

Sirius International Group, Ltd.
Consolidated Financial Statements
For the years ended December 31, 2019, 2018, and 2017

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Report of Independent Auditors

To the Board of Directors and Shareholder of Sirius International Group, Ltd.

We have audited the accompanying consolidated financial statements of Sirius International Group, Ltd. and its subsidiaries, which comprise the consolidated balance sheets as of December 31, 2019 and 2018, and the related consolidated statements of income (loss), of comprehensive (loss), of shareholder's equity and of cash flows for each of the three years in the period ended December 31, 2019.

Management's Responsibility for the Consolidated Financial Statements

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

Auditors' Responsibility

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

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

Opinion

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of Sirius International Group, Ltd. and its subsidiaries as of December 31, 2019 and 2018, and the results of their operations and their cash flows for each of the three years in the period ended December 31, 2019 in accordance with accounting principles generally accepted in the United States of America.

PricewaterhouseCoopers LLP

New York, New York
March 19, 2020

Sirius International Group, Ltd.
Consolidated Balance Sheets
As at December 31, 2019 and 2018

(Expressed in millions of U.S. dollars, except share information)

	2019	2018
Assets		
Fixed maturity investments, trading, at fair value (<i>Amortized cost 2019: \$1,644.9; 2018: \$1,949.9</i>)	\$ 1,669.3	\$ 1,946.4
Short-term investments, at fair value (<i>Amortized cost 2019: \$1,089.6; 2018: \$710.9</i>)	1,084.0	710.2
Equity securities, trading, at fair value (<i>Cost 2019: \$379.2; 2018: \$409.4</i>)	405.2	380.0
Other long-term investments, at fair value (<i>Cost 2019: \$315.4; 2018: \$337.6</i>)	346.8	365.0
Cash	136.1	119.4
Restricted cash	14.3	12.8
Total investments and cash	3,655.7	3,533.8
Accrued investment income	11.1	14.1
Insurance and reinsurance premiums receivable	730.1	630.6
Reinsurance recoverable on unpaid losses	410.3	350.2
Reinsurance recoverable on paid losses	73.9	55.0
Funds held by ceding companies	293.9	186.8
Ceded unearned insurance and reinsurance premiums	162.0	159.8
Deferred acquisition costs	148.2	141.6
Deferred tax asset	166.7	202.5
Accounts receivable on unsettled investment sales	6.7	5.0
Goodwill	400.8	400.6
Intangible assets	179.8	195.6
Other assets	136.6	81.5
Total assets	\$ 6,375.8	\$ 5,957.1
Liabilities		
Loss and loss adjustment expense reserves	\$ 2,331.5	\$ 2,016.7
Unearned insurance and reinsurance premiums	708.0	647.2
Ceded reinsurance payable	244.7	206.9
Funds held under reinsurance treaties	169.1	110.6
Deferred tax liability	205.9	237.4
Debt	685.2	696.8
Accounts payable on unsettled investment purchases	2.3	3.2
Other liabilities	180.3	125.3
Total liabilities	4,527.0	4,044.1
Commitments and contingencies (See Note 20)		
Common shareholder's equity		
Common shares (<i>shares issued and outstanding: 12,000</i>)	0.1	0.1
Additional paid-in surplus	1,553.3	1,553.3
Retained earnings	529.9	559.7
Accumulated other comprehensive (loss)	(236.9)	(201.8)
Total common shareholder's equity	1,846.4	1,911.3
Non-controlling interests	2.4	1.7
Total equity	1,848.8	1,913.0
Total liabilities and equity	\$ 6,375.8	\$ 5,957.1

See Notes to Consolidated Financial Statements.

Sirius International Group, Ltd.
Consolidated Statements of Income (Loss)
For the years ended December 31, 2019, 2018, and 2017

(Expressed in millions of U.S. dollars)

	2019	2018	2017
Revenues			
Net earned insurance and reinsurance premiums	\$ 1,441.6	\$ 1,262.3	\$ 1,035.3
Net investment income	84.3	70.9	56.5
Net realized investment gains (losses)	56.7	2.3	(27.4)
Net unrealized investment gains (losses)	80.5	(23.1)	(23.3)
Net foreign exchange gains	7.7	22.7	9.5
Revaluation of contingent consideration	(0.8)	3.5	35.2
Other revenue	73.9	71.2	20.8
Total revenues	1,743.9	1,409.8	1,106.6
Expenses			
Loss and loss adjustment expenses	1,170.3	900.0	811.2
Insurance and reinsurance acquisition expenses	288.7	255.4	197.2
Other underwriting expenses	138.2	146.2	106.3
General and administrative expenses	81.1	64.3	78.9
Intangible asset amortization expenses	15.8	15.8	10.2
Impairment of intangible assets	-	8.0	5.0
Interest expense on debt	31.0	30.8	22.4
Total expenses	1,725.1	1,420.5	1,231.2
Pre-tax income (loss)	18.8	(10.7)	(124.6)
Income tax (expense)	(11.9)	(40.4)	(26.4)
Net income (loss)	6.9	(51.1)	(151.0)
Less: income attributable to non-controlling interests	(1.7)	(1.4)	0.4
Income (loss) before dividends on Preference shares	5.2	(52.5)	(150.6)
Dividends on Preference shares	-	-	(14.1)
Net income (loss) attributable to Sirius Group's common shareholder	\$ 5.2	\$ (52.5)	\$ (164.7)

See Notes to Consolidated Financial Statements.

Sirius International Group, Ltd.
Consolidated Statements of Comprehensive (Loss)
For the years ended December 31, 2019, 2018, and 2017

<i>(Expressed in millions of U.S. dollars)</i>	2019	2018	2017
Comprehensive income (loss)			
Net income (loss)	\$ 6.9	\$ (51.1)	\$ (151.0)
Other comprehensive (loss) income, net of tax			
Change in foreign currency translation, net of tax	(35.1)	(61.9)	71.7
Total other comprehensive (loss) income	(35.1)	(61.9)	71.7
Comprehensive (loss)	(28.2)	(113.0)	(79.3)
Income attributable to non-controlling interests	(1.7)	(1.4)	0.4
Comprehensive (loss) attributable to Sirius Group's common shareholder	\$ (29.9)	\$ (114.4)	\$ (78.9)

See Notes to Consolidated Financial Statements.

Sirius International Group, Ltd.
Consolidated Statements of Shareholder's Equity
For the years ended December 31, 2019, 2018, and 2017

<i>(Expressed in millions of U.S. dollars)</i>	2019	2018	2017
Common shares			
Balance at beginning and end of period	\$ 0.1	\$ 0.1	\$ 0.1
Additional paid-in surplus			
Balance at beginning of period	1,553.3	1,409.7	1,384.0
Capital contributions	-	143.5	275.8
Redemption of preference shares	-	-	(250.0)
Other, net	-	0.1	(0.1)
Balance at end of period	1,553.3	1,553.3	1,409.7
Retained earnings			
Balance at beginning of period	559.7	760.6	1,035.3
Cumulative effect of an accounting change	-	1.6	-
Balance at beginning of period, as adjusted	559.7	762.2	1,035.3
Net income (loss)	6.9	(51.1)	(151.0)
Income attributable to non-controlling interests	(1.7)	(1.4)	0.4
Dividends declared on common shares	(35.0)	(150.0)	(110.0)
Dividends paid to preference shareholders	-	-	(14.1)
Balance at end of period	529.9	559.7	760.6
Accumulated other comprehensive (loss)			
Balance at beginning of period	(201.8)	(139.9)	(211.6)
Accumulated net foreign currency translation (losses)			
Balance at beginning of period	(201.8)	(139.9)	(211.6)
Net change in foreign currency translation	(35.1)	(61.9)	71.7
Balance at the end of period	(236.9)	(201.8)	(139.9)
Total common shareholder's equity	\$ 1,846.4	\$ 1,911.3	\$ 2,030.5
Non-controlling interests	2.4	1.7	0.2
Total equity	\$ 1,848.8	\$ 1,913.0	\$ 2,030.7

See Notes to Consolidated Financial Statements.

Sirius International Group, Ltd.
Consolidated Statements of Cash Flows
For the years ended December 31, 2019, 2018, and 2017

<i>(Expressed in millions of U.S. dollars)</i>	2019	2018	2017
Cash flows provided from (used for) operations:			
Net income (loss)	\$ 6.9	\$ (51.1)	\$ (151.0)
Adjustments to reconcile net income (loss) to net cash provided from (used for) operations:			
Net realized and unrealized investment (gains) losses	(137.2)	20.8	50.7
Amortization of premium on fixed maturity investments	(5.9)	6.1	16.7
Amortization of intangible assets	15.8	15.8	10.2
Depreciation and other amortization	8.2	9.5	8.9
Revaluation of contingent consideration	0.8	(3.5)	(35.2)
Impairment of intangible assets	-	8.0	5.0
Other operating items:			
Net change in loss and loss adjustment expense reserves	357.8	203.7	188.3
Net change in reinsurance recoverable on paid and unpaid losses	(90.9)	(95.7)	(11.1)
Net change in funds held by ceding companies	(111.1)	(48.0)	(38.9)
Net change in unearned insurance and reinsurance premiums	89.1	195.5	55.7
Net change in ceded reinsurance payable	48.4	93.4	22.8
Net change in ceded unearned insurance and reinsurance premiums	(13.3)	(76.3)	14.4
Net change in insurance and reinsurance premiums receivable	(127.0)	(144.1)	(102.3)
Net change in deferred acquisition costs	(10.7)	(28.4)	(27.0)
Net change in funds held under reinsurance treaties	60.6	42.7	5.8
Net change in current and deferred income taxes, net	(5.5)	18.7	13.3
Net change in other assets and liabilities, net	47.1	(31.7)	(45.7)
Net cash provided from (used for) operations	133.1	135.4	(19.4)
Cash flows (used for) provided from investing activities:			
Net change in short-term investments	(366.4)	(115.7)	(3.6)
Sales of fixed maturities and convertible fixed maturity investments	536.1	1,307.2	1,421.4
Maturities, calls, and paydowns of fixed maturity and convertible fixed maturity investments	407.6	102.7	292.2
Sales of common equity securities	369.3	353.0	82.4
Distributions and redemptions of other long-term investments	74.6	72.4	40.6
Sales of consolidated subsidiaries and unconsolidated affiliates, net of cash sold	-	-	0.8
Contributions to other long-term investments	(53.5)	(160.1)	(167.5)
Purchases of common equity securities	(336.9)	(505.7)	(167.8)
Purchases of fixed maturities and convertible fixed maturity investments	(680.7)	(1,256.3)	(1,018.5)
Purchases of loan participations	(20.0)	-	-
Purchases of consolidated subsidiaries, net of cash acquired	-	(7.9)	(354.5)
Net change in unsettled investment purchases and sales	(2.6)	(1.2)	(7.9)
Other, net	(0.6)	(4.8)	(5.9)
Net cash (used for) provided from investing activities	(73.1)	(216.4)	111.7
Cash flows (used for) financing activities:			
Dividends to common shareholder	(35.0)	(150.0)	(110.0)
Payment of contingent consideration	-	(0.9)	(30.6)
Change in collateral held on Interest Rate Cap	(0.1)	-	(1.1)
Cash dividends paid to non-controlling interests	(1.0)	-	(14.1)
Capital contribution from parent	-	143.5	61.0
Issuance of debt, net of issuance costs	-	-	340.8
Redemption of preference share	-	-	(250.0)
Repayment of debt	-	-	(3.8)
Other, net	-	-	(1.0)
Net cash (used for) financing activities	(36.1)	(7.4)	(8.8)
Effect of exchange rate changes on cash	(5.7)	(9.9)	9.9
Net increase (decrease) in cash during year	18.2	(98.3)	93.4
Cash and restricted cash balance at beginning of year	132.2	230.5	137.1
Cash and restricted cash balance at end of year	\$ 150.4	\$ 132.2	\$ 230.5

