company (together, “Arch MI U.S.”), mortgage reinsurance by Arch Reinsurance Ltd. (“Arch Re Bermuda”) to mortgage insurers on both a proportional and non-proportional basis globally; direct mortgage insurance in Europe through Arch Insurance (EU) Designated Activity Company (“Arch MI Europe”) and in Hong Kong through Arch MI Asia Limited (“Arch MI Asia”); and participation in various GSE credit risk-sharing products primarily through Arch Re Bermuda.

The following tables set forth our mortgage segment’s underwriting results.

	Three Months Ended September 30,		
	2019	2018	% Change
Gross premiums written	\$ 375,092	\$ 350,559	7.0
Premiums ceded	(57,703)	(57,226)	
Net premiums written	317,389	293,333	8.2
Change in unearned premiums	25,611	7,591	
Net premiums earned	343,000	300,924	14.0
Other underwriting income	3,955	3,733	
Losses and loss adjustment expenses	(13,080)	(9,615)	
Acquisition expenses	(34,396)	(33,361)	
Other operating expenses	(37,003)	(31,122)	
Underwriting income	\$ 262,476	\$ 230,559	13.8

Underwriting Ratios			% Point Change
	2019	2018	
Loss ratio	3.8%	3.2%	0.6
Acquisition expense ratio	10.0%	11.1%	(1.1)
Other operating expense ratio	10.8%	10.3%	0.5
Combined ratio	24.6%	24.6%	—

	Nine Months Ended September 30,		
	2019	2018	% Change
Gross premiums written	\$ 1,095,607	\$ 1,002,727	9.3
Premiums ceded	(149,358)	(154,230)	
Net premiums written	946,249	848,497	11.5
Change in unearned premiums	72,436	23,147	
Net premiums earned	1,018,685	871,644	16.9
Other underwriting income	11,867	10,464	
Losses and loss adjustment expenses	(50,226)	(74,672)	
Acquisition expenses	(98,722)	(87,665)	
Other operating expenses	(116,697)	(108,622)	
Underwriting income	\$ 764,907	\$ 611,149	25.2

Underwriting Ratios			% Point Change
	2019	2018	
Loss ratio	4.9%	8.6%	(3.7)
Acquisition expense ratio	9.7%	10.1%	(0.4)
Other operating expense ratio	11.5%	12.5%	(1.0)
Combined ratio	26.1%	31.2%	(5.1)

Premiums Written.

The following tables set forth our mortgage segment’s net premiums written by underwriting location (*i.e.*, where the business is underwritten):

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Underwriting location:				
United States	\$ 260,202	82.0	\$ 240,959	82.1
Other	57,187	18.0	52,374	17.9
Total	\$ 317,389	100.0	\$ 293,333	100.0

2019 Third Quarter versus 2018 Third Quarter. Gross premiums written by the mortgage segment in the 2019 third quarter were 7.0% higher than in the 2018 third quarter, while net premiums written were 8.2% higher. The growth in net premiums written primarily reflected an increase in monthly premium business due to growth in insurance in force in the U.S.

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Underwriting location:				
United States	\$ 774,356	81.8	\$ 691,851	81.5
Other	171,893	18.2	156,646	18.5
Total	\$ 946,249	100.0	\$ 848,497	100.0

Nine Months Ended September 30, 2019 versus 2018 period. Gross premiums written by the mortgage segment for the nine months ended September 30, 2019 were 9.3% higher than in the 2018 period, while net premiums written were 11.5% higher. The growth in net premiums written primarily reflected an increase in monthly premium business due to growth in insurance in force in the U.S. In addition, net premiums written for the nine months ended September 30, 2019 included \$17.1 million due to the novation of a quota share reinsurance arrangement on international business.

The persistency rate, which represents the percentage of mortgage insurance in force at the beginning of a 12-month period that remains in force at the end of such period, of the Arch MI U.S. portfolio of mortgage loans was 78.6% at September 30, 2019, compared to 81.5% at December 31, 2018.

Arch MI U.S. generated \$25.3 billion of new insurance written (“NIW”) in the 2019 third quarter, compared to \$21.4 billion in the 2018 third quarter. NIW represents the original principal balance of all loans that received coverage during the period. Monthly premium policies contributed 92.3% of NIW in the 2019 third quarter, compared to 92.6% for the 2018 third quarter.

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The following tables provide details on the NIW generated by Arch MI U.S.:

(U.S. Dollars in millions)

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Total new insurance written (NIW) (1)	\$ 25,313		\$ 21,425	
Credit quality (FICO):				
>=740	\$ 15,204	60.1	\$ 12,013	56.1
680-739	8,725	34.5	7,728	36.1
620-679	1,384	5.5	1,684	7.9
Total	\$ 25,313	100.0	\$ 21,425	100.0
Loan-to-value (LTV):				
95.01% and above	\$ 3,182	12.6	\$ 3,231	15.1
90.01% to 95.00%	10,409	41.1	9,689	45.2
85.01% to 90.00%	7,762	30.7	6,264	29.2
85.01% and below	3,960	15.6	2,241	10.5
Total	\$ 25,313	100.0	\$ 21,425	100.0
Monthly vs. single:				
Monthly	\$ 23,358	92.3	\$ 19,842	92.6
Single	1,955	7.7	1,583	7.4
Total	\$ 25,313	100.0	\$ 21,425	100.0
Purchase vs. refinance:				
Purchase	\$ 19,068	75.3	\$ 20,397	95.2
Refinance	6,245	24.7	1,028	4.8
Total	\$ 25,313	100.0	\$ 21,425	100.0

(1) Represents the original principal balance of all loans that received coverage during the period.

(U.S. Dollars in millions)

	Nine Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Total new insurance written (NIW) (1)	\$ 53,681		\$ 52,742	
Credit quality (FICO):				
>=740	\$ 31,416	58.5	\$ 29,933	56.8
680-739	18,905	35.2	18,952	35.9
620-679	3,360	6.3	3,857	7.3
Total	\$ 53,681	100.0	\$ 52,742	100.0
Loan-to-value (LTV):				
95.01% and above	\$ 7,520	14.0	\$ 7,328	13.9
90.01% to 95.00%	22,881	42.6	24,030	45.6
85.01% to 90.00%	15,937	29.7	15,817	30.0
85.01% and below	7,343	13.7	5,567	10.6
Total	\$ 53,681	100.0	\$ 52,742	100.0
Monthly vs. single:				
Monthly	\$ 49,556	92.3	\$ 49,046	93.0
Single	4,125	7.7	3,696	7.0
Total	\$ 53,681	100.0	\$ 52,742	100.0
Purchase vs. refinance:				

Net Premiums Earned.

The following tables set forth our mortgage segment's net premiums earned by underwriting location:

	Three Months Ended September 30,			
	2019		2018	
	Amount	%	Amount	%
Underwriting location:				
United States	\$ 287,064	83.7	\$ 256,231	85.1
Other	55,936	16.3	44,693	14.9
Total	\$ 343,000	100.0	\$ 300,924	100.0
Nine Months Ended September 30,				
	2019		2018	
	Amount	%	Amount	%
Underwriting location:				
United States	\$ 843,599	82.8	\$ 742,269	85.2
Other	175,086	17.2	129,375	14.8
Total	\$ 1,018,685	100.0	\$ 871,644	100.0

Net premiums earned for the 2019 third quarter were 14.0% higher than in the 2018 third quarter. For the nine months ended September 30, 2019, net premiums earned were 16.9% higher than in the 2018 period. The increases were primarily due to growth in U.S. insurance in force.

Other Underwriting Income.

Other underwriting income, which is primarily related to older GSE credit risk-sharing transactions receiving derivative accounting treatment, was \$4.0 million for the 2019 third quarter, compared to \$3.7 million for the 2018 third quarter, and \$11.9 million for the nine months ended September 30, 2019, compared to \$10.5 million for the 2018 period.

Losses and Loss Adjustment Expenses.

The table below shows the components of the mortgage segment's loss ratio:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Current year	13.4 %	16.0 %	14.0 %	17.2 %
Prior period reserve development	(9.6)%	(12.8)%	(9.1)%	(8.6)%
Loss ratio	3.8 %	3.2 %	4.9 %	8.6 %

Current Year Loss Ratio.

The mortgage segment's current year loss ratio was 2.6 points lower in the 2019 third quarter than in the 2018 third quarter. The mortgage segment's current year loss ratio was 3.2 points lower for the nine months ended September 30, 2019 than for the 2018 period. The lower current year loss ratios for the 2019

Purchase	\$	44,349	82.6	\$	49,556	94.0
Refinance		<u>9,332</u>	<u>17.4</u>		<u>3,186</u>	<u>6.0</u>
Total	\$	<u>53,681</u>	<u>100.0</u>	\$	<u>52,742</u>	<u>100.0</u>

- (1) Represents the original principal balance of all loans that received coverage during the period.

periods reflect the current favorable macroeconomic environment.

Prior Period Reserve Development.

The mortgage segment's net favorable development was \$33.0 million, or 9.6 points, for the 2019 third quarter, compared to \$38.6 million, or 12.8 points, for the 2018 third quarter, and \$92.5 million, or 9.1 points, for the nine months ended September 30, 2019, compared to \$74.9 million, or 8.6 points, for the 2018 period. See [note 5, "Reserve for Losses and Loss Adjustment Expenses,"](#) to our consolidated financial statements for information about the mortgage segment's prior year reserve development.

