ARCH REINSURANCE LTD. AND SUBSIDIARIES

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

Consolidated Financial Statements

December 31, 2021 and 2020

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Report of Independent Auditors

To the Board of Directors of Arch Reinsurance Ltd.:

Opinion

We have audited the accompanying consolidated financial statements of Arch Reinsurance Ltd. and its subsidiaries (the "Company"), which comprise the consolidated balance sheets as of December 31, 2021 and December 31, 2020, and the related consolidated statements of income, comprehensive income, changes in shareholder's equity and cash flows for the years then ended, including the related notes (collectively referred to as the "consolidated financial statements").

In our opinion, the accompanying consolidated financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2021 and December 31, 2020, and the results of its operations and its cash flows for the years then ended in accordance with accounting principles generally accepted in the United States of America.

Basis for Opinion

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

Responsibilities of Management for the Consolidated Financial Statements

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

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

Auditors' Responsibilities for the Audit of the Consolidated Financial Statements

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

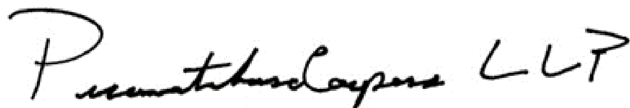
if there is a substantial likelihood that, individually or in the aggregate, they would influence the judgment made by a reasonable user based on the financial statements.
In performing an audit in accordance with US GAAS, we:

- Exercise professional judgment and maintain professional skepticism throughout the audit.
- Identify and assess the risks of material misstatement of the consolidated financial statements, whether due to fraud or error, and design and perform audit procedures responsive to those risks. Such procedures include examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements.
- Obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control. Accordingly, no such opinion is expressed.
- Evaluate the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluate the overall presentation of the consolidated financial statements.
- Conclude whether, in our judgment, there are conditions or events, considered in the aggregate, that raise substantial doubt about the Company's ability to continue as a going concern for a reasonable period of time.

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

Other Matter

Accounting principles generally accepted in the United States of America require that the incurred and paid loss development for the years ended December 31, 2012 to December 31, 2020 on pages 29 to 37 be presented to supplement the basic financial statements. Such information is the responsibility of management and, although not a part of the basic financial statements, is required by the Financial Accounting Standards Board who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.



New York, New York
April 1, 2022

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

	December 31,	
	2021	**2020**
Assets		
Investments:		
Fixed maturities available for sale, at fair value (amortized cost: $17,968,722 and $18,143,305; net of allowance for credit losses: $2,883 and $2,397)	$ 17,993,007	$ 18,717,825
Short-term investments available for sale, at fair value (amortized cost: $1,732,685 and $1,922,007; net of allowance for credit losses: $0 and $0)	1,732,663	1,922,637
Collateral received under securities lending, at fair value (amortized cost: $0 and $301,089)	—	301,096
Equity securities, at fair value	1,804,170	1,444,830
Other Investments (portion measured at fair value: $1,973,550 and $3,824,796)	1,973,550	4,324,796
Investments accounted for using the equity method	3,077,611	2,047,889
Total investments	26,581,001	28,759,073
Cash	809,393	860,835
Accrued investment income	85,453	103,299
Securities pledged under securities lending, at fair value (amortized cost: $0 and $294,493)	—	294,912
Investment in operating affiliates	1,128,779	121,560
Premiums receivable (net of allowance for credit losses: $39,958 and $37,781)	2,633,280	2,064,586
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses (net of allowance for credit losses: $13,230 and $11,636)	5,880,735	4,500,802
Contractholder receivables (Net of allowance for credit losses: $3,437 and $8,638)	1,828,691	1,986,924
Ceded unearned premiums	1,729,455	1,234,075
Deferred acquisition costs	901,841	790,708
Receivable for securities sold	60,179	92,743
Goodwill and intangible assets	944,983	692,863
Other assets	2,416,776	1,680,191
Total assets	$ 45,000,566	$ 43,182,571
Liabilities		
Reserve for losses and loss adjustment expenses	$ 17,757,156	$ 16,513,929
Unearned premiums	6,011,942	4,838,965
Reinsurance balances payable	1,583,253	683,263
Contractholder payables	1,832,127	1,995,562
Collateral held for insured obligations	242,352	215,581
Senior notes	1,438,186	1,575,246
Revolving credit agreement borrowings	—	155,687
Securities lending payable	—	301,089
Payable for securities purchased	64,850	218,779
Other liabilities	1,283,393	1,466,449
Total liabilities	30,213,259	27,964,550
Commitments and Contingencies		
Redeemable noncontrolling interests	9,233	58,548
Redeemable preferred shares	111,000	111,000
Shareholder's Equity		
Common shares ($1.00 par, shares authorized: 2,625,000, issued: 2,549,323)	2,549	2,549
Additional paid-in capital	5,709,595	5,171,462
Retained earnings	9,021,297	8,566,658
Accumulated other comprehensive income (loss), net of deferred income tax	(66,367)	484,797
Total shareholder's equity available to Arch	14,667,074	14,225,466
Non-redeemable noncontrolling interests	—	823,007
Total shareholder's equity	14,667,074	15,048,473
Total liabilities, noncontrolling interests and shareholder's equity	$ 45,000,566	$ 43,182,571

See Notes to Consolidated Financial Statements

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

	Year Ended December 31,	
	2021	**2020**
Revenues		
Net premiums earned	$ 8,082,298	$ 6,991,935
Net investment income	389,116	516,127
Net realized gains (losses)	379,376	825,377
Other underwriting income	22,073	26,784
Equity in net income of investment funds accounted for using the equity method	366,402	146,693
Other income (loss)	10,191	28
Total revenues	9,249,456	8,506,944
Expenses		
Losses and loss adjustment expenses	4,584,803	4,689,599
Acquisition expenses	1,303,178	1,004,842
Other operating expenses	1,005,891	891,732
Amortization of intangible assets	82,955	69,031
Interest expense	80,728	103,494
Net foreign exchange (gains) losses	(41,230)	83,150
Total expenses	7,016,325	6,841,848
Income before income taxes and income (loss) from operating affiliates	2,233,131	1,665,096
Income taxes:		
Current tax expense (benefit)	294,961	194,455
Deferred tax expense (benefit)	(166,951)	(83,205)
Income tax expense	128,010	111,250
Income (loss) from operating affiliates	265,283	17,202
Net income	$ 2,370,404	$ 1,571,048
Net (income) loss attributable to noncontrolling interests	(82,613)	(60,191)
Net income available to Arch	$ 2,287,791	$ 1,510,857
Preferred dividends	(1,523)	—
Net income available to Arch common shareholders	$ 2,286,268	$ 1,510,857

See Notes to Consolidated Financial Statements

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

	Year Ended December 31,	
	2021	**2020**
Comprehensive Income		
Net income	$ 2,370,404	$ 1,571,048
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	(386,617)	678,436
Reclassification of net realized gains (losses), net of income taxes, included in net income	(116,068)	(426,182)
Foreign currency translation adjustments	(62,462)	31,079
Comprehensive income	1,805,257	1,854,381
Net (income) loss attributable to noncontrolling interests	(82,613)	(60,191)
Other comprehensive (income) loss attributable to noncontrolling interests	13,984	(9,062)
Comprehensive income available to Arch	$ 1,736,628	$ 1,785,128

See Notes to Consolidated Financial Statements

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

	Year Ended December 31,	
	2021	2020
Common shares		
Balance at beginning and end of year	2,549	2,560
Common shares issued, net	—	(11)
Balance at beginning and end of year	2,549	2,549
Additional paid-in capital		
Balance at beginning of year	5,171,462	4,138,555
Amortization of share-based compensation	60,861	43,934
Capital contribution from parent	487,161	988,700
Other	(9,889)	273
Balance at end of year	5,709,595	5,171,462
Retained earnings		
Balance at beginning of year	8,566,658	7,299,888
Cumulative effect of an accounting change	—	(22,452)
Balance at beginning of year, as adjusted	8,566,658	7,277,436
Net income	2,370,404	1,571,048
Net (income) loss attributable to noncontrolling interests	(82,613)	(60,191)
Preferred share dividends	(1,523)	—
Dividends paid to parent	(1,831,629)	(221,635)
Balance at end of year	9,021,297	8,566,658
Accumulated other comprehensive income (loss)		
Balance at beginning of year	484,797	210,524
Unrealized appreciation (decline) in value of available-for-sale investments, net of deferred income tax:		
Balance at beginning of year	500,780	258,245
Unrealized holding gains (losses) arising during period, net of reclassification adjustment, net of deferred income tax	(502,686)	252,256
Unrealized holding gains (losses) during period attributable to noncontrolling interests	15,188	(9,721)
Balance at end of year	13,282	500,780
Foreign currency translation adjustments, net of deferred income tax:		
Balance at beginning of year	(15,983)	(47,721)
Foreign currency translation adjustments	(62,462)	31,079
Foreign currency translation adjustments attributable to noncontrolling interests	(1,204)	659
Balance at end of year	(79,649)	(15,983)
Balance at end of year	(66,367)	484,797
Total shareholder's equity available to Arch	14,667,074	14,225,466
Non-redeemable noncontrolling interests	—	823,007
Total shareholder's equity	$ 14,667,074	$ 15,048,473

See Notes to Consolidated Financial Statements

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

	Year Ended December 31, 2021	Year Ended December 31, 2020
Operating Activities		
Net income	$ 2,370,404	$ 1,571,048
Adjustments to reconcile net income to net cash provided by operating activities:		
Net realized (gains) losses	(428,304)	(860,865)
Net impairment losses recognized in earnings	1,037	14,136
Equity in net income or loss of investment funds accounted for using the equity method and other income or loss	(464,640)	(48,387)
Amortization of intangible assets	82,955	69,031
Share-based compensation	61,903	44,709
Changes in:		
Reserve for losses and loss adjustment expenses, net of unpaid losses and loss adjustment expenses recoverable	1,762,190	2,113,827
Unearned premiums, net of ceded unearned premiums	936,039	445,781
Premiums receivable	(685,214)	(318,643)
Deferred acquisition costs	(263,243)	(143,948)
Reinsurance balances payable	500,065	65,950
Other items, net	(351,512)	12,450
Net Cash provided by operating activities	3,521,680	2,965,089
Investing Activities		
Purchases of fixed maturity investments	(35,446,757)	(39,717,280)
Purchases of equity securities	(1,175,480)	(1,595,010)
Purchases of other investments	(1,859,096)	(1,808,727)
Proceeds from sales of fixed maturity investments	33,577,445	37,945,742
Proceeds from sales of equity securities	918,145	1,147,264
Proceeds from sales, redemptions and maturities of other investments	1,765,533	1,029,578
Proceeds from redemptions and maturities of fixed maturity investments	1,628,755	869,134
Net settlements of derivative instruments	(40,072)	179,006
Net (purchases) sales of short-term investments	165,039	(1,018,836)
Change in cash collateral related to securities lending	—	81,210
Purchase of operating affiliates	(753,916)	—
Impact of the deconsolidation of the variable interest entity	(349,202)	—
Purchases of fixed assets	(39,495)	(36,506)
Other	(524,591)	(46,476)
Net cash used For investing activities	(2,133,692)	(2,970,901)
Financing Activities		
Capital contribution from parent	487,161	988,700
Proceeds from borrowings	—	30,400
Repayments of borrowings	—	(359,000)
Change in securities lending collateral	—	(81,210)
Change in third party investment in non-redeemable noncontrolling interests	15,971	(2,867)
Dividends paid to redeemable noncontrolling interests	(1,907)	(4,945)
Other	(3,277)	73,715
Dividends paid to parent	(1,831,629)	(221,635)
Net Cash used for financing activities	(1,333,681)	423,158
Effects of exchange rate changes on foreign currency cash and restricted cash	(33,742)	22,038
Increase (decrease) in cash and restricted cash and restricted cash	20,565	439,384
Cash and restricted cash, beginning of year	1,244,893	805,509
Cash and restricted cash, end of year	$ 1,265,458	$ 1,244,893
Income taxes paid (received)	$ 286,279	$ 197,556
Interest paid	$ 80,901	$ 93,266

See Notes to Consolidated Financial Statements

1. General

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

Operations

Insurance Operations. The Company's insurance operations are conducted in Bermuda, the United States, the United Kingdom, Europe, Canada and Australia. The insurance operations in Bermuda are conducted through Arch Insurance (Bermuda), a division of Arch Re Bermuda, and Alternative Re Limited. In the U.S., the Company's principal insurance subsidiaries are Arch Insurance Company ("Arch Insurance"), Arch Specialty Insurance Company ("Arch Specialty"), Arch Indemnity Insurance Company ("Arch Indemnity Insurance") and Arch Property & Casualty Insurance Company ("Arch P&C"). Arch Insurance is an admitted insurer in 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands and Guam. Arch Specialty is an approved excess and surplus lines insurer in 50 states, the District of Columbia, Puerto Rico and the U.S. Virgin Islands and an authorized insurer in one state. Arch Indemnity Insurance is an admitted insurer in 50 states and the District of Columbia. Arch P&C, which is not currently writing business, is an admitted insurer in 40 states and the District of Columbia and is filing applications for admission in all remaining states where it is not yet admitted. The insurance group also operates McNeil & Company, Inc. ("McNeil"), a specialized risk manager and a program administrator based in Cortland, New York. The headquarters for the U.S. support operations (excluding underwriting units) for the insurance operations is in Jersey City, New Jersey. The insurance operations have offices throughout the U.S., including five regional offices located in Alpharetta, Georgia, Chicago, Illinois, New York, New York, San Francisco, California, Dallas, Texas and additional branch offices.

The insurance group's operations in Canada are conducted through Arch Insurance Canada Ltd. ("Arch Insurance Canada"), a Canada domestic company which is authorized in all Canadian provinces and territories. Arch Insurance Canada is headquartered in Toronto, Ontario. In 2019, Arch Insurance (EU) Designated Activity Company (formerly, Arch Mortgage Insurance Designated Activity Company) ("Arch Insurance (EU)"), based in Dublin, Ireland, received authorization from the Central Bank of Ireland ("CBOI") to expand its classes of business as part of the Company's plan to address the U.K.'s departure from the European Union ("Brexit"). As of January 2020, all of the insurance business in the European Union ("EU") previously written by Arch Insurance (U.K.) Limited (formerly Arch Insurance Company (Europe) Limited) ("Arch Insurance (U.K.)") is now written through Arch Insurance (EU). Arch Insurance (EU) has branches in Denmark, Italy and outside the EU in the U.K. At the end of December 2020, Arch Insurance (U.K.) received court approval in the U.K. to transfer its legacy book of business written in the European Economic Area ("EEA") to Arch Insurance (EU) under Part VII of the U.K. Financial Services and Market Act 2000. In November 2019, the Company closed the acquisition of Barbican Group Holdings Limited and its subsidiaries ("Barbican"). Following the acquisition, the Company conducts its insurance operations on several platforms in the U.K., including Arch Insurance (U.K.), the Company's participation on Lloyd's of London syndicates of 2012 ("Arch Syndicate 2012") and 1955 (formerly Barbican Syndicate 1955) ("Arch Syndicate 1955"). In addition, Arch Managing Agency Limited (formerly Barbican Managing Agency Limited) ("AMAL") is the managing agent of Arch Syndicate 2012 and Arch Syndicate 1955. Our Lloyd's syndicates provide us access to Lloyd's extensive distribution network and worldwide licenses. AMAL also acts as managing agent for third party members of Arch Syndicate 1955. With the Barbican acquisition, we also acquired Castel Underwriting Agencies Limited ("Castel") in the U.K. and Castel Underwriting Europe BV in the Netherlands, giving us additional underwriting intermediary capabilities for our underwriting platforms. Collectively, the U.K. insurance operations are referred to as "Arch U.K.". Arch U.K. operations include the Arch U.K. Regional Division, which underwrites U.K. commercial lines. Arch U.K. conducts its operations from London and other locations in the U.K. and also has branches in Germany, Italy, Spain and Denmark. Arch Underwriting at Lloyd's (Australia) Pty Ltd, based in Sydney, Australia, is a Lloyd's services company which underwrites exclusively for Arch's Lloyd's Syndicates.

Reinsurance Operations. The Company's reinsurance operations are conducted on a worldwide basis through the following reinsurance subsidiaries: Arch Re Bermuda, Arch Reinsurance Company ("Arch Re U.S."), Arch Syndicate 2012, Arch Syndicate 1955 and Arch Reinsurance Europe Underwriting Designated Activity Company ("Arch Re Europe"). Arch Re Bermuda is headquartered in Hamilton, Bermuda. Arch Re Bermuda has also been approved as a "certified reinsurer" in certain U.S. states that allow reduced collateral for reinsurance ceded to such reinsurers. Arch Re U.S. is licensed or is an accredited or otherwise approved reinsurer in 50 states and the District of Columbia and Puerto Rico, the provinces of Ontario and Quebec in Canada with its principal U.S. office in Morristown, New Jersey. Treaty operations in Canada are conducted through the Canadian branch of Arch Re U.S. ("Arch Re Canada"). Arch Re U.S. is also an admitted insurer in Guam. The property

facultative reinsurance operations are conducted primarily through Arch Re U.S. The property facultative reinsurance operations have offices throughout the U.S., Canada, Europe and the U.K. Arch Re Europe, licensed and authorized as a non-life reinsurer and a life reinsurer, is headquartered in Dublin, Ireland with branch offices outside the EEA in Zurich and London. The acquisition of Barbican in November 2019 also contributed to the Company's reinsurance operations. AMAL is the managing agent for the reinsurance business of Arch Syndicate 2012 and Arch Syndicate 1955.

Mortgage Operations. The Company's mortgage operations include U.S. and international mortgage insurance and reinsurance operations as well as participation in government sponsored enterprise ("GSE") credit risk-sharing transactions. The Company's mortgage group includes direct mortgage insurance in the U.S. primarily provided by Arch Mortgage Insurance Company, United Guaranty Residential Insurance Company and Arch Mortgage Guaranty Company (together, "Arch MI U.S."), mortgage reinsurance by Arch Re Bermuda to mortgage insurers on both a proportional and non-proportional basis globally; direct mortgage insurance in EEA and U.K. provided by Arch Insurance (EU), in Australia through Arch LMI Pty Ltd. ("Arch LMI") and Arch Lenders Mortgage Indemnity Limited (formerly Westpac Lenders Mortgage Insurance Limited) ("Arch Indemnity"), and in Hong Kong by Arch MI Asia Limited ("Arch MI Asia"); and participation in various GSE credit risk-sharing products provided primarily by Arch Re Bermuda.

In 2014, with the acquisition of CMG Mortgage Insurance Company which was renamed "Arch Mortgage Insurance Company," the Company entered the U.S. mortgage insurance market place. Arch Mortgage Insurance Company ("AMIC") is licensed and operates in all 50 states, the District of Columbia and Puerto Rico.

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

In January 2019, Arch LMI was authorized by the Australia Prudential Regulation Authority ("APRA") to write lenders' mortgage insurance. In August 2021, we acquired Westpac Lenders Mortgage Insurance Limited, which is also authorized by APRA to write lenders' mortgage insurance, which has since been renamed Arch Lenders Mortgage Indemnity Ltd ("Arch Indemnity"). Arch LMI and Arch Indemnity are headquartered in Sydney, Australia and focus on providing direct lenders' mortgage insurance and reinsurance to the Australian market.

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

In the 2020 fourth quarter, the Company, Somers, and Greysbridge Ltd., a wholly-owned subsidiary of the Company, entered into an Agreement and Plan of Merger (as amended, the "Merger Agreement"). The Company assigned its rights under the Merger Agreement to Greysbridge Holdings Ltd. ("Greysbridge"). The merger and the related Greysbridge equity financing closed on July 1, 2021. Effective July 1, 2021, Somers is wholly owned by Greysbridge, and Greysbridge is owned 40% by the Company, 30% by certain funds managed by Kelso & Company ("Kelso") and 30% by certain funds managed by Warburg Pincus LLC ("Warburg"). Based on the governing documents of Greysbridge, the Company concluded that, while it retains significant influence over Somers, Somers no longer constitutes a variable interest entity. Accordingly, effective July 1, 2021, the Company no longer consolidates the results of Somers in its consolidated financial statements and footnotes. (see Note 4).

In January 2017, the Company and Kelso sponsored the formation of Premia Holdings Ltd. Premia Holdings Ltd. is the parent of Premia Reinsurance Ltd., a multi-line Bermuda reinsurance company (together with Premia Holdings Ltd., "Premia").