See Notes to Consolidated Financial Statements.

Sirius International Group, Ltd.
Notes to Consolidated Financial Statements
For the years ended December 31, 2019, 2018, and 2017

Note 1. General

Sirius International Group, Ltd. (the “Company” or “SIG”) is a Bermuda exempted company that provides multi-line insurance and reinsurance on a worldwide basis through its wholly owned subsidiaries (collectively with the Company, “Sirius Group”).

Note 2. Summary of significant accounting policies

Basis of presentation

The accompanying consolidated financial statements at December 31, 2019, have been prepared in accordance with generally accepted accounting principles in the United States of America (“GAAP”). The accompanying consolidated financial statements present the consolidated results of operations, financial condition, and cash flows of the Company and its subsidiaries and those entities in which the Company has control and a majority economic interest as well as those variable interest entities (“VIEs”) that meet the requirements for consolidation. All significant intercompany transactions 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 as of the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Actual results could differ from those estimates. Certain amounts in the prior period financial statements have been reclassified to conform to the current presentation. Tabular dollar amounts are in millions, with the exception of share and per share amounts. All amounts are reported in U.S. dollars, except where noted otherwise.

On February 26, 2019, Sirius International Insurance Group, Ltd. (“Sirius Ltd.”), the Company’s indirect parent, approved the contribution of Sirius Acquisitions Holding Company III (“SAHC3”) to Sirius International UK Holdings II, Ltd. (“SIUK2”), an indirect subsidiary of the Company. The contribution of SAHC3 to SIUK2 during 2019 qualifies as a common control transaction and SAHC3’s financial position, results of operations, and cash flows for the year ended December 31, 2018 are included in Sirius Group’s consolidated financial statements.

On May 26, 2017, Sirius Ltd., the Company’s indirect parent, acquired 100% ownership of IMG Acquisition, Inc. and its subsidiaries (“IMG”), through Sirius Acquisitions Holding Company II (“SAHC2”). On June 29, 2018, SAHC2 was contributed to Sirius Bermuda Insurance Company Ltd. (“SBDA”), a subsidiary of the Company. The contribution of SAHC2 to SBDA qualifies as a common control transaction and SAHC2’s results of operations and cash flows for the year ended December 31, 2018 are included in Sirius Group’s consolidated financial statements. In addition, the comparative information for the year ended December 31, 2017 has been revised to include SAHC2’s financial position as at December 31, 2017 and results of operations and cash flows for the period SAHC2 was under common control.

Significant accounting policies

Investment securities

Sirius Group’s invested assets consist of securities and other investments held for general investment purposes. Sirius Group’s portfolio of fixed maturity investments and equity securities held for general investment purposes are classified as trading and are reported at fair value as of the balance sheet date. Changes in unrealized gains and losses are reported pre-tax in revenues. Realized investment gains and losses are accounted for using the first-in first-out method and are reported pre-tax in revenues. Premiums and discounts on all fixed maturity investments are amortized and/or accreted to income over the anticipated life of the investment and are reported in Net investment income.

Sirius Group’s invested assets that are measured at fair value include fixed maturity investments, common and preferred equity securities, and other long-term investments, such as interests in hedge funds and private equities. Fair value is defined as the price received to sell an asset in an orderly transaction between market participants at the measurement date reflecting the highest and best use valuation concepts. In determining its estimates of fair value, Sirius Group uses a variety of valuation approaches and inputs. Whenever possible, Sirius Group estimates fair value using valuation methods that maximize the use of quoted prices and other observable inputs.

Short-term investments

Short-term investments consist of money market funds, certificates of deposit and other securities which, at the time of purchase, mature or become available for use within one year. Short-term investments are carried at fair value.

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Notes to Consolidated Financial Statements
For the years ended December 31, 2019, 2018, and 2017

Other long-term investments

Other long-term investments consist primarily of hedge funds, private equity funds, other investments in limited partnerships and other private equity securities. The fair value of other long-term investments is generally based upon Sirius Group's proportionate interest in the underlying fund's net asset value, which is deemed to approximate fair value. In addition, due to a lag in reporting, some of the fund managers, fund administrators, or both, are unable to provide final fund valuations as of the Company's reporting date. In these circumstances, Sirius Group estimates the return of the current period and uses all credible information available. This includes utilizing preliminary estimates reported by its fund managers and using information that is available to Sirius Group with respect to the underlying investments, as necessary. The changes in fair value are reported in pre-tax revenues in Net unrealized investment gains. Actual final fund valuations may differ from Sirius Group's estimates and these differences are recorded in the period they become known as a change in estimate.

Other long-term investments also includes certain investments that are eligible for the equity method where Sirius Group has elected the fair value option under which the changes in fair value are reported in pre-tax revenues in Net unrealized investment (losses). (See **Note 17**.)

Loan participations

Loan participations that qualify for sale accounting under the Accounting Standards Codification ("ASC") Topic 860, "Transfers and Servicing of Financial Assets", are carried at fair value. The fair value of loan participations is estimated using discounted cash flow analysis. Sirius Group includes Loan participations in Other assets in the Consolidated Balance Sheets.

Cash

Cash includes amounts on hand and demand deposits with banks and other financial institutions. Amounts presented in the statement of cash flows are shown net of balances acquired and sold in the purchase or sale of the Company's consolidated subsidiaries.

Restricted cash

Restricted cash represents cash and cash equivalents that Sirius Group is (a) holding for the benefit of a third party and is legally or contractually restricted as to withdrawal or usage for general corporate purposes; and (b) not replaceable by another type of asset other than cash or cash equivalents, under the terms of Sirius Group's contractual arrangements with such third parties.

Insurance and reinsurance operations

Premiums written are recognized as revenues and are earned ratably over the term of the related policy or reinsurance treaty. Premiums written include amounts reported by brokers, managing general underwriters, 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, managing general underwriters, familiarity with each market, the timing of the reported information, an analysis and understanding of the characteristics of each class 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. Unearned premiums represent the portion of premiums written that are applicable to future insurance or reinsurance coverage provided by policies or treaties in force.

Deferred acquisition costs represent commissions, premium taxes, brokerage expenses, and other costs which are directly attributable to the successful acquisition or renewal of contracts and vary with the production of business. These costs are deferred and amortized over the period during which the premiums are earned. Amortization of Deferred acquisition costs are shown net of contractual commissions earned on reinsurance ceded within Insurance and reinsurance acquisition expenses. Deferred acquisition costs are limited to the amount expected to be recovered from future earned premiums and anticipated investment income. This limitation is referred to as a premium deficiency. A premium deficiency is recognized if the sum of expected loss and loss adjustment expenses ("LAE"), expected dividends to policyholders, unamortized acquisition costs, and maintenance costs exceeds related unearned premiums and anticipated investment income. A premium deficiency is recognized 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.

Other underwriting expenses consist primarily of personnel related expenses (including salaries, benefits, and variable compensation expense) and other general operating expenses related to the underwriting operations.

Losses and LAE are charged against income as incurred. Unpaid insurance loss and LAE reserves are based on estimates (generally determined by claims adjusters, legal counsel, and actuarial staff) of the ultimate costs of settling claims, including the effects of inflation and other societal and economic factors. Unpaid reinsurance loss and LAE reserves are based primarily on reports received from ceding companies and actuarial projections. Unpaid loss and LAE reserves represent management's best estimate of ultimate losses and LAE, net of estimated salvage and subrogation recoveries, if applicable. Such estimates are regularly reviewed and updated and any resulting adjustments are reflected in current operations. The process of estimating loss and LAE reserves involves a considerable degree of judgment by management and the ultimate amount of expense to be incurred could be greater or less than the amounts currently reflected in the financial statements.

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Sirius Group enters into ceded reinsurance contracts to protect its businesses from losses due to concentration of risk, to manage its operating leverage ratios and to limit losses arising from catastrophic events. Such reinsurance contracts are executed through excess of loss treaties and catastrophe contracts under which the reinsurer indemnifies for a specified part or all of certain types of losses over stipulated amounts arising from any one occurrence or event. Sirius Group has also entered into quota share treaties with reinsurers under which all risks meeting prescribed criteria are covered on a pro-rata basis. The amount of each risk ceded by Sirius Group is subject to maximum limits which vary by line of business and type of coverage. Although these contracts protect Sirius Group, these reinsurance arrangements do not relieve Sirius Group from its primary obligations to insureds.

Amounts recoverable from reinsurers are estimated in a manner consistent with the claim liability associated with the reinsured policies. The collectability of reinsurance recoverables is subject to the solvency of the reinsurers. Sirius Group is selective in regard to its reinsurers, principally placing reinsurance with those reinsurers with a strong financial condition, industry ratings, and underwriting ability. Management monitors the financial condition and ratings of its reinsurers on an ongoing basis.