Underwriting Expenses.

2019 Third Quarter versus 2018 Third Quarter. The underwriting expense ratio for the mortgage segment was 20.8% in the 2019 third quarter, compared to 21.4% in the 2018 third quarter. The lower ratio in the 2019 third quarter primarily resulted from the higher level of net premiums earned.

Nine Months Ended September 30, 2019 versus 2018 period. The underwriting expense ratio for the mortgage segment was 21.2% for the nine months ended September 30, 2019, compared to 22.6% for the 2018 period. The lower ratio in the 2019 period primarily resulted from the higher level of net premiums earned.

Corporate (Non-Underwriting) Segment

The corporate (non-underwriting) segment results include net investment income, other income (loss), corporate expenses, transaction costs and other, amortization of intangible assets, interest expense, items related to our non-cumulative preferred shares, net realized gains or losses, net impairment losses included in earnings, equity in net income or loss of investment funds accounted for using the equity method, net foreign exchange gains or losses and income taxes. Such amounts exclude the results of the 'other' segment.

Net Investment Income.

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

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Fixed maturities	\$ 109,955	\$ 103,252	\$ 331,941	\$ 294,658
Equity securities	3,581	3,426	9,321	10,408
Short-term investments	3,432	4,417	11,178	12,591
Other (1)	24,170	18,030	67,229	56,501
Gross investment income	141,138	129,125	419,669	374,158
Investment expenses (2)	(14,262)	(14,797)	(48,506)	(51,826)
Net investment income	\$ 126,876	\$ 114,328	\$ 371,163	\$ 322,332

- (1) Amounts include dividends and other distributions on investment funds, term loan investments, funds held balances, cash balances and other items.
- (2) Investment expenses were approximately 0.31% of average invested assets for the 2019 third quarter, compared to 0.29% for the 2018 third quarter, and 0.33% for the nine months ended September 30, 2019, compared to 0.36% for the 2018 period.

The higher level of net investment income for the 2019 periods primarily reflected growth in average investable assets, the reinvestment of fixed income securities at slightly higher available yields and the shift from municipal bonds to corporates. The pre-tax investment income yield, calculated based on amortized cost and on an annualized basis, was 2.58% for the 2019 third quarter, compare to 2.45% for the 2018 third quarter, and 2.62% for the nine months ended September 30, 2019, compared to 2.31% for the 2018 period.

Corporate Expenses.

Corporate expenses were \$15.1 million for the 2019 third quarter, compared to \$13.2 million for the 2018 third quarter, and \$47.9 million for the nine months ended September 30, 2019, compared to \$43.3 million for the 2018 period. The increase in corporate expenses in the 2019 periods primarily reflected higher compensation costs.

Transaction Costs and Other.

Transaction costs and other were \$2.0 million for the 2019 third quarter, compared to \$1.1 million for the 2018 third quarter, and \$5.4 million for the nine months ended September 30, 2019, compared to \$8.8 million for the 2018 period. Amounts in the 2019 period primarily related to recent acquisition activity. Amounts for 2018 periods were primarily attributable to the write off of intangible assets related to insurance licenses for a subsidiary of UGC which was merged into another subsidiary.

Amortization of Intangible Assets.

Amortization of intangible assets for the 2019 third quarter was \$20.0 million, compared to \$26.3 million for the 2018 third quarter, and \$60.2 million for the nine months ended September 30, 2019, compared to \$79.5 million for the 2018 period. Such expenses primarily related to the UGC acquisition, while the 2019 periods also included amortization related to the previously announced acquisitions of (i) renewal rights of a U.K. commercial lines book of business on January 1, 2019; and (ii) McNeil & Co. on December 6, 2018. See the consolidated financial statements contained in our 2018 Form 10-K for disclosures on our amortization pattern.

Interest Expense.

Interest expense was \$23.2 million for the 2019 third quarter, compared to the \$24.7 million for the 2018 third quarter, and \$70.1 million for the nine months ended September 30, 2019, compared to \$76.6 million for the 2018 period. The lower level in the 2019 periods reflected the paydown of revolving credit agreement borrowings in the second half of 2018.

Loss on Redemption of Preferred Shares.

In January 2018, we redeemed all remaining 6.75% Series C preferred shares and, in accordance with GAAP, recorded a loss of \$2.7 million to remove original issuance costs related to the redeemed shares from additional paid-in capital. Such adjustment had no impact on total shareholders' equity or cash flows.

Net Realized Gains or Losses.

We recorded net realized gains of \$81.2 million for the 2019 third quarter, compared to net realized losses of \$47.0 million for the 2018 third quarter, and net realized gains of \$318.7 million for the nine months ended September 30, 2019, compared to net realized losses of \$218.4 million for the 2018 period. Currently, our portfolio is actively managed to maximize total return within certain guidelines. The effect of financial market movements on the investment portfolio will directly impact net realized gains and losses as the portfolio is adjusted and rebalanced. Net realized gains or losses from the sale of fixed maturities primarily results from our decisions to reduce credit exposure, to change duration targets, to rebalance our portfolios or due to relative value determinations. Net realized gains or losses also include realized and unrealized contract gains and losses on our derivative instruments, changes in the fair value of assets accounted for using the fair value option and in the fair value of equities, along with re-measurement of contingent consideration liability amounts. See [note 6, "Investment Information—Net Realized Gains \(Losses\)."](#) to our consolidated financial statements for additional information.

Net Impairment Losses Recognized in Earnings.

We recorded \$1.2 million of impairment losses for the 2019 third quarter, compared to \$0.5 million for the 2018 third quarter, and \$2.5 million for the nine months ended September 30, 2019, compared to \$1.1 million for the 2018 period. See [note 6, "Investment Information—Other-Than-Temporary Impairments."](#) to our consolidated financial statements for additional information.

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

We recorded \$17.1 million of equity in net income related to investment funds accounted for using the equity method in the 2019 third quarter, compared to \$16.0 million of income for the 2018 third quarter, and \$96.5 million of income for the nine months ended September 30, 2019, compared to \$52.5 million for the 2018 period. Investment funds accounted for using the equity method totaled \$1.58 billion at September 30, 2019, compared to \$1.49 billion at December 31, 2018. See [note 6, "Investment Information—Investments Accounted For Using the Equity Method."](#) to our consolidated financial statements for additional information.

Net Foreign Exchange Gains or Losses.

Net foreign exchange gains for the 2019 third quarter were \$29.8 million, compared to net foreign exchange gains for the 2018 third quarter of \$7.1 million. Net foreign exchange gains for the nine months ended September 30, 2019 were \$28.8 million, compared to net foreign exchange gains for the 2018 period of \$38.3 million. Amounts in both periods were primarily unrealized and resulted from the effects of revaluing our net insurance liabilities required to be settled in foreign currencies at each balance sheet date.

Income Tax Expense.

Our income tax provision on income (loss) before income taxes resulted in an expense of 8.9% for the 2019 third quarter and 9.0% for the nine months ended September 30, 2019, compared to 12.9% for the 2018 third quarter and 11.3% for the nine months ended September 30, 2018. The effective tax rates for the 2019 third quarter and nine months ended September 30, 2019 included a discrete income tax benefit of \$1.3 million and \$5.6 million, respectively, related to share based compensation. Our effective tax rate, which is based upon the expected annual effective tax rate, may fluctuate from period to period based on the relative mix of income or loss reported by jurisdiction and the varying tax rates in each jurisdiction.

Other Segment

The 'other' segment includes the results of Watford. Pursuant to generally accepted accounting principles, Watford is considered a variable interest entity and we concluded that we are the primary beneficiary of Watford. As such, we consolidate

the results of Watford in our consolidated financial statements, although we only own approximately 11% of Watford's common equity. See [note 11, "Variable Interest Entities and Noncontrolling Interests,"](#) and [note 4, "Segment Information,"](#) to our consolidated financial statements for additional information on Watford.

CRITICAL ACCOUNTING POLICIES, ESTIMATES AND RECENT ACCOUNTING PRONOUNCEMENTS

Critical accounting policies, estimates and recent accounting pronouncements are discussed in Management's Discussion and Analysis of Financial Condition and Results of Operations contained in our 2018 Form 10-K, updated where applicable in the notes accompanying our consolidated financial statements, including [note 1, "Basis of Presentation and Recent Accounting Pronouncements."](#)

FINANCIAL CONDITION

Investable Assets

At September 30, 2019, total investable assets held by Arch were \$21.57 billion, excluding the \$2.73 billion included in the 'other' segment (i.e., attributable to Watford).