Premia's strategy is to reinsure or acquire companies or reserve portfolios in the non-life property and casualty insurance and reinsurance run-off market. Arch Re Bermuda and certain Arch co-investors invested $100.0 million and acquired approximately 25% of Premia as well as warrants to purchase additional common equity. Affiliates of Kelso invested $300.0 million and acquired the balance of Premia as well as warrants to purchase additional common equity (see Note 14).

In 2021, the Company completed the share purchase agreement with Natixis to purchase 29.5% of the common equity of Coface SA ("Coface"), a France-based leader in the global trade and credit insurance market. This is a long-term, strategic investment in Coface, and fits with the Company's efforts to develop uncorrelated sources of underwriting income. Our companies share a focus on specialty underwriting where knowledge and expertise create value for our clients, and trade credit contributes to the Company's specialty-driven business model.

The Company has reclassified the presentation of certain prior year information to conform to the current presentation, including the correct presentation of 'income (loss) from operating affiliates' on its consolidated statements of income for all periods presented to reclass such item from 'other income (loss)'. The Company also changed its presentation of 'investment in operating affiliates' on its consolidated balance sheet for all periods presented to reclass such item from 'other assets'. Such reclassifications had no effect on the Company's net income, comprehensive income, shareholder's equity or cash flows. Management views the impact of the prior period misclassification as not material to the financial statements on a quantitative and qualitative basis. (See Note 9). Tabular amounts are in U.S. Dollars in thousands, except share amounts, unless otherwise noted.

2. Business Acquired

Westpac Lenders Mortgage Insurance Limited ("WLMI")

On August 31, 2021, the Company completed the acquisition of WLMI, an Australian Prudential Regulation Authority authorized captive lenders mortgage insurance ("LMI") provider to the Westpac Banking Corporation ("Westpac"). As part of the acquisition, WLMI will retain its existing risk in force and remain Westpac's exclusive provider of LMI on new mortgage originations for a period of 10 years. Upon completion of this transaction, the Company renamed WLMI to Arch Lenders Mortgage Indemnity Limited ("Arch Indemnity"). Arch Indemnity will become the Company's primary provider of LMI to the Australian market.

Somerset Bridge Group Limited, Southern Rock Holdings Limited and affiliates ("Somerset Group")

On August 6, 2021, the Company completed the acquisition of Somerset Group. The acquisition includes Somerset Group's motor insurance managing general agent, distribution capabilities through direct and aggregator channels, affiliated insurer and fully integrated claims operation.

In connection with the acquisitions noted above, the Company increased its goodwill and intangible assets by $350.1 million.

3. Significant Accounting Policies

(a) Basis of Presentation

The consolidated financial statements have been prepared in conformity with accounting principles generally accepted in the United States of America ("GAAP") and include the accounts of Arch Re Bermuda and its subsidiaries, including Arch Re U.S., Arch Capital Group (U.S.) Inc. ("Arch-U.S."), Arch Insurance, Arch Specialty, Arch P&C, Arch Indemnity Insurance, Arch Insurance Canada, Arch Re Europe, AMIC, UGRIC, Arch Mortgage Guaranty Company, Arch LMI, Arch Indemnity, Arch MI Asia, Arch Insurance (EU), Arch Insurance (U.K.), Arch Syndicate 2012, Arch Syndicate 1955, and AMAL. 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. The Company's principal estimates include:

- The reserve for losses and loss adjustment expenses;
- Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses, including the provision for uncollectible amounts;
- Estimates of written and earned premiums;
- The valuation of the investment portfolio and assessment of allowance for credit losses;
- The valuation of purchased intangible assets;
- The assessment of goodwill and intangible assets for impairment; and
- The valuation of deferred tax assets.

(b) Premium Revenues and Related Expenses

Insurance. Insurance premiums written are generally recorded at the policy inception and are primarily earned on a pro rata basis over the terms of the policies for all products, usually 12 months. Premiums written include estimates that are derived from multiple sources which include the historical experience of the underlying business, similar business and available industry information. Unearned premium reserves represent the portion of premiums written that relates to the unexpired terms of in-force insurance policies.

Reinsurance. Reinsurance premiums written include amounts reported by brokers and ceding companies, supplemented by the Company's own estimates of premiums where reports have not been received. The determination of premium estimates requires a review of the Company's experience with the ceding companies, familiarity with each market, the timing of the reported information, an analysis and understanding of the characteristics of each line of business, and management's judgment of the impact of various factors, including premium or loss trends, on the volume of business written and ceded to the Company. On an ongoing basis, the Company's underwriters review the amounts reported by these third parties for

reasonableness based on their experience and knowledge of the subject class of business, taking into account the Company's historical experience with the brokers or ceding companies. In addition, reinsurance contracts under which the Company assumes business generally contain specific provisions which allow the Company to perform audits of the ceding company to ensure compliance with the terms and conditions of the contract, including accurate and timely reporting of information. Based on a review of all available information, management establishes premium estimates where reports have not been received. Premium estimates are updated when new information is received and differences between such estimates and actual amounts are recorded in the period in which estimates are changed or the actual amounts are determined.

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

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

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

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

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

Premium estimates are reviewed by management at least quarterly. Such review includes a comparison of actual reported premiums to expected ultimate premiums along with a review of the aging and collection of premium estimates. Based on management's review, the appropriateness of the premium estimates is evaluated, and any adjustment to these estimates is recorded in the period in which it becomes known. Adjustments to premium estimates could be material and such adjustments could directly and significantly impact earnings favorably or unfavorably in the period they are determined because the estimated premium may be fully or substantially earned. A significant portion of amounts included as premiums

receivable, which represent estimated premiums written, net of commissions, are not currently due based on the terms of the underlying contracts.

Unearned premiums represent the portion of premiums written that is applicable to the estimated unexpired risk of insured loans. A portion of premium payments may be refundable if the insured cancels coverage, which generally occurs when the loan is repaid, the loan amortizes to a sufficiently low amount to trigger a lender permitted or legally required cancellation, or the value of the property has increased sufficiently in accordance with the terms of the contract. Premium refunds reduce premiums earned in the consolidated statements of income. Generally, only unearned premiums are refundable.

Premiums receivable include amounts receivable from agents, brokers and insured that are both currently due and amounts not yet due on insurance, reinsurance and mortgage insurance policies. Premiums receivable balances are reported net of an allowance for expected credit losses. The Company monitors credit risk associated with premiums receivable through its ongoing review of amounts outstanding, aging of the receivable, historical loss data, and counterparty financial strength measures. The allowance also includes estimated uncollectible amounts related to dispute risk. In certain instances, credit risk may be reduced by the Company's right to offset loss obligations or unearned premiums against premiums receivable. Any allowance for credit losses is charged to net realized gains (losses) in the period the receivable is recorded and revised in subsequent periods to reflect changes in the Company's estimate of expected credit losses. See note 7 for additional information.

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

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

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

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

No premium deficiency charges were recorded by the Company during 2021 and 2020.

(c) Deposit Accounting

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

contracts deemed to transfer only significant underwriting risk. For those contracts that contain only significant timing risk, an accretion rate is established at inception of the contract based on actuarial estimates whereby the deposit accounting liability is increased to the estimated amount payable over the contract term. The accretion on the deposit is based on the expected rate of return required to fund the expected future payment obligations. Periodically the Company reassesses the estimated ultimate liability and the related expected rate of return. The accretion of the deposit accounting liability as well as changes to the estimated ultimate liability and the accretion rate would be reflected as part of interest expense in the Company's results of operations. Any negative accretion in a deposit accounting liability is shown in other underwriting income in the Company's results of operations.

Under some of these contracts, the ceding company retains the related assets on a funds-held basis. Such amounts are included in "Other assets" on the Company's balance sheet. Interest income produced by those assets are recorded as part of net investment income in the Company's results of operations.

(d) Retroactive Reinsurance

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

(e) Reinsurance Ceded

In the normal course of business, the Company purchases reinsurance to increase capacity and to limit the impact of individual losses and events on its underwriting results by reinsuring certain levels of risk with other insurance enterprises or reinsurers. The Company uses pro rata, excess of loss and facultative reinsurance contracts. Reinsurance ceding commissions that represent a recovery of acquisition costs are recognized as a reduction to acquisition costs while the remaining portion is deferred. The accompanying consolidated statement of income reflects premiums and losses and loss adjustment expenses and acquisition costs, net of reinsurance ceded. See Note 8 for information on the Company's reinsurance usage. Reinsurance premiums ceded and unpaid losses and loss adjustment expenses recoverable are estimated in a manner consistent with that of the original policies issued and the terms of the reinsurance contracts. If the reinsurers are unable to satisfy their obligations under the agreements, the Company's insurance or reinsurance subsidiaries would be liable for such defaulted amounts.

Reinsurance recoverables are recorded as assets, predicated on the reinsurers' ability to meet their obligations under the reinsurance agreements. In certain instances, the Company obtains collateral, including letters of credit and trust accounts to further reduce the credit exposure on its reinsurance recoverables. The Company reports its reinsurance recoverables net of an allowance for expected credit loss. The allowance is based upon the Company's ongoing review of amounts outstanding, the financial condition of its reinsurers, amounts and form of collateral obtained and other relevant factors. A ratings based probability-of-default and loss-given-default methodology is used to estimate the allowance for expected credit loss. Any allowance for credit losses is charged to net realized gains (losses) in the period the recoverable is recorded and revised in subsequent periods to reflect changes in the Company's estimate of expected credit losses. See note 7 for additional information.

(f) Cash

Cash includes cash equivalents, which are investments with original maturities of three months or less that are not part of the investment portfolio.

(g) Restricted Cash

Restricted cash represents amounts held for the benefit of third parties and is legally or contractually restricted as to withdrawal or usage by the Company. Such amounts are included in "Other assets" on the Company's consolidated balance sheets.

(h) Investments

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

Prior to the termination of its program in 2021, the Company entered into securities lending agreements with financial institutions to enhance investment income whereby it loaned certain of its securities to third parties, primarily major brokerage firms, for short periods of time through a lending agent. Such securities have been reclassified as "Securities pledged under securities lending, at fair value." The Company maintained legal control over the securities it lent, retained the earnings and cash flows associated with the loaned securities and received a fee from the borrower for the temporary use of the securities. Collateral received was required at a rate of 102% or greater of the fair value of the loaned securities including accrued investment income and was monitored and maintained by the lending agent. Such collateral is reflected as "Collateral received under securities lending, at fair value."

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

The Company's investment portfolio includes equity securities that are accounted for at fair value. Such holdings primarily include publicly traded common stocks. Dividend income on equities is reflected in net investment income. Changes in fair value on equity securities are included in "Net realized gains (losses)" in the consolidated statement of income.

The Company elected to carry certain fixed maturity securities, equity securities, short-term investments and other investments at fair value under the fair value option afforded by accounting guidance regarding the fair value option for financial assets and liabilities. The fair value for certain of the Company's other investments are determined using net asset values ("NAVs") as advised by external fund managers. The NAV is based on the fund manager's valuation of the underlying holdings in accordance with the fund's governing documents.

Changes in fair value of investments accounted for using the fair value option are included in "Net realized gains (losses)." The primary reasons for electing the fair value option were to address simplification and cost-benefit considerations.

The Company invests in reverse repurchase agreements that are generally treated as collateralized receivables. Receivables for reverse repurchase agreements are reflected in "Other investments" or "Short-term investments" in the Company's consolidated balance sheet depending on their terms. These agreements are recorded at their contracted resale amount plus accrued interest, other than those that are accounted for at fair value. In reverse repurchase transactions, the Company obtains an interest in the purchased assets that are received as collateral.

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

these investments is limited to the investment carrying amounts reported in the Company's consolidated balance sheets and any unfunded commitment.

The Company conducts a periodic review to identify and evaluate credit based impairments related to the Company’s available for sale investments. The Company derives estimated credit losses by comparing expected future cash flows to be collected to the amortized cost of the security. Estimates of expected future cash flows consider among other things, macroeconomic conditions as well as the financial condition, near-term and long-term prospects for the issuer, and the likelihood of the recoverability of principal and interest. Effective January 1, 2020, credit losses are recognized through an allowance account subject to reversal, rather than a reduction in amortized cost. Declines in value attributable to factors other than credit are reported in other comprehensive income while the allowance for credit loss is charged to net realized gains (losses).

For available for sale investments that the Company intends to sell or for which it is more likely than not that the Company would be required to sell before an anticipated recovery in value, the full amount of the impairment is included in net realized gains (losses). The new cost basis of the investment is the previous amortized cost basis reduced by the impairment recognized in net realized gains (losses). The new cost basis is not adjusted for any subsequent recoveries in fair value.

The Company reports accrued investment income separately from investment balances and has elected not to measure an allowance for credit losses for accrued investment income. Any uncollectible accrued interest income is written off in the period it is deemed uncollectible.

Prior to January 1, 2020, the Company performed quarterly reviews of its investments to determine whether declines in fair value below the cost basis were considered other-than-temporary in accordance with applicable accounting guidance regarding the recognition and presentation of other-than-temporary-impairment (“OTTI”). The process of determining whether a security was other-than-temporarily impaired required judgment and involved analyzing many factors. These factors included (i) an analysis of the liquidity, business prospects and overall financial condition of the issuer, (ii) the time period in which there was a significant decline in value, (iii) the significance of the decline and (iv) the analysis of specific credit events. When there were credit-related losses associated with debt securities for which the Company did not have an intent to sell and it was more likely than not that it would not be required to sell the security before recovery of its cost basis, the amount of the OTTI related to a credit loss was recognized in earnings and the amount of the OTTI related to other factors (e.g., interest rates, market conditions, etc.) was recorded as a component of other comprehensive income (loss). The amount of the credit loss of an impaired debt security was the difference between the amortized cost and the greater of (i) the present value of expected future cash flows and (ii) the fair value of the security. In instances where no credit loss existed but it was more likely than not that the Company would have to sell the debt security prior to the anticipated recovery, the decline in fair value below amortized cost was recognized as an OTTI in earnings. In periods after the recognition of an OTTI on debt securities, the Company accounted for such securities as if they had been purchased on the measurement date of the OTTI at an amortized cost basis equal to the previous amortized cost basis less the OTTI recognized in earnings. For debt securities for which OTTI were recognized in earnings, the difference between the new amortized cost basis and the cash flows expected to be collected would be accreted or amortized into net investment income. See Note 9 for additional information.

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

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

(i) Derivative Instruments

The Company recognizes all derivative instruments, including embedded derivative instruments, at fair value in its consolidated balance sheets. The Company employs the use of derivative instruments within its operations to mitigate risks

arising from assets and liabilities held in foreign currencies as well as part of its overall investment strategy. For such instruments, changes in assets and liabilities measured at fair value are recorded as “Net realized gains” in the consolidated statements of income. In addition, the Company’s derivative instruments include amounts related to underwriting activities where an insurance or reinsurance contract meets the accounting definition of a derivative instrument. For such contracts, changes in fair value are reflected in “Other underwriting income” in the consolidated statements of income as the underlying contract originates from the Company’s underwriting operations. For 2021 and 2020, the Company did not designate any derivative instruments as hedges under the relevant accounting guidance. See Note 11 for information on the Company’s derivative instruments.

(j) Reserves for Losses and Loss Adjustment Expenses

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

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

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

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

Certain insurance policies written by the Company’s insurance operations feature large deductibles, primarily in its construction and national accounts line of business. Under such contracts, the Company is obligated to pay the claimant for the full amount of the claim. The Company is subsequently reimbursed by the policyholder for the deductible amount. These amounts are included on a gross basis in the consolidated balance sheets as contractholder payables and contractholder receivables. In the event that the Company is unable to collect from the policyholder, the Company would be liable for such defaulted amounts. Collateral, primarily in the form of letters of credit, cash and trusts, is obtained from the policyholder to mitigate the Company’s credit risk. In the instances where the Company receives collateral in the form of cash, the Company reflects it in “Collateral held for insured obligations.”

Contractholder receivables are reported net of an allowance for expected credit losses. The allowance is based upon the Company's ongoing review of amounts outstanding, changes in policyholder credit standing, amounts and form of collateral obtained, and other relevant factors. A ratings based probability-of-default and loss-given-default methodology is used to estimate the allowance for expected credit losses. Any allowance for credit losses is charged to net realized gains (losses) in the period the receivable is recorded and revised in subsequent periods to reflect changes in the Company's estimate of expected credit losses. See note 7 for additional information.

(l) Foreign Exchange

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

(m) Income Taxes

Deferred income taxes reflect the expected future tax consequences of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and amounts used for income tax purposes. A valuation allowance is recorded if it is more likely than not that some or all of a deferred tax asset may not be realized. The Company considers future taxable income and feasible tax planning strategies in assessing the need for a valuation allowance. In the event the Company determines that it will not be able to realize all or part of its deferred income tax assets in the future, an adjustment to the deferred income tax assets would be charged to income in the period in which such determination is made. In addition, if the Company subsequently assesses that the valuation allowance is no longer needed, a benefit would be recorded to income in the period in which such determination is made. See Note 13 for more information.

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

(n) Share-Based Payment Arrangements

The Company applies a fair value based measurement method in accounting for its share-based payment arrangements with eligible employees and directors. Compensation expense is estimated based on the fair value of the award at the grant date and is recognized in net income over the requisite service period with a corresponding increase in shareholder's equity. No value is attributed to awards that employees forfeit because they fail to satisfy vesting conditions. The Company's (i) time-based awards generally vest over a three year period with one-third vesting on each of the first, second and third anniversaries of the grant date and (ii) performance-based awards cliff vest after each three year performance period based on achievement of the specified performance criteria. The share-based compensation expense associated with awards that have graded vesting features and vest based on service conditions only is calculated on a straight-line basis over the requisite service period for the entire award. Compensation expense recognized in connection with performance awards is based on the achievement of the specified performance and service conditions. The final measure of compensation expense recognized over the requisite service period reflects the final performance outcome. During the recognition period compensation expense is accrued based on the performance condition that is probable of achievement. For awards granted to retirement-eligible employees where no service is required for the employee to retain the award, the grant date fair value is immediately recognized as compensation expense at the grant date because the employee is able to retain the award without continuing to provide service. For employees near retirement eligibility, attribution of compensation cost is over the period from the grant date to the retirement eligibility date. These charges had no impact on the Company's cash flows or total shareholder's equity. See Note 20 for information relating to the Company's share-based payment awards.

(o) Guaranty Fund and Other Related Assessments

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

(p) Goodwill and Intangible Assets

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

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

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

(q) Investment in Operating Affiliates

Investment in operating affiliates primarily represent the Company's investments in which it has significant influence and which are accounted for under the equity method of accounting. In applying the equity method of accounting, investments in operating affiliates are initially recorded at cost and are subsequently adjusted based on the Company's proportionate share of net income or loss of the operating affiliate. The Company records its proportionate share of other comprehensive income or loss of the operating affiliate as a component of other comprehensive income. Adjustments are based on the most recently available financial information from the operating affiliate. Changes in the carrying value of these investments are recorded in income (loss) from operating affiliates.

(r) Recent Accounting Pronouncements

Recently Issued Accounting Standards Adopted

The Company adopted ASU 2019-12, "Simplifying the Accounting for Income Taxes." This ASU eliminates certain exceptions for recognizing deferred taxes for investments, performing intraperiod tax allocations and calculating income taxes in interim periods. The ASU also clarifies the accounting for transactions that result in a step-up in the tax basis of goodwill. The adoption of this guidance did not have a material effect on the Company's consolidated financial statements.

Recently Issued Accounting Standards Not Yet Adopted

ASU 2020-04, "Facilitation of the Effects of Reference Rate Reform on Financial Reporting," was issued in March 2020. This ASU provides optional expedients and exceptions for applying GAAP to investments, derivatives, or other transactions that reference the London Interbank Offered Rate (LIBOR) or another reference rate expected to be discontinued because of reference rate reform. Along with the optional expedients, the amendments include a general principle that permits an entity to consider contract modifications due to reference reform to be an event that does not require contract re-measurement at the modification date or reassessment of a previous accounting determination. This standard may be elected over time through December 31, 2022 as reference rate reform activities occur. The Company is currently evaluating the impact of the new guidance on its consolidated financial statements and does not expect this guidance to have a material effect on the Company's consolidated financial statements.

4. Variable Interest Entity and Noncontrolling Interests

Somers Holdings Ltd.