Reinsurance premiums, commissions, expense reimbursements, and reserves related to reinsured business are accounted for on a basis consistent with those used in accounting for the original policies issued and the terms of the reinsurance contracts. Reinsurance premiums ceded are expensed over the period the reinsurance coverage is provided. Ceded unearned insurance and reinsurance premiums represent the portion of premiums ceded applicable to the unexpired term of policies in force. Funds held by ceding companies represent amounts due to Sirius Group in connection with certain assumed reinsurance agreements in which the ceding company retains a portion of the premium to provide security against future loss payments. The funds held by ceding companies are generally invested by the ceding company and a contractually agreed interest amount is credited to Sirius Group and recognized as investment income. Funds held under reinsurance treaties represent contractual payments due from Sirius Group that have been retained to secure such obligations.

Accruals for contingent commission liabilities are established for reinsurance contracts that provide for the stated commission percentage to increase or decrease based on the loss experience of the contract. Changes in the estimated liability for contingent commission arrangements are recorded as Insurance and reinsurance acquisition expenses. Accruals for contingent commission liabilities are determined through the review of the contracts that have these adjustable features and are estimated based on expected loss and LAE.

Derivative financial instruments

Sirius Group holds derivative financial instruments for both risk management and investment purposes. Sirius Group recognizes all derivatives as either assets or liabilities, measured at fair value, in the Consolidated Balance Sheets. Changes in the fair value of derivative instruments are recognized in current period pre-tax income.

Deferred software costs

Sirius Group capitalizes costs related to computer software developed for internal use during the application development stage of software development projects. These costs generally consist of certain external, payroll, and payroll-related costs. Sirius Group begins amortization of these costs once the project is completed and ready for its intended use. Amortization is on a straight-line basis and over a useful life of three to five years. As of December 31, 2019 and 2018, Sirius Group had unamortized deferred software costs of \$6.8 million and \$9.3 million, respectively. For the years ended December 31, 2019, 2018, and 2017, Sirius Group had amortization expenses of \$3.6 million, \$4.8 million, and \$4.6 million, respectively, related to software developed for internal use.

Share-based compensation

Share-based compensation plans are accounted for in accordance with the ASC Topic 718 "Compensation - Stock Compensation" Sirius Group recognizes the compensation expense for stock restricted share and performance share awards based on the fair value of the award on the date of grant over the requisite service period. Awards under the 2016 Long-term Incentive Plan and 2018 Omnibus Incentive Plan vest over two or three years. The Company has elected to recognize forfeitures as they occur rather than estimate service-based forfeitures over the requisite service period.

Defined benefit plans

Certain Sirius Group employees in Europe participate in defined benefit plans. The liability for the defined benefit plans that is reported on the Consolidated Balance Sheets is the current value of the defined benefit obligation at the end of the period, reduced by the fair value of the plan's managed assets, with adjustments for actuarial gains and losses. The defined benefit pension plan obligation is calculated annually by independent actuaries. The current value of the defined benefit obligation is determined through discounting of expected future cash flows, using interest rates determined by current market interest rates. The service costs and actuarial gains and losses on the defined benefit obligation and the fair value on the plan assets are recognized in the Consolidated Statements of Income.

Commission and other revenue recognition

Sirius Group recognizes agent commissions and other revenues when it has fulfilled all of its obligations necessary to earn the revenue and when it can both reliably estimate the amount of revenue, net of any amounts expected to be uncollectible, and any amounts associated with expected cancellations.

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Federal and foreign income taxes

Certain of Sirius Group's subsidiaries file consolidated tax returns in the United States. Sirius Group has subsidiaries in various jurisdictions, including but not limited to Sweden, the United Kingdom, and Luxembourg, which are subject to applicable taxes in those jurisdictions.

Deferred tax assets and liabilities are recorded when a difference between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for tax purposes exists, and for other temporary differences. The deferred tax asset or liability is recorded based on tax rates expected to be in effect when the difference reverses. The deferred tax asset is recognized when it is more likely than not that it will be realized.

The Tax Cuts and Jobs Act (the "TCJA") which was enacted into law in the U.S. in December 31, 2017 includes a new base erosion and anti-abuse tax ("BEAT"), which is essentially a minimum tax that is potentially applicable to certain otherwise deductible payments made by U.S. entities to non-U.S. affiliates, including cross-border interest payments and reinsurance premiums. The statutory BEAT rate is 10% in 2019-2025, and then rises to 12.5% in 2026 and thereafter. The TCJA also includes provisions for Global Intangible Low-Taxed Income ("GILTI") under which taxes on foreign income are imposed on the excess of a deemed return on tangible assets of certain foreign subsidiaries. Consistent with accounting guidance, Sirius Group is treating BEAT as an in period tax charge when incurred in future periods for which no deferred taxes need to be provided and has made an accounting policy election to treat GILTI taxes in a similar manner.

Foreign currency exchange

The U.S. dollar is the functional currency for Sirius Group's businesses except for Sirius International Insurance Corporation ("Sirius International"), Lloyd's Syndicate 1945 ("Syndicate 1945"), several subsidiaries of International Medical Group Acquisition, Inc. ("IMG"), and the Canadian reinsurance operations of Sirius America Insurance Company ("Sirius America"). Sirius Group also invests in securities denominated in foreign currencies. Assets and liabilities recorded in these foreign currencies are translated into U.S. dollars at exchange rates in effect at the balance sheet date, and revenues and expenses are converted using the average exchange rates for the period. Net foreign exchange gains and losses arising from the translation of functional currencies are reported in shareholder's equity, in Accumulated other comprehensive (loss). As of December 31, 2019 and 2018, Sirius Group had Net unrealized foreign currency translation losses of \$236.9 million and \$201.8 million, respectively, recorded in Accumulated other comprehensive (loss) on its Consolidated Balance Sheets.

Assets and liabilities relating to foreign operations are remeasured into the functional currency using current exchange rates; revenues and expenses are remeasured into the functional currency using the weighted average exchange rate for the period. The resulting exchange gains and losses are reported as a component of net income in the period in which they arise within Net realized investment gains (losses), Net unrealized investment gains (losses), and Net foreign exchange gains.

The following rates of exchange for the U.S. dollar have been used for translation of assets and liabilities for subsidiaries whose functional currency is not the U.S. dollar at December 31, 2019 and 2018:

Currency	Closing Rate 2019	Closing Rate 2018
Swedish kronor	9.3210	8.9397
British pound	0.7568	0.7850
Euro	0.8912	0.8734
Canadian dollar	1.3003	1.3614

Goodwill and intangible assets

Goodwill represents the excess of the purchase price of an acquisition over the fair value of the identifiable net assets acquired and is assigned to the applicable reporting unit at acquisition. Goodwill is evaluated for impairment on an annual basis. Sirius Group initially evaluates goodwill using a qualitative approach to determine whether it is more likely than not that the fair value of goodwill is greater than its carrying value. If the results of the qualitative evaluation indicate that it is more likely than not that the carrying value of goodwill exceeds its fair value, Sirius Group performs the quantitative test for impairment.

Indefinite-lived intangible assets are evaluated for impairment similar to goodwill. Finite-lived intangible are amortized on a straight-line basis over their estimated useful lives. The amortization periods approximate the period over which Sirius Group expects to generate future net cash inflows from the use of these assets. All of these assets are subject to impairment testing for the impairment or disposal of long-lived assets when events or conditions indicate that the carrying value of an asset may not be fully recoverable from future cash flows.

If goodwill or intangible assets are impaired, such assets are written down to their fair values with the related expense recorded in Sirius Group's results of operations. (See **Note 10.**)

Non-controlling interests

Non-controlling interests consist of the ownership interests of non-controlling shareholders in consolidated subsidiaries, and are presented separately on the balance sheet.

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Variable interest entities

Sirius Group consolidates a VIE when it has both the power to direct the activities of the VIE that most significantly impact its economic performance and either the obligation to absorb losses or the right to receive returns from the VIE that could potentially be significant to the VIE.

An entity in which Sirius Group holds a variable interest is a VIE if any of the following conditions exist: (a) the total equity investment at risk is not sufficient to permit the entity to finance its activities without additional subordinated financial support, (b) as a group, the holders of equity investment at risk lack either the direct or indirect ability through voting rights or similar rights to make decisions about an entity's activities that most significantly impact the entity's economic performance or the obligation to absorb the expected losses or right to receive the expected residual returns, or (c) the voting rights of some investors are disproportionate to their obligation to absorb the expected losses of the entity, their rights to receive the expected residual returns of the entity, or both, and substantially all of the entity's activities either involve or are conducted on behalf of an investor with disproportionately few voting rights. 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 (a) the power to direct the activities of a VIE that most significantly impact the economic performance of the VIE and (b) 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 following an event that requires reassessment, Sirius Group determines whether it is the primary beneficiary based on the facts and circumstances surrounding each entity. (See **Note 18**.)

Preference Shares

On May 24, 2007, the Company issued \$250.0 million in non-cumulative perpetual preference shares with a \$1,000 per share liquidation preference ("Preference shares"), and received \$245.7 million of proceeds, net of \$4.3 million of issuance costs and commissions. These shares were issued in an offering that was exempt from the registration requirements of the Securities Act of 1933. On October 25, 2017, the Company redeemed all of its outstanding 250,000 Fixed/Floating Perpetual Non-Cumulative Preference shares. The redemption price equaled the \$1,000 liquidation preference per preference share.

Recently adopted changes in accounting principles

Leases

Effective January 1, 2019, Sirius Group adopted Accounting Standards Update ("ASU") 2016-2, Leases (Accounting Standards Codification ("ASC") 842) which requires lessees to recognize lease assets and liabilities on the balance sheet for both operating and financing leases, with the exception of leases with an original term of 12 months or less. Under previous guidance, recognition of lease assets and liabilities was not required for operating leases. The new guidance requires that lease assets and liabilities to be recognized and measured initially based on the present value of the lease payments. Sirius Group adopted the new guidance using the simplified transition option that allows companies to apply the new lease standard at the adoption date and recognize a cumulative effect adjustment to the opening balance of retained earnings in the period of adoption. Sirius Group also made the following elections:

- Sirius Group elected the package of practical expedients to not reassess prior conclusions related to contracts containing leases, lease classification and initial direct costs for all leases upon transition.
- Sirius Group did not elect the hindsight practical expedient upon transition, for all leases.
- Sirius Group elected the short-term lease measurement and recognition exemption, resulting in lease payments being recorded as an expense on a straight-line basis over the lease term.
- Sirius Group elected to include both lease and non-lease components as a single component for all leases.
- Sirius Group did not elect the land easement practical expedient as it was not applicable.