Investable Assets Held by Arch

The following table summarizes the fair value of the investable assets held by Arch:

Investable assets (1):	Estimated Fair Value	% of Total
September 30, 2019		
Fixed maturities (2)	\$ 16,586,794	76.9
Short-term investments (2)	785,358	3.6
Cash	799,709	3.7
Equity securities (2)	559,054	2.6
Other investments (2)	1,369,554	6.4
Investments accounted for using the equity method	1,575,832	7.3
Securities transactions entered into but not settled at the balance sheet date	(110,213)	(0.5)
Total investable assets held by Arch	<u>\$ 21,566,088</u>	<u>100.0</u>

Average effective duration (in years)	3.64
Average S&P/Moody's credit ratings (3)	AA/Aa2
Embedded book yield (4)	2.70%

December 31, 2018		
Fixed maturities (2)	\$ 14,881,902	76.1
Short-term investments (2)	995,926	5.1
Cash	583,027	3.0
Equity securities (2)	368,843	1.9
Other investments (2)	1,261,525	6.4
Investments accounted for using the equity method	1,493,791	7.6
Securities transactions entered into but not settled at the balance sheet date	(18,153)	(0.1)
Total investable assets held by Arch	<u>\$ 19,566,861</u>	<u>100.0</u>

Average effective duration (in years)	3.38
Average S&P/Moody's credit ratings (3)	AA/Aa2
Embedded book yield (4)	2.89%

- (1) In securities lending transactions, we receive collateral in excess of the fair value of the securities pledged. For purposes of this table, we have excluded the collateral received under securities lending, at fair value and included the securities pledged under securities lending, at fair value.
- (2) Includes investments carried at fair value under the fair value option.
- (3) Average credit ratings on our investment portfolio on securities with ratings by Standard & Poor's Rating Services ("S&P") and Moody's Investors Service ("Moody's").
- (4) Before investment expenses.

At September 30, 2019, approximately \$15.40 billion, or 71.4%, of total investable assets held by Arch were internally managed, compared to \$14.08 billion, or 72.0%, at December 31, 2018.

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The following table summarizes our fixed maturities and fixed maturities pledged under securities lending agreements (“Fixed Maturities”) by type:

	Estimated Fair Value	% of Total
September 30, 2019		
Corporate bonds	\$ 6,494,654	39.2
Mortgage backed securities	528,227	3.2
Municipal bonds	652,296	3.9
Commercial mortgage backed securities	754,306	4.5
U.S. government and government agencies	4,830,839	29.1
Non-U.S. government securities	1,800,032	10.9
Asset backed securities	1,526,440	9.2
Total	<u>\$ 16,586,794</u>	<u>100.0</u>
December 31, 2018		
Corporate bonds	\$ 5,735,526	38.5
Mortgage backed securities	535,763	3.6
Municipal bonds	1,012,308	6.8
Commercial mortgage backed securities	729,442	4.9
U.S. government and government agencies	3,601,269	24.2
Non-U.S. government securities	1,713,891	11.5
Asset backed securities	1,553,703	10.4
Total	<u>\$ 14,881,902</u>	<u>100.0</u>

The following table provides the credit quality distribution of our Fixed Maturities. For individual fixed maturities, S&P ratings are used. In the absence of an S&P rating, ratings from Moody’s are used, followed by ratings from Fitch Ratings.

	Estimated Fair Value	% of Total
September 30, 2019		
U.S. government and gov’t agencies (1)	\$ 5,403,271	32.6
AAA	3,240,708	19.5
AA	1,879,728	11.3
A	3,648,581	22.0
BBB	1,576,052	9.5
BB	362,117	2.2
B	210,824	1.3
Lower than B	61,205	0.4
Not rated	204,308	1.2
Total	<u>\$ 16,586,794</u>	<u>100.0</u>
December 31, 2018		
U.S. government and gov’t agencies (1)	\$ 4,194,676	28.2
AAA	3,551,039	23.9
AA	2,129,336	14.3
A	3,069,656	20.6
BBB	1,251,205	8.4
BB	275,201	1.8
B	183,614	1.2
Lower than B	61,271	0.4
Not rated	165,904	1.1
Total	<u>\$ 14,881,902</u>	<u>100.0</u>

(1) Includes U.S. government-sponsored agency residential mortgage-backed securities and agency commercial mortgage-backed securities.

The following table provides information on the severity of the unrealized loss position as a percentage of amortized cost for all Fixed Maturities which were in an unrealized loss position:

Severity of gross unrealized losses:	Estimated Fair Value	Gross Unrealized Losses	% of Total Gross Unrealized Losses
September 30, 2019			
0-10%	\$ 4,084,228	\$ (70,410)	82.6
10-20%	79,286	(12,714)	14.9
20-30%	3,701	(1,121)	1.3
Greater than 30%	1,480	(999)	1.2
Total	<u>\$ 4,168,695</u>	<u>\$ (85,244)</u>	<u>100.0</u>
December 31, 2018			
0-10%	\$ 8,722,837	\$ (190,170)	92.5
10-20%	87,188	(13,012)	6.3
20-30%	3,359	(1,058)	0.5
Greater than 30%	2,363	(1,266)	0.6
Total	<u>\$ 8,815,747</u>	<u>\$ (205,506)</u>	<u>100.0</u>

The following table summarizes our top ten exposures to fixed income corporate issuers by fair value at September 30, 2019, excluding guaranteed amounts and covered bonds:

	Estimated Fair Value	Credit Rating (1)
Bank of America Corporation	\$ 241,428	A-/A2
Apple Inc.	213,331	AA+/Aa1
JPMorgan Chase & Co.	209,254	A-/A2
Wells Fargo & Company	201,534	A-/A1
Citigroup Inc.	184,850	A/A1
Morgan Stanley	141,891	BBB+/A3
Nestlé S.A.	113,597	AA-/Aa2
BP p.l.c.	110,616	A-/A1
The Goldman Sachs Group, Inc.	109,147	BBB+/A3
Deere & Company	105,217	A/A2
Total	<u>\$ 1,630,865</u>	

(1) Average credit ratings as assigned by S&P and Moody’s, respectively.

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The following table provides information on our structured securities, which includes residential mortgage-backed securities (“RMBS”), commercial mortgage-backed securities (“CMBS”) and asset-backed securities (“ABS”):

	Agencies	Investment Grade	Below Investment Grade	Total
Sep 30, 2019				
RMBS	\$ 478,427	\$ 15,437	\$ 34,363	\$ 528,227
CMBS	94,004	636,384	23,918	754,306
ABS	—	1,458,377	68,063	1,526,440
Total	\$ 572,431	\$ 2,110,198	\$ 126,344	\$ 2,808,973
Dec 31, 2018				
RMBS	\$ 488,862	\$ 15,410	\$ 31,491	\$ 535,763
CMBS	104,547	602,865	22,030	729,442
ABS	—	1,485,150	68,553	1,553,703
Total	\$ 593,409	\$ 2,103,425	\$ 122,074	\$ 2,818,908

At September 30, 2019, our structured securities included \$38.3 million par value in sub-prime securities with a fair value of \$30.6 million and average credit quality ratings from S&P/Moody’s of “CCC-/Caa3,” compared to \$38.2 million par value with a fair value of \$31.7 million and average credit quality ratings of “CCC-/Caa3” at December 31, 2018.

At September 30, 2019, our investment portfolio included \$559.1 million of equity securities, compared to \$368.8 million at December 31, 2018. Our equity portfolio includes publicly traded common stocks in the natural resources, energy, consumer staples and other sectors and exchange-traded funds.

The following table summarizes our other investments which are included in investments accounted for using the fair value option, by strategy:

	September 30, 2019	December 31, 2018
Lending	\$ 624,699	\$ 524,112
Term loan investments	289,902	281,486
Energy	113,791	117,509
Credit related funds	165,444	152,510
Investment grade fixed income	83,649	101,902
Infrastructure	49,602	45,371
Private equity	25,027	24,383
Real estate	17,440	14,252
Total	\$ 1,369,554	\$ 1,261,525

For details on our investments accounted for using the equity method, see [note 6, “Investment Information—Investments Accounted For Using the Equity Method.”](#) to our consolidated financial statements.

Our investment strategy allows for the use of derivative instruments. We utilize various derivative instruments such as futures contracts to enhance investment performance, replicate investment positions or manage market exposures and duration

risk that would be allowed under our investment guidelines if implemented in other ways. See [note 8, “Derivative Instruments.”](#) to our consolidated financial statements for additional disclosures related to derivatives.

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. See [note 7, “Fair Value.”](#) to our consolidated financial statements for a summary of our financial assets and liabilities measured at fair value, segregated by level in the fair value hierarchy.

Investable Assets in the ‘Other’ Segment

Investable assets in the ‘other’ segment are managed by Watford. The board of directors of Watford establishes its investment policies and guidelines. Watford’s investments are accounted for using the fair value option with changes in the carrying value of such investments recorded in net realized gains or losses.