In March 2014, the Company invested $100.0 million and acquired 2,500,000 common shares of Somers. Somers was considered a VIE and the Company concluded that it was the primary beneficiary of Somers, through June 30, 2021. As such, the results of Somers were included in the Company's consolidated financial statements as of and for the periods ended June 30, 2021.

In the 2020 fourth quarter, the Company, Somers and Greysbridge, a wholly-owned subsidiary of Arch, entered into an Agreement and Plan of Merger (as amended, the "Merger Agreement"). The merger and the related Greysbridge equity financing closed on July 1, 2021. Effective July 1, 2021, Somers is wholly owned by Greysbridge, and Greysbridge is owned 40% by the Company, 30% by certain investment funds managed by Kelso and 30% by certain investment funds managed by Warburg. Based on the governing documents of Greysbridge, the Company concluded that, while it retains significant influence over Somers, Somers no longer constitutes a variable interest entity. Accordingly, effective July 1, 2021, the Company no longer consolidates the results of Somers in its consolidated financial statements and footnotes. Beginning in the 2021 third quarter, the Company classifies its investment as 'investments in operating affiliates' on the Company's balance sheets and is accounted for under the equity method.

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

	December 31, 2020
Assets	
Investments accounted for using the fair value option (1)	$ 1,790,385
Fixed maturities available for sale, at fair value	655,249
Equity securities, at fair value	52,410
Cash	211,451
Accrued investment income	14,679
Premiums receivable	224,377
Reinsurance recoverable on unpaid and paid losses and LAE	286,590
Ceded unearned premiums	122,339
Deferred acquisition costs, net	53,705
Receivable for securities sold	37,423
Goodwill and intangible assets	7,650
Other assets	75,801
Total assets of consolidated VIE	$ 3,532,059
Liabilities	
Reserves for losses and loss adjustment expenses	$ 1,519,583
Unearned premiums	407,714
Reinsurance balances payable	63,269
Revolving credit agreement borrowings	155,687
Senior notes	172,689
Payable for securities purchased	25,881
Other liabilities	193,494
Total liabilities of consolidated VIE	$ 2,538,317
Redeemable noncontrolling interests	$ 52,398

(1) Included in "other investments" on the Company's balance sheet.

The following table summarizes Somers' cash flow from operating, investing and financing activities.

	Year Ended December 31,	
	2021	2020
Total cash provided by (used for):		
Operating activities	$ 46,991	$ 181,736
Investing activities	96,325	258,589
Financing activities	(2,042)	(335,776)

Non-redeemable noncontrolling interests

Through June 30, 2021, the Company accounted for the portion of Somers' common equity attributable to third party investors in the shareholder's equity section of its consolidated balance sheets. The noncontrolling ownership in Somers' common shares was approximately 87% at December 31, 2020. The portion of Somers' income or loss attributable to third party investors was recorded in the consolidated statements of income in 'net (income) loss attributable to noncontrolling interests.'

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

	December 31,	
	2021	2020
Balance, beginning of year	$ 823,007	$ 762,777
Impact of deconsolidation of Somers	(918,874)	—
Additional paid in capital attributable to non-redeemable noncontrolling interests	22,113	1,334
Repurchases attributable to non-redeemable noncontrolling interests	—	(2,867)
Amounts attributable to noncontrolling interests	78,314	53,076
Other amounts attributable to noncontrolling interests	—	(375)
Other comprehensive (income) loss attributable to noncontrolling interests	(4,560)	9,062
Balance, end of year	$ —	$ 823,007

Redeemable noncontrolling interests

Through June 30, 2021, the Company accounted for redeemable noncontrolling interests in the mezzanine section of its consolidated balance sheets in accordance with applicable accounting guidance. Such redeemable noncontrolling interests primarily related to the Somers 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 Somers Preference Shares were issued at a discounted amount of $24.50 per share. Because the redemption features are not solely within the control of Somers, the Company accounted for the redeemable noncontrolling interests in the Somers Preference Shares in the mezzanine section of its consolidated balance sheets.

Preferred dividends on the Somers Preference Shares, including the accretion of the discount and issuance costs, was $2.1 million for 2021, compared to $4.4 million for 2020.

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

	December 31,	
	2021	2020
Balance, beginning of year	$ 58,548	$ 55,404
Impact of deconsolidation of Somers	(48,919)	—
Redemption of redeemable noncontrolling interests	—	—
Accretion of preference share issuance costs	—	93
Other	(396)	3,051
Balance, end of year	$ 9,233	$ 58,548

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

	December 31,	
	2021	2020
Amounts attributable to non-redeemable noncontrolling interests	$ (78,314)	$ (53,076)
Dividends attributable to redeemable noncontrolling interests	(4,299)	(7,114)
Net (income) loss attributable to noncontrolling interests	$ (82,613)	$ (60,190)

Bellemeade Re

The Company has entered into 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 benchmark index for each respective transaction and short term invested trust asset yields. The benchmark index for agreements effective prior to 2021 is based on one-month LIBOR, while the 2021 agreements benchmark index is based on the Secured Overnight Financing Rate ("SOFR"). SOFR is a measure of the cost of borrowing cash overnight, collateralized by U.S. Treasury securities, and is based on directly observable U.S. Treasury-backed repurchase transactions.

	Dec 31, 2021				Dec 31, 2020			
		Maximum Exposure to Loss				Maximum Exposure to Loss		
Bellemeade Entities (Issue Date)	Total VIE Assets	On-Balance Sheet (Asset) Liability	Off-Balance Sheet	Total	Total VIE Assets	On-Balance Sheet (Asset) Liability	Off-Balance Sheet	Total
Bellemeade 2017-1 Ltd. (Oct-17)	$ 108,368	$ (159)	$ 424	$ 265	$ 145,573	$ (245)	$ 844	$ 599
Bellemeade 2018-1 Ltd. (Apr-18)	181,136	(528)	1,268	740	250,095	(903)	2,245	1,342
Bellemeade 2018-2 Ltd. (Aug-18)	—	—	—	—	108,395	(138)	280	142
Bellemeade 2018-3 Ltd. (Oct-18)	302,563	(1,018)	2,496	1,478	302,563	(1,320)	3,262	1,942
Bellemeade 2019-1 Ltd. (Mar-19)	181,324	(380)	5,807	5,427	219,256	(1,361)	8,461	7,100
Bellemeade 2019-2 Ltd. (Apr-19)	398,316	(515)	3,998	3,483	398,316	(730)	5,201	4,471
Bellemeade 2019-3 Ltd. (Jul-19)	409,859	(584)	3,190	2,606	528,084	(861)	5,079	4,218
Bellemeade 2019-4 Ltd. (Oct-19)	411,954	(462)	4,759	4,297	468,737	(890)	6,676	5,786
Bellemeade 2020-1 Ltd. (Jun-20)	—	—	—	—	275,068	(178)	1,012	834
Bellemeade 2020-2 Ltd. (Sep-20) (1)	217,766	(177)	1,984	1,807	423,420	(556)	6,839	6,283
Bellemeade 2020-3 Ltd. (Nov-20) (2)	348,818	(128)	5,793	5,665	418,158	(631)	9,605	8,974
Bellemeade 2020-4 Ltd. (Dec-20) (3)	176,826	(50)	1,630	1,580	321,393	(156)	6,816	6,660
Bellemeade 2021-1 Ltd. (Mar-21) (4)	568,986	(303)	3,283	2,980	—	—	—	—
Bellemeade 2021-2 Ltd. (Jun-21) (5)	522,807	281	4,124	4,405	—	—	—	—
Bellemeade 2021-3 Ltd. (Sep-21) (6)	507,873	(411)	3,446	3,035	—	—	—	—
Total	$ 4,336,596	$ (4,434)	$ 42,202	$ 37,768	$ 3,859,058	$ (7,969)	$ 56,320	$ 48,351

(1) At December 31, 2021, $1 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).
(2) At December 31, 2021, $16 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).
(3) At December 31, 2021, $9 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).
(4) At December 31, 2021, $61 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).
(5) At December 31, 2021, $93 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).
(6) At December 31, 2021, $131 million of coverage from a separate panel of reinsurers is remaining (not reflected in this table).

5. Reserve for Losses and Loss Adjustment Expenses

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

	Year Ended December 31,	
	2021	**2020**
Reserve for losses and loss adjustment expenses at beginning of year	$ 16,513,929	$ 13,891,842
Unpaid losses and loss adjustment expenses recoverable	4,314,855	4,082,650
Net reserve for losses and loss adjustment expenses at beginning of year	12,199,074	9,809,192
Net incurred losses and loss adjustment expenses relating to losses occurring in:		
Current year	4,940,987	4,851,051
Prior years	(356,184)	(161,452)
Total net incurred losses and loss adjustment expenses	4,584,803	4,689,599
Net losses and loss adjustment expense reserves of acquired business (1)	104,176	—
Retroactive reinsurance transactions (2)	(444,147)	182,210
Impact of deconsolidation of Somers (3)	(1,460,611)	—
Foreign exchange (gains) losses	1,181	179,190
Net paid losses and loss adjustment expenses relating to losses occurring in:		
Current year	(734,846)	(661,529)
Prior years	(2,091,705)	(1,999,588)
Total net paid losses and loss adjustment expenses	(2,826,551)	(2,661,117)
Net reserve for losses and loss adjustment expenses at end of year	12,157,925	12,199,074
Unpaid losses and loss adjustment expenses recoverable	5,599,231	4,314,855
Reserve for losses and loss adjustment expenses at end of year	$ 17,757,156	$ 16,513,929

(1) Represents activity related to the Company's acquisitions in 2021 (see Note 2) and the acquisition of Barbican.
(2) See 'Retroactive Reinsurance Transactions' section.
(3) See Note 4.

2021 Prior Year Reserve Development

During 2021, the Company recorded estimated net favorable development on prior year loss reserves of $356.2 million, which consisted of net favorable development of $16.2 million from the insurance operation, $178.8 million from the reinsurance operation, $169.6 million from the mortgage operation, partially offset by $8.4 million of adverse development from the 'other' operation (activity prior to the deconsolidation of Somers).

The insurance operation's net favorable development of $16.2 million, or 0.4 points of net earned premium, consisted of $109.8 million of net favorable development in short-tailed and long-tailed lines mostly offset by $93.5 million of net adverse development from medium-tailed lines. Net favorable development of $81.7 million in short-tailed lines reflected $38.9 million of favorable development from property (excluding marine), primarily from the 2018 to 2020 accident years (*i.e.*, the year in which a loss occurred), $26.7 million of favorable development in lenders products, primarily from the 2020 accident year, and $16.2 million of favorable development on travel and accident, primarily from the 2016 to 2020 accident years. Net favorable development of $28.1 million in long-tailed lines reflected favorable development in construction, national accounts and alternative markets, primarily from the 2016 to 2019 accident years, partially offset by adverse development in executive assurance, primarily from the 2015, 2017 and 2018 accident years. Net adverse development in medium-tailed lines reflected $57.6 million of adverse development in contract binding, primarily from the 2013 to 2019 accident years and $30.8 million of adverse development in professional liability, primarily from the 2018 to 2020 accident years.

The reinsurance operation's net favorable development of $178.8 million, or 6.3 points of net earned premium, consisted of $184.1 million of net favorable development from short-tailed and medium-tailed lines, partially offset by $5.3 million of net

adverse development from long-tailed lines. Net favorable development of $175.5 million in short-tailed lines reflected $123.3 million from other specialty lines, primarily from the 2014 to 2019 underwriting years (*i.e.*, losses attributable to contracts having an inception or renewal date within the given twelve-month period), and $88.6 million of favorable development from property other than property catastrophe business, primarily from the 2015 to 2020 underwriting years. Such amounts were partially offset by adverse development of $36.4 million from property catastrophe, primarily from the 2020 underwriting year. Adverse development in long-tailed lines reflected an increase in casualty reserves, primarily from the 2018 underwriting year.

The mortgage operation's net favorable development of $169.6 million, or 13.2 points of net earned premium. Approximately a third of this development came from the U.S. first lien portfolio, which benefited from improving economic conditions and rising home prices, resulting in reduced claim rate assumptions primarily associated with pre-pandemic delinquencies. Various vintage CRT contracts also experienced similar effects and contributed to the favorable development, including the effect of contracts called by the GSEs. Subrogation recoveries on second lien and student loan business and international business also contributed to the favorable development.

2020 Prior Year Reserve Development

During 2020, the Company recorded estimated net favorable development on prior year loss reserves of $161.5 million, which consisted of net favorable development of $7.8 million from the insurance operation, $134.0 million from the reinsurance operation, $19.0 million from the mortgage operation, and $0.7 million from the 'other' operation.

The insurance operation's net favorable development of $7.8 million, or 0.3 points of net earned premium, consisted of $83.0 million of net favorable development in short-tailed and long-tailed lines partially offset by $75.2 million of net adverse development from medium-tailed lines. Net favorable development of $33.6 million in short-tailed lines reflected $21.6 million of favorable development from property (excluding marine), primarily from the 2015 to 2018 accident years, (*i.e.*, the year in which a loss occurred) and $8.4 million of favorable development on travel and accident, primarily from the 2019 accident year. Net favorable development of $49.4 million in long-tailed lines included $38.8 million of favorable development related to other business, including alternative markets and excess workers' compensation, across all accident years, and $9.3 million of favorable development related to construction business. Net adverse development in medium-tailed lines reflected $37.9 million of adverse development in surety business, primarily from the 2019 accident year, $23.1 million in contract binding business, primarily from the 2016 to 2019 accident years, and $16.0 million in program business, primarily from the 2016 to 2019 accident years.

The reinsurance operation's net favorable development of $134.0 million, or 6.2 points of net earned premium, consisted of $155.9 million of net favorable development from short-tailed and medium-tailed lines, partially offset by $21.9 million of net adverse development from long-tailed lines. Net favorable development of $144.0 million in short-tailed lines reflected $87.7 million related to property catastrophe and property other than property catastrophe business, primarily from the 2015 to 2019 underwriting years, and $53.6 million from other specialty lines, across most underwriting years. The net reduction of loss estimates for the reinsurance operation's short-tailed lines primarily resulted from varying levels of reported and paid claims activity than previously anticipated which led to decreases in certain loss ratio selections during 2020. Adverse development in long-tailed lines reflected an increase in casualty reserves, primarily from the 2012 to 2015 underwriting years.

The mortgage operation's net favorable development of $19.0 million, or 1.4 points of net earned premium, included $16.2 million of favorable development on U.S. primary mortgage insurance business. Such development was primarily driven by subrogation recoveries on second lien business and student loan business.

<u>Retroactive Reinsurance Transactions</u>

In 2021, the Company entered into a retroactive reinsurance transaction with third party reinsurer to reinsure run-off liabilities associated with certain U.S. insurance exposures.

In 2021, the Company entered into a reinsurance to close with the related party, in connection with the 2018 and prior years of account for certain London syndicate business. See Note 14.

In 2020, the Company entered into a reinsurance-to-close agreement related to a third party arrangement covering the 2017 and prior years of account for certain London syndicate business.

In 2019, the Company entered into a retroactive reinsurance transaction with third party reinsurer to reinsure run-off liabilities associated with certain U.S. insurance exposures, which was commuted in 2020.

6. Short Duration Contracts

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

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

The Company determined the following to be insignificant for disclosure purposes: (i) certain mortgage business, including non-U.S. primary business, second lien and student loan exposures, global mortgage reinsurance and participation in various GSE credit risk-sharing products; and (ii) certain reinsurance business, including casualty clash and non-traditional lines, and (iii) amounts associated with Southern Rock Holdings Limited. See Note 2. Such amounts are included as reconciling items.

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

Insurance Operations

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

Ultimate losses and loss adjustment expenses are generally determined by projection of claim emergence and settlement patterns observed in the past that can reasonably be expected to persist into the future. In forecasting ultimate losses and loss adjustment expenses with respect to any line of business, past experience with respect to that line of business is the

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

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

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

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

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

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

- *Historical paid loss development methods* - these methods, like historical incurred loss development methods, assume that the ratio of losses in one period to losses in an earlier period will remain constant. These methods use historical loss

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

- *Adjusted historical paid and incurred loss development methods* - these methods take traditional historical paid and incurred loss development methods and adjust them for the estimated impact of changes from the past in factors such as inflation, the speed of claim payments or the adequacy of case reserves. Adjusted historical paid and incurred loss development methods are often more reliable methods of predicting ultimate losses in periods of significant change, provided the actuaries can develop methods to reasonably quantify the impact of changes. As such, these methods utilize more judgment than historical paid and incurred loss development methods.
- *Bornhuetter-Ferguson ("B-F") paid and incurred loss methods* - these methods utilize actual paid and incurred losses and expected patterns of paid and incurred losses, taking the initial expected ultimate losses into account to determine an estimate of expected ultimate losses. The B-F paid and incurred loss methods are useful when there are few reported claims and a relatively less stable pattern of reported losses.
- *Frequency-Severity methods* - These methods utilize actual paid and incurred claim experience, but break the data down into its component pieces: claim counts, often expressed as a ratio to exposure or premium (frequency), and average claim size (severity). The component pieces are projected to an ultimate level and multiplied together to result in an estimate of ultimate loss. These methods are especially useful when the severity of claims can be confined to a relatively stable range of estimated ultimate average claim value.
- *Additional analyses* - other methodologies are often used in the reserving process for specific types of claims or events, such as catastrophic or other specific major events. These include vendor catastrophe models, which are typically used in the estimation of Loss Reserves at the early stage of known catastrophic events before information has been reported to an insurer or reinsurer.

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

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

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

In 2021 and 2018, the Company entered into loss portfolio transfer and adverse development cover reinsurance agreements accounted for as retroactive reinsurance. The agreements transfer Loss Reserves and future favorable or adverse development on certain runoff programs and certain third party occurrence business, within multi-line and other specialty business (the "Covered Lines"). As incurred losses and allocated loss adjustment expenses for the Covered Lines are ceded to the reinsurer, the Company is not exposed to changes in the amount, timing and uncertainty of cash flows arising from the Covered Lines. To avoid distortion, the incurred losses and allocated loss adjustment expenses and cumulative paid losses and loss adjustment expenses for the Covered Lines are excluded entirely from the tables below. Unpaid loss and loss adjustment expenses recoverable at December 31, 2021 included $390.1 million related to such reinsurance agreements.