As a result of the adoption of the new guidance, Sirius Group recognized a lease liability of \$36.8 million, which represents the present value of our remaining lease payments and a right-of-use asset of \$34.4 million as of January 1, 2019. The adoption of this guidance did not materially impact our results of operations or cash flows. Due to the adoption of the standard using the retrospective cumulative-effect adjustment method, there are no changes to our previously reported results prior to January 1, 2019. Lease expense did not change materially as a result of the adoption of the new guidance. (See **Note 20**.)

Premium amortization on callable debt securities

Effective January 1, 2019, Sirius Group adopted ASU 2017-8, Premium Amortization on Purchased Callable Debt Securities (ASC 310-20), which changes the amortization period for certain purchased callable debt securities. Under the new guidance, for investments in callable debt securities held at a premium, the premium will be amortized over the period to the earliest call date. The new guidance does not change the amortization period for callable debt securities held at a discount. The adoption of this guidance did not have a significant effect on our financial statements.

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Recent accounting pronouncements

Credit losses

In June 2016, the FASB issued ASU 2016-13, *Measurement of Credit Losses on Financial Instruments* (ASC 326), which establishes new guidance for the recognition of credit losses for financial assets measured at amortized cost. The new guidance, which applies to financial assets that have the contractual right to receive cash, including reinsurance receivables, requires reporting entities to estimate the credit losses expected over the life of a credit exposure using historical information, current information and reasonable and supportable forecasts that affect the collectability of the financial asset. The new guidance for Sirius Group is effective for annual and interim periods beginning after December 15, 2022. Adoption of this guidance is on a modified retrospective basis. Early adoption of the guidance is permitted. Sirius Group plans to early adopt the standard on its effective date of January 1, 2020. This guidance is currently not expected to have a material impact on the consolidated financial statements.

Fair Value Measurement Disclosures

In August 2018, the FASB issued ASU 2018-13, *Fair Value Measurement (Topic 820): Disclosure Framework—Changes to the Disclosure Requirements for Fair Value Measurement*, which modifies the disclosure requirements of fair value measurements. The new guidance is effective for fiscal years beginning after December 15, 2019 and for interim periods within those fiscal years. The adoption of this guidance will not have a material impact on the consolidated financial statements.

Note 3. Significant transactions

Cedar Insurance Company (formerly WRM America Indemnity Company, Inc.)

On August 16, 2018, Sirius Group acquired 100% ownership of WRM America Indemnity Company, Inc. ("WRM America") from WRM America Indemnity Holding Company, LLC for \$16.9 million in cash. During 2019, WRM America changed its name to Cedar Insurance Company ("Cedar"). Cedar is a New York-domiciled insurer with a run-off book of business mainly comprised of general liability, educator's legal liability, automobile liability and physical damage, property and excess catastrophe liability. As part of the purchase of Cedar, Sirius Group acquired \$3.1 million of indefinite-lived intangible assets related to insurance licenses.

The Phoenix Holdings Ltd.

On July 2, 2018, Sirius Group terminated its share purchase agreement to acquire a controlling interest in The Phoenix Holdings Ltd. As a result of the termination, Sirius Group recognized an income statement charge for the \$4.5 million call option it held during 2018.

IMG

On May 26, 2017, Sirius Ltd., the Company's indirect parent, acquired 100% ownership of IMG, through SAHC2. On June 29, 2018, SAHC2 was contributed to SBDA, a subsidiary of the Company. The contribution of SAHC2 to SBDA qualifies as a common control transaction and SAHC2's results of operations and cash flows for the year ended December 31, 2018 are included in Sirius Group's consolidated financial statements. In addition, the comparative information for the year ended December 31, 2017 has been revised to include SAHC2's financial position as at December 31, 2017 and results of operations and cash flows for the period SAHC2 was under common control.

The purchase of IMG was undertaken to expand on Sirius Group's existing Global Accident and Health ("Global A&H") platform and to accelerate the growth strategy of the Global A&H international insurance business, to add service fee revenues to Sirius Group's existing risk-transfer based insurance revenues, and to gain access to IMG's distribution networks and client base. Total consideration consisted of \$250.8 million of cash, \$100.0 million of Series A redeemable preference shares issued by Sirius Ltd., and up to \$50.0 million of contingent consideration, payable in Series A redeemable preference shares, which was stated as \$43.1 million at fair value at acquisition date, resulting in a total enterprise value of \$393.9 million. Sirius Ltd. assumed certain IMG debt of \$129.5 million ("Debt Assumption"), reducing its cash consideration by that amount and resulting in a total equity consideration of \$264.4 million. Concurrently with the transaction, IMG's subsidiary International Medical Group - Stop-Loss, Inc. ("IMG - Stop Loss") was sold to Certus Management Group, Inc. ("Certus"). As part of the sale of IMG - Stop Loss, Sirius Group issued a secured promissory note of \$9.0 million to Certus.

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

<i>(Millions)</i>	Total	Useful Life
Purchase price		
Cash paid	\$ 250.8	
Series A redeemable preference shares	100.0	
Contingent consideration	43.1	
Total enterprise value	393.9	
Less: Debt assumed	(129.5)	
Total purchase price (a)	\$ 264.4	
Assets acquired		
Total investments	\$ 41.0	
Cash	10.5	
Accrued investment income	0.2	
Insurance and reinsurance premiums receivable	1.6	
Deferred acquisition costs	2.9	
Other assets	12.9	
Intangible asset – distribution relationships	91.0	13.0 years
Intangible asset – customer relationships	17.0	12.5 years
Intangible asset – trade names	27.0	
Intangible asset – technology	10.0	5.0 years
Total assets acquired	214.1	
Liabilities assumed		
Loss and loss adjustment expense reserves	14.3	
Unearned insurance and reinsurance premiums	9.8	
Deferred tax liability	55.9	
Debt	129.5	
Other liabilities	18.2	
Total liabilities assumed	227.7	
Net assets acquired (b)	(13.6)	
Goodwill (a)-(b)	\$ 278.0	

The goodwill balance is primarily attributed to IMG's assembled workforce and access to the supplemental healthcare and medical travel insurance market. None of the goodwill recognized is expected to be deductible for income tax purposes.

The IMG Earnout is payable, if earnings before interest expense, taxes, depreciation and amortization ("EBITDA") of IMG exceed amounts defined in the purchase agreement for each year during the three year period ending December 31, 2019. As part of the Series A preference shares redemption agreement, the parties agreed that any remaining contingent consideration in respect of the IMG acquisition, will be paid in cash, not in Series A redeemable preference shares, following the redemption, as previously contemplated in the agreement in respect of the IMG acquisition. During the years ended December 31, 2019 and 2018, Sirius Ltd. paid \$6.9 million and \$3.5 million, respectively, to IMG for the contingent payment for the 2018 and 2017 calendar years, respectively. At December 31, 2019, and 2018, the IMG Earnout liability was remeasured at a fair value of \$18.4 million and \$19.9 million, respectively, and is reflected within Other liabilities. As a result of the remeasurement of the IMG Earnout, Sirius Ltd. has recognized \$(5.5) million, \$6.1 million and \$13.6 million, respectively, in Revaluation of contingent consideration.

During 2019, Sirius Group obtained \$163 million, or 9%, of its gross written premiums through IMG. During 2018 and 2017, Sirius Group received 7% and 11% of its gross written premiums through IMG, respectively.

During 2017, IMG's revenues and net income after acquisition, inclusive of intangible asset amortization expenses, were \$79.6 million and \$13.3 million, respectively.

Armada

On April 3, 2017, Sirius Group purchased 100% of Armada and its subsidiaries from Armada Enterprises LLC ("Seller"). Armada is an insurance services and health care technology business that creates specialty employee benefit products and serves to strengthen health care coverage and access. The purchase of Armada was undertaken to expand and accelerate the growth of Sirius Group's Global A&H platform in the United States, to diversify Sirius Group's revenues to include fee based revenues, and to gain access to Armada's distribution networks. Total consideration for the acquisition consisted of (1) the purchase of 50% of Armada by Sirius Group for \$123.4 million, and (2) the redemption by Armada of the remaining 50% held by Seller for a redemption price based on a three years contingent earn-out mechanism that could result in an additional payment to Seller of up to \$125.0 million ("Armada Earnout"), with fair value of \$79.1 million at acquisition date, resulting in a total enterprise value of \$202.5 million.

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

<i>(Millions)</i>	Total	Useful Life
Purchase price		
Cash paid	\$ 123.4	
Contingent consideration	79.1	
Total purchase price (a)	<u>\$ 202.5</u>	
Assets acquired		
Restricted cash	\$ 10.4	
Other assets	1.2	
Intangible asset – distribution relationships	60.0	22.5 years
Intangible asset – trade name	16.0	7.5 years
Intangible asset – technology	5.5	9.0 years
Total assets acquired	<u>93.1</u>	
Liabilities assumed		
Other liabilities	13.3	
Total liabilities assumed	<u>13.3</u>	
Net assets acquired (b)	<u>79.8</u>	
Goodwill (a)-(b)	<u>\$ 122.7</u>	

The goodwill balance is primarily attributed to Armada's assembled workforce and access to the supplemental healthcare insurance market, and additional synergies to be realized in the future. The goodwill recognized is expected to be deductible for income tax purposes in the future. The contingent consideration is payable if EBITDA of Armada exceeds amounts defined in the redemption agreement. The Armada Earnout can be settled in the Company's common shares, subject to certain criteria. The Armada Earnout is subject to fair value measurement, which is a component of net income and reflected in Revaluation of contingent consideration. In December 2017, Sirius Group settled approximately 82% of the Armada Earnout with the Seller for \$30.6 million. At December 31, 2017, the remaining Armada Earnout liability was remeasured at a fair value of \$13.3 million and is reflected in Other liabilities. As a result of the settlement and remeasurement of the Armada Earnout, Sirius Group recorded a \$35.2 million gain in Revaluation of contingent consideration in 2017. During 2019, Sirius Group did not pay any of the Armada Earnout. During 2018, Sirius Group paid \$0.9 million of the Armada Earnout. At December 31, 2019 and 2018, the Armada Earnout was remeasured at a fair value of \$9.7 million and \$8.9 million, respectively, and is reflected within Other liabilities. As a result of the remeasurement of the Armada Earnout, Sirius Group has recognized \$(0.8) million and \$3.5 million, respectively, in Revaluation of contingent consideration during the years ended December 31, 2019 and 2018.