The following table summarizes investable assets in the ‘other’ segment:

	September 30, 2019	December 31, 2018
Investments accounted for using the fair value option:		
Other investments	\$ 1,070,566	\$ 1,050,414
Fixed maturities	563,214	922,819
Short-term investments	357,611	282,131
Equity securities	56,905	56,638
Total	2,048,296	2,312,002
Fixed maturities available for sale, at fair value	639,112	393,351
Equity securities, at fair value	43,487	32,206
Cash	80,390	63,529
Securities sold but not yet purchased	(65,736)	(7,790)
Securities transactions entered into but not settled at the balance sheet date	(15,302)	(35,635)
Total investable assets included in ‘other’ segment	\$ 2,730,247	\$ 2,757,663

Reinsurance

The effects of reinsurance on written and earned premiums and losses and loss adjustment expenses (“LAE”) with unaffiliated reinsurers were as follows:

	Three Months Ended		Nine Months Ended	
	September 30,		September 30,	
	2019	2018	2019	2018
Premiums written:				
Direct	\$ 1,438,943	\$ 1,242,276	\$ 4,176,274	\$ 3,601,410
Assumed	742,178	489,052	2,020,535	1,664,676
Ceded	(567,664)	(397,775)	(1,613,195)	(1,221,093)
Net	<u>\$ 1,613,457</u>	<u>\$ 1,333,553</u>	<u>\$ 4,583,614</u>	<u>\$ 4,044,993</u>
Premiums earned:				
Direct	\$ 1,375,384	\$ 1,223,445	\$ 3,977,005	\$ 3,545,493
Assumed	593,129	466,361	1,701,307	1,446,815
Ceded	(530,490)	(398,928)	(1,407,696)	(1,129,768)
Net	<u>\$ 1,438,023</u>	<u>\$ 1,290,878</u>	<u>\$ 4,270,616</u>	<u>\$ 3,862,540</u>
Losses and LAE:				
Direct	\$ 741,871	\$ 718,921	\$ 2,063,168	\$ 1,807,860
Assumed	366,904	198,248	1,093,541	759,527
Ceded	(306,320)	(217,749)	(868,179)	(504,954)
Net	<u>\$ 802,455</u>	<u>\$ 699,420</u>	<u>\$ 2,288,530</u>	<u>\$ 2,062,433</u>

Reinsurance Recoverables

The following table summarizes our reinsurance recoverables on paid and unpaid losses (not including ceded unearned premiums) at September 30, 2019 and December 31, 2018:

	September 30, 2019	December 31, 2018
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	\$ 3,168,195	\$ 2,919,372
% due from carriers with A.M. Best rating of “A-” or better	58.6%	63.0%
% due from unrated fully collateralized reinsurers (1)	15.5%	12.9%
% due from all other carriers with no A.M. Best rating (2)	25.9%	24.1%
Largest balance due from any one carrier as % of total shareholders’ equity	1.7%	2.7%

(1) Such amount is fully collateralized through reinsurance trusts.

(2) Over 90% of such amount is collateralized through reinsurance trusts or letters of credit.

Growth in items not rated in 2019 is primarily due to recoverables from a third party reinsurer related to a retroactive reinsurance transaction to reinsure liabilities associated with certain U.S. insurance exposures. Such amounts are fully collateralized. See [note 5, “Reserve for Losses and Loss](#)

[Adjustment Expenses.”](#) to our consolidated financial statements for additional information.

Bellemeade Re

We have entered into various aggregate excess of loss mortgage reinsurance agreements with various special purpose reinsurance companies domiciled in Bermuda (the “Bellemeade Agreements”). For the respective coverage periods, we 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. We 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.

The following table summarizes the respective coverages and retentions at September 30, 2019:

	Initial Coverage at Issuance	Coverage at Sept. 30, 2019	First Layer Retention
Bellemeade 2015-1 Ltd. (1)	\$ 300,000	\$ 6,046	\$ 129,900
Bellemeade 2017-1 Ltd. (2)	368,100	249,737	165,700
Bellemeade 2018-1 Ltd. (3)	374,460	362,603	168,510
Bellemeade 2018-2 Ltd. (4)	653,278	507,534	352,258
Bellemeade 2018-3 Ltd. (5)	506,110	488,430	179,331
Bellemeade 2019-1 Ltd. (6)	341,790	293,595	208,046
Bellemeade 2019-2 Ltd. (7)	621,022	621,022	221,794
Bellemeade 2019-3 Ltd. (8)	700,920	700,920	232,093

- (1) Issued in July 2015, covering in-force policies issued between January 1, 2009 and March 31, 2013.
- (2) Issued in October 2017, covering in-force policies issued between January 1, 2017 and June 30, 2017.
- (3) Issued in April 2018, covering in-force policies issued between July 1, 2017 and December 31, 2017.
- (4) Issued in August 2018, covering in-force policies issued between April 1, 2013 and December 31, 2015.
- (5) Issued in October 2018, covering in-force policies issued between January 1, 2018 and June 30, 2018.
- (6) Issued in March 2019, covering in-force policies primarily issued between 2005-2008 under United Guaranty Residential Insurance Company (“UGRIC”); as well as policies issued through 2015 under both UGRIC and Arch Mortgage Insurance Company.
- (7) Issued in April 2019, covering in-force policies issued between July 1, 2018 and December 31, 2018.
- (8) Issued in July 2019, covering in-force policies issued in 2016.

In October 2019, we entered into an aggregate excess of loss reinsurance agreement with Bellemeade Re 2019-4 Ltd. Such agreement provides for up to \$577.3 million of aggregate excess of loss reinsurance coverage at inception in excess of \$162.4 million of aggregate losses for new delinquencies on a portfolio of in-force policies issued in the first half of 2019.

Reserve for Losses and Loss Adjustment Expenses

We establish reserve for losses and loss adjustment expenses (“Loss Reserves”) which represent estimates involving actuarial and statistical projections, at a given point in time, of our expectations of the ultimate settlement and administration costs of losses incurred. Estimating Loss Reserves is inherently difficult, which is exacerbated by the fact that we have relatively limited historical experience upon which to base such estimates. We utilize actuarial models as well as available historical insurance industry loss ratio experience and loss development patterns to assist in the establishment of Loss Reserves. Actual losses and loss adjustment expenses paid will deviate, perhaps substantially, from the reserve estimates reflected in our financial statements.

At September 30, 2019 and December 31, 2018, our Loss Reserves, net of unpaid losses and loss adjustment expenses recoverable, by type and by operating segment were as follows:

	September 30, 2019	December 31, 2018
Insurance segment:		
Case reserves	\$ 1,506,217	\$ 1,489,644
IBNR reserves	3,297,090	3,266,796
Total net reserves	4,803,307	4,756,440
Reinsurance segment:		
Case reserves	1,178,486	1,082,917
Additional case reserves	174,241	191,002
IBNR reserves	1,730,100	1,578,907
Total net reserves	3,082,827	2,852,826
Mortgage segment:		
Case reserves	285,458	355,606
IBNR reserves	155,432	122,304
Total net reserves (1)	440,890	477,910
Other segment:		
Case reserves	434,495	364,052
Additional case reserves	24,495	36,512
IBNR reserves	573,201	551,266
Total net reserves	1,032,191	951,830
Total:		
Case reserves	3,404,656	3,292,219
Additional case reserves	198,736	227,514
IBNR reserves	5,755,823	5,519,273
Total net reserves	\$ 9,359,215	\$ 9,039,006

- (1) At September 30, 2019, total net reserves include \$309.9 million from U.S. mortgage insurance business, of which 61.8% represents policy years 2009 and prior and the remainder from later policy years. At December 31, 2018, total net reserves include \$375.8 million from U.S. mortgage insurance business, of which 73.4% represents policy years 2009 and prior and the remainder from later policy years.

At September 30, 2019 and December 31, 2018, the insurance segment’s Loss Reserves by major line of business, net of unpaid losses and loss adjustment expenses recoverable, were as follows:

	September 30, 2019	December 31, 2018
Insurance segment:		
Professional lines (1)	\$ 1,259,731	\$ 1,247,914
Construction and national accounts	1,223,245	1,166,143
Excess and surplus casualty (2)	524,981	631,370
Programs	548,552	482,045
Property, energy, marine and aviation	343,652	388,710
Travel, accident and health	99,564	83,836
Lenders products	29,836	52,007
Other (3)	773,746	704,415
Total net reserves	\$ 4,803,307	\$ 4,756,440

- (1) Includes professional liability, executive assurance and healthcare business.
(2) Includes casualty and contract binding business.
(3) Includes alternative markets, excess workers’ compensation and surety business.

At September 30, 2019 and December 31, 2018, the reinsurance segment’s Loss Reserves by major line of business, net of unpaid losses and loss adjustment expenses recoverable, were as follows:

	September 30, 2019	December 31, 2018
Reinsurance segment:		
Casualty (1)	\$ 1,630,159	\$ 1,551,550
Other specialty (2)	672,042	582,420
Property excluding property catastrophe	459,768	422,612
Marine and aviation	133,960	130,683
Property catastrophe	105,952	90,635
Other (3)	80,946	74,926
Total net reserves	\$ 3,082,827	\$ 2,852,826

- (1) Includes executive assurance, professional liability, workers’ compensation, excess motor, healthcare and other.
(2) Includes non-excess motor, surety, accident and health, workers’ compensation catastrophe, agriculture, trade credit and other.
(3) Includes life, casualty clash and other.

Mortgage Operations Supplemental Information

The mortgage segment's insurance in force ("IIF") and risk in force ("RIF") were as follows at September 30, 2019 and December 31, 2018:

(U.S. Dollars in millions)

	September 30, 2019		December 31, 2018	
	Amount	%	Amount	%
Insurance In Force (IIF) (1):				
U.S. primary mortgage insurance	\$ 284,496	69.7	\$ 276,538	72.1
Mortgage reinsurance	25,440	6.2	25,975	6.8
Other (2)	98,054	24.0	81,147	21.2
Total	\$ 407,990	100.0	\$ 383,660	100.0

Risk In Force (RIF) (3):

U.S. primary mortgage insurance	\$ 72,916	92.0	\$ 70,995	92.3
Mortgage reinsurance	2,086	2.6	2,217	2.9
Other (2)	4,216	5.3	3,728	4.8
Total	\$ 79,218	100.0	\$ 76,940	100.0

- (1) Represents the aggregate dollar amount of each insured mortgage loan's current principal balance.
- (2) Includes GSE credit risk-sharing transactions and international insurance business.
- (3) Represents the aggregate dollar amount of each insured mortgage loan's current principal balance multiplied by the insurance coverage percentage specified in the policy for insurance policies issued and after contract limits and/or loss ratio caps for credit risk-sharing or reinsurance transactions.