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

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

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 233,149	$ 232,498	$ 205,776	$ 199,469	$ 197,005	$ 192,993	$ 190,770	$ 178,616	$ 178,250	$ 178,343	$ 627	4,245
2013		159,102	156,785	149,199	143,400	134,952	133,869	128,624	127,290	126,276	25	4,243
2014			148,368	145,957	147,465	136,201	132,307	134,329	135,032	134,942	3,098	3,884
2015				112,409	109,865	103,995	102,515	97,852	91,830	91,892	3,804	4,536
2016					104,449	101,306	105,657	100,471	96,437	92,553	874	6,160
2017						280,715	246,291	235,951	230,439	231,228	8,248	6,426
2018							180,981	186,030	173,693	170,057	9,136	5,020
2019								179,056	178,564	165,477	6,667	5,080
2020									359,394	329,362	66,698	4,186
2021										426,870	158,163	2,951
									Total	$1,947,000		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 20,638	$ 93,394	$ 138,977	$ 161,831	$ 167,540	$ 179,945	$ 181,307	$ 173,184	$ 174,032	$ 174,384
2013		32,292	84,936	110,808	120,111	122,244	125,475	123,356	124,688	124,841
2014			25,881	53,751	77,892	84,195	87,812	98,553	115,383	122,296
2015				23,580	64,953	76,338	86,253	87,926	86,246	87,316
2016					24,828	83,552	98,683	97,506	95,002	91,241
2017						30,228	139,867	195,532	211,708	215,895
2018							30,026	102,285	134,858	142,838
2019								26,130	105,380	133,911
2020									55,619	194,487
2021										90,423
									Total	1,377,632
	All outstanding liabilities before 2012, net of reinsurance									17,517
	Liabilities for losses and loss adjustment expenses, net of reinsurance									586,885

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

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 241,368	$ 263,451	$ 269,204	$ 272,004	$ 258,371	$ 253,758	$ 243,863	$ 244,448	$ 242,332	$ 239,075	$ 43,924	65,731
2013		283,228	297,225	307,152	302,165	282,122	274,717	272,849	269,754	270,558	54,640	67,113
2014			330,015	336,019	338,890	343,113	339,701	344,197	342,934	343,569	66,498	75,904
2015				359,058	391,884	398,908	392,143	391,455	382,722	386,801	91,081	78,785
2016					389,832	394,485	406,082	399,571	374,896	367,818	115,303	79,005
2017						417,377	417,941	422,624	412,512	407,115	145,130	84,692
2018							430,415	453,190	450,937	451,459	189,965	77,700
2019								456,353	487,547	481,045	253,849	84,895
2020									607,249	616,910	428,750	89,560
2021										622,713	543,386	65,477
									Total	$4,187,063		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 6,984	$ 30,915	$ 58,650	$ 83,637	$ 108,660	$ 130,098	$ 143,885	$ 155,085	$ 163,016	$ 168,119
2013		6,857	29,265	71,449	101,293	122,288	149,292	164,403	174,946	184,800
2014			9,228	40,346	71,624	112,702	162,123	191,305	211,643	224,101
2015				11,139	44,605	88,515	139,492	181,704	211,715	227,697
2016					11,709	41,979	87,616	136,870	164,662	194,773
2017						13,408	52,356	99,874	135,111	165,606
2018							17,025	63,848	115,137	154,248
2019								18,431	73,222	121,859
2020									24,509	76,743
2021										26,301
									Total	1,544,247
							All outstanding liabilities before 2012, net of reinsurance			242,741
							Liabilities for losses and loss adjustment expenses, net of reinsurance			$2,885,557

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

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 317,654	$ 320,207	$ 318,453	$ 313,907	$ 291,316	$ 275,665	$ 277,683	$ 285,163	$ 285,527	$ 286,118	$ 11,570	15,576
2013		301,956	320,659	324,442	320,524	294,674	291,205	281,996	271,501	273,948	11,739	15,696
2014			264,537	279,846	299,104	279,043	282,058	298,017	292,247	288,318	22,336	15,676
2015				258,989	277,615	276,492	260,063	255,432	252,478	267,925	20,617	14,724
2016					275,394	291,645	308,453	314,747	322,042	327,230	42,509	15,749
2017						271,088	286,565	312,554	308,917	323,854	60,718	16,404
2018							273,521	315,085	320,653	337,083	85,411	15,854
2019								290,217	318,469	318,498	119,673	12,982
2020									384,852	414,580	240,888	10,049
2021										516,420	435,910	8,550
									Total	$3,353,974		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 17,718	$ 69,069	$ 121,211	$ 164,724	$ 190,395	$ 209,295	$ 227,389	$ 251,313	$ 255,337	$ 260,173
2013		19,032	87,458	137,963	179,395	198,008	217,132	238,951	245,687	247,078
2014			13,817	63,312	129,712	173,089	208,074	229,958	243,791	249,960
2015				9,066	52,046	100,089	126,499	174,161	193,186	216,986
2016					10,568	68,226	127,286	158,230	205,596	242,431
2017						9,306	67,669	113,208	143,340	196,125
2018							12,287	68,424	118,361	158,709
2019								12,418	65,477	122,362
2020									17,161	87,547
2021										23,349
									Total	1,804,720
							All outstanding liabilities before 2012, net of reinsurance			64,171
							Liabilities for losses and loss adjustment expenses, net of reinsurance			$1,613,425

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

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 254,684	$ 265,479	$ 259,582	$ 257,240	$ 256,379	$ 248,066	$ 248,310	$ 245,205	$ 245,260	$ 243,849	$ 2,057	55,219
2013		266,089	274,285	265,594	265,672	253,554	254,916	250,252	247,443	246,682	3,461	71,613
2014			303,053	327,098	319,706	319,418	318,297	314,300	311,097	310,097	5,770	109,575
2015				335,250	358,587	357,364	365,362	357,123	349,895	347,669	7,201	148,924
2016					409,367	431,760	428,579	416,724	410,610	408,621	11,032	175,261
2017						483,414	502,068	492,166	501,753	505,135	16,867	219,810
2018							513,466	565,717	563,969	566,283	32,467	247,052
2019								568,337	613,673	641,832	63,880	235,824
2020									622,241	572,265	192,056	149,004
2021										637,258	361,237	75,250
									Total	$4,479,691		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 78,523	$ 166,414	$ 190,754	$ 209,916	$ 223,798	$ 232,640	$ 233,862	$ 237,221	$ 240,191	$ 239,928
2013		86,911	151,897	181,721	214,941	226,769	235,801	237,863	238,792	239,831
2014			108,003	197,609	235,079	267,959	282,104	292,638	294,049	295,551
2015				138,393	236,516	278,265	306,313	321,395	327,082	330,872
2016					176,238	305,250	342,345	363,392	379,885	385,890
2017						181,454	343,049	381,419	424,219	446,749
2018							212,316	390,009	443,644	480,852
2019								212,629	386,894	488,094
2020									173,123	311,112
2021										157,346
									Total	3,376,225
					All outstanding liabilities before 2012, net of reinsurance					22,375
					Liabilities for losses and loss adjustment expenses, net of reinsurance					$1,125,841

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2021:

	Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Property, energy, marine and aviation	19.3 %	43.5 %	19.1 %	6.6 %	1.4 %	2.3 %	3.2 %	0.5 %	0.3 %	0.2 %
Third party occurrence business	3.3 %	9.3 %	11.6 %	11.0 %	9.8 %	8.7 %	5.4 %	4.1 %	3.5 %	2.1 %
Third party claims-made business	4.4 %	18.0 %	17.8 %	12.3 %	12.7 %	7.9 %	7.0 %	4.3 %	1.0 %	1.7 %
Multi-line and other specialty	34.7 %	29.5 %	11.0 %	8.6 %	4.6 %	2.8 %	0.7 %	0.7 %	0.8 %	(0.1)%

Reinsurance Operations

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

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

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

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

As mentioned above, there can be a considerable time lag from the time a claim is reported to a ceding company to the time it is reported to the reinsurer. The lag can be several years in some cases and may be attributed to a number of reasons, including the time it takes to investigate a claim, delays associated with the litigation process, the deterioration in a claimant’s physical condition many years after an accident occurs, the case reserving approach of the ceding company, etc. In the reserving process, the Company assumes that such lags are predictable, on average, over time and therefore the lags are contemplated in the loss reporting patterns used in their actuarial methods. This means that the reinsurance operations must rely on estimates for a longer period of time than does an insurance company. Backlogs in the recording of assumed reinsurance can also complicate the accuracy of loss reserve estimation. As of December 31, 2021 there were no significant backlogs related to the processing of assumed reinsurance information at our reinsurance operations.

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

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

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

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

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

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

Casualty ($000's)

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 143,029	$ 141,202	$ 137,049	$ 125,104	$ 115,131	$ 109,788	$ 118,457	$ 121,721	$ 120,260	$ 119,222	$ 24,441	N/A
2013		166,016	159,257	155,066	148,784	136,717	135,155	131,475	135,762	135,959	30,873	N/A
2014			216,882	222,109	219,355	233,552	230,019	239,765	240,067	236,378	41,077	N/A
2015				223,208	221,922	230,830	238,126	242,180	249,029	252,809	57,345	N/A
2016					215,222	227,534	251,415	266,254	273,266	272,689	54,087	N/A
2017						270,728	257,088	273,166	301,616	313,605	66,450	N/A
2018							281,141	294,820	285,646	290,955	66,572	N/A
2019								336,062	348,015	374,002	120,045	N/A
2020									386,684	374,912	234,251	N/A
2021										445,047	392,885	N/A
									Total	$2,815,578		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 1,306	$ 8,486	$ 14,690	$ 25,523	$ 36,562	$ 47,807	$ 59,511	$ 69,877	$ 75,833	$ 79,364
2013		2,480	9,930	23,044	43,069	54,567	63,136	70,803	76,703	81,856
2014			3,920	16,061	40,804	63,441	91,098	114,456	134,529	145,376
2015				4,463	20,275	47,288	71,098	96,835	120,566	138,035
2016					5,739	25,649	51,684	86,798	113,835	132,814
2017						6,429	30,360	64,075	113,307	137,921
2018							7,580	31,218	106,571	129,196
2019								15,815	57,643	96,935
2020									17,730	50,603
2021										14,794
									Total	1,006,894
									All outstanding liabilities before 2012, net of reinsurance	297,823
									Liabilities for losses and loss adjustment expenses, net of reinsurance	$2,106,507

Property catastrophe ($000's)

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 149,957	$ 122,942	$ 108,590	$ 102,114	$ 99,885	$ 99,071	$ 97,037	$ 97,145	$ 96,531	$ 96,447	$ 105	N/A
2013		67,257	47,780	36,401	31,902	29,345	28,617	27,727	27,865	27,657	(138)	N/A
2014			45,159	30,877	25,296	22,412	20,652	19,945	19,841	19,615	(10)	N/A
2015				33,579	18,075	11,580	5,585	3,775	3,130	2,920	67	N/A
2016					25,641	18,719	14,575	10,772	8,362	7,426	881	N/A
2017						87,504	54,768	50,553	36,846	25,121	(712)	N/A
2018							77,868	60,418	41,642	27,657	4,783	N/A
2019								38,570	24,808	23,534	4,576	N/A
2020									267,750	334,185	40,561	N/A
2021										316,197	61,821	N/A
									Total	$ 880,759		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 25,850	$ 70,832	$ 83,822	$ 90,727	$ 92,886	$ 94,015	$ 94,625	$ 95,312	$ 95,414	$ 95,606
2013		12,200	19,201	24,038	25,894	27,652	27,891	27,892	28,597	28,346
2014			13,622	19,939	18,402	19,231	18,821	19,013	19,154	19,241
2015				(3,152)	(2,518)	1,786	2,050	1,616	1,705	1,781
2016					(6,722)	2,521	2,796	4,082	3,312	3,668
2017						30,704	32,228	37,791	27,797	14,969
2018							27,497	12,506	24,259	(4,612)
2019								3,834	12,680	18,134
2020									53,275	155,063
2021										64,764
									Total	396,960
	All outstanding liabilities before 2012, net of reinsurance									2,449
	Liabilities for losses and loss adjustment expenses, net of reinsurance									$ 486,248

Property excluding property catastrophe ($000's)

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2012	$ 156,162	$ 121,808	$ 123,689	$ 119,124	$ 114,699	$ 112,477	$ 111,001	$ 108,436	$ 102,994	$ 103,367	$ 508	N/A
2013		115,473	76,905	70,558	66,208	64,486	63,702	62,504	63,269	62,782	384	N/A
2014			143,464	117,448	99,328	90,710	88,438	84,130	82,408	80,940	923	N/A
2015				215,095	189,109	184,774	189,045	188,343	177,281	173,659	8,482	N/A
2016					177,039	146,307	138,375	136,868	140,681	137,579	12,700	N/A
2017						271,713	253,859	240,749	233,153	216,358	13,045	N/A
2018							225,638	242,069	238,052	214,942	11,593	N/A
2019								216,653	206,997	196,840	17,777	N/A
2020									371,752	343,078	51,075	N/A
2021										552,066	255,343	N/A
									Total	$2,081,611		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 26,153	$ 78,080	$ 93,198	$ 101,868	$ 102,844	$ 103,480	$ 102,658	$ 102,598	$ 102,504	$ 102,525
2013		25,993	42,737	49,816	52,997	53,796	55,676	61,183	62,113	62,139
2014			23,496	62,800	71,692	76,634	78,274	78,657	78,567	78,268
2015				75,622	119,237	149,814	160,848	166,025	159,675	159,925
2016					33,400	95,616	99,428	104,984	112,838	115,102
2017						27,569	125,768	158,066	166,087	181,628
2018							30,047	108,863	153,944	169,054
2019								43,230	124,222	150,931
2020									101,969	208,888
2021										136,712
									Total	1,365,172
	All outstanding liabilities before 2012, net of reinsurance									7,595
	Liabilities for losses and loss adjustment expenses, net of reinsurance									$ 724,034

Marine and aviation ($000's)

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,										Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021		
2012	$ 58,992	$ 58,868	$ 55,053	$ 52,286	$ 51,079	$ 49,727	$ 46,046	$ 43,028	$ 41,182	$ 40,016	$ 1,005	N/A
2013		38,881	37,668	36,653	35,251	35,157	34,415	33,970	30,316	27,605	2,394	N/A
2014			30,958	29,159	27,373	25,674	23,677	23,310	22,031	21,984	4,909	N/A
2015				33,646	37,505	31,790	31,736	30,789	28,464	27,680	3,867	N/A
2016					27,351	22,747	23,567	19,273	16,969	15,019	6,708	N/A
2017						28,800	26,346	23,830	20,827	19,903	6,387	N/A
2018							28,017	26,084	24,615	24,756	6,452	N/A
2019								48,929	55,307	60,983	15,112	N/A
2020									83,457	76,598	36,671	N/A
2021										111,046	89,459	N/A
									Total	$ 425,590		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 2,658	$ 11,433	$ 27,528	$ 33,313	$ 35,055	$ 36,257	$ 37,746	$ 38,038	$ 38,131	$ 38,116
2013		4,945	13,731	18,415	21,388	22,398	23,672	24,049	23,786	23,753
2014			4,177	7,985	11,590	12,469	14,645	15,080	15,956	16,036
2015				7	13,418	19,023	20,861	22,629	22,306	22,445
2016					(7,333)	(1,687)	521	3,261	5,864	6,767
2017						1,660	6,541	9,367	11,030	11,632
2018							2,005	6,968	11,236	13,585
2019								10,756	21,580	29,068
2020									9,220	26,519
2021										8,643
									Total	196,564
					All outstanding liabilities before 2012, net of reinsurance					16,855
					Liabilities for losses and loss adjustment expenses, net of reinsurance					$ 245,881

Other specialty ($000's)

	Incurred losses and allocated loss adjustment expenses, net of reinsurance										December 31, 2021	
	Year ended December 31,										Total of IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021		
2012	$ 222,558	$ 211,839	$ 202,046	$ 196,138	$ 193,882	$ 196,539	$ 194,726	$ 189,193	$ 181,246	$ 179,364	$ 2,392	N/A
2013		252,744	226,032	216,250	212,721	213,614	211,261	210,825	204,894	201,830	6,409	N/A
2014			274,826	256,332	258,114	251,474	246,393	248,083	243,652	237,478	7,857	N/A
2015				209,764	201,057	199,468	196,521	196,840	193,626	182,162	8,549	N/A
2016					223,191	220,661	215,078	209,564	215,614	210,344	13,182	N/A
2017						269,254	258,419	247,203	245,505	241,598	30,855	N/A
2018							320,538	316,231	308,190	324,536	40,807	N/A
2019								360,854	341,409	326,168	51,165	N/A
2020									533,861	460,084	102,130	N/A
2021										582,446	300,667	N/A
									Total	$2,946,010		

	Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance									
2012	$ 45,663	$ 121,679	$ 144,429	$ 155,445	$ 163,160	$ 167,164	$ 171,519	$ 173,305	$ 173,606	$ 173,494
2013		57,317	119,445	145,521	161,608	171,189	176,483	183,772	184,111	186,956
2014			68,869	146,652	182,184	195,433	201,974	212,991	215,597	219,060
2015				54,359	114,382	138,350	145,419	154,369	162,314	164,471
2016					65,055	138,648	162,661	174,403	186,247	189,411
2017						73,366	164,829	192,274	199,051	205,998
2018							71,167	201,732	231,358	245,330
2019								79,718	158,132	216,647
2020									97,617	243,980
2021										126,635
									Total	1,971,982
					All outstanding liabilities before 2012, net of reinsurance					7,777
					Liabilities for losses and loss adjustment expenses, net of reinsurance					$ 981,805

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2021:

	Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Casualty	2.5 %	7.3 %	11.6 %	11.3 %	9.6 %	8.4 %	7.7 %	5.9 %	4.4 %	3.0 %
Property catastrophe	21.6 %	30.0 %	32.8 %	(14.2)%	(11.6)%	2.2 %	1.0 %	1.2 %	(0.4)%	0.2 %
Property excluding property catastrophe	26.7 %	38.9 %	13.3 %	5.8 %	3.4 %	0.4 %	2.0 %	0.4 %	— %	— %
Marine and aviation	4.9 %	26.9 %	19.0 %	10.3 %	7.4 %	2.9 %	2.4 %	— %	0.1 %	— %
Other specialty	26.3 %	34.2 %	12.9 %	5.2 %	4.2 %	3.1 %	2.1 %	0.9 %	0.8 %	(0.1)%

Mortgage Operations

The Company’s mortgage operations includes (1) U.S. primary mortgage insurance, (2) U.S. credit risk transfer and other, and (3) International mortgage insurance and reinsurance. The latter two categories along with second lien and student loan exposures are excluded on the basis of insignificance for the purposes of presenting disclosures related to short duration contracts.

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

Because the reserving process requires the Company to forecast future conditions, it is inherently uncertain and requires significant judgment and estimation. The use of different estimates would result in the establishment of different reserve levels. Additionally, changes in estimates are likely to occur from period to period as economic conditions change, and the ultimate liability may vary significantly from the estimates used. Major risk factors include (but are not limited to) changes in home prices and borrower equity, which can limit the borrower’s ability to sell the property and satisfy the outstanding loan balance, and changes in unemployment, which can affect the borrower’s income and ability to make mortgage payments. The unique nature of the COVID-19 pandemic, with no historical precedent, adds further uncertainty to current reserve estimates.

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

Claim size severity estimates are determined by examining the risk sizes on the delinquent loans and estimating the portion of risk that will be paid, as well as any expenses. This is done based on a review of historical development patterns, an assessment of economic conditions and the level of equity the borrowers may have in their homes, as well as considering economic conditions and loss mitigation opportunities. Mortgage insurance is generally not subject to large claim sizes, as with some other lines of insurance. A claim size over $250,000 is rare, and this helps reduce the volatility of claim size estimates.

The claim rate and claim size assumptions generate case reserves for the population of reported delinquencies. The reserve for unreported delinquencies (included in IBNR reserves) is estimated by looking at historical patterns of reporting. Claim rates and claim sizes can then be assigned to estimated unreported delinquencies using assumptions made in the establishment of case reserves.

Mortgage insurance Loss Reserves are short-tail, in the sense that the vast majority of delinquencies are resolved within two years of being reported. Due to the forbearances and foreclosure moratoriums associated with COVID-19, settlement timelines may be extended. While reserves are initially analyzed by reserve cohort, as described above, they are also rolled up

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

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

The following table presents information on the mortgage operations' short-duration insurance contracts:

U.S. primary mortgage insurance ($000's except claim count)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2021	
	Year ended December 31,											
Accident year	2012 unaudited	2013 unaudited	2014 unaudited	2015 unaudited	2016 unaudited	2017 unaudited	2018 unaudited	2019 unaudited	2020 unaudited	2021	Total of IBNR liabilities plus expected development on reported claims	Cumulative number of paid claims
2012	$ 520,835	$ 480,592	$ 475,317	$ 469,238	$ 467,296	$ 459,467	$ 458,065	$ 456,286	$ 456,331	$ 456,362	1	15,080
2013		469,311	419,668	411,793	405,809	395,693	393,149	390,987	391,062	391,324	1	9,468
2014			316,095	297,151	279,434	266,027	265,992	261,091	262,682	262,829	4	6,299
2015				222,790	197,238	198,001	194,677	189,235	190,913	190,560	1	4,554
2016					183,556	170,532	148,715	140,608	142,392	141,657	1	3,424
2017						179,376	132,220	107,255	108,181	109,242	1	2,474
2018							132,318	96,357	89,120	87,962	60	1,635
2019								108,424	119,253	110,362	181	851
2020									420,003	373,533	2,686	189
2021										144,375	2,246	11
									Total	$2,268,206		

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance										
2012	(106,065)	186,605	327,605	395,695	426,024	441,577	448,151	452,348	453,587	453,986
2013		41,447	203,957	308,956	353,189	373,909	382,200	386,853	387,894	387,879
2014			20,099	129,159	201,925	233,879	247,038	254,175	256,285	256,875
2015				16,159	92,431	151,222	171,337	180,321	183,472	184,025
2016					11,462	72,201	113,357	127,286	131,161	131,717
2017						8,622	48,112	78,650	87,317	89,756
2018							3,966	31,478	50,135	55,853
2019								2,899	20,105	29,102
2020									1,040	4,144
2021										469
									Total	1,593,806
						All outstanding liabilities before 2012, net of reinsurance				14,288
						Liabilities for losses and loss adjustment expenses, net of reinsurance				$ 688,688

The following table presents the average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance, as of December 31, 2021:

Average annual percentage payout of incurred losses and allocated loss adjustment expenses by age, net of reinsurance

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
U.S. Primary	2.7 %	34.9 %	25.3 %	10.5 %	4.4 %	2.1 %	0.9 %	0.5 %	0.1 %	0.1 %

The following table represents a reconciliation of the disclosures of net incurred and paid loss development tables to the reserve for losses and loss adjustment expenses at December 31, 2021:

	December 31, 2021
Net outstanding liabilities	
Insurance	
Property, energy, marine and aviation	$ 586,885
Third party occurrence business	2,885,557
Third party claims-made business	1,613,425
Multi-line and other specialty	1,125,841
Reinsurance	
Casualty	2,106,507
Property catastrophe	486,248
Property excluding property catastrophe	724,034
Marine and aviation	245,881
Other specialty	981,805
Mortgage	
U.S. primary	688,688
Other short duration lines not included in disclosures	441,459
Total for short duration lines	**11,886,330**
Unpaid losses and loss adjustment expenses recoverable	
Insurance	
Property, energy, marine and aviation	354,432
Third party occurrence business	1,537,549
Third party claims-made business	921,086
Multi-line and other specialty	199,485
Reinsurance	
Casualty	592,879
Property catastrophe	484,598
Property excluding property catastrophe	118,939
Marine and aviation	111,298
Other specialty	373,292
Mortgage	
U.S. primary	48,259
Other short duration lines not included in disclosures (1)	887,457
Intercompany eliminations	(4,146)
Total for short duration lines	**5,625,128**
Lines other than short duration	76,240
Discounting	(55,575)
Unallocated claims adjustment expenses	225,033
	245,698
Total gross reserves for losses and loss adjustment expenses	**$ 17,757,156**

(1) Includes unpaid loss and loss adjustment expenses recoverable of $390.1 million related to the loss portfolio transfer reinsurance agreements.