During 2017, Armada's revenues and net income after acquisitions, inclusive of intangible asset amortization expenses, were \$24.7 million and \$9.7 million, respectively.

Note 4. Segment information

Sirius Group classifies its business into four reportable segments – Global Property, Global A&H, Specialty and Casualty ("Specialty & Casualty"), and Runoff and Other ("Runoff & Other"). The accounting policies of the reportable segments are the same as those used for the preparation of the Company's consolidated financial statements.

The Company's Global Property, Global A&H, Specialty & Casualty, and Runoff & Other reportable segments each have managers who are responsible for the overall profitability of their respective segments and who are directly accountable to the Company's chief operating decision maker, the Chief Executive Officer ("CEO") of the Company. The CEO assesses segment operating performance, allocates capital, and makes resource allocation decisions based on Technical profit (loss), Underwriting (loss) profit, and Underwriting (loss) profit, including net service fee revenue.

Segment results are shown prior to corporate eliminations. Corporate eliminations are shown to reconcile to consolidated Technical profit (loss), consolidated Underwriting profit (loss) and consolidated Underwriting profit (loss), including net service fee revenue.

Sirius Group does not allocate its assets by segment, with the exception of Goodwill and Intangible assets, and, accordingly, investment income is not allocated to each segment.

Global Property

Global Property consists of Sirius Group's underwriting lines of business which offer other property insurance and reinsurance, property catastrophe excess reinsurance, and agriculture reinsurance on a worldwide basis:

Other Property—Sirius Group participates in the broker market for property reinsurance treaties written on a proportional and excess of loss basis. For Sirius Group's international business, the book consists of treaty, written on both a proportional and excess of loss basis, facultative, and primary business, primarily in Europe, Asia and Latin America. In the United States, the book predominantly centers on significant participations on proportional and excess of loss treaties mostly in the excess and surplus lines segment of the market.

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Property Catastrophe Excess—Property catastrophe excess of loss reinsurance treaties covers losses from catastrophic events. Sirius Group writes a worldwide book with the largest concentration of exposure in Europe and the United States. The U.S. book has a national account focus supporting principally the lower and/or middle layers of large capacity programs and also consists of select small regional and standard lines carriers. The exposures written in the international book are diversified across many countries, regions, perils and layers.

Agriculture—Sirius Group provides stop-loss reinsurance coverage to companies writing U.S. government-sponsored multi-peril crop insurance ("MPCI"). Sirius Group's participation is net of the government's stop-loss reinsurance protection. Sirius Group also provides coverage for crop-hail and certain named perils when bundled with MPCI business. Sirius Group also writes agriculture business outside of the United States.

Global A&H

The Global A&H operating segment consists of Sirius Group's insurance, reinsurance, and managing general underwriting ("MGU") units (which include Armada and IMG) that offer accident and health products on a worldwide basis:

Accident and Health insurance and reinsurance—Sirius Group is an insurer of accident and health insurance business in the United States, either on an admitted or surplus lines basis, as well as international business written through wholly-owned IMG. Armada business is written on an admitted basis. Sirius Group also writes proportional and excess reinsurance treaties covering employer medical stop-loss for per person (specific) and per employer (aggregate) exposures. In addition, Sirius Group writes some medical, health, travel and personal accident coverages written on a treaty, facultative and primary basis.

Specialty & Casualty

Specialty & Casualty consists of Sirius Group's insurance and reinsurance underwriting units which offer specialty & casualty product lines on a worldwide basis. Specialty lines represent unique risks where the more difficult and unusual risks are underwritten. Because specialty lines tend to be the more unusual or higher risks, much of the market is characterized by a high degree of specialization:

Aviation & Space—provides aviation insurance that covers loss of or damage to an aircraft and the aircraft operations' liability to passengers, cargo and hull as well as to third parties. Additionally, liability arising out of non-aircraft operations such as hangars, airports and aircraft products can be covered. Space insurance primarily covers loss of or damage to a satellite during launch and in orbit. The book consists of treaty, written on both a proportional and excess of loss basis, facultative, and primary business.

Marine—provides marine reinsurance, primarily written on an excess of loss and proportional basis. Coverage offered includes damage to ships and goods in transit, marine liability lines, and offshore energy industry insurance. Sirius Group also writes yacht business, both on reinsurance and a primary basis. The marine portfolio is diversified across many countries and regions.

Trade Credit—writes credit and bond reinsurance worldwide. The bulk of the business is traditional short-term commercial credit insurance, covering pre-agreed domestic and export sales of goods and services with typical coverage periods of 60 to 120 days. Losses under these policies are correlated to adverse changes in a respective country's gross national product.

Contingency—underwrites contingency insurance for event cancellation and non-appearance, primarily on a primary policy and facultative reinsurance basis. Additionally, coverage for liabilities arising from contractual bonus, prize redemption and over-redemption is also offered. The contingency portfolio is diversified across many countries and regions.

Casualty—underwrites a cross section of all casualty lines, including general liability, umbrella, auto, workers compensation, professional liability, and other specialty classes, written on a proportional, excess of loss, and primary basis.

Surety—underwrites commercial surety bonds, including non-construction contract bonds, in a broad range of business segments in the United States.

Environmental—underwrites a pure environmental insurance book in the United States consisting of four core products that revolve around pollution coverage, which are premises pollution liability, contractor's pollution liability, contractor's pollution and professional liability.

Runoff & Other

Runoff & Other consists of asbestos risks, environmental risks and other long-tailed liability exposures, and underwriting results from Sirius Global Solutions Holding Company ("Sirius Global Solutions") and its subsidiaries. Sirius Global Solutions is a Connecticut-based division of Sirius Group specializing in the acquisition and management of runoff liabilities for insurance and reinsurance companies, both in the United States and internationally.

Segment reorganization

In December 2019, Sirius Group completed an internal reorganization to optimize operations that went into effect on January 1, 2020.

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The following tables summarize the segment results for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	For the year ended December 31, 2019					Total
	Global Property	Global A&H	Specialty & Casualty	Runoff & Other	Corporate Elimination	
Gross written premiums	\$ 848.4	\$ 593.4	\$ 456.7	\$ 4.2	\$ -	\$ 1,902.7
Net written premiums	\$ 625.7	\$ 458.1	\$ 416.3	\$ 2.5	\$ -	\$ 1,502.6
Net earned insurance and reinsurance premiums	\$ 635.9	\$ 443.3	\$ 360.2	\$ 2.2	\$ -	\$ 1,441.6
Loss and allocated LAE ⁽¹⁾	(582.7)	(271.3)	(271.6)	(1.8)	-	(1,127.4)
Insurance and reinsurance acquisition expenses	(107.3)	(125.8)	(98.8)	(2.9)	46.1	(288.7)
Technical profit (loss)	(54.1)	46.2	(10.2)	(2.5)	46.1	25.5
Unallocated LAE ⁽²⁾	(11.4)	(7.4)	(9.3)	(1.0)	(13.8)	(42.9)
Other underwriting expenses	(63.9)	(23.7)	(31.2)	(5.9)	(13.5)	(138.2)
Underwriting (loss) income	(129.4)	15.1	(50.7)	(9.4)	18.8	(155.6)
Service fee revenue ⁽³⁾	-	124.2	-	-	(49.6)	74.6
Managing general underwriter unallocated LAE ⁽⁴⁾	-	(17.3)	-	-	17.3	-
Managing general underwriter other underwriting expenses ⁽⁵⁾	-	(13.5)	-	-	13.5	-
General and administrative expenses, MGU + Runoff & Other ⁽⁶⁾	-	(66.9)	-	(3.7)	-	(70.6)
Underwriting (loss) income, including net service fee income	(129.4)	41.6	(50.7)	(13.1)	-	(151.6)
Net investment income						84.3
Net realized investment gains (losses)						56.7
Net unrealized investment (losses) gains						80.5
Net foreign exchange gains (losses)						7.7
Revaluation of contingent consideration						(0.8)
Other revenue ⁽⁷⁾						(0.7)
General and administrative expenses ⁽⁸⁾						(10.5)
Intangible asset amortization expenses						(15.8)
Impairment of intangible assets						-
Interest expense on debt						(31.0)
Pre-tax income (loss)						\$ 18.8
Underwriting Ratios						
Loss ratio	93.4%	62.9%	78.0%	NM	NM	81.2%
Acquisition expense ratio	16.9%	28.4%	27.4%	NM	NM	20.0%
Other underwriting expense ratio	10.0%	5.3%	8.7%	NM	NM	9.6%
Combined ratio ⁽⁹⁾	120.3%	96.6%	114.1%	NM	NM	110.8%
Goodwill and intangible assets ⁽¹⁰⁾	\$ -	\$ 572.5	\$ -	\$ 8.1	\$ -	\$ 580.6

⁽¹⁾Loss and allocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽²⁾Unallocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽³⁾Service fee revenue is part of Other revenue on the Consolidated Statements of (Loss) (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁴⁾Managing general underwriter unallocated LAE represents IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the claims process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁵⁾Managing general underwriter other underwriting expenses represent IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the underwriting process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁶⁾General and administrative expenses, MGU + Runoff & Other is part of General and administrative expenses on the Consolidated Statements of Income (Loss) (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁷⁾Other revenue is presented net of Service fee revenue and is comprised mainly of gains (losses) from derivatives (see Note 13), (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁸⁾General and administrative expenses are presented net of General and administrative expenses, MGU + Runoff & Other (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁹⁾Ratios considered not meaningful ("NM") to Runoff & Other and Corporate Elimination.

⁽¹⁰⁾Sirius Group does not allocate its assets by segment, with the exception of Goodwill and Intangible assets.