The insurance in force and risk in force for our U.S. primary mortgage insurance business by policy year were as follows at September 30, 2019:

(U.S. Dollars in millions)

	IIF		RIF		Delinquency
	Amount	%	Amount	%	Rate (1)
Policy year:					
2009 and prior	\$ 17,943	6.3	\$ 4,156	5.7	8.48%
2010	442	0.2	117	0.2	3.21%
2011	1,919	0.7	533	0.7	1.46%
2012	6,919	2.4	1,929	2.6	0.81%
2013	13,552	4.8	3,782	5.2	0.94%
2014	14,950	5.3	4,111	5.6	1.04%
2015	27,984	9.8	7,431	10.2	0.79%
2016	44,091	15.5	11,445	15.7	0.88%
2017	47,430	16.7	12,136	16.6	0.82%
2018	57,472	20.2	14,511	19.9	0.62%
2019	51,794	18.2	12,765	17.5	0.09%
Total	\$ 284,496	100.0	\$ 72,916	100.0	1.48%

- (1) Represents the ending percentage of loans in default.

The insurance in force and risk in force for our U.S. primary mortgage insurance business by policy year were as follows at December 31, 2018:

(U.S. Dollars in millions)

	IIF		RIF		Delinquency
	Amount	%	Amount	%	Rate (1)
Policy year:					
2009 and prior	\$ 21,210	7.7	\$ 4,900	6.9	8.90%
2010	646	0.2	175	0.2	2.62%
2011	2,530	0.9	701	1.0	1.57%
2012	9,650	3.5	2,664	3.8	0.78%
2013	16,823	6.1	4,676	6.6	0.89%
2014	18,274	6.6	4,947	7.0	0.97%
2015	33,781	12.2	8,849	12.5	0.69%
2016	52,324	18.9	13,407	18.9	0.77%
2017	54,287	19.6	13,793	19.4	0.55%
2018	67,013	24.2	16,883	23.8	0.15%
Total	\$ 276,538	100.0	\$ 70,995	100.0	1.60%

- (1) Represents the ending percentage of loans in default.

The following tables provide supplemental disclosures on risk in force for our U.S. primary mortgage insurance business at September 30, 2019 and December 31, 2018:

(U.S. Dollars in millions)

	September 30, 2019		December 31, 2018	
	Amount	%	Amount	%
Credit quality (FICO):				
>=740	\$ 41,975	57.6	\$ 41,066	57.8
680-739	25,013	34.3	23,954	33.7
620-679	5,501	7.5	5,485	7.7
<620	427	0.6	490	0.7
Total	\$ 72,916	100.0	\$ 70,995	100.0
Weighted average FICO score	743		743	

Loan-to-value (LTV):

95.01% and above	\$ 8,948	12.3	\$ 7,918	11.2
90.01% to 95.00%	40,086	55.0	39,370	55.5
85.01% to 90.00%	20,708	28.4	20,643	29.1
85.00% and below	3,174	4.4	3,064	4.3
Total	\$ 72,916	100.0	\$ 70,995	100.0
Weighted average LTV	93.1%		93.0%	
Total RIF, net of external reinsurance	\$ 57,768		\$ 55,755	

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(U.S. Dollars in millions)

	September 30, 2019		December 31, 2018	
	Amount	%	Amount	%
Total RIF by State:				
Texas	\$ 5,599	7.7	\$ 5,491	7.7
California	4,984	6.8	4,505	6.3
Florida	3,821	5.2	3,541	5.0
Virginia	2,907	4.0	2,931	4.1
Georgia	2,667	3.7	2,573	3.6
Illinois	2,602	3.6	2,482	3.5
Minnesota	2,480	3.4	2,400	3.4
North Carolina	2,469	3.4	2,505	3.5
Washington	2,466	3.4	2,408	3.4
Maryland	2,443	3.4	2,407	3.4
Others	40,478	55.5	39,752	56.0
Total	\$ 72,916	100.0	\$ 70,995	100.0

The following table provides supplemental disclosures for our U.S. primary mortgage insurance business related to insured loans and loss metrics:

(U.S. Dollars in thousands, except policy, loan and claim count)

	Nine Months Ended September 30,	
	2019	2018
Roll-forward of insured loans in default:		
Beginning delinquent number of loans	20,665	27,068
New notices	28,728	27,258
Cures	(27,877)	(31,111)
Paid claims	(2,273)	(2,854)
Ending delinquent number of loans (1)	19,243	20,361
Ending number of policies in force (1)	1,304,263	1,270,728
Delinquency rate (1)	1.48%	1.60%
Losses:		
Number of claims paid	2,273	2,854
Total paid claims	\$ 91,601	\$ 118,492
Average per claim	\$ 40.3	\$ 41.5
Severity (2)	96.6%	102.0%
Average reserve per default (in thousands)	\$ 14.7	\$ 18.1

(1) Includes first lien primary and pool policies.

(2) Represents total paid claims divided by RIF of loans for which claims were paid.

The risk-to-capital ratio, which represents total current (non-delinquent) risk in force, net of reinsurance, divided by total statutory capital, for Arch MI U.S. was approximately 12.9 to 1 at September 30, 2019, compared to 13.0 to 1 at December 31, 2018.

Shareholders' Equity and Book Value per Share

Total shareholders' equity available to Arch was \$11.16 billion at September 30, 2019, compared to \$9.44 billion at December 31, 2018. The increase reflected strong underwriting and investment returns.

The following table presents the calculation of book value per share:

(U.S. dollars in thousands, except share data)

	September 30, 2019	December 31, 2018
Total shareholders' equity available to Arch	\$ 11,158,096	\$ 9,439,827
Less preferred shareholders' equity	780,000	780,000
Common shareholders' equity available to Arch	\$ 10,378,096	\$ 8,659,827
Common shares and common share equivalents outstanding, net of treasury shares (1)	405,230,531	402,454,834
Book value per share	\$ 25.61	\$ 21.52

(1) Excludes the effects of 19,170,417 and 20,076,593 stock options and 1,609,195 and 1,307,304 restricted stock units outstanding at September 30, 2019 and December 31, 2018, respectively.

LIQUIDITY

This section does not include information specific to Watford. We do not guarantee or provide credit support for Watford, and our financial exposure to Watford is limited to our investment in Watford's senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from reinsurance transactions with Watford.

Liquidity is a measure of our ability to access sufficient cash flows to meet the short-term and long-term cash requirements of our business operations.

Arch Capital is a holding company whose assets primarily consist of the shares in its subsidiaries. Generally, Arch Capital depends on its available cash resources, liquid investments and dividends or other distributions from its subsidiaries to make payments, including the payment of debt service obligations and operating expenses it may incur and any dividends or liquidation amounts with respect to our preferred and common shares.

For the nine months ended September 30, 2019, Arch Capital received dividends of \$86.4 million from Arch Re Bermuda, our Bermuda-based reinsurer and insurer, which can pay approximately \$2.54 billion to Arch Capital during the remainder of 2019 without providing an affidavit to the Bermuda Monetary Authority ("BMA"). For the nine months ended September 30, 2019 Arch Capital Group (U.S.) Inc. ("Arch-U.S.") received \$465.0 million of dividends from Arch U.S. MI Holdings Inc., a subsidiary of Arch-U.S.

We expect that our liquidity needs, including our anticipated (re)insurance obligations and operating and capital expenditure needs, for the next twelve months, at a minimum, will be met by funds generated from underwriting activities and investment income, as well as by our balance of cash, short-term investments, proceeds on the sale or maturity of our investments, and our credit facilities.

Cash Flows

The following table summarizes our cash flows from operating, investing and financing activities, excluding amounts related to the ‘other’ segment (*i.e.*, Watford). See [note 11, “Variable Interest Entities and Noncontrolling Interests.”](#) for cash flows related to Watford.

	Nine Months Ended	
	September 30,	
	2019	2018
Total cash provided by (used for):		
Operating activities	\$ 1,366,762	\$ 947,656
Investing activities	(1,093,054)	(181,774)
Financing activities	(45,757)	(713,511)
Effects of exchange rate changes on foreign currency cash	(6,981)	(9,867)
Increase (decrease) in cash and restricted cash	\$ 220,970	\$ 42,504

- Cash provided by operating activities for the nine months ended September 30, 2019 reflected a higher level of premiums collected than in the 2018 period.
- Cash used for investing activities for the nine months ended September 30, 2019 was higher than in the 2018 period, reflecting a higher level of securities purchased.
- Cash used for financing activities for the nine months ended September 30, 2019 was lower than in the 2018 period. The 2018 period reflected \$250.0 million of paydowns on our revolving credit agreement borrowings, \$184.5 million of repurchases under our share repurchase program and \$92.6 million related to redemption of our Series C preferred shares.

CAPITAL RESOURCES

This section does not include information specific to Watford. We do not guarantee or provide credit support for Watford, and our financial exposure to Watford is limited to our investment in Watford’s senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from reinsurance transactions with Watford.