7. Allowance for Expected Credit Losses

Premiums Receivable

The following table provides a roll forward of the allowance for expected credit losses of the Company's premium receivables:

	December 31, 2021	
	Premium Receivables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 2,064,586	$ 37,781
Change for provision of expected credit losses (2)		2,177
Balance at end of period	$ 2,663,280	$ 39,958

	December 31, 2020	
	Premium Receivables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 1,778,717	$ 21,003
Cumulative effect of accounting change (1)		6,539
Change for provision of expected credit losses (2)		10,239
Balance at end of period	$ 2,064,586	$ 37,781

(1) Adoption of ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326)".
(2) Amounts deemed uncollectible are written-off in operating expenses. For the 2021 and 2020 period, amounts written off totaled $3.8 million and $2.8 million, respectively.

Reinsurance Recoverables

The Company monitors the financial condition of its reinsurers and attempts to place coverages only with substantial, financially sound carriers. Although the Company has not experienced any material credit losses to date, an inability of its reinsurers or retrocessionaires to meet their obligations to it over the relevant exposure periods for any reason could have a material adverse effect on its financial condition and results of operations.

The following table provides a roll forward of the allowance for expected credit losses of the Company's reinsurance recoverables:

	December 31, 2021	
	Reinsurance Recoverables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 4,500,802	$ 11,636
Change for provision of expected credit losses		1,594
Balance at end of period	$ 5,880,735	$ 13,230

	December 31, 2020	
	Reinsurance Recoverables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 4,346,816	$ 1,364
Cumulative effect of accounting change (1)		12,010
Change for provision of expected credit losses		(1,738)
Balance at end of period	$ 4,500,802	$ 11,636

(1) Adoption of ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326)".

The following table summarizes the Company's reinsurance recoverables on paid and unpaid losses (not including ceded unearned premiums) at December 31, 2021 and 2020:

	December 31,	
	2021	2020
Reinsurance recoverable on unpaid and paid losses and loss adjustment expenses	$ 5,880,735	$ 4,500,802
% due from carriers with A.M. Best rating of "A-" or better	69.7 %	63.9 %
% due from all other rated carriers	0.1 %	0.1 %
% due from all other carriers with no A.M. Best rating (1)	30.2 %	36.0 %
Largest balance due from any one carrier as % of total shareholders' equity (2)	6.7 %	1.8 %

(1) At December 31, 2021 and 2020 period, over 91% and 94% of such amount is collateralized through reinsurance trusts, funds withheld arrangements, letters of credit or other, respectively.
(2) The 2021 period included impact of deconsolidation of Somers. See Note 4.

Contractholder Receivables

The following table provides a roll forward of the allowance for expected credit losses of the Company's contractholder receivables:

	December 31, 2021	
	Contractholder Receivables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 1,986,924	$ 8,638
Change for provision of expected credit losses		(5,201)
Balance at end of period	$ 1,828,691	$ 3,437

	December 31, 2020	
	Contractholder Receivables, Net of Allowance	Allowance for Expected Credit Losses
Balance at beginning of period	$ 2,119,460	$ —
Cumulative effect of accounting change (1)		6,663
Change for provision of expected credit losses		1,975
Balance at end of period	$ 1,986,924	$ 8,638

(1) Adoption of ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326)".

8. Reinsurance

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

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

	Year Ended December 31,	
	2021	2020
Premiums Written		
Direct	$ 7,706,832	$ 6,553,910
Assumed	5,045,655	3,534,158
Ceded	(3,734,150)	(2,650,352)
Net	$ 9,018,337	$ 7,437,716
Premiums Earned		
Direct	$ 7,149,794	$ 6,361,451
Assumed	4,333,873	3,213,873
Ceded	(3,401,369)	(2,583,389)
Net	$ 8,082,298	$ 6,991,935
Losses and Loss Adjustment Expenses		
Direct	$ 4,266,758	$ 4,392,392
Assumed	2,826,820	2,204,323
Ceded	(2,508,775)	(1,907,116)
Net	$ 4,584,803	$ 4,689,599

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"). For the respective coverage periods, the Company will retain the first layer of the respective aggregate losses and the special purpose reinsurance companies will provide second layer coverage up to the outstanding coverage amount. The Company 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. See Note 4, "Variable Interest Entity and Noncontrolling Interests."

The following table summarizes the respective coverages and retentions at December 31, 2021:

		December 31, 2021	
	Initial Coverage at Issuance	Current Coverage	Remaining Retention, Net
Bellemeade 2017-1 Ltd. (1)	$ 368,114	$ 108,368	$ 125,926
Bellemeade 2018-1 Ltd. (2)	374,460	181,136	122,118
Bellemeade 2018-3 Ltd. (3)	506,110	302,563	128,020
Bellemeade 2019-1 Ltd. (4)	341,790	181,324	97,845
Bellemeade 2019-2 Ltd. (5)	621,022	398,316	156,419
Bellemeade 2019-3 Ltd. (6)	700,920	409,859	181,583
Bellemeade 2019-4 Ltd. (7)	577,267	411,954	116,292
Bellemeade 2020-2 Ltd. (8)	449,167	218,877	222,567
Bellemeade 2020-3 Ltd. (9)	451,816	365,141	154,732
Bellemeade 2020-4 Ltd. (10)	337,013	186,065	129,824
Bellemeade 2021-1 Ltd. (11)	643,577	630,163	149,189
Bellemeade 2021-2 Ltd. (12)	616,017	616,017	139,763
Bellemeade 2021-3 Ltd. (13)	639,391	639,391	140,545
Total	$ 6,626,664	$ 4,649,174	$ 1,864,823

(1) Issued in October 2017, covering in-force policies issued between January 1, 2017 and June 30, 2017.
(2) Issued in April 2018, covering in-force policies issued between July 1, 2017 and December 31, 2017.
(3) Issued in October 2018, covering in-force policies issued between January 1, 2018 and June 30, 2018.
(4) Issued in March 2019, covering in-force policies primarily issued between 2005 to 2008 under United Guaranty Residential Insurance Company ("UGRIC"); as well as policies issued through 2015 under both UGRIC and Arch Mortgage Insurance Company.
(5) Issued in April 2019, covering in-force policies issued between July 1, 2018 and December 31, 2018.
(6) Issued in July 2019, covering in-force policies issued in 2016.
(7) Issued in October 2019, covering in-force policies issued between January 1, 2019 and June 30, 2019.
(8) Issued in September 2020, covering in-force policies issued between January 1, 2020 and May 31, 2020. $423 million was directly funded by Bellemeade 2020-2 Ltd. with an additional $26 million of capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.
(9) Issued in November 2020, covering in-force policies issued between June 1, 2020 and August 31, 2020. $418 million was directly funded by Bellemeade 2020-3 Ltd. with an additional $34 million of capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.
(10) Issued in December 2020, covering in-force policies issued between July 1, 2019 and December 31, 2019. $321 million was directly funded by Bellemeade 2020-4 Ltd. with an additional $16 million of capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.
(11) Issued in March 2021, covering in-force policies issued between September 1, 2020 and November 30, 2020. $580 million was directly funded by Bellemeade Re 2021-1 Ltd. with an additional $64 million capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.
(12) Issued in June 2021, covering in-force policies issued between December 1, 2020 and March 31, 2021. $523 million was directly funded by Bellemeade Re 2021-2 Ltd. via insurance-linked notes, with an additional $93 million capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.
(13) Issued in September 2021, covering in-force policies issued between April 1, 2021 and June 30, 2021. $508 million was directly funded by Bellemeade Re 2021-3 Ltd. via insurance-linked notes, with an additional $131 million capacity provided directly to Arch MI U.S. by a separate panel of reinsurers.

9. Investment Information

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	Allowance for Expected Credit Losses (2)	Cost or Amortized Cost
December 31, 2021					
Fixed maturities (1):					
Corporate bonds	$ 6,553,333	$ 104,170	$ (69,194)	$ (2,037)	$ 6,520,394
Mortgage backed securities	408,477	2,825	(5,410)	(48)	411,110
Municipal bonds	404,666	18,724	(1,409)	(2)	387,353
Commercial mortgage backed securities	1,046,484	1,740	(3,117)	(6)	1,047,867
U.S. government and government agencies	4,767,662	10,075	(45,967)	—	4,803,554
Non-U.S. government securities	2,120,294	54,048	(34,749)	(82)	2,101,077
Asset backed securities	2,692,091	6,540	(11,108)	(708)	2,697,367
Total	17,993,007	198,122	(170,954)	(2,883)	17,968,722
Short-term investments	1,732,663	568	(590)	—	1,732,685
Total	$ 19,725,670	$ 198,690	$ (171,544)	$ (2,883)	$ 19,701,407
December 31, 2020					
Fixed maturities (1):					
Corporate bonds	$ 7,856,571	$ 414,247	$ (34,388)	$ (896)	$ 7,477,608
Mortgage backed securities	630,001	8,939	(5,028)	(278)	626,368
Municipal bonds	494,522	27,291	(3,835)	(11)	471,077
Commercial mortgage backed securities	389,900	8,722	(2,954)	(122)	384,254
U.S. government and government agencies	5,557,077	22,612	(12,611)	—	5,547,076
Non-U.S. government securities	2,433,733	153,891	(8,060)	—	2,287,902
Asset backed securities	1,634,804	19,225	(10,715)	(1,090)	1,627,384
Total	18,996,608	654,927	(77,591)	(2,397)	18,421,669
Short-term investments	1,922,637	2,693	(2,063)	—	1,922,007
Total	$ 20,919,245	$ 657,620	$ (79,654)	$ (2,397)	$ 20,343,676

(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) Effective January 1, 2020, the Company adopted ASU 2016-13 and as a result any credit impairment losses on the Company's available-for-sale investments are recorded as an allowance, subject to reversal.

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

	Less than 12 Months		12 Months or More		Total	
	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses	Estimated Fair Value	Gross Unrealized Losses
December 31, 2021						
Fixed maturities (1):						
Corporate bonds	$ 3,639,582	$ (63,938)	$ 98,867	$ (5,256)	$ 3,738,449	$ (69,194)
Mortgage backed securities	222,176	(3,545)	46,809	(1,865)	268,985	(5,410)
Municipal bonds	26,665	(385)	16,361	(1,024)	43,026	(1,409)
Commercial mortgage backed securities	675,603	(2,805)	5,908	(312)	681,511	(3,117)
U.S. government and government agencies	4,211,621	(44,180)	33,373	(1,787)	4,244,994	(45,967)
Non-U.S. government securities	1,511,301	(31,983)	62,957	(2,766)	1,574,258	(34,749)
Asset backed securities	1,667,002	(9,853)	33,082	(1,255)	1,700,084	(11,108)
Total	11,953,950	(156,689)	297,357	(14,265)	12,251,307	(170,954)
Short-term investments	284,733	(590)	—	—	284,733	(590)
Total	$ 12,238,683	$ (157,279)	$ 297,357	$ (14,265)	$ 12,536,040	$ (171,544)
December 31, 2020						
Fixed maturities (1):						
Corporate bonds	$ 747,442	$ (33,086)	$ 3,934	$ (1,302)	$ 751,376	$ (34,388)
Mortgage backed securities	284,619	(4,788)	3,637	(240)	288,256	(5,028)
Municipal bonds	67,937	(3,835)	—	—	67,937	(3,835)
Commercial mortgage backed securities	126,624	(2,916)	2,655	(38)	129,279	(2,954)
U.S. government and government agencies	1,285,907	(12,611)	—	—	1,285,907	(12,611)
Non-U.S. government securities	543,844	(7,658)	2,441	(402)	546,285	(8,060)
Asset backed securities	634,470	(9,110)	57,737	(1,605)	692,207	(10,715)
Total	3,690,843	(74,004)	70,404	(3,587)	3,761,247	(77,591)
Short-term investments	97,920	(2,063)	—	—	97,920	(2,063)
Total	$ 3,788,763	$ (76,067)	$ 70,404	$ (3,587)	$ 3,859,167	$ (79,654)

(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 and reinvested and included the fixed maturities pledged. See “Securities Lending Agreements.” In 2021, the Company terminated its securities lending program and no longer enters into securities lending agreements with financial institutions.

At December 31, 2021, on a lot level basis, approximately 4,700 security lots out of a total of approximately 10,240 security lots were in an unrealized loss position and the largest single unrealized loss from a single lot in the Company’s fixed maturity portfolio was $1.1 million. The Company believes that such securities were temporarily impaired at December 31, 2021. At December 31, 2020, on a lot level basis, approximately 2,320 security lots out of a total of approximately 11,180 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 $0.9 million.

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

	December 31, 2021		December 31, 2020	
Maturity	Estimated Fair Value	Amortized Cost	Estimated Fair Value	Amortized Cost
Due in one year or less	$ 300,889	$ 299,772	$ 348,200	$ 339,951
Due after one year through five years	8,350,153	8,334,286	10,629,959	10,340,819
Due after five years through 10 years	4,689,155	4,684,393	4,881,564	4,654,754
Due after 10 years	505,758	493,927	482,180	448,139
	13,845,955	13,812,378	16,341,903	15,783,663
Mortgage backed securities	408,477	411,110	630,001	626,368
Commercial mortgage backed securities	1,046,484	1,047,867	389,900	384,254
Asset backed securities	2,692,091	2,697,367	1,634,804	1,627,384
Total (1)	$ 17,993,007	$ 17,968,722	$ 18,996,608	$ 18,421,669

(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 and reinvested and included the fixed maturities pledged. See "Securities Lending Agreements." In 2021, the Company terminated its securities lending program and no longer enters into securities lending agreements with financial institutions.

Securities Lending Agreements

In 2021, the Company terminated its securities lending program and no longer enters into securities lending agreements with financial institutions to enhance investment income. Prior to the termination of this program, the Company loaned certain of its securities to third parties, primarily major brokerage firms, for short periods of time through a lending agent. The Company maintained legal control over the securities it lent (shown as 'Securities pledged under securities lending, at fair value' on the Company's balance sheet), retained the earnings and cash flows associated with the loaned securities and received a fee from the borrower for the temporary use of the securities. An indemnification agreement with the lending agent protected the Company in the event a borrower became insolvent or failed to return any of the securities on loan from the Company.

The Company receives collateral (shown as 'Collateral received under securities lending, at fair value' on the Company's balance sheet) in the form of cash or U.S. government and government agency securities. At December 31, 2021, the Company had no cash collateral or security collateral due to the termination of the program. At December 31, 2020, the fair value of the cash collateral received on securities lending was nil and the fair value of security collateral received was $301.1 million.

The carrying value of collateral held under the Company's securities lending transactions by significant investment category and remaining contractual maturity of the underlying agreements was as follows at December 31, 2020 (no balances at December 31, 2021 due to the termination of the program):

	Remaining Contractual Maturity of the Agreements				
	Overnight and Continuous	Less than 30 Days	30-90 Days	90 Days or More	Total
December 31, 2020					
U.S. government and government agencies	$ 142,317	$ —	$ 139,290	$ —	$ 281,607
Corporate bonds	3,021	—	—	—	3,021
Equity securities	16,461	—	—	—	16,461
Total	$ 161,799	$ —	$ 139,290	$ —	$ 301,089
Gross amount of recognized liabilities for securities lending in offsetting disclosure in Note 11					$ —
Amounts related to securities lending not included in offsetting disclosure in Note 11					$ 301,089

Equity Securities, at Fair Value

At December 31, 2021, the Company held $1.8 billion of equity securities, at fair value, compared to $1.4 billion at December 31, 2020.

Net Investment Income

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

	Year Ended December 31,	
	2021	2020
Fixed maturities	$ 330,057	$ 412,445
Term loans	34,843	84,149
Equity securities (dividends)	42,396	28,958
Short-term investments	6,927	10,760
Other (1)	62,892	72,277
Gross investment income	477,115	608,589
Investment expenses	(87,999)	(92,462)
Net investment income	$ 389,116	$ 516,127

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

Net Realized Gains (Losses)

Net realized gains (losses) were as follows:

	Year Ended December 31,	
	2021	2020
Available for sale securities:		
Gross gains on investment sales	$ 313,886	$ 595,935
Gross losses on investment sales	(156,791)	(117,282)
Change in fair value of assets and liabilities accounted for using the fair value option:		
Fixed maturities	7,953	15,881
Other investments	116,781	13,656
Equity securities	13,028	14,629
Short term investments	601	2,279
Equity securities at fair value:		
Net realized gains (losses) on securities sold	122,606	26,849
Net unrealized gains (losses) on equity securities still held at reporting date	48,746	102,394
Allowance for credit losses:		
Investments related	(2,100)	(3,597)
Underwriting related	1,062	(10,007)
Net impairment losses	—	(533)
Derivative instruments (1)	(32,390)	179,675
Other (2)	(54,006)	5,498
Net realized gains (losses)	$ 379,376	$ 825,377

(1) See Note 11 for information on the Company’s derivative instruments.
(2) 2021 period reflected $33.1 million of losses related to the Company’s deconsolidation of Somers.

Other Investments

The following table summarizes the Company's other investments and other investable assets:

	December 31, 2021	December 31, 2020
Fixed maturities	$ 416,698	$ 843,354
Other investments	1,432,553	2,331,885
Short-term investments	97,806	557,008
Equity securities	26,493	92,549
Investments accounted for using the fair value option	$ 1,973,550	$ 3,824,796
Other investable assets (1)	—	500,000
Total other investments	$ 1,973,550	$ 4,324,796

(1) Participation interests in a receivable of a reverse repurchase agreement

The following table summarizes the Company's other investments, as detailed in the previous table, by strategy:

	December 31, 2021	December 31, 2020
Lending	536,345	572,636
Term loan investments	484,950	1,231,731
Investment grade fixed income	147,810	138,646
Private equity	91,126	48,750
Energy	81,692	65,813
Credit related funds	70,278	90,780
Infrastructure	20,352	165,516
Real estate	—	18,013
Total	$ 1,432,553	$ 2,331,885

Investments Accounted For Using the Equity Method

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

	December 31, 2021	December 31, 2020
Credit related funds	1,022,334	740,060
Private equity	436,042	235,289
Real Estate	396,395	258,518
Equities	395,090	343,058
Lending	376,649	179,629
Infrastructure	230,070	175,882
Energy	119,141	115,453
Fixed income	101,890	—
Total	$ 3,077,611	$ 2,047,889

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

The Company recorded equity in net income related to investments accounted for using the equity method of $366.4 million for 2021, compared to $146.7 million for 2020. In applying the equity method, investments are initially recorded at cost and are subsequently adjusted based on the Company's proportionate share of the net income or loss of the funds (which include changes in the 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.

Certain of the Company's other investments and investments accounted for using the equity method 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.

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 determined that these limited partnership interests represented variable interests in the funds because the general partner did not have a significant interest in the funds. The Company's maximum exposure to loss with respect to these investments is limited to the investment carrying amounts reported in the Company's consolidated balance sheets and any unfunded commitment.