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(Millions)	For the year ended December 31, 2018					Total
	Global Property	Global A&H	Specialty & Casualty	Runoff & Other	Corporate Elimination	
Gross written premiums	\$ 962.4	\$ 500.6	\$ 325.1	\$ 32.9	\$ -	\$ 1,821.0
Net written premiums	\$ 655.0	\$ 379.8	\$ 292.7	\$ 29.6	\$ -	\$ 1,357.1
Net earned insurance and reinsurance premiums	\$ 636.0	\$ 357.6	\$ 239.5	\$ 29.2	\$ -	\$ 1,262.3
Loss and allocated LAE ⁽¹⁾	(518.2)	(189.0)	(142.9)	(13.0)	-	(863.1)
Insurance and reinsurance acquisition expenses	(121.1)	(109.7)	(65.5)	(2.8)	43.7	(255.4)
Technical profit (loss)	(3.3)	58.9	31.1	13.4	43.7	143.8
Unallocated LAE ⁽²⁾	(10.5)	(5.9)	(5.9)	(1.6)	(13.0)	(36.9)
Other underwriting expenses	(68.2)	(27.4)	(28.2)	(6.3)	(16.1)	(146.2)
Underwriting (loss) income	(82.0)	25.6	(3.0)	5.5	14.6	(39.3)
Service fee revenue ⁽³⁾	-	115.7	-	-	(44.7)	71.0
Managing general underwriter unallocated LAE ⁽⁴⁾	-	(14.0)	-	-	14.0	-
Managing general underwriter other underwriting expenses ⁽⁵⁾	-	(16.1)	-	-	16.1	-
General and administrative expenses, MGU + Runoff & Other ⁽⁶⁾	-	(53.6)	-	(3.1)	-	(56.7)
Underwriting (loss) income, including net service fee income	(82.0)	57.6	(3.0)	2.4	-	(25.0)
Net investment income						70.9
Net realized investment gains (losses)						2.3
Net unrealized investment (losses) gains						(23.1)
Net foreign exchange gains (losses)						22.7
Gain on revaluation of contingent consideration						3.5
Other revenue ⁽⁷⁾						0.2
General and administrative expenses ⁽⁸⁾						(7.6)
Intangible asset amortization expenses						(15.8)
Impairment of intangible assets						(8.0)
Interest expense on debt						(30.8)
Pre-tax income (loss)						\$ (10.7)
Underwriting Ratios						
Loss ratio	83.1%	54.5%	62.1%	NM	NM	71.3%
Acquisition expense ratio	19.0%	30.7%	27.3%	NM	NM	20.2%
Other underwriting expense ratio	10.7%	7.7%	11.8%	NM	NM	11.6%
Combined ratio ⁽⁹⁾	112.8%	92.9%	101.2%	NM	NM	103.1%
Goodwill and intangible assets ⁽¹⁰⁾	\$ -	\$ 588.1	\$ -	\$ 8.1	\$ -	\$ 596.2

⁽¹⁾Loss and allocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽²⁾Unallocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽³⁾Service fee revenue is part of Other revenue on the Consolidated Statements of Income (Loss) (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁴⁾Managing general underwriter unallocated LAE represents IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the claims process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁵⁾Managing general underwriter other underwriting expenses represent IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the underwriting process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁶⁾General and administrative expenses, MGU + Runoff & Other is part of General and administrative expenses on the Consolidated Statements of Income (Loss) (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁷⁾Other revenue is presented net of Service fee revenue and is comprised mainly of gains (losses) from derivatives (see Note 13), and the termination of the call option to purchase The Phoenix Holdings, Ltd. (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁸⁾General and administrative expenses are presented net of General and administrative expenses, MGU + Runoff & Other (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁹⁾Ratios considered not meaningful ("NM") to Runoff & Other and Corporate Elimination.

⁽¹⁰⁾Sirius Group does not allocate its assets by segment, with the exception of Goodwill and Intangible assets.

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(Millions)	For the year ended December 31, 2017					Total
	Global Property	Global A&H	Specialty & Casualty	Runoff & Other	Corporate Elimination	
Gross written premiums	\$ 732.1	\$ 494.6	\$ 218.1	\$ (5.5)	\$ -	\$ 1,439.3
Net written premiums	\$ 556.2	\$ 341.5	\$ 193.0	\$ (0.5)	\$ -	\$ 1,090.2
Net earned insurance and reinsurance premiums	\$ 564.4	\$ 306.8	\$ 163.2	\$ 0.9	\$ -	\$ 1,035.3
Loss and allocated LAE ⁽¹⁾	(499.5)	(175.0)	(99.6)	(11.0)	-	(785.1)
Insurance and reinsurance acquisition expenses	(112.9)	(89.6)	(41.1)	3.5	42.9	(197.2)
Technical profit (loss)	(48.0)	42.2	22.5	(6.6)	42.9	53.0
Unallocated LAE ⁽²⁾	(12.9)	(4.8)	(5.3)	(3.1)	-	(26.1)
Other underwriting expenses	(63.3)	(23.4)	(16.5)	(2.9)	-	(106.1)
Underwriting (loss) income	(124.2)	14.0	0.7	(12.6)	42.9	(79.2)
Service fee revenue ⁽³⁾	-	65.9	-	-	(42.9)	23.0
Managing general underwriter unallocated LAE ⁽⁴⁾	-	-	-	-	-	-
Managing general underwriter other underwriting expenses ⁽⁵⁾	-	-	-	-	-	-
General and administrative expenses, MGU + Runoff & Other ⁽⁶⁾	-	(44.8)	-	(4.0)	-	(48.8)
Underwriting (loss) income, including net service fee income	(124.2)	35.1	0.7	(16.6)	-	(105.0)
Net investment income						56.5
Net realized investment gains (losses)						(27.4)
Net unrealized investment (losses) gains						(23.3)
Net foreign exchange gains (losses)						9.5
Gain on revaluation of contingent consideration						35.2
Other revenue ⁽⁷⁾						(2.3)
General and administrative expenses ⁽⁸⁾						(30.2)
Intangible asset amortization expenses						(10.2)
Impairment of intangible assets						(5.0)
Interest expense on debt						(22.4)
Pre-tax income (loss)						\$ (124.6)
Underwriting Ratios						
Loss ratio	90.8%	58.6%	64.3%	NM	NM	78.4%
Acquisition expense ratio	20.0%	29.2%	25.2%	NM	NM	19.0%
Other underwriting expense ratio	11.2%	7.6%	10.1%	NM	NM	10.2%
Combined ratio ⁽⁹⁾	122.0%	95.4%	99.6%	NM	NM	107.6%
Goodwill and intangible assets ⁽¹⁰⁾	\$ -	\$ 612.3	\$ -	\$ 5.0	\$ -	\$ 617.3

⁽¹⁾Loss and allocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽²⁾Unallocated LAE are part of Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss) (the sum of Loss and allocated LAE and Unallocated LAE is equal to Loss and loss adjustment expenses on the Consolidated Statements of Income (Loss)).

⁽³⁾Service fee revenue is part of Other revenue on the Consolidated Statements of Income (Loss) (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁴⁾Managing general underwriter unallocated LAE represents IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the claims process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁵⁾Managing general underwriter other underwriting expenses represent IMG and Armada generated operating expenses following their integration with the Accident and Health insurance and reinsurance underwriting unit, representing costs associated with the underwriting process. In 2017, all Armada and IMG expenses were disclosed within General and administrative expenses, MGU + Runoff & Other.

⁽⁶⁾General and administrative expenses, MGU + Runoff & Other is part of General and administrative expenses on the Consolidated Statements of Income (Loss) (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁷⁾Other revenue is presented net of Service fee revenue and is comprised mainly of gains (losses) from derivatives (see Note 13) (the sum of Service fee revenue and Other revenue is equal to Other revenue on the Consolidated Statements of Income (Loss)).

⁽⁸⁾General and administrative expenses are presented net of General and administrative expenses, MGU + Runoff & Other (the sum of General and administrative expenses, MGU + Runoff & Other and General and administrative expenses is equal to General and administrative expenses on the Consolidated Statements of Income (Loss)).

⁽⁹⁾Ratios considered not meaningful ("NM") to Runoff & Other and Corporate Elimination.

⁽¹⁰⁾Sirius Group does not allocate its assets by segment, with the exception of Goodwill and Intangible assets.

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Note 5. Reserves for unpaid losses and loss adjustment expenses

Sirius Group establishes loss and LAE reserves that are estimates of future amounts needed to pay claims and related expenses for events that have already occurred. Sirius Group also obtains reinsurance whereby another reinsurer contractually agrees to indemnify Sirius Group for all or a portion of the reinsurance risks underwritten by Sirius Group. Such arrangements, where one reinsurer provides reinsurance to another reinsurer, are usually referred to as “retrocessional reinsurance” arrangements. Sirius Group establishes estimates of amounts recoverable from retrocessional reinsurance in a manner consistent with the loss and LAE liability associated with reinsurance contracts offered to its customers (the “ceding companies”), net of an allowance for uncollectible amounts. Net reinsurance loss reserves represent loss and LAE reserves reduced by retrocessional reinsurance recoverable on unpaid losses.

In addition to those factors which give rise to inherent uncertainties in establishing loss and LAE reserves, the inherent uncertainties of estimating such reserves are even greater for the reinsurer, due primarily to: (1) the claim-tail for reinsurers and insurers working through MGUs being further extended because claims are first reported to either the original primary insurance company or the MGU and then through one or more intermediaries to reinsurers, (2) the diversity of loss development patterns among different types of reinsurance treaties, facultative contracts or direct insurance contracts, (3) the necessary reliance on the ceding companies, intermediaries, and MGUs for information regarding reported claims and (4) the differing reserving practices among ceding companies and MGUs.

As with insurance reserves, the process of estimating reinsurance reserves involves a considerable degree of judgment by management and, as of any given date, is inherently uncertain. Based on the above, such uncertainty may be larger relative to the reserves for a company that principally writes reinsurance compared to an insurance company, and certainty may take a longer time to emerge.

Upon notification of a loss from an insured (typically a ceding company), Sirius Group establishes case reserves, including LAE reserves, based upon Sirius Group’s share of the amount of reserves reported by the insured and Sirius Group’s independent evaluation of the loss. In cases where available information indicates that reserves reported by a ceding company are inadequate or excessive, Sirius Group establishes case reserves or incurred but not reported (“IBNR”) in excess of or below its share of the reserves reported by the ceding company. Also, in certain instances, Sirius Group may decide not to establish case reserves or IBNR, when the information available indicates that reserves established by ceding companies are not adequately supported. In addition, specific claim information reported by insureds or obtained through claim audits can alert management 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 where customary. Generally, ceding company audits are not customary outside the United States. This information is often used to supplement estimates of IBNR.