The following table provides an analysis of our capital structure:

(U.S. dollars in thousands, except share data)	Sep 30, 2019	Dec 31, 2018
Debt:		
Senior notes, due May 2034	\$ 300,000	\$ 300,000
Arch-U.S. senior notes, due Nov 2043 (1)	500,000	500,000
Arch Finance senior notes, due Dec 2026 (1)	500,000	500,000
Arch Finance senior notes, due Dec 2046 (1)	450,000	450,000
Deferred debt costs on senior notes	(15,963)	(16,472)
Revolving credit agreement borrowings due Oct 2021 (2)	—	—
Total	\$ 1,734,037	\$ 1,733,528
Shareholders’ equity available to Arch:		
Series E non-cumulative preferred shares	\$ 450,000	\$ 450,000
Series F non-cumulative preferred shares	330,000	330,000
Common shareholders’ equity	10,378,096	8,659,827
Total	\$ 11,158,096	\$ 9,439,827
Total capital available to Arch	\$ 12,892,133	\$ 11,173,355
Debt to total capital (%)	13.5	15.5
Preferred to total capital (%)	6.1	7.0
Debt and preferred to total capital (%)	19.5	22.5

- (1) Fully and unconditionally guaranteed by Arch Capital.
(2) \$500 million unsecured facility for revolving loans and letters of credit.

Arch Capital and Arch-U.S. are each holding companies and, accordingly, they conduct substantially all of their operations through their operating subsidiaries. Arch Capital Finance LLC (“Arch Finance”) is a wholly owned subsidiary of Arch U.S. MI Holdings Inc. As a result, Arch Capital, Arch-U.S. and Arch Finance’s cash flows and their ability to service their debt depends upon the earnings of their operating subsidiaries, or affiliates in the case of Arch Finance, and on their ability to distribute the earnings, loans or other payments from such subsidiaries or affiliates to Arch Capital, Arch-U.S. and Arch Finance, respectively.

In addition, Arch MI U.S. is required to maintain compliance with the GSEs requirements, known as the Private Mortgage Insurer Eligibility Requirements or “PMIERS.” The financial requirements require an eligible mortgage insurer’s available assets, which generally include only the most liquid assets of an insurer, to meet or exceed “minimum required assets” as of each quarter end. Minimum required assets are calculated from PMIERS tables with several risk dimensions (including origination year, original loan-to-value and original credit score of performing loans, and the delinquency status of non-performing loans) and are subject to a minimum amount. Arch MI U.S. satisfied the PMIERS’ financial requirements as of September 30, 2019 with an estimated PMIER sufficiency ratio of 154%, compared to 141% at December 31, 2018.

Pursuant to our 2014 acquisition of the CMG Mortgage Insurance Company and its affiliated mortgage insurance companies, we made a contingent consideration payment of \$61.5 million in April 2019. The maximum amount of remaining contingent consideration payments over the remaining earn-out period is \$6.6 million.

Arch Capital, through its subsidiaries, provides financial support to certain of its insurance subsidiaries and affiliates, through certain reinsurance arrangements beneficial to the ratings of such subsidiaries. Historically, our insurance, reinsurance and mortgage insurance subsidiaries have entered into separate reinsurance arrangements with Arch Re Bermuda covering individual lines of business. The reinsurance agreements between our U.S.-based property casualty insurance and reinsurance subsidiaries and Arch Re Bermuda were canceled on a cutoff basis as of January 1, 2018. As a result, the level of subject business ceded to Arch Re Bermuda for the reported periods was substantially lower than in 2017 and prior periods.

SHARE REPURCHASE PROGRAM

The board of directors of Arch Capital has authorized the investment in Arch Capital's common shares through a share repurchase program. For the nine months ended September 30, 2019, Arch Capital repurchased 0.1 million shares under the share repurchase program with an aggregate purchase price of \$2.9 million. Since the inception of the share repurchase program through September 30, 2019, Arch Capital has repurchased 386.3 million common shares for an aggregate purchase price of \$3.97 billion. At September 30, 2019, approximately \$160.9 million of share repurchases were available under the program. On November 8, 2019, the board of directors of ACGL increased the aggregate purchase amount authorized under the share repurchase program to \$1.0 billion. Repurchases under this authorization may be effected from time to time in open market or privately negotiated transactions through December 31, 2021. The timing and amount of the repurchase transactions under this program will depend on a variety of factors, including market conditions and corporate and regulatory considerations. We will continue to monitor our share price and, depending upon results of operations, market conditions and the development of the economy, as well as other factors, we will consider share repurchases on an opportunistic basis.

CATASTROPHIC EVENTS AND SEVERE ECONOMIC EVENTS

We have large aggregate exposures to natural and man-made catastrophic events and severe economic events. Catastrophes can be caused by various events, including hurricanes, floods, windstorms, earthquakes, hailstorms, tornadoes, explosions,

severe winter weather, fires, droughts and other natural disasters. Catastrophes can also cause losses in non-property business such as mortgage insurance, workers' compensation or general liability. In addition to the nature of property business, we believe that economic and geographic trends affecting insured property, including inflation, property value appreciation and geographic concentration, tend to generally increase the size of losses from catastrophic events over time.

Our models employ both proprietary and vendor-based systems and include cross-line correlations for property, marine, offshore energy, aviation, workers compensation and personal accident. We seek to limit the probable maximum pre-tax loss to a specific level for severe catastrophic events. Currently, we seek to limit our 1-in-250 year return period net probable maximum loss from a severe catastrophic event in any geographic zone to approximately 25% of total shareholders' equity available to Arch. We reserve the right to change this threshold at any time.

Based on in-force exposure estimated as of October 1, 2019, our modeled peak zone catastrophe exposure was a windstorm affecting the Northeastern U.S., with a net probable maximum pre-tax loss of \$414 million, followed by windstorms affecting Florida Tri-County and the Gulf of Mexico regions with net probable maximum pre-tax losses of \$398 million and \$357 million, respectively. Our exposures to other perils, such as U.S. earthquake and international events, were less than the exposures arising from U.S. windstorms and hurricanes. As of October 1, 2019, our modeled peak zone earthquake exposure (San Francisco earthquake) represented approximately 70% of our peak zone catastrophe exposure, and our modeled peak zone international exposure (Japan earthquake) was substantially less than both our peak zone windstorm and earthquake exposures.

Effective July 1, 2019, our insurance operations had in effect a reinsurance program which provided coverage for certain property-catastrophe related losses equal to \$275 million in excess of various retentions per occurrence.

We also have significant exposure to losses due to mortgage defaults resulting from severe economic events in the future. For our U.S. mortgage insurance business, we have developed a proprietary risk model ("Realistic Disaster Scenario" or "RDS") that simulates the maximum loss resulting from a severe economic downturn impacting the housing market. The RDS models the collective impact of adverse conditions for key economic indicators, the most significant of which is a decline in home prices. The RDS model projects paths of future home prices, unemployment rates, income levels and interest rates and assumes correlation across states and geographic regions. The resulting future performance of our in-force portfolio is then estimated under the economic stress scenario, reflecting loan and borrower information.

Currently, we seek to limit our modeled RDS loss from a severe economic event to approximately 25% of total tangible shareholders' equity available to Arch (total shareholders' equity available to Arch less goodwill and intangible assets). We reserve the right to change this threshold at any time. Based on in-force exposure estimated as of October 1, 2019, our modeled RDS loss was approximately 9% of tangible shareholders' equity available to Arch.

Net probable maximum loss estimates are net of expected reinsurance recoveries, before income tax and before excess reinsurance reinstatement premiums. RDS loss estimates are net of expected reinsurance recoveries and after income tax. Catastrophe loss estimates are reflective of the zone indicated and not the entire portfolio. Since hurricanes and windstorms can affect more than one zone and make multiple landfalls, our catastrophe loss estimates include clash estimates from other zones. Our catastrophe loss estimates and RDS loss estimates do not represent our maximum exposures and it is highly likely that our actual incurred losses would vary materially from the modeled estimates. There can be no assurances that we will not suffer pre-tax losses greater than 25% of our total shareholders' equity or tangible shareholders' equity from one or more catastrophic events or severe economic events due to several factors, including the inherent uncertainties in estimating the frequency and severity of such events and the margin of error in making such determinations resulting from potential inaccuracies and inadequacies in the data provided by clients and brokers, the modeling techniques and the application of such techniques or as a result of a decision to change the percentage of shareholders' equity exposed to a single catastrophic event or severe economic event. In addition, actual losses may increase if our reinsurers fail to meet their obligations to us or the reinsurance protections purchased by us are exhausted or are otherwise unavailable. See "Risk Factors—Risks Relating to Our Industry" and "Management's Discussion and Analysis of Financial Condition and Results of Operations—Catastrophic Events and Severe Economic Events" in our 2018 Form 10-K.

OFF-BALANCE SHEET ARRANGEMENTS

Off-balance sheet arrangements are discussed in Management's Discussion and Analysis of Financial Condition and Results of Operations contained in our 2018 Form 10-K.

MARKET SENSITIVE INSTRUMENTS AND RISK MANAGEMENT

In accordance with the SEC's Financial Reporting Release No. 48, we performed a sensitivity analysis to determine the effects that market risk exposures could have on the future earnings, fair values or cash flows of our financial instruments as of September 30, 2019. Market risk represents the risk of changes in the fair value of a financial instrument and is comprised of

several components, including liquidity, basis and price risks. We have not included Watford in the following analyses as we do not guarantee or provide credit support for Watford, and our financial exposure to Watford is limited to our investment in Watford's senior notes, common and preferred shares and counterparty credit risk (mitigated by collateral) arising from reinsurance transactions.