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

	December 31,	
	2021	2020
Investments accounted for using the equity method (1)	$ 3,077,611	$ 2,047,889
Investments accounted for using the fair value option (2)	170,595	184,720
Total	$ 3,248,206	$ 2,232,609

(1) Aggregate unfunded commitments were $2.6 billion at December 31, 2021, compared to $1.8 billion at December 31, 2020.
(2) Aggregate unfunded commitments were $18.8 million at December 31, 2021, compared to $35.6 million at December 31, 2020.

Investments in Operating Affiliates

Investments in which the Company has significant influence over the operating and financial policies are classified as 'investments in operating affiliates' on the Company's balance sheets and are accounted for under the equity method. Such investments primarily include the Company's investment in Coface SA ("Coface"), Greysbridge and Premia. Investments in Coface and Premia are generally recorded on a three month lag, while the Company's investment in Greysbridge is not recorded on a lag.

In 2021, the Company completed the share purchase agreement with Natixis to purchase 29.5% of the common equity of Coface, a France-based leader in the global trade credit insurance market. The consideration paid was €9.95 per share, or an aggregate €453 million (approximately $546 million) including related fees. Income (loss) from operating affiliates reflected a one-time gain of $74.5 million realized from the acquisition. As a result of equity method accounting rules, approximately $36 million of additional gain was deferred and will generally be recognized over the next five years. As of December 31, 2021, the Company owned approximately 29.86% of the issued shares of Coface, or 30.10% excluding treasury shares, with a carrying value of $630.5 million.

In July 2021, the Company announced the completion of the previously disclosed acquisition of Somers by Greysbridge for a cash purchase price of $35.00 per common share. Effective July 1, 2021, Somers is wholly owned by Greysbridge, and Greysbridge is owned 40% by the Company, 30% by certain investment funds managed by Kelso and 30% by certain investment funds managed by Warburg. At December 31, 2021 the Company's carrying value in Greysbridge was $375.7 million, which reflected the Company's aggregate purchase price of $278.9 million along with income (loss) from operating affiliates, which included a one-time gain of $95.7 million recognized from the acquisition. In addition, the 'net realized gains (losses)' line on the Company's consolidated statements of income included a $33.1 million loss as a result of deconsolidation of Somers in the Company's financial statements following the close of the transaction. See Note 4.

The Company recorded income from operating affiliates of $264.7 million for 2021, compared to income of $16.8 million for 2020. The income from operating affiliates for the 2021 period, primarily related to the Company's recent investments in Coface and Greysbridge.

Allowance for Expected Credit Losses

The following table provides a roll forward of the allowance for expected credit losses of the Company's securities classified as available for sale:

	Year Ended December 31, 2021			
	Structured Securities (1)	Municipal Bonds	Corporate Bonds	Total
Balance at beginning of period	$ 1,490	$ 11	$ 896	$ 2,397
Additions for current-period provision for expected credit losses	602	—	2,858	3,460
Additions (reductions) for previously recognized expected credit losses	(847)	(9)	(320)	(1,176)
Reductions due to disposals (3)	(443)	—	(1,355)	(1,798)
Balance at end of period	$ 802	$ 2	$ 2,079	$ 2,883

	Year Ended December 31, 2020			
	Structured Securities (1)	Municipal Bonds	Corporate Bonds	Total
Balance at beginning of period	$ —	$ —	$ —	$ —
Cumulative effect of accounting change (2)	517	—	117	634
Additions for current-period provision for expected credit losses	2,942	67	7,644	10,653
Additions (reductions) for previously recognized expected credit losses	(1,398)	6	(5,638)	(7,030)
Reductions due to disposals	(571)	(62)	(1,227)	(1,860)
Balance at end of period	$ 1,490	$ 11	$ 896	$ 2,397

(1) Includes asset backed securities, mortgage backed securities and commercial mortgage backed securities.
(2) Adoption of ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326)".
(3) Reduction for the 2021 period primarily related to the Company's deconsolidation of Somers.

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.

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

	December 31, 2021	December 31, 2020
Assets used for collateral or guarantees:		
Affiliated transactions	$ 4,223,955	$ 4,643,334
Third party agreements	2,721,122	3,083,286
Deposits with U.S. regulatory authorities	798,100	827,552
Deposits with non-U.S. regulatory authorities	506,517	179,099
Total restricted assets (1)	$ 8,249,694	$ 8,733,271

(1) 2020 balances Included $1.0 billion related to Somers. See note 4.

Reconciliation of Cash and Restricted Cash

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

	December 31, 2021	December 31, 2020
Cash	$ 809,393	$ 860,835
Restricted cash (included in 'other assets')	456,065	384,058
Cash and restricted cash	$ 1,265,458	$ 1,244,893

10. 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 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.

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 $23.8 billion of financial assets and liabilities measured at fair value at December 31, 2021, approximately $7.7 million, or 0.0%, were priced using non-binding broker-dealer quotes. Of the $26.5 billion of financial assets and liabilities measured at fair value at December 31, 2020, approximately $150.1 million, or 0.6%, 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.

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

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

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

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

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

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.

Other investments

The Company determined that exchange-traded investments would be included in Level 1 as their fair values are based on quoted market prices in active markets. Other investments also include term loan investments for which fair values are estimated by using quoted prices of term loan investments with similar characteristics, pricing models or matrix pricing. Such investments are generally classified within Level 2. A small number of securities are included in Level 3 due to the lack of an available independent price source for such securities.

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, U.S. 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.

Residential mortgage loans

The Company's residential mortgage loans (included in 'other assets' in the consolidated balance sheets) include amounts related to the Company's whole mortgage loan purchase and sell program. Fair values of residential mortgage loans are generally determined based on market prices. As significant inputs used in pricing process for these residential mortgage loans are observable market inputs, the fair value of these securities are classified within Level 2.

Contingent consideration liabilities

Contingent consideration liabilities (included in 'Other liabilities' in the consolidated balance sheets) include amounts related to the Company's acquisitions. Such amounts are remeasured at fair value at each balance sheet date with changes in fair value recognized in 'Net realized gains (losses).' To determine the fair value of contingent consideration liabilities, the Company estimates future payments using an income approach based on modeled inputs which include a weighted average cost of capital. The Company determined that contingent consideration liabilities would be included within Level 3.

The following table presents the Company's financial assets and liabilities measured at fair value by level at December 31, 2021:

		Fair Value Measurement Using:		
	Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets measured at fair value:				
Available for sale securities:				
Fixed maturities:				
Corporate bonds	$ 6,553,333	$ —	$ 6,553,320	$ 13
Mortgage backed securities	408,477	—	408,477	—
Municipal bonds	404,666	—	404,666	—
Commercial mortgage backed securities	1,046,484	—	1,046,484	—
U.S. government and government agencies	4,767,662	4,739,415	28,247	—
Non-U.S. government securities	2,120,294	—	2,120,294	—
Asset backed securities	2,692,091	—	2,688,744	3,347
Total	17,993,007	4,739,415	13,250,232	3,360
Equity securities, at fair value	1,804,170	1,762,864	38,388	2,918
Short-term investments	1,732,663	1,050,769	681,894	—
Derivative instruments (3)	127,121	—	127,121	—
Residential mortgage loans	49,847	—	49,847	—
Fair value option:				
Corporate bonds	388,546	—	388,546	—
Non-U.S. government bonds	23,785	—	23,785	—
Asset backed securities	4,367	—	4,367	—
Short-term investments	97,806	528	97,278	—
Equity securities	26,493	21,745	—	4,748
Other investments	310,798	20,352	262,465	27,981
Other investments measured at net asset value (1)	1,121,755			
Total	1,973,550	42,625	776,441	32,729
Total assets measured at fair value	$ 23,680,358	$ 7,595,673	$ 14,923,923	$ 39,007
Liabilities measured at fair value:				
Contingent consideration liabilities	$ (16,960)	—	—	(16,960)
Securities sold but not yet purchased (2)	—	—	—	—
Derivative instruments (3)	(54,224)	—	(54,224)	—
Total liabilities measured at fair value	$ (71,184)	$ —	$ (54,224)	$ (16,960)

(1) 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.

(2) 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.

(3) See Note 11.

The following table presents the Company's financial assets and liabilities measured at fair value by level at December 31, 2020:

		Fair Value Measurement Using:		
	Estimated Fair Value	Quoted Prices in Active Markets for Identical Assets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Assets measured at fair value (1):				
Available for sale securities:				
Fixed maturities:				
Corporate bonds	$ 7,856,571	$ —	$ 7,856,558	$ 13
Mortgage backed securities	630,001	—	630,001	—
Municipal bonds	494,522	—	494,522	—
Commercial mortgage backed securities	389,900	—	389,900	—
U.S. government and government agencies	5,557,077	5,463,356	93,721	—
Non-U.S. government securities	2,433,733	—	2,433,733	—
Asset backed securities	1,634,804	—	1,631,378	3,426
Total	18,996,608	5,463,356	13,529,813	3,439
Equity securities, at fair value	1,460,959	1,401,653	17,291	42,015
Short-term investments	1,922,637	1,918,280	4,357	—
Derivative instruments (4)	177,383	—	177,383	—
Fair value option:				
Corporate bonds	651,294	—	650,309	985
Non-U.S. government bonds	35,263	—	35,263	—
Mortgage backed securities	3,282	—	3,282	—
Commercial mortgage backed securities	1,090	—	1,090	—
Asset backed securities	152,151	—	152,151	—
U.S. government and government agencies	274	164	110	—
Short-term investments	557,008	420,131	136,877	—
Equity securities	92,549	23,373	188	68,988
Other investments	1,134,229	51,149	1,015,977	67,103
Other investments measured at net asset value (2)	1,197,656			
Total	3,824,796	494,817	1,995,247	137,076
Total assets measured at fair value	$ 26,382,383	$ 9,278,106	$ 15,724,091	$ 182,530
Liabilities measured at fair value:				
Contingent consideration liabilities	(461)	—	—	(461)
Securities sold but not yet purchased (3)	(21,679)	—	(21,679)	—
Derivative instruments (4)	(108,705)	—	(108,705)	—
Total liabilities measured at fair value	$ (130,845)	$ —	$ (130,384)	$ (461)

(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 9.

(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 11.

The following table presents a reconciliation of the beginning and ending balances for all financial assets and liabilities measured at fair value on a recurring basis using Level 3 inputs for 2021 and 2020:

	Assets						Liabilities
	Available For Sale		Fair Value Option			Fair Value	
	Structured Securities (1)	Corporate Bonds	Corporate Bonds	Other Investments	Equity Securities	Equity Securities	Contingent Consideration Liabilities
Year Ended December 31, 2021							
Balance at beginning of year	$ 3,426	$ 13	$ 985	$ 67,103	$ 68,988	$ 42,015	$ (461)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	(135)	—	13	868	4,941	1,958	—
Included in other comprehensive income	133	—	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	—	—	13,213	—	5,718	(16,494)
Issuances	—	—	—	—	—	—	—
Sales (3)	—	—	(998)	(53,203)	(69,181)	(46,773)	—
Settlements	(77)	—	—	—	—	—	(5)
Transfers in and/or out of Level 3	—	—	—	—	—	—	—
Balance at end of year	$ 3,347	$ 13	$ —	$ 27,981	$ 4,748	$ 2,918	$ (16,960)
Year Ended December 31, 2020							
Balance at beginning of year	$ 5,216	$ 8,851	$ 932	$ 68,817	$ 58,094	$ 55,889	$ (7,998)
Total gains or (losses) (realized/unrealized)							
Included in earnings (2)	—	(5,865)	(13)	(314)	10,894	8,214	(72)
Included in other comprehensive income	(169)	397	—	—	—	—	—
Purchases, issuances, sales and settlements							
Purchases	—	—	66	52,449	—	4,030	—
Issuances	—	—	—	—	—	—	—
Sales	—	—	—	(56,833)	—	(26,118)	—
Settlements	(1,413)	(1,462)	—	—	—	—	7,609
Transfers in and/or out of Level 3	(208)	(1,908)	—	2,984	—	—	—
Balance at end of year	$ 3,426	$ 13	$ 985	$ 67,103	$ 68,988	$ 42,015	$ (461)

(1) Includes asset backed securities, mortgage backed securities and commercial mortgage backed securities.
(2) Gains or losses were included in net realized gains (losses).
(3) Sales for the 2021 period primarily relates to the Company's deconsolidation of Somers.

Financial Instruments Disclosed, But Not Carried, At Fair Value

The Company uses various financial instruments in the normal course of its business. The carrying values of cash, accrued investment income, receivable for securities sold, certain other assets, payable for securities purchased and certain other liabilities approximated their fair values at December 31, 2021, due to their respective short maturities. As these financial instruments are not actively traded, their respective fair values are classified within Level 2.

At December 31, 2021, the Company's senior notes were carried at their cost, net of debt issuance costs, of $1.4 billion and had a fair value of $1.8 billion. At December 31, 2020, the Company's senior notes were carried at their cost, net of debt issuance costs, of $1.6 billion and had a fair value of $2.1 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 value of the senior notes is classified within Level 2.

Fair Value Measurements on a Non-Recurring Basis

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

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

Investments accounted for using the equity method. When the Company determines that the carrying value of these assets may not be recoverable, the Company records the assets at fair value with the loss recognized in income. In such cases, the

Company measures the fair value of these assets using the techniques discussed above in “Fair Value Measurements on a Recurring Basis.”

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

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

11. Derivative Instruments

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

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

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

	Estimated Fair Value		
	Asset Derivatives	**Liability Derivatives**	**Notional Value (1)**
December 31, 2021			
Futures contracts (2)	$ 34,999	$ (9,808)	$ 2,826,564
Foreign currency forward contracts (2)	7,734	(11,390)	915,962
TBAs	11,227	—	11,227
Other (2)	73,161	(33,026)	3,736,773
Total	$ 127,121	$ (54,224)	
December 31, 2020			
Futures contracts (2)	$ 11,046	$ (4,496)	$ 3,099,796
Foreign currency forward contracts (2)	52,716	(6,202)	1,656,729
TBAs	—	—	—
Other (2)	113,621	(98,007)	5,763,919
Total	$ 177,383	$ (108,705)	

(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.’

The Company did not hold any derivatives which were designated as hedging instruments at December 31, 2021 or 2020.

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.

At December 31, 2021, $122.3 million and $53.9 million, respectively, of asset derivatives and liability derivatives were subject to a master netting agreement compared to $138.8 million and $93.0 million, respectively, at December 31, 2020. The remaining derivatives included in the table above were not subject to a master netting agreement.

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	Year Ended December 31, 2021	Year Ended December 31, 2020
Net realized gains (losses):		
Futures contracts	$ (15,262)	$ 114,987
Foreign currency forward contracts	(39,755)	49,974
TBAs	(233)	1,129
Other	22,860	13,585
Total	$ (32,390)	$ 179,675

12. Other Comprehensive Income (Loss)

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

	Unrealized Appreciation on Available-For-Sale Investments	Foreign Currency Translation Adjustments	Total
Year Ended December 31, 2021			
Beginning balance	$ 500,780	$ (15,983)	$ 484,797
Other comprehensive income (loss) before reclassifications	(371,430)	(63,666)	(435,096)
Amounts reclassified from accumulated other comprehensive income	(116,068)	—	(116,068)
Net current period other comprehensive income (loss)	(487,498)	(63,666)	(551,164)
Ending balance	$ 13,282	$ (79,649)	$ (66,367)
Year Ended December 31, 2020			
Beginning balance	$ 258,245	$ (47,721)	$ 210,524
Other comprehensive income (loss) before reclassifications	668,717	31,738	700,455
Amounts reclassified from accumulated other comprehensive income	(426,182)	—	(426,182)
Net current period other comprehensive income (loss)	242,535	31,738	274,273
Ending balance	$ 500,780	$ (15,983)	$ 484,797

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

Details About AOCI Components	Consolidated Statement of Income Line Item That Includes Reclassification	Amounts Reclassed from AOCI Year Ended December 31, 2021	Amounts Reclassed from AOCI Year Ended December 31, 2020
Unrealized appreciation on available-for-sale investments			
	Net realized gains	$ 157,095	$ 478,652
	Provision for credit losses	(2,099)	(3,597)
	Other-than-temporary impairment losses	—	(533)
	Total before tax	154,996	474,522
	Income tax expense	(38,928)	(48,340)
	Net of tax	$ 116,068	$ 426,182

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

	Before Tax Amount	Tax Expense (Benefit)	Net of Tax Amount
Year Ended December 31, 2021			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	$ (406,462)	$ (19,845)	$ (386,617)
Less reclassification of net realized gains (losses) included in net income	154,996	38,928	116,068
Foreign currency translation adjustments	(62,403)	59	(62,462)
Other comprehensive income (loss)	$ (623,861)	$ (58,714)	$ (565,147)
Year Ended December 31, 2020			
Unrealized appreciation (decline) in value of investments:			
Unrealized holding gains (losses) arising during period	$ 754,290	$ 75,854	$ 678,436
Less reclassification of net realized gains (losses) included in net income	474,522	48,340	426,182
Foreign currency translation adjustments	31,449	370	31,079
Other comprehensive income (loss)	$ 311,217	$ 27,884	$ 283,333

13. Income Taxes

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

Arch Re Bermuda and its non-U.S. subsidiaries will be subject to U.S. federal income tax only to the extent that they derive U.S. source income that is subject to U.S. withholding tax or income that is effectively connected with the conduct of a trade or business within the U.S. and is not exempt from U.S. tax under an applicable income tax treaty with the U.S. Arch Re Bermuda and its non-U.S. subsidiaries will be subject to a withholding tax on dividends from U.S. investments and interest from certain U.S. payors (subject to reduction by any applicable income tax treaty). Arch Re Bermuda and its non-U.S. subsidiaries intend to conduct their operations in a manner that will not cause them to be treated as engaged in a trade or business in the United States and, therefore, will not be required to pay U.S. federal income taxes (other than U.S. excise taxes on insurance and reinsurance premium and withholding taxes on dividends and certain other U.S. source investment income). However, because there is uncertainty as to the activities which constitute being engaged in a trade or business within the United States, there can be no assurances that the U.S. Internal Revenue Service will not contend successfully that Arch Re Bermuda or its non-U.S. subsidiaries are engaged in a trade or business in the United States. If Arch Re Bermuda or any of its non-U.S. subsidiaries were subject to U.S. income tax, Arch Re Bermuda’s shareholder’s equity and earnings could be materially adversely affected. Arch Re Bermuda has subsidiaries and branches that operate in various jurisdictions around the world that are subject to tax in the jurisdictions in which they operate. The significant jurisdictions in which Arch Re Bermuda’s subsidiaries and branches are subject to tax are the United States, United Kingdom, Ireland, Canada, Switzerland, Australia and Denmark.

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

	Year Ended December 31,	
	2021	2020
Current expense (benefit):		
United States	$ 284,275	$ 178,535
Non-U.S.	10,686	15,920
	294,961	194,455
Deferred expense (benefit):		
United States	(123,261)	(86,530)
Non-U.S.	(43,690)	3,325
	(166,951)	(83,205)
Income tax expense (benefit)	$ 128,010	$ 111,250

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

	Year Ended December 31,	
	2021	2020
Income (Loss) Before Income Taxes:		
Bermuda	$ 1,647,535	$ 1,217,387
United States	643,239	407,372
Other	207,640	57,540
Total	$ 2,498,414	$ 1,682,299

The expected tax provision computed on pre-tax income or loss at the weighted average tax rate has been calculated as the sum of the pre-tax income in each jurisdiction multiplied by that jurisdiction’s applicable statutory tax rate. The 2021 applicable statutory tax rates by jurisdiction were as follows: Bermuda (0.0%), United States (21.0%), United Kingdom (19.0%), Ireland (12.5%), Denmark (22.0%), Canada (26.5%), Gibraltar (12.5%), Australia (30.0%), Hong Kong (16.5%) and the Netherlands (25.0%).

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

	Year Ended December 31,	
	2021	2020
Expected income tax expense (benefit) computed on pre-tax income at weighted average income tax rate	$ 158,230	$ 112,597
Addition (reduction) in income tax expense (benefit) resulting from:		
Tax-exempt investment income	(23,572)	(1,824)
Meals and entertainment	379	547
State taxes, net of U.S. federal tax benefit	20,978	5,027
Foreign branch taxes	1,998	2,094
Prior year adjustment	(1,432)	3,983
Foreign exchange gains & losses	1,190	(1,736)
Changes in applicable tax rate	447	—
Dividend withholding taxes	12,211	7,105
Change in valuation allowance	(40,764)	12,797
Contingent consideration	—	9
Share based compensation	(5,339)	(2,533)
Intercompany loan write-off	—	(22,083)
Other	3,684	(4,733)
Income tax expense (benefit)	$ 128,010	$ 111,250

The effect of a change in tax laws or rates on deferred tax assets and liabilities is recognized in income in the period in which such change is enacted.