Generally, initial actuarial estimates of IBNR reserves not related to a specific event are based on the loss ratio method applied to each class of business. Sirius Group regularly reviews the adequacy of its recorded reserves by using a variety of generally accepted actuarial methods, including historical incurred and paid loss development methods. Estimates of the initial expected ultimate losses involve management judgment and are based on historical information for that class of business, which includes loss ratios, market conditions, changes in pricing and conditions, underwriting changes, changes in claims emergence, and other factors that may influence expected ultimate losses. If actual loss activity differs substantially from expectations, an adjustment to recorded reserves may be warranted. As time passes, loss reserve estimates for a given year will rely more on actual loss activity and historical patterns than on initial loss ratio assumptions.

The actuarial methods are used to calculate a point estimate of loss and LAE reserves for each company within Sirius Group. These point estimates are then aggregated to produce an actuarial point estimate for Sirius Group. Once a point estimate is established, Sirius Group’s actuaries estimate loss reserve ranges to measure the sensitivity of the actuarial assumptions used to set the point estimates. These ranges are calculated from historical variations in loss ratios, payment, and reporting patterns by class and type of business. Management then establishes an estimate for the carried loss and LAE reserves shown in the financial statement. The management selection is within the range of loss reserve estimates provided by Sirius Group’s actuaries.

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Loss and Loss Adjustment Expense Reserve Summary

The following table summarizes the loss and LAE reserve activities of Sirius Group for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019	2018	2017
Gross beginning balance	\$ 2,016.7	\$ 1,898.5	\$ 1,620.1
Less beginning reinsurance recoverable on unpaid losses	(350.2)	(319.7)	(291.5)
Net loss and LAE reserve balance	1,666.5	1,578.8	1,328.6
Loss and LAE reserves acquired ⁽¹⁾	-	0.2	14.3
Losses and LAE incurred relating to:			
Current year losses	1,066.5	907.3	811.8
Prior years losses	103.8	(7.3)	(0.6)
Total net incurred losses and LAE	1,170.3	900.0	811.2
Accretion of fair value adjustment to net loss and LAE reserves	0.1	0.1	0.1
Foreign currency translation adjustment to net loss and LAE reserves	(4.4)	(20.9)	36.8
Loss and LAE paid relating to:			
Current year losses	251.3	251.4	222.8
Prior years losses	660.0	540.3	389.5
Total loss and LAE payments	911.3	791.7	612.3
Net ending balance	1,921.2	1,666.5	1,578.8
Plus ending reinsurance recoverable on unpaid losses	410.3	350.2	319.7
Gross ending balance	\$ 2,331.5	\$ 2,016.7	\$ 1,898.5

⁽¹⁾ Loss and LAE reserves acquired in 2018 relate to Sirius Group's purchase of Cedar; 2017 relate to Sirius Group's purchase of IMG.

Loss and LAE development - 2019

During the year ended December 31, 2019, Sirius Group had unfavorable prior year loss reserve development of \$103.8 million. Increases in loss reserve estimates were recorded in Global Property (\$91.5 million), Specialty & Casualty (\$12.4 million), and Runoff & Other (\$1.1 million). The unfavorable loss reserve development in Global Property was primarily attributable to prior year catastrophe events, including Typhoon Jebi and Hurricanes Michael, Florence, and Irma. The unfavorable loss reserve development in Specialty & Casualty was primarily driven by unfavorable loss reserve development in the Casualty Reinsurance line (\$13 million) due to early reporting of large claims coupled with steady reporting of less severe claims.

Loss and LAE development - 2018

During the year ended December 31, 2018, Sirius Group had net favorable prior year loss reserve development of \$7.3 million. During 2018, Sirius Group strengthened its Global Property loss reserves by \$43.6 million in Other Property (\$34.9 million) and Property Catastrophe Excess (\$13.2 million), resulting from higher than expected loss reporting from recent accident years, including \$21.4 million from Hurricanes Harvey, Irma, and Maria. Specialty & Casualty had net favorable loss reserve development of \$18.3 million, primarily driven by Aviation & Space (\$7.9 million) and Marine (\$6.8 million). The net favorable prior year loss reserve development of \$17.6 million for Runoff & Other included reductions in World Trade Center claims in response to revised information received by the Company and runoff Casualty reserves. Global A&H recorded \$15.0 million of net favorable loss reserve development due to lower than expected claims activity.

Loss and LAE development - 2017

During the year ended December 31, 2017, Sirius Group had net favorable prior year loss reserve development of \$0.6 million. During 2017, Sirius Group strengthened its asbestos loss reserves by \$59.0 million, which was offset by reductions of other runoff claims reserves of \$45.7 million, which is reflected in the Runoff & Other segment. The Specialty & Casualty segment had net favorable prior year loss development of \$12.1 million, which is comprised of the Marine (\$5.4 million), Trade credit (\$4.2 million), Aviation & Space (\$1.7 million), and Contingency (\$0.8 million) operating segments.

Fair value adjustment to loss and LAE reserves

In connection with purchase accounting for acquisitions, Sirius Group is required to adjust loss and LAE reserves and the related reinsurance recoverables to fair value on their respective acquired balance sheets. The net reduction to loss and LAE reserves is being recognized through an income statement charge ratably with and over the period the claims are settled and is recorded within General and administrative expenses. Sirius Group recognized \$0.1 million of such charges during the years ended December 31, 2019, 2018, and 2017, respectively. As of December 31, 2019, the pre-tax un-accreted adjustment was \$0.7 million.

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Asbestos and Environmental Loss and Loss Adjustment Expense Reserve Activity

In the Runoff & Other segment, Sirius Group's reserves include provisions made for claims that assert damages from asbestos and environmental ("A&E") related exposures primarily at Sirius America. Asbestos claims relate primarily to injuries asserted by those who came in contact with asbestos or products containing asbestos. Environmental claims relate primarily to pollution and related clean-up cost obligations, particularly as mandated by U.S. federal and state environmental protection agencies. In addition to the factors described above regarding the reserving process, Sirius Group estimates its A&E reserves based upon, among other factors, facts surrounding reported cases and exposures to claims, such as policy limits and deductibles, current law, past and projected claim activity, and past settlement values for similar claims, as well as analysis of industry studies and events, such as recent settlements and asbestos-related bankruptcies. The cost of administering A&E claims, which is an important factor in estimating loss reserves, tends to be higher than in the case of non-A&E claims due to the higher legal costs typically associated with A&E claims.

Sirius Group's A&E exposure is primarily from reinsurance contracts written between 1974 through 1985 by acquired companies, mainly MONY Reinsurance Company, which was acquired in 1991, and Christiania General Insurance Company, which was acquired in 1996. The exposures are mostly higher layer excess of loss treaty and facultative coverages with relatively low limits exposed for each claim.

The acquisition of companies having modest portfolios of A&E exposure has been typical of several prior Sirius Global Solutions transactions and is likely to be an element of at least some future acquisitions. However, the acquisition of new A&E liabilities is undertaken only after careful due diligence and utilizing conservative reserving assumptions in relation to industry benchmarks. In the case of portfolios acquired previously by Sirius Global Solutions, the exposures arise almost entirely from old assumed reinsurance contracts having small limits of liability.

During 2019, Sirius Group did not record any asbestos-related incurred losses and LAE on its asbestos reserves. Sirius Group recorded a decrease of \$6.9 million and an increase of \$59.0 million of asbestos-related incurred losses and LAE on its asbestos reserves in 2018 and 2017, respectively. The 2018 decrease was driven by favorable loss reserve development primarily due to benign claims activity on the Sirius Global Solutions portfolio. The 2017 increase was primarily a result of an in-depth analysis of Sirius Group's loss reserves undertaken in the second quarter of 2017.

Sirius Group recorded \$0.7 million, \$4.0 million, and \$6.1 million of environmental losses in 2019, 2018, and 2017, respectively, on its already existing reserves.

Sirius Group's net reserves for A&E losses were \$187.3 million and \$200.3 million as of December 31, 2019 and 2018, respectively. Sirius Group's asbestos three-year net paid survival ratio was approximately 11.5 years and 10.2 years as of December 31, 2019 and 2018. Sirius Group's environmental three-year net paid survival ratio was approximately 4.0 years and 4.2 years as of December 31, 2019 and 2018, respectively.

Sirius Group's reserves for A&E losses as of December 31, 2019 represent management's best estimate of its ultimate liability based on information currently available. However, as case law expands, medical and clean-up costs increase, and industry settlement practices change, Sirius Group may be subject to asbestos and environmental losses beyond currently estimated amounts. Sirius Group cannot reasonably estimate at the present time loss reserve additions arising from any such future adverse developments and cannot be sure that allocated loss reserves will be sufficient to cover additional liability arising from any such adverse developments.

The following table summarizes reported A&E loss and LAE reserve activities (gross and net of reinsurance) for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019		2018		2017	
	Gross	Net	Gross	Net	Gross	Net
Asbestos:						
Beginning balance	\$ 236.8	\$ 184.4	\$ 259.2	\$ 204.6	\$ 187.0	\$ 166.4
Incurred losses and LAE	0.1	-	(6.9)	(6.9)	96.9	59.0
Paid losses and LAE	(12.2)	(11.1)	(15.5)	(13.3)	(24.7)	(20.8)
Ending balance	224.7	173.3	236.8	184.4	259.2	204.6
Environmental:						
Beginning balance	16.7	15.9	16.7	16.0	18.5	13.9
Incurred losses and LAE	0.7	0.7	4.0	4.0	2.9	6.1
Paid losses and LAE	(2.9)	(2.6)	(4.0)	(4.1)	(4.7)	(4.0)
Ending balance	14.5	14.0	16.7	15.9	16.7	16.0
Total asbestos and environmental:						
Beginning balance	253.4	200.3	275.9	220.6	205.5	180.3
Incurred losses and LAE	0.8	0.7	(3.0)	(2.9)	99.8	65.1
Paid losses and LAE	(15.0)	(13.7)	(19.5)	(17.4)	(29.4)	(24.8)
Ending balance	\$ 239.2	\$ 187.3	\$ 253.4	\$ 200.3	\$ 275.9	\$ 220.6

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Net loss reserves by type

The following tables present Sirius Group's loss and LAE reserves, net of reinsurance, by type as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Case Reserve	\$ 1,030.6	\$ 924.5
IBNR Reserve	890.6	742.0
Loss and loss adjustment expense reserves, net of reinsurance	\$ 1,921.2	\$ 1,666.5

Reconciliation of liabilities for unpaid loss and LAE

The following table summarizes the ending liabilities for unpaid loss and LAE, net of reinsurance for each of Sirius Group's segments as of December 31, 2019:

<i>(Millions)</i>	As of December 31, 2019
Liabilities for unpaid loss and LAE, net of reinsurance	
Unpaid and allocated LAE reserves, net of reinsurance	
Other Property	\$ 490.7
Property Catastrophe Excess	286.0
Agriculture	68.1
Global Accident & Health	176.9
Aviation & Space	109.2
Trade credit	46.5
Environmental	4.6
Marine	52.4
Surety	4.9
Contingency	8.3
Casualty	202.0
Runoff & Other	430.6
Total unpaid and allocated LAE reserves, net of reinsurance	<u>1,880.2</u>
Unallocated LAE	41.0
Total unpaid loss and LAE reserves, net of reinsurance	<u>1,921.2</u>
Reinsurance recoverable on unpaid losses	
Other Property	137.3
Property Catastrophe Excess	60.0
Agriculture	2.0
Global Accident & Health	42.9
Aviation & Space	40.3
Trade credit	10.1
Environmental	4.6
Marine	8.7
Surety	0.5
Contingency	2.1
Casualty	1.2
Runoff & Other	100.6
Total reinsurance recoverable on unpaid losses	<u>410.3</u>
Total unpaid loss and LAE reserves	\$ 2,331.5

The following table groupings, reflecting the Other Property, Property Catastrophe Excess, Agriculture, Global Accident & Health, Aviation & Space, Trade Credit, Environmental, Marine, Surety, Contingency, Casualty, and Runoff & Other lines of business include three sections.