An analysis of material changes in market risk exposures at September 30, 2019 that affect the quantitative and qualitative disclosures presented in our 2018 Form 10-K (see section captioned "Management's Discussion and Analysis of Financial Condition and Results of Operations—Market Sensitive Instruments and Risk Management") were as follows:

Investment Market Risk

Fixed Income Securities. We invest in interest rate sensitive securities, primarily debt securities. We consider the effect of interest rate movements on the fair value of our fixed maturities, fixed maturities pledged under securities lending agreements, short-term investments and certain of our other investments which invest in fixed income securities and the corresponding change in unrealized appreciation. As interest rates rise, the fair value of our interest rate sensitive securities falls, and the converse is also true. Based on historical observations, there is a low probability that all interest rate yield curves would shift in the same direction at the same time. Furthermore, at times interest rate movements in certain credit sectors exhibit a much lower correlation to changes in U.S. Treasury yields. Accordingly, the actual effect of interest rate movements may differ materially from the amounts set forth in the following tables.

The following table summarizes the effect that an immediate, parallel shift in the interest rate yield curve would have had on our fixed income securities:

(U.S. dollars in billions)	Interest Rate Shift in Basis Points				
	-100	-50	—	+50	+100
Sep 30, 2019					
Total fair value	\$ 20.91	\$ 20.55	\$ 20.21	\$ 19.82	\$ 19.48
Change from base	3.5%	1.7%		(1.9)%	(3.6)%
Change in unrealized value	\$ 0.71	\$ 0.34		\$ (0.38)	\$ (0.73)
Dec 31, 2018					
Total fair value	\$ 19.23	\$ 18.91	\$ 18.62	\$ 18.30	\$ 17.98
Change from base	3.3%	1.6%		(1.7)%	(3.4)%
Change in unrealized value	\$ 0.61	\$ 0.30		\$ (0.32)	\$ (0.63)

In addition, we consider the effect of credit spread movements on the market value of our fixed maturities, fixed maturities pledged under securities lending agreements, short-term investments and certain of our other investments and investment funds accounted for using the equity method which

invest in fixed income securities and the corresponding change in unrealized appreciation. As credit spreads widen, the fair value of our fixed income securities falls, and the converse is also true.

The following table summarizes the effect that an immediate, parallel shift in credit spreads in a static interest rate environment would have had on our fixed income securities:

(U.S. dollars in billions)	Credit Spread Shift in Percentage Points				
	-100	-50	—	+50	+100
Sep 30, 2019					
Total fair value	\$ 20.59	\$ 20.41	\$ 20.21	\$ 20.01	\$ 19.82
Change from base	1.9%	1.0%		(1.0)%	(1.9)%
Change in unrealized value	\$ 0.38	\$ 0.20		\$ (0.20)	\$ (0.38)
Dec 31, 2018					
Total fair value	\$ 19.08	\$ 18.84	\$ 18.62	\$ 18.39	\$ 18.15
Change from base	2.5%	1.2%		(1.2)%	(2.5)%
Change in unrealized value	\$ 0.47	\$ 0.22		\$ (0.22)	\$ (0.47)

Another method that attempts to measure portfolio risk is Value-at-Risk (“VaR”). VaR attempts to take into account a broad cross-section of risks facing a portfolio by utilizing relevant securities volatility data skewed towards the most recent months and quarters. VaR measures the amount of a portfolio at risk for outcomes 1.65 standard deviations from the mean based on normal market conditions over a one year time horizon and is expressed as a percentage of the portfolio’s initial value. In other words, 95% of the time, should the risks taken into account in the VaR model perform per their historical tendencies, the portfolio’s loss in any one year period is expected to be less than or equal to the calculated VaR, stated as a percentage of the measured portfolio’s initial value. As of September 30, 2019, our portfolio’s VaR was estimated to be 3.34% compared to an estimated 3.02% at December 31, 2018.

Equity Securities. At September 30, 2019 and December 31, 2018, the fair value of our investments in equity securities totaled \$559.1 million and \$368.8 million, respectively. These investments are exposed to price risk, which is the potential loss arising from decreases in fair value. An immediate hypothetical 10% decline in the value of each position would reduce the fair value of such investments by approximately \$55.9 million and \$36.9 million at September 30, 2019 and December 31, 2018, respectively, and would have decreased book value per share by approximately \$0.14 and \$0.09, respectively. An immediate hypothetical 10% increase in the value of each position would increase the fair value of such investments by approximately \$55.9 million and \$36.9 million at September 30, 2019 and December 31, 2018, respectively, and would have increased book value per share by approximately \$0.14 and \$0.09, respectively.

Investment-Related Derivatives. At September 30, 2019, the notional value of all derivative instruments (excluding to-be-announced mortgage backed securities which are included in the fixed income securities analysis above and foreign currency forward contracts which are included in the foreign currency exchange risk analysis below) was \$7.53 billion, compared to \$4.95 billion at December 31, 2018. If the underlying exposure of each investment-related derivative held at September 30, 2019 depreciated by 100 basis points, it would have resulted in a reduction in net income of approximately \$75.3 million, and a decrease in book value per share of approximately \$0.19 per share, compared to \$49.5 million and \$0.12 per share, respectively, on investment-related derivatives held at December 31, 2018. If the underlying exposure of each investment-related derivative held at September 30, 2019 appreciated by 100 basis points, it would have resulted in an increase in net income of approximately \$75.3 million, and an increase in book value per share of approximately \$0.19 per share, compared to \$49.5 million and \$0.12 per share, respectively, on investment-related derivatives held at December 31, 2018. See [note 8, “Derivative Instruments,”](#) to our consolidated financial statements for additional disclosures concerning derivatives.

For further discussion on investment activity, please refer to “Financial Condition—Investable Assets.”

Foreign Currency Exchange Risk

Foreign currency rate risk is the potential change in value, income and cash flow arising from adverse changes in foreign currency exchange rates. Through our subsidiaries and branches located in various foreign countries, we conduct our insurance and reinsurance operations in a variety of local currencies other than the U.S. Dollar. We generally hold investments in foreign currencies which are intended to mitigate our exposure to foreign currency fluctuations in our net insurance liabilities. We may also utilize foreign currency forward contracts and currency options as part of our investment strategy. See [note 8, “Derivative Instruments,”](#) to our consolidated financial statements for additional information.

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The following table provides a summary of our net foreign currency exchange exposures, as well as foreign currency derivatives in place to manage these exposures:

(U.S. dollars in thousands, except per share data)	September 30, 2019	December 31, 2018
Net assets (liabilities), denominated in foreign currencies, excluding shareholders' equity and derivatives	\$ 206,486	\$ (561,311)
Shareholders' equity denominated in foreign currencies (1)	542,970	478,678
Net foreign currency forward contracts outstanding (2)	52,491	241,442
Net exposures denominated in foreign currencies	\$ 801,947	\$ 158,809
Pre-tax impact of a hypothetical 10% appreciation of the U.S. Dollar against foreign currencies:		
Shareholders' equity	\$ (80,195)	\$ (15,881)
Book value per share	\$ (0.20)	\$ (0.04)
Pre-tax impact of a hypothetical 10% decline of the U.S. Dollar against foreign currencies:		
Shareholders' equity	\$ 80,195	\$ 15,881
Book value per share	\$ 0.20	\$ 0.04

- (1) Represents capital contributions held in the foreign currencies of our operating units.
(2) Represents the net notional value of outstanding foreign currency forward contracts.

Although we generally attempt to match the currency of our projected liabilities with investments in the same currencies, from time to time we may elect to over or underweight one or more currencies, which could increase our exposure to foreign currency fluctuations and increase the volatility of our shareholders' equity. Historical observations indicate a low probability that all foreign currency exchange rates would shift against the U.S. Dollar in the same direction and at the same time and, accordingly, the actual effect of foreign currency rate movements may differ materially from the amounts set forth above. For further discussion on foreign exchange activity, please refer to "—Results of Operations."

Effects of Inflation

We do not believe that inflation has had a material effect on our consolidated results of operations, except insofar as inflation may affect our reserve for losses and loss adjustment expenses and interest rates. The potential exists, after a catastrophe loss, for the development of inflationary pressures in a local economy. The anticipated effects of inflation on us are considered in our catastrophe loss models. The actual effects of inflation on our results cannot be accurately known until claims are ultimately settled.

OTHER FINANCIAL INFORMATION

The consolidated financial statements as of September 30, 2019 and for the three month and nine month periods ended September 30, 2019 and 2018 have been reviewed by PricewaterhouseCoopers LLP, the registrant's independent public accountants, whose report is included as an exhibit to this filing. The report of PricewaterhouseCoopers LLP states that they did not audit and they do not express an opinion on that unaudited financial information. Accordingly, the degree of reliance on their report on such information should be restricted in light of the limited nature of the review procedures applied. PricewaterhouseCoopers LLP is not subject to the liability provisions of Section 11 of the Securities Act of 1933 for their report on the unaudited financial information because that report is not a "report" or a "part" of the registration statement prepared or certified by PricewaterhouseCoopers LLP within the meaning of Sections 7 and 11 of the Securities Act of 1933.

ITEM 3. QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

Reference is made to the information appearing above under the subheading "Market Sensitive Instruments and Risk Management" under the caption "Management's Discussion and Analysis of Financial Condition and Results of Operations," which information is hereby incorporated by reference.