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

	December 31,	
	2021	2020
Deferred income tax assets:		
Net operating loss	$ 87,960	$ 67,142
Uncrystalized losses	—	2,926
Discounting of net loss reserves	72,001	74,247
Net unearned premium reserve	75,483	66,368
Compensation liabilities	28,062	27,351
Foreign tax credit carryforward	20,058	19,160
Interest expense	755	622
Goodwill and intangible assets	—	14,450
Bad debt reserves	10,252	10,842
Lease liability	115,041	23,604
Net unrealized foreign exchange losses	21,453	165
Net unrealized decline of investments	166	—
Other, net	—	2,173
Deferred tax assets before valuation allowance	431,231	309,050
Valuation allowance	(43,953)	(88,255)
Deferred tax assets net of valuation allowance	387,278	220,795
Deferred income tax liabilities:		
Depreciation and amortization	—	(495)
Deferred policy acquisition costs	(25,612)	(42,045)
Deposit accounting liability	(1,578)	(1,751)
Goodwill and intangibles	(70,549)	—
Lloyds year of account deferral	(12,514)	—
Contingency reserve	(49,486)	(64,593)
Investment related	(7,492)	(9,571)
Net unrealized appreciation of investments	(8,377)	(66,681)
Right of use asset	(17,406)	(19,239)
Other, net	(271)	(844)
Total deferred tax liabilities	(193,285)	(205,219)
Net deferred income tax assets (liabilities)	$ 193,993	$ 15,576

The Company provides a valuation allowance to reduce certain deferred tax assets to an amount which management expects to more likely than not be realized. As of December 31, 2021, the Company's valuation allowance was $44.0 million, compared to $88.3 million at December 31, 2020. The valuation allowance in both periods was primarily attributable to valuation allowances on the Company's U.K., Canadian and Australian operations and certain other deferred tax assets relating to loss carryforwards that have a limited use.

At December 31, 2021, the Company’s net operating loss carryforwards and tax credits were as follows:

	December 31, 2021	Expiration
Operating Loss Carryforwards:		
United Kingdom	259,235	No expiration
Ireland	9,032	No expiration
Australia	39,981	No expiration
Hong Kong	23,203	No expiration
United States (1)	29,508	Various
Tax Credits:		
U.K. foreign tax credits	20,058	No expiration

(1) On January 30, 2014, the Company’s U.S. mortgage operations underwent an ownership change for U.S. federal income tax purposes as a result of the Company’s acquisition of the CMG Entities. As a result of this ownership change, a limitation has been imposed upon the utilization of approximately $7.6 million of the Company’s existing U.S. net operating loss carryforwards. Utilization is limited to approximately $0.6 million per year in accordance with Section 382 of the Internal Revenue Code of 1986 as amended (“the Code”).

The Company’s U.S. mortgage operations are eligible for a tax deduction, subject to certain limitations, under Section 832(e) of the Code for amounts required by state law or regulation to be set aside in statutory contingency reserves. The deduction is allowed only to the extent that the Company purchases non-interest bearing U.S. Mortgage Guaranty Tax and Loss Bonds (“T&L Bonds”) issued by the U.S. Treasury Department in an amount equal to the tax benefit derived from deducting any portion of the statutory contingency reserves. T&L bonds are reflected in ‘other assets’ on the Company’s balance sheet and totaled approximately $31.6 million at December 31, 2021, compared to $88.1 million at December 31, 2020.

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

The Company recognizes interest and penalties relating to unrecognized tax benefits in the provision for income taxes. As of December 31, 2021, the Company’s total unrecognized tax benefits, including interest and penalties, were $2.0 million. If recognized, the full amount of the unrecognized tax benefit would impact the consolidated effective tax rate. A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	Year Ended December 31, 2021	2020
Balance at beginning of year	$ 2,008	$ 2,008
Additions based on tax positions related to the current year	—	—
Additions for tax positions of prior years	—	—
Balance at end of year	$ 2,008	$ 2,008

The Company, its subsidiaries and branches file income tax returns in various federal, state and local and foreign jurisdictions. The following table details open tax years that are potentially subject to examination by local tax authorities, in the following major jurisdictions:

Jurisdiction	Tax Years
United States	2015-2021
United Kingdom	2020-2021
Ireland	2017-2021
Canada	2017-2021
Switzerland	2018-2021
Denmark	2017-2021
Australia	2017-2021

As of December 31, 2021, the Company's current income tax payable (included in "Other liabilities") was $14.7 million.

14. Transactions with Related Parties

In 2017, the Company acquired approximately 25% of Premia Holdings Ltd. Premia Holdings Ltd. is the parent of Premia Reinsurance Ltd., a multi-line Bermuda reinsurance company (together with Premia Holdings Ltd., "Premia"). Premia's strategy is to reinsure or acquire companies or reserve portfolios in the non-life property and casualty insurance and reinsurance run-off market. Arch Re Bermuda and certain Arch co-investors invested $100.0 million and acquired approximately 25% of Premia as well as warrants to purchase additional common equity. Arch has appointed two directors to serve on the seven person board of directors of Premia. Arch Re Bermuda is providing a 25% quota share reinsurance treaty on certain business written by Premia.

In the 2021 first quarter, as part of the Company's acquisition of Barbican, the Company entered into an agreement with Premia Managing Agency Limited for the reinsurance to close of Syndicate 1955's 2018 underwriting year of account into Premia Syndicate 1884's 2021 underwriting year of account. The reinsurance to close covers legacy business underwritten by Syndicate 1955 on the underwriting 2018 and prior years of account and under the agreement, approximately $380 million of net liabilities was transferred to Syndicate 1844, with an effective date of January 1, 2021. The Company has no reinsurance recoverable on unpaid and paid losses or funds held liability at December 31, 2021, compare to $199.8 million and $149.6 million, respectively at December 31, 2020.

In July 2021, following consummation of the Merger Agreement and the related Greysbridge equity financing, pursuant to which Somers is wholly owned by Greysbridge, and Greysbridge is owned 40% by the Company, 30% by certain funds managed by Kelso and 30% by certain funds managed by Warburg, the Company entered into certain reinsurance transactions with Somers. For 2021, the Company ceded premiums written related to such transactions of $453.9 million (which includes reinsurance transactions in force as well as those entered into in conjunction with the Merger Agreement). In addition, Somers paid certain acquisition costs and administrative fees to the Company. At December 31, 2021, the Company recorded a reinsurance recoverable on unpaid and paid losses from Somers of $902.8 million and a reinsurance balance payable to Somers of $258.4 million. See Note 4.

The Company has a put/call option that was entered into in connection with the Greysbridge equity financing, whereby beginning January 1, 2024 the Company will have a call right (but not the obligation) and Warburg and Kelso will each have a put right (but not the obligation) to buy/sell one third of their initial shares annually at the tangible book value per share of Greysbridge for the most recently ended fiscal quarter.

As of December 31, 2021, the Company owns $35.0 million in aggregate principal amount of Somers 6.5% senior notes, due July 2, 2029 and approximately 6.6% of Somers' preference shares.

During 2021 and 2020, the Company incurred approximately $27.8 million and $20.3 million for services that are provided by Arch Global Services Inc. and Arch Global Services (Cyprus) Ltd. (collectively, "Global Services"). Such fees were incurred pursuant to the terms of services agreements between Arch Re Bermuda and certain of its subsidiaries and entered into with Global Services, and are included in "Other operating expenses" in the consolidated statements of income.

During 2021 and 2020, the Company incurred approximately $35.3 million and $31.9 million, respectively, of investment service fees to Arch Investment Management Ltd. ("AIM"). Such fees are incurred pursuant to the terms of specific

investment service agreements between Arch Re Bermuda and certain of its subsidiaries and AIM, and are included in “Net investment income” in the consolidated statements of income is net of these fees.

In the 2020 fourth quarter, the Company acquired Arch Capital Services Inc. (“ACSI”) from Arch Capital, its parent company. In return, the Company issued 11,100 1.31% Series A Cumulative Redeemable Preference Shares (the “Preferred Shares”) with a liquidation preference of $10,000 per share to Arch Capital. ACSI was valued at $111.0 million in the transaction. The Company subsequently sold all of the ACSI shares to Arch Capital Group (U.S.) Inc. for $111.0 million on December 30, 2020. ACSI converted to an LLC (ACS LLC) on December 31, 2020. During 2020, the Company incurred approximately $86.7 million of administrative and support service fees to ACSI and its subsidiary, Arch International Services Inc. Such fees were incurred pursuant to the terms of specific administrative and support service agreements between Arch Re Bermuda and certain of its subsidiaries and ACSI and its subsidiary, Arch International Services Inc., and are included in “Other operating expenses” in the consolidated statements of income.

15. 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:

	December 31,	
	2021	2020
Operating lease costs	$ 27,618	$ 27,715
Cash payments included in the measurement of lease liabilities reported in operating cash flows	$ 27,972	$ 26,136
Right-of-use assets obtained in exchange for new lease liabilities	$ 22,686	$ 9,336
Right-of-use assets (1)	$ 98,935	$ 104,066
Operating lease liability (1)	$ 118,188	$ 124,223
Weighted average discount rate	3.9 %	3.9 %
Weighted average remaining lease term	6.2	5.6

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

The following table presents the contractual maturities of the Company's operating lease liabilities at December 31, 2021:

Years Ending December 31,	
2022	$ 27,291
2023	21,948
2024	20,929
2025	16,101
2026	13,342
Thereafter	34,172
Total undiscounted lease liability	133,783
Less: present value adjustment	(14,895)
Operating lease liability	$ 118,888

All of these leases are for the rental of office space, with expiration terms that range from 2022 to 2033. Rental expense was approximately $27.6 million and $27.7 million for 2021 and 2020, respectively.

16. Commitments and Contingencies

Concentrations of Credit Risk

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

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

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

	Year Ended December 31,	
Broker	**2021**	**2020**
Marsh & McLennan Companies and its subsidiaries	18.3 %	13.3 %
Aon Corporation and its subsidiaries	12.2 %	12.0 %

No other broker and no one insured or reinsured accounted for more than 10% of gross premiums written for 2021 and 2020.

The Company's available for sale investment portfolio is managed in accordance with guidelines that have been tailored to meet specific investment strategies, including standards of diversification, which limit the allowable holdings of any single issue. There were no investments in any entity in excess of 10% of the Company's shareholder's equity at December 31, 2021 other than investments issued or guaranteed by the United States government or its agencies.

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 $3.0 billion and $2.1 billion at December 31, 2021 and 2020, respectively.

Purchase Obligations

The Company has also entered into certain agreements which commit the Company to purchase goods or services, primarily related to software and computerized systems. Such purchase obligations were approximately $96.6 million and $34.7 million at December 31, 2021 and 2020, respectively.

Employment and Other Arrangements

At December 31, 2021, the Company has entered into employment agreements with certain of its executive officers. Such employment arrangements provide for compensation in the form of base salary, annual bonus, share-based awards, participation in the Company's employee benefit programs and the reimbursements of expenses.

Loans with Affiliates

Arch Capital depends on its available cash resources, liquid investments and dividends or other distributions from subsidiaries to make payments, including the payment of debt service obligations and operating expenses it may incur and any payments of dividends, redemption amounts or liquidation amounts with respect to preferred shares and common shares, and to fund the share repurchase program. During the course of 2021 and 2020, Arch Capital requested cash advances from Arch Re Bermuda. Arch Re Bermuda agreed to provide such cash advances to Arch Capital in the form of interest free loans which were repayable upon demand. Arch Re Bermuda advanced $1.8 billion in 2021 and $221.6 million in 2020 to Arch Capital on such terms. The loan balances due to Arch Re Bermuda were subsequently forgiven and converted into dividend payments which reduced the outstanding loan balance due from Arch Capital at each balance sheet date to nil.

17. Debt and Financing Arrangements

The Company's senior notes payable at December 31, 2021 and 2020 were as follows:

	Interest (Fixed)	Principal Amount	Carrying Amount at December 31, 2021	Carrying Amount at December 31, 2020
2043 notes (1)	5.144%	$ 500,000	$ 495,063	$ 494,944
2026 notes (2)	4.011%	500,000	497,633	497,211
2046 notes (3)	5.031%	450,000	445,490	445,402
Somers notes (4)				137,689
		$ 1,450,000	$ 1,438,186	$ 1,575,246

(1) Senior notes of Arch-U.S., a wholly-owned subsidiary of Arch Re Bermuda, issued on December 13, 2013 and due November 1, 2043 ("2043 notes"), fully and unconditionally guaranteed by Arch Capital.

(2) Senior notes of Arch Capital Finance LLC ("Arch Finance"), a wholly-owned finance subsidiary of Arch Re Bermuda, issued on December 8, 2016 and due December 15, 2026 ("2026 notes"), fully and unconditionally guaranteed by Arch Capital.

(3) Senior notes of Arch Finance issued on December 8, 2016 and due December 15, 2046 ("2046 notes"), fully and unconditionally guaranteed by Arch Capital.

(4) Senior notes of Somers issued on July 2, 2019 and due July 2, 2029 ("Somers Senior Notes"), reflecting the elimination of amounts owned by Arch-U.S. Effective July 1, 2021, the Company no longer consolidates Somers in its Financials. See Note 4.

During 2021 and 2020, the Company made interest payments of $80.9 million and $93.3 million, respectively, related to its senior notes and other financing arrangements.

Letter of Credit and Revolving Credit Facilities

In the normal course of its operations, the Company enters into agreements with financial institutions to obtain secured and unsecured credit facilities.

On December 17, 2019, Arch Capital and certain of its subsidiaries entered into a $750.0 million five-year credit facility (the "Credit Facility") with a syndication of lenders. The Credit Facility consists of a $250.0 million secured facility for letters of credit (the "Secured Facility") and a $500.0 million unsecured facility for revolving loans and letters of credit (the "Unsecured Facility"). Obligations of each borrower under the Secured Facility for letters of credit are secured by cash and eligible securities of such borrower held in collateral accounts. Commitments under the Credit Facility may be increased up to, but not exceeding, an aggregate of $1.3 billion. Arch Capital has a one-time option to convert any or all outstanding revolving loans of Arch Capital and/or Arch-U.S. to term loans with the same terms as the revolving loans except that any prepayments may not be re-borrowed. Arch-U.S. guarantees the obligations of Arch Capital, and Arch Capital guarantees the obligations of Arch-U.S. Borrowings of revolving loans may be made at a variable rate based on LIBOR or an alternative base rate at the option of Arch Capital. Arch Capital and its lenders may agree on a LIBOR successor rate at the appropriate time to address the replacement of LIBOR. Secured letters of credit are available for issuance on behalf of certain Arch Capital subsidiaries. The Credit Facility is structured such that each party that requests a letter of credit or borrowing does so only for itself and its own obligations.

The Credit Facility contains certain restrictive covenants customary for facilities of this type, including restrictions on indebtedness, consolidated tangible net worth, minimum shareholders' equity levels and minimum financial strength ratings. Arch Capital and its subsidiaries which are party to the agreement were in compliance with all covenants contained therein at December 31, 2021.

Commitments under the Credit Facility will expire on December 17, 2024, and all loans then outstanding must be repaid. Letters of credit issued under the Unsecured Facility will not have an expiration date later than December 17, 2025. Under the $250.0 million secured letter of credit facility, Arch Capital's subsidiaries had $240.4 million of letters of credit outstanding and remaining capacity of $9.6 million at December 31, 2021. In addition, certain of Arch Capital's subsidiaries had outstanding secured and unsecured letters of credit of $26.0 million and $290.0 million respectively, which were issued in the normal course of business.

When issued, all secured letters of credit are secured by a portion of the investment portfolio. At December 31, 2021, these letters of credit were secured by investments with a fair value of $348.4 million.

The Company's outstanding revolving credit agreement borrowings were as follows:

	Year Ended December 31,	
	2021	2020
Somers		$ 155,687
Total revolving credit agreement borrowings	$ —	$ 155,687

Federal Home Loan Bank Membership

Certain subsidiaries of the Company are members of Federal Home Loan Banks ("FHLBs"). Members may borrow from the FHLBs at competitive rates subject to certain conditions. Conditions include maintaining sufficient collateral deposits for funding and a requirement to hold stock in the FHLBs related to both membership and outstanding advances. At December 31, 2021 and 2020, the Company had $80.0 million of advances outstanding under the FHLB program, included in 'other liabilities' on the Company's balance sheet, secured by investments with a fair value of $80.2 million.

18. Goodwill and Intangible Assets

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

	Goodwill	Intangible assets with an indefinite life	Intangible assets with finite life	Total
Net balance at December 31, 2019	$ 326,551	$ 85,911	$ 325,621	$ 738,083
Acquisitions	—	—	39,178	39,178
Amortization	—	—	(69,031)	(69,031)
Foreign currency movements and other adjustment	(11,922)	(6,692)	3,247	(15,367)
Net balance at December 31, 2020	314,629	79,219	299,015	692,863
Acquisitions (1)	31,677	—	318,459	350,136
Amortization	—	—	(82,955)	(82,955)
Impact of deconsolidation of Somers (2)	—	(7,650)	—	(7,650)
Foreign currency movements and other adjustment	(1,441)	(212)	(5,758)	(7,411)
Net balance at December 31, 2021	$ 344,865	$ 71,357	$ 528,761	$ 944,983
Gross balance at December 31, 2021	$ 342,842	$ 70,246	$ 1,099,158	$ 1,512,246
Accumulated amortization	—	—	(568,695)	(568,695)
Foreign currency movements and other adjustment	2,023	1,111	(1,702)	1,432
Net balance at December 31, 2021	$ 344,865	$ 71,357	$ 528,761	$ 944,983

(1) Certain amounts for the Company' 2021 acquisitions are considered provisional.
(2) See Note 4.

The following table presents the components of goodwill and intangible assets:

	Gross Balance	Accumulated Amortization	Foreign Currency Translation Adjustment and Other	Net Balance
December 31, 2021				
Acquired insurance contracts	$ 451,505	$ (409,592)	$ 339	$ 42,252
Operating platform	52,674	(48,838)	56	3,892
Distribution relationships	599,378	(117,158)	(2,211)	480,009
Goodwill	342,842	—	2,023	344,865
Insurance licenses	48,331	—	—	48,331
Syndicate capacity	21,915	—	1,111	23,026
Unfavorable service contract	(9,533)	9,435	—	(98)
Other	5,134	(2,542)	114	2,706
Total	$ 1,512,246	$ (568,695)	$ 1,432	$ 944,983
December 31, 2020				
Acquired insurance contracts	$ 451,505	$ (381,349)	$ 284	$ 70,440
Operating platform	52,674	(44,347)	60	8,387
Distribution relationships	282,001	(68,239)	3,446	217,208
Goodwill	318,043	—	(3,414)	314,629
Insurance licenses	55,981	—	—	55,981
Syndicate capacity	21,915	—	1,324	23,239
Unfavorable service contract	(9,533)	9,147	—	(386)
Other	5,134	(1,896)	127	3,365
Total	$ 1,177,720	$ (486,684)	$ 1,827	$ 692,863

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

2022	$ 109,144
2023	99,620
2024	79,410
2025	44,523
2026	35,252
2027 and thereafter	160,812
Total	$ 528,761

The estimated remaining useful lives of these assets range from one to fifteen years at December 31, 2021.

19. Shareholder’s Equity

Authorized and Issued

The authorized share capital of the Company consists of 2,625,000 common shares, par value of $1.00 per share, at December 31, 2021 and 2020. The issued share capital of the Company consists of 2,549,323 common shares, par value of $1.00 per share at December 31, 2021 and 2020. On December 14, 2020, the Company re-designated 11,100 common shares as Preferred Shares, and issued all of the 11,100 Preferred Shares to ACGL in exchange for 1,000 ACSI shares on December 15, 2020.

Series A Cumulative Redeemable Preferred Shares

On December 15, 2020, the Company issued all of the authorized 11,100 Preferred Shares, with a $1.00 par value and $10,000 liquidation preference per share.