ITEM 4. CONTROLS AND PROCEDURES

Evaluation of Disclosure Controls and Procedures

In connection with the filing of this Form 10-Q, our management, including the Chief Executive Officer and Chief Financial Officer, conducted an evaluation of the effectiveness of disclosure controls and procedures pursuant to applicable Exchange Act Rules as of the end of the period covered by this report. Based on that evaluation, the Chief Executive Officer and Chief Financial Officer concluded that the disclosure controls and procedures were effective as of the end of and during the period covered by this report with respect to information being recorded, processed, summarized and reported within time periods specified in the SEC's rules and forms and with respect to timely communication to them and other members of management responsible for preparing periodic reports of all material information required to be disclosed in this report as it relates to Arch Capital and its consolidated subsidiaries.

We continue to enhance our operating procedures and internal controls to effectively support our business and our regulatory and reporting requirements. Our management does not expect that our disclosure controls or our internal controls will prevent all errors and all fraud. A control system, no matter how well conceived and operated, can provide only reasonable, not absolute, assurance that the objectives of the control system are met. Further, the design of a control system must reflect the fact that there are resource constraints, and the benefits of controls must be considered relative to their costs. As a result of the inherent limitations in all control systems, no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within the company have been detected. These inherent limitations include the realities that judgments in decision-making can be faulty, and that breakdowns can occur because of simple error or mistake. Additionally, controls can be circumvented by the individual acts of some persons or by collusion of two or more people. The design of any system of controls also is based in part upon certain assumptions about the likelihood of future events, and there can be no assurance that any design will succeed in achieving its stated goals under all potential future conditions; over time, controls may become inadequate because of changes in conditions, or the degree of compliance with the policies or procedures may deteriorate. As a result of the inherent limitations in a cost-effective control system, misstatement due to error or fraud may occur and not be detected. Accordingly, our disclosure controls and procedures are designed to provide reasonable, not absolute, assurance that the disclosure controls and procedures are met.

Changes in Internal Controls Over Financial Reporting

There have been no changes in internal control over financial reporting that occurred during the quarter ended September 30, 2019 that have materially affected, or are reasonably likely to materially affect, internal control over financial reporting.

PART II. OTHER INFORMATION

ITEM 1. LEGAL PROCEEDINGS

We, in common with the insurance industry in general, are subject to litigation and arbitration in the normal course of our business. As of September 30, 2019, we were not a party to any litigation or arbitration which is expected by management to have a material adverse effect on our results of operations and financial condition and liquidity.

ITEM 1A. RISK FACTORS

There were no material changes from the risk factors previously disclosed in our Annual Report on Form 10-K for the year ended December 31, 2018.

ITEM 2. UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS

The following table summarizes our purchases of common shares for the 2019 third quarter:

Period	Issuer Purchases of Equity Securities			
	Total Number of Shares Purchased (1)	Average Price Paid per Share	Total Number of Shares Purchased as Part of Publicly Announced Plans or Programs	Approximate Dollar Value of Shares that May Yet be Purchased Under the Plan or Programs (2)
7/1/2019 - 7/31/2019	27,535	\$ 38.56	—	\$ 160,867
8/1/2019 - 8/31/2019	18,304	39.17	—	\$ 160,867
9/1/2019 - 9/30/2019	22,686	41.13	—	\$ 160,867
Total	68,525	\$ 39.57	—	

- (1) Represents repurchases by Arch Capital of shares, from time to time, from employees in order to facilitate the payment of withholding taxes on restricted shares granted and the exercise of stock appreciation rights. We purchased these shares at their fair value, as determined by reference to the closing price of our common shares on the day the restricted shares vested or the stock appreciation rights were exercised.
- (2) Remaining amount available at September 30, 2019 under Arch Capital's share repurchase authorization, under which repurchases may be effected from time to time in open market or privately negotiated transactions. On November 8, 2019, the board of directors of ACGI increased the aggregate purchase amount authorized under the share repurchase program to \$1.0 billion. Repurchases under this authorization may be effected from time to time in open market or privately negotiated transactions through December 31, 2021.

ITEM 3. DEFAULTS UPON SENIOR SECURITIES

None.

ITEM 4. MINE SAFETY DISCLOSURES

Not applicable.

ITEM 5. OTHER INFORMATION

In accordance with Section 10a(i)(2) of the Securities Exchange Act of 1934, as amended, we are responsible for disclosing non-audit services to be provided by our independent auditor, PricewaterhouseCoopers LLP, which are approved by the Audit Committee of our board of directors. During the 2019 third quarter, the Audit Committee approved engagements of PricewaterhouseCoopers LLP for permitted non-audit services, which consisted of tax consulting services, tax compliance services and other accounting consulting services.

Disclosure of Certain Activities Under Section 13(r) of the Securities Exchange Act of 1934

Section 13(r) of the Securities Exchange Act of 1934, as amended, requires an issuer to disclose in its annual or quarterly reports whether it or an affiliate knowingly engaged in certain activities described in that section, including certain activities related to Iran during the period covered by the report.

Certain of our non-U.S. subsidiaries underwrite insurance and facultative reinsurance on a global basis to non-U.S. insureds and insurers, including for liability, marine, aviation and energy risks. Coverage provided to non-Iranian business may indirectly cover an exposure in Iran. For example, certain of our operations underwrite global marine hull and cargo policies that provide coverage for vessels navigating into and out of ports worldwide, including Iran. For the quarter ended September 30, 2019, there has been no material amount of premium allocated or apportioned to activities relating to Iran, and we are unable to attribute gross revenues or net profits from any such policies because they insure multiple voyages and fleets containing multiple ships. Such non-U.S. subsidiaries will continue to provide such coverage only to the extent permitted by applicable law.

ITEM 6. EXHIBITS

Exhibit Number	Exhibit Description	Incorporated by Reference			Filed Herewith
		Form	Original Number	Date Filed	
15	Accountants' Awareness Letter (regarding unaudited interim financial information)				X
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				X
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002				X
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				X
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002				X
101.INS	XBRL Instance Document				
101.SCH	XBRL Taxonomy Extension Schema Document				
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document				
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document				
101.LAB	XBRL Taxonomy Extension Label Linkbase Document				
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document				

SIGNATURES

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

ARCH CAPITAL GROUP LTD.
(REGISTRANT)

Date: November 8, 2019

/s/ Marc Grandisson

Marc Grandisson
President and Chief Executive Officer (Principal Executive Officer)

Date: November 8, 2019

/s/ François Morin

François Morin
Executive Vice President, Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)

November 8, 2019

Securities and Exchange Commission
100 F Street, N.E.
Washington, DC 20549

Commissioners:

We are aware that our report dated November 8, 2019, on our review of interim financial information of Arch Capital Group Ltd., which appears in this Quarterly Report on Form 10-Q, is incorporated by reference in the Registration Statements on Form S-3 (Nos. 333-221344, 333-221344-01 and 333-221344-02) and in the Registration Statements on Form S-8 (Nos. 333-211193, 333-142835, 333-181308, 333-203993 and 333-224783) of Arch Capital Group Ltd.

Very truly yours,

/s/ PricewaterhouseCoopers LLP

New York, NY

1 of 1

Certification
of Chief Executive Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, Marc Grandisson, certify that:

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

Date: November 8, 2019

By: /s/ Marc Grandisson

Name: Marc Grandisson

Title: President and Chief Executive Officer

Certification
of Chief Financial Officer
Pursuant to Section 302 of the
Sarbanes-Oxley Act of 2002

I, François Morin, certify that:

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

Date: November 8, 2019

By: /s/ François Morin

Name: François Morin

Title: Executive Vice President, Chief Financial Officer
and Treasurer

Certification Pursuant to Chapter 63, Title 18 United States Code §1350**As Adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**

In connection with the Quarterly Report of Arch Capital Group Ltd. (the “Company”) on Form 10-Q for the period ending September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), Marc Grandisson, as President and Chief Executive Officer of the Company, certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of section 13(a) of the Securities Exchange Act of 1934; and
- (2) the information contained in such report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 8, 2019

By: /s/ Marc Grandisson

Name: Marc Grandisson

Title: President and Chief Executive Officer

A signed original of this written statement required by Section 906 or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Arch Capital Group Ltd. and will be retained by Arch Capital Group Ltd. and furnished to the Securities and Exchange Commission or its staff upon request.

Certification Pursuant to Chapter 63, Title 18 United States Code §1350**As Adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002**

In connection with the Quarterly Report of Arch Capital Group Ltd. (the “Company”) on Form 10-Q for the period ending September 30, 2019 as filed with the Securities and Exchange Commission on the date hereof (the “Report”), François Morin, as Executive Vice President, Chief Financial Officer and Treasurer of the Company, certifies pursuant to 18 U.S.C. Section 1350, as adopted pursuant to Section 906 of the Sarbanes-Oxley Act of 2002, that:

- (1) the Report fully complies with the requirements of section 13(a) of the Securities Exchange Act of 1934; and
- (2) the information contained in such report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date:	November 8, 2019
By:	<u>/s/ François Morin</u>
Name:	François Morin
Title:	Executive Vice President, Chief Financial Officer and Treasurer

A signed original of this written statement required by Section 906 or other document authenticating, acknowledging or otherwise adopting the signature that appears in typed form within the electronic version of this written statement required by Section 906, has been provided to Arch Capital Group Ltd. and will be retained by Arch Capital Group Ltd. and furnished to the Securities and Exchange Commission or its staff upon request.