Holders of the Preferred Shares will be entitled to receive dividend payments. The dividends will be computed on the basis of a 360-day year of twelve 30-day months at an annual rate of 1.31%.

Except in specified circumstances relating to certain regulations or corporate events, the Preference Shares may be redeemed, at the option of the Company, in whole or in part at any time without penalty at a redemption price of $10,000 per share plus all accrued but unpaid dividends.

20. Share-Based Compensation

Long Term Incentive and Share Award Plans

Arch Capital utilizes share-based compensation plans for officers, other employees and directors of Arch Capital and its subsidiaries, including Arch Re Bermuda, to provide competitive compensation opportunities, to encourage long-term service, to recognize individual contributions and reward achievement of performance goals and to promote the creation of long-term value for Arch Capital shareholders by aligning the interests of such persons with those of shareholders.

The 2018 Long-Term Incentive and Share Award Plan (the “2018 Plan”) became effective as of May 9, 2018 following approval by shareholders of Arch Capital. The 2018 Plan provides for the issuance of restricted stock units, performance units, restricted shares, performance shares, stock options and stock appreciation rights (“SAR”) and other equity-based awards to employees and directors of Arch Capital and subsidiaries. The 2018 Plan authorizes the issuance of 34,500,000 common shares and will terminate as to future awards on February 28, 2028. At December 31, 2021, 9,909,950 shares are available for future issuance.

The 2015 Long Term Incentive and Share Award Plan (the (“2015 Plan”) authorizes the issuance of 12,900,000 common shares and became effective as of May 7, 2015 following approval by shareholders of Arch Capital. The 2015 Plan provides for the issuance of share-based awards to employees and directors of Arch Capital and subsidiaries and will terminate as to future awards on February 26, 2025. At December 31, 2021, 606,942 shares are available for future issuance.

The 2012 Long Term Incentive and Share Award Plan (the “2012 Plan”) became effective as of May 9, 2012 following approval by shareholders of Arch Capital. The 2012 Plan authorized the issuance of 22,301,772 common shares and was fully used on February 28, 2022. At December 31, 2021, 320,272 shares are available for grant under the 2012 Plan.

Upon Arch Capital shareholder approval on May 6, 2016, the Amended and Restated Arch Capital Group Ltd. 2007 Employee Share Purchase Plan (the “ESPP”) became effective and a total of 4,689,777 common shares were reserved for issuance. The purpose of the ESPP is to give employees of Arch Capital and its subsidiaries an opportunity to purchase common shares through payroll deductions, thereby encouraging employees to share in the economic growth and success of Arch Capital and its subsidiaries. The ESPP is designed to qualify as an “employee share purchase plan” under Section 423 of the Code. At December 31, 2021, approximately 1,608,354 shares remain available for issuance.

Stock Options and Stock Appreciation Rights

Arch Capital generally issues stock options and SARs to eligible employees, with exercise prices equal to the fair market values of Arch Capital’s Common Shares on the grant dates. Such grants generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date.

The grant date fair value is determined using the Black-Scholes option valuation model. The expected life assumption was based on an expected term analysis, which incorporated Arch Capital’s historical exercise experience. Expected volatility is based on the Arch Capital’s daily historical trading data of its common shares. The table below summarizes the assumptions used.

	Year Ended December 31,	
	2021	2020
Dividend yield	—%	—%
Expected volatility	24.2%	16.6 %
Risk free interest rate	1.0%	1.2 %
Expected option life	6.0 years	6.0 years

A summary of stock option and SAR activity under Arch Capital's Long Term Incentive and Share Award Plans during 2021 is presented below:

	Year Ended December 31, 2021			
	Number of Options / SARs	Weighted Average Exercise Price	Weighted Average Contractual Term	Aggregate Intrinsic Value
Outstanding, beginning of year	7,945,022	$ 23.95		
Granted	786,159	$ 35.85		
Exercised	(1,385,971)	$ 17.02		
Forfeited or expired	(66,714)	$ 35.49		
Outstanding, end of year	7,278,496	$ 26.45	4.88	$ 131,033
Exercisable, end of year	5,696,643	$ 23.72	3.93	$ 118,109

The aggregate intrinsic value of stock options and SARs exercised represents the difference between the exercise price of the stock options and SARs and the closing market price of the Company's common shares on the exercise dates. During 2021, the Company received proceeds of $10.0 million from the exercise of stock options and recognized a tax benefit of $5.4 million from the exercise of stock options and SARs.

	Year Ended December 31,	
	2021	2020
Weighted average grant date fair value	$ 9.21	$ 8.14
Aggregate intrinsic value of Options/SARs exercised	$ 31,632	$ 19,112

Restricted Common Shares and Restricted Units

Arch Capital also issues restricted share and unit awards to eligible employees, for which the fair value is equal to the fair market values of Arch Capital's common shares on the grant dates. Restricted share and unit awards generally vest over a three year period with one-third vesting on the first, second and third anniversaries of the grant date.

A summary of restricted share and restricted unit activity under Arch Capital's Long Term Incentive and Share Award Plans for 2021 is presented below:

	Year Ended December 31, 2021	
	Restricted Common Shares	Restricted Unit Awards
Unvested Shares:		
Unvested balance, beginning of year	1,341,395	1,120,752
Granted	878,877	175,962
Vested	(354,875)	(555,085)
Forfeited	(99,907)	(41,945)
Unvested balance, end of year	1,765,490	699,684
Weighted Average Grant Date Fair Value:		
Unvested balance, beginning of year	$ 36.87	$ 31.43
Granted	$ 35.87	$ 35.94
Vested	$ 38.20	$ 30.46
Forfeited	$ 36.27	$ 32.23
Unvested balance, end of year	$ 36.14	$ 33.29

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

	Year Ended December 31,	
	2021	2020
Restricted shares and restricted unit awards granted	1,054,839	1,684,086
Weighted average grant date fair value	$ 35.88	$ 36.50
Aggregate fair value of vested restricted shares and units awards	$ 42,965	$ 30,794

The aggregate intrinsic value of restricted units outstanding at December 31, 2021 was $31.1 million.

Performance Awards

Arch Capital also issues performance share and unit awards (“performance awards”) to eligible employees, which are earned based on the achievement of pre-established threshold, target and maximum goals over three-year performance periods. Final payouts depend on the level of achievement along with each employees continued service through the vest date, and can vary between 0% and 200%. The grant date fair value of the performance awards is measured using a Monte Carlo simulation model, which incorporated the assumptions summarized in the table below. Expected volatility is based on Arch Capital’s daily historical trading data of its common shares. The cumulative compensation expense recognized and unrecognized as of any reporting period date represents the adjusted estimate of performance shares and units that will ultimately be awarded, valued at their original grant date fair values.

	Year Ended December 31,	
	2021	2020
Expected volatility	37.5 %	18.1 %
Risk free interest rate	0.3 %	1.1 %

	Performance Shares	Performance Units
Unvested Shares:		
Unvested balance, beginning of year	747,652	32,065
Granted	281,458	10,698
Performance adjustment (1)(2)	(13,863)	11,447
Vested	(219,105)	(24,440)
Unvested balance, end of year	796,142	29,770
Weighted Average Grant Date Fair Value:		
Unvested balance, beginning of year	$ 35.36	$ 33.48
Granted	$ 37.38	$ 37.38
Performance adjustment (1)(2)	$ 24.65	$ 24.71
Vested	$ 24.65	$ 24.71
Unvested balance, end of year	$ 39.21	$ 38.71

(1) The performance adjustment represents the difference between the number of performance shares granted and earned, which vested following the end of the performance period. The performance shares were granted at the maximum level of achievement.

(2) The performance adjustment represents the change in PSUs, which vested following the end of the performance period. The performance units were granted at the target level of achievement.

The following table presents the weighted average grant date fair values of performance awards granted.

	Year Ended December 31,	
	2021	2020
Performance awards	292,156	436,776
Weighted average grant date fair value	$ 37.38	$ 38.59

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

Share-Based Compensation Expense

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

	Year Ended December 31,	
	2021	2020
Pre-Tax		
Stock options and SARs	$ 7,784	$ 7,384
Restricted share and unit awards	40,362	35,947
Performance awards	9,607	7,252
ESPP	3,587	2,029
Total	$ 61,340	$ 52,612
After-Tax		
Stock options and SARs	$ 6,395	$ 6,028
Restricted share and unit awards	32,894	29,264
Performance awards	7,831	5,903
ESPP	3,306	1,871
Total	$ 50,426	$ 43,066

	December 31, 2021		
	Stock Options and SARs	Restricted Common Shares and Units	Performance Share and Units
Unrecognized compensation cost related to unvested awards	$ 5,416	$ 41,003	3,551
Weighted average recognition period (years)	1.06	1.28	0.6

21. Retirement Plans

For purposes of providing employees with retirement benefits, the Company maintains defined contribution retirement plans. Contributions are based on the participants' eligible compensation. For 2021 and 2020, the Company expensed approximately $57.8 million and $50.6 million, respectively, related to these retirement plans.

22. Legal Proceedings

The Company, in common with the insurance industry in general, is subject to litigation and arbitration in the normal course of its business. As of December 31, 2021, 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.

23. Statutory Information

Arch Re Bermuda and its insurance and reinsurance subsidiaries are subject to insurance and/or reinsurance laws and regulations in the jurisdictions in which they operate. These regulations include certain restrictions on the amount of dividends or other distributions available to shareholders without prior approval of the insurance regulatory authorities. During 2021 and 2020, Arch Re Bermuda paid dividends to Arch Capital of $1.8 billion and $221.6 million, respectively.

The actual and required statutory capital and surplus for Arch Re Bermuda and its principal operating subsidiaries at December 31, 2021 and 2020 was as follows:

	December 31,	
	2021	2020
Actual capital and surplus (1):		
Bermuda	$ 17,528,510	$ 17,390,943
Ireland	958,200	883,337
United States	5,600,652	4,904,840
United Kingdom	902,002	967,440
Canada	70,063	64,286
Australia	283,693	64,507
Required capital and surplus:		
Bermuda	$ 5,661,301	$ 5,234,121
Ireland	794,933	701,161
United States	1,717,646	1,644,324
United Kingdom	563,164	601,662
Canada	42,513	37,441
Australia	214,022	19,370

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

There were no state-prescribed or permitted regulatory accounting practices for any of the Company’s insurance or reinsurance entities that resulted in reported statutory surplus that differed from that which would have been reported under the prescribed practices of the respective regulatory authorities, including the National Association of Insurance Commissioners. The differences between statutory financial statements and statements prepared in accordance with GAAP vary by jurisdiction, however, with the primary differences being that statutory financial statements may not reflect deferred acquisition costs, certain net deferred tax assets, goodwill and intangible assets, unrealized appreciation or depreciation on debt securities and certain unauthorized reinsurance recoverables and include contingency reserves.

The statutory net income (loss) for the Company’s principal operating subsidiaries for 2021 and 2020 was as follows:

	Year Ended December 31,	
	2021	2020
Statutory net income (loss):		
Bermuda	$ 2,370,746	$ 1,579,889
Ireland	25,191	18,397
United States	345,790	143,271
United Kingdom	35,286	4,078
Canada	6,985	(1,049)
Australia	11,874	(8,601)

Bermuda

Under the Bermuda Insurance Act 1978 and related regulations, each as amended (the “Insurance Act”), Arch Re Bermuda is registered as a Class 4 insurer and long-term insurer and is required to maintain minimum statutory capital and surplus equal to the greater of a minimum solvency margin and the enhanced capital requirement (“ECR”) as determined by the Bermuda Monetary Authority (“BMA”). The ECR is calculated based on the Bermuda Solvency Capital Requirement model, a risk-based model that takes into account the risk characteristics of different aspects of the company’s business. At December 31, 2021 and 2020, the actual and required capital and surplus were based on the economic balance sheet requirements.

Under the Insurance Act, Arch Re Bermuda is restricted with respect to the payment of dividends. Arch Re Bermuda is prohibited from declaring or paying in any financial year dividends of more than 25% of its total statutory capital and surplus (as shown on its previous financial year’s statutory balance sheet) unless it files, at least seven days before payment of such dividends, with the BMA an affidavit stating that it will continue to meet the required margins following the declaration of those dividends. Accordingly, Arch Re Bermuda can pay approximately $3.8 billion to Arch Capital during 2022 without providing an affidavit to the BMA.

Ireland

The Company has three Irish subsidiaries: Arch Re Europe, an authorized life and non-life reinsurer, Arch Insurance (EU), an authorized non-life insurer and Arch Underwriting Europe, a registered insurance and reinsurance intermediary. Irish authorized reinsurers and insurers, such as Arch Re Europe, Arch Insurance (EU) and Irish intermediaries, such as Arch Underwriters Europe, are also subject to the general body of Irish laws and regulations including the provisions of the Companies Act 2014. As part of the Company's Brexit plan, Arch Insurance (EU) received approval from the Central Bank of Ireland ("CBOI") to expand the nature of its business in 2019 commenced writing insurance lines in the European Economic Area in 2020, and the Part VII Transfer was completed at the end of December 2020. Arch Re Europe, Arch Insurance (EU) and Arch Underwriters Europe are subject to the supervision of the CBOI and must comply with Irish insurance acts and regulations as well as with directions and guidance issued by the CBOI. Arch Re Europe and Arch Insurance (EU) are required to maintain a minimum level of capital. At December 31, 2021 and 2020, these requirements were met.

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

United States

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

Dividends or distributions, if any, made by Arch Re U.S. would result in an increase in available capital at Arch-U.S., the Company's U.S. holding company. Arch Re U.S. can declare a maximum of approximately $217.5 million of dividends during 2022 subject to the approval of the Commissioner of the Delaware Department of Insurance.

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

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

The Company's U.S. mortgage insurance subsidiaries are subject to detailed regulation by their domiciliary and primary regulators, the Wisconsin Office of the Commissioner of Insurance ("Wisconsin OCI") for AMIC and Arch Mortgage Guaranty Company, the North Carolina Department of Insurance ("NC DOI") for UGRIC, and by state insurance departments in each state in which they are licensed. As mandated by state insurance laws, mortgage insurers are generally mono-line companies restricted to writing a single type of insurance business, such as mortgage insurance business. Each company is subject to either Wisconsin or North Carolina statutory requirements as to payment of dividends. Generally, both Wisconsin and North Carolina law precludes any dividend before giving at least 30 days' notice to the Wisconsin OCI or NC DOI, as applicable, and prohibits paying any dividend unless it is fair and reasonable to do so. In addition, the state regulators and the GSEs limit or restrict our eligible mortgage insurers' ability to pay stockholder dividends or otherwise return capital to shareholders. Under respective states law, our U.S. mortgage subsidiaries can declare a maximum of approximately $194.1 million of ordinary dividends in 2022, however, dividend capacity is limited by the respective companies unassigned surplus amounts. In certain instances, approval by the GSEs would be required for dividends or other forms of return of capital to shareholders due to the requirements under PMIERs, including the minimum required assets imposed on our eligible mortgage insurers by the GSEs. Such dividend would result in an increase in available capital at Arch U.S. MI Holdings Inc., a subsidiary of Arch-U.S.

Mortgage insurance companies licensed in Wisconsin or North Carolina are required to establish contingency loss reserves for purposes of statutory accounting in an amount equal to at least 50% of net earned premiums. These amounts generally cannot be withdrawn for a period of 10 years and are separate liabilities for statutory accounting purposes, which affects the

ability to pay dividends. However, with prior regulatory approval, a mortgage insurance company may make early withdrawals from the contingency reserve when incurred losses exceed 35% of net premiums earned in a calendar year.

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

United Kingdom

The Prudential Regulation Authority ("PRA") and the Financial Conduct Authority ("FCA") regulate insurance and reinsurance companies and the FCA regulates firms carrying on insurance mediation activities operating in the U.K., both under the Financial Services and Markets Act 2000. The Company's U.K. insurance operations are conducted through Arch Insurance (U.K.), Arch Syndicate 2012 and Arch Syndicate 1955. AMAL is the managing agent of Arch Syndicate 2012 and Arch Syndicate 1955. Arch Syndicate 2012 and Arch Syndicate 1955 provide access to Lloyd's extensive distribution network and worldwide licenses. AMAL also acts as managing agent for third party members of Arch Syndicate 1955. All U.K. companies are also subject to a range of statutory provisions, including the laws and regulations of the Companies Acts 2006 (as amended) (the "U.K. Companies Acts").

Arch Insurance (U.K.) and AMAL must maintain a margin of solvency at all times under the Solvency II Directive from the European Insurance and Occupational Pensions Authority. The regulations stipulate that insurers are required to maintain the minimum capital requirement and solvency capital requirement at all times. At December 31, 2021 and 2020, our subsidiaries were in compliance with these requirements.

As corporate members of Lloyd's, AMAL (as managing agent of Arch Syndicate 2012 and Arch Syndicate 1955) and each syndicate's respective corporate members are subject to the oversight of the Council of Lloyd's. The capital required to support a Syndicate's underwriting capacity, or funds at Lloyd's, is assessed annually and is determined by Lloyd's in accordance with the capital adequacy rules established by the PRA. The Company has provided capital to support the underwriting of Arch Syndicate 2012 and Arch Syndicate 1955 in the form of pledged assets and letters of credit provided by Arch Re Bermuda. The amount which the Company provides as funds at Lloyd's is not available for distribution to the Company for the payment of dividends. Lloyd's is supervised by the PRA and required to implement certain rules prescribed by the PRA under the Lloyd's Act of 1982 regarding the operation of the Lloyd's market. With respect to managing agents and corporate members, Lloyd's prescribes certain minimum standards relating to management and control, solvency and other requirements and monitors managing agents' compliance with such standards.

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

Canada

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

Under the Insurance Companies Act (Canada), Arch Insurance Canada is required to maintain an adequate amount of capital in Canada, calculated in accordance with a test promulgated by OSFI called the Minimum Capital Test ("MCT"), and Arch Re Canada is required to maintain an adequate margin of assets over liabilities in Canada, calculated in accordance with a test

promulgated by OSFI called the Branch Adequacy of Assets Test. Dividends or distributions, if any, made by Arch Insurance Canada would result in an increase in available capital at Arch Insurance Company (see "—United States" section).

Australia

The Australian Prudential Regulation Authority ("APRA") is an independent statutory authority responsible for prudential supervision of institutions across banking, insurance and superannuation and promotes financial stability in Australia. Arch Indemnity has been authorized to conduct monoline lenders' mortgage insurance business in Australia since June 2002 and was acquired by the Company on August 30, 2021. Arch LMI Pty Ltd. ("Arch LMI") was authorized by APRA in January 2019 to conduct monoline lenders' mortgage insurance business in Australia. Major regulatory requirements that are applicable to Arch LMI and Arch Indemnity as general as an insurance providers in Australia include requirements on minimum capital levels and compliance with corporate governance standards, including the risk management strategy for our Australian mortgage insurance business. At December 31, 2021 and 2020, these requirements were met.

The Company also conducts property and casualty insurance business in Australia through the Company's Lloyd's platform. This insurance business is managed by and distributed through local coverholders and is subject to Lloyd's Supervision. In addition, the business is subject to local Australian prudential regulatory oversight by APRA, and additional separate financial services market conduct regulation by the Australian Securities and Investments Commission.

24. Subsequent Event

Bellemeade Re 2022-1 Ltd.

In January 2022, the Company announced that it has obtained over $315 million of indemnity reinsurance on a pool representing approximately $6.3 billion of mortgages from Bellemeade Re 2022-1 Ltd., a special purpose reinsurer. The coverage was obtained by issuing approximately $283.5 million in bonds and $33 million in direct reinsurance. This transaction largely covers a portfolio of policies issued from July through November 2021.

Russia Invasion of Ukraine

The events related to the recent Russian invasion of Ukraine have resulted in economic, financial, sectoral and other targeted sanctions issued by government and regulatory bodies in the U.S., U.K., European Union and other countries. Arch Reinsurance Ltd. and its subsidiaries ("Arch") must comply with all applicable sanctions, trade controls and related laws and regulations in the jurisdictions where we operate. Arch is closely monitoring our underwriting and investment portfolios in light of these new sanctions. We continue to evaluate our exposure to these sanctions, as well as the possible impact of these events on the global economy and financial markets. While the impact on the business remains uncertain, Arch is actively monitoring the situation in Ukraine with a particular focus on the holdings and valuation of the Company's investments, incurred losses, and premium volume, all of which are impacted by the increased volatility and uncertainty. Due to the recentness of these events, we are unable to estimate the effects of these matters on our prospective results of operations or financial condition.