The first table (top section of grouping) presents, for each of the previous 10 accident years (1) cumulative total undiscounted incurred loss and allocated LAE, net of reinsurance, as of each of the previous 10 year-end evaluations, (2) total IBNR plus expected development on reported claims as of December 31, 2019, and (3) the cumulative number of reported claims as of December 31, 2019. The net loss reserves for losses and loss expenses related to the acquisitions described in **Note 3** have been incorporated within the ten year short duration tables on a prospective basis. Sirius Group provides treaty reinsurance for a significant portion and across all lines of its business. Sirius Group does not receive, and as such does not maintain claims count information associated with many of its reinsurance contracts, especially proportional covers. As such, Sirius Group has determined that it is impracticable to provide this information.

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The second table (middle section grouping) presents cumulative paid loss and allocated LAE, net of reinsurance for each of the previous 10 accident years, as of each of the previous 10 year-end evaluations. Also included in this table is a calculation of the liability for loss and allocated LAE as of December 31, 2019 which is then included in the reconciliation to the consolidated balance sheet presented above. The liability as of December 31, 2019 is calculated as the cumulative incurred loss and allocated LAE from the first table less the cumulative paid loss and allocated from the second table, plus any outstanding liabilities from accident years prior to 2010.

The third table (bottom section of grouping) is supplementary information about the average historical claims duration as of December 31, 2019. It shows the weighted average annual percentage payout of incurred loss and allocated LAE by accident year as of each age. For example, the first column is calculated as the incremental paid loss and allocated LAE in the first calendar year for each given accident year (e.g. calendar year 2010 for accident year 2010, calendar year 2011 for accident year 2011) divided by the cumulative incurred loss and allocated LAE as of December 31, 2019 for that accident year. The resulting ratios are weighted together using cumulative incurred loss and allocated LAE as of December 31, 2019.

Other Property

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance												
Accident Year	Year ended December 31,									December 31, 2019		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
2010	156.1	153.2	144.5	145.2	140.2	139.3	138.6	137.0	136.7	136.3	1.5	NA
2011		162.9	150.3	141.2	133.2	131.3	132.0	132.2	131.0	131.1	0.1	NA
2012			162.1	148.9	143.8	139.4	134.7	132.7	132.6	132.0	1.1	NA
2013				130.0	126.8	116.0	112.5	112.2	111.7	111.4	0.7	NA
2014					113.8	116.6	114.1	114.4	112.0	111.3	0.7	NA
2015						139.7	132.2	134.4	134.4	134.1	1.6	NA
2016							194.9	213.7	218.3	219.1	1.7	NA
2017								332.7	369.3	387.9	19.1	NA
2018									270.8	326.3	34.0	NA
2019										245.0	101.1	NA
									Total	1,934.5		

Other Property

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Accident Year	Year ended December 31,										2019
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
2010	31.4	88.7	115.5	123.2	128.0	130.1	130.6	130.6	130.5	131.4	131.4
2011		26.6	79.1	102.8	115.7	121.7	124.2	126.8	126.5	127.1	127.1
2012			20.0	84.7	107.4	115.5	118.9	124.2	125.0	126.2	126.2
2013				27.2	71.4	95.4	101.9	105.2	105.8	106.3	106.3
2014					18.8	68.9	95.5	103.7	105.9	106.7	106.7
2015						30.8	93.0	114.3	123.9	127.7	127.7
2016							31.2	128.0	180.6	197.5	197.5
2017								58.2	222.4	298.6	298.6
2018									54.8	180.1	180.1
2019										46.2	46.2
									Total	1,447.8	1,447.8
										All outstanding liabilities before 2010, net of reinsurance	4.0
										Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	490.7

Other Property

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	17.8%	42.5%	20.1%	7.2%	3.1%	1.8%	0.9%	0.3%	0.1%	0.7%

Sirius International Group, Ltd.
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Property Catastrophe Excess

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance												December 31, 2019	
Year ended December 31,													
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	2019		
2010	136.1	131.0	131.0	130.2	122.8	121.9	121.4	120.7	121.3	127.3		0.1	NA
2011		152.6	89.7	142.7	121.4	118.0	117.2	117.1	117.2	117.2		0.2	NA
2012			145.0	57.8	51.1	49.2	49.7	44.8	45.0	46.5		0.5	NA
2013				70.3	76.5	73.5	72.9	72.1	71.8	71.4		—	NA
2014					55.4	57.0	54.3	54.4	54.3	54.8		0.5	NA
2015						27.4	29.3	26.9	25.9	25.0		0.2	NA
2016							50.4	47.7	42.4	41.2		2.3	NA
2017								105.4	123.4	117.4		8.3	NA
2018									160.4	178.0		9.1	NA
2019										169.9		35.1	NA
										Total			

Property Catastrophe Excess

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											2019
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2019
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited
2010	49.8	90.0	102.5	107.6	111.1	113.6	117.5	117.5	118.0	119.1	119.1
2011		15.9	54.7	96.0	114.4	114.7	115.2	116.1	116.2	116.7	116.7
2012			2.8	25.8	35.4	40.0	40.9	42.7	44.0	46.1	46.1
2013				10.9	48.3	60.7	65.5	66.8	68.0	68.9	68.9
2014					9.2	35.8	41.9	47.4	49.1	51.5	51.5
2015						1.8	9.3	16.6	19.9	22.4	22.4
2016							10.4	25.7	31.7	37.0	37.0
2017								13.2	67.4	86.4	86.4
2018									2.7	115.8	115.8
2019										3.3	3.3
										Total	667.2
											4.5
											286.0

All outstanding liabilities before 2010, net of reinsurance

Liabilities for loss and allocated loss adjustment expenses, net of reinsurance

Property Catastrophe Excess

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance

Years	1	2	3	4	5	6	7	8	9	10
	12.7%	45.7%	19.0%	9.8%	2.3%	2.0%	1.9%	0.7%	0.5%	0.8%

Sirius International Group, Ltd.
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Agriculture

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019	
Year ended December 31,												
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	12.8	10.8	10.9	10.7	10.6	10.7	10.7	10.7	10.7	10.7	—	NA
2011		21.5	21.5	21.7	21.7	21.7	21.6	21.6	21.6	21.6	—	NA
2012			41.1	45.9	45.9	45.8	47.0	47.0	47.0	46.9	—	NA
2013				9.1	10.8	12.9	13.0	12.8	12.8	12.8	—	NA
2014					9.7	8.2	8.5	8.9	8.9	9.0	—	NA
2015						7.0	9.1	9.4	9.4	9.4	—	NA
2016							33.1	30.5	29.5	29.6	0.2	NA
2017								50.2	46.8	46.1	(0.4)	NA
2018									39.1	41.3	3.3	NA
2019										71.8	46.0	NA
										Total	299.2	

Agriculture

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	0.5	10.6	10.8	10.6	10.6	10.6	10.6	10.6	10.6	10.7	
2011		1.0	21.3	21.6	21.6	21.6	21.6	21.6	21.6	21.6	
2012			19.0	45.4	45.7	45.6	46.9	46.9	46.9	46.9	
2013				7.1	10.6	12.8	13.0	12.8	12.8	12.8	
2014					6.5	8.1	8.8	8.8	8.9	9.0	
2015						1.5	7.7	8.9	9.2	9.2	
2016							10.0	27.8	29.2	29.5	
2017								9.0	43.3	46.1	
2018									2.6	35.8	
2019										9.5	
										Total	231.1
										All outstanding liabilities before 2010, net of reinsurance	-
										Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	68.1

Agriculture

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	22.3%	67.5%	4.8%	0.4%	1.1%	0.1%	0.1%	-%	-%	-%

Sirius International Group, Ltd.
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Global Accident & Health

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019	
Year ended December 31,												
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	2019	
2010	118.4	125.4	123.0	122.1	121.8	121.8	121.9	121.8	121.7	121.7		NA
2011		161.3	176.7	172.3	171.6	171.6	171.6	171.4	171.4	171.5		NA
2012			161.4	160.1	147.8	147.1	146.9	146.7	146.6	146.5		NA
2013				125.5	123.3	118.8	118.3	117.7	116.9	116.8		NA
2014					130.8	131.9	130.3	130.3	129.4	129.4		NA
2015						152.7	148.8	145.5	144.2	143.8		NA
2016							173.3	187.1	183.0	181.5		NA
2017								176.4	172.6	165.9		NA
2018									198.3	205.5		NA
2019										271.9		NA
										Total	1,654.5	

Global Accident & Health

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	53.1	102.2	119.2	121.4	121.7	121.8	121.9	121.9	121.9	122.0	
2011		71.2	139.2	166.1	171.1	171.5	171.6	171.6	171.6	171.7	
2012			72.2	136.1	146.1	146.5	146.6	146.6	146.6	146.6	
2013				54.4	103.7	114.2	115.6	116.8	116.3	116.3	
2014					59.2	111.1	124.6	126.3	126.3	127.0	
2015						75.4	129.8	141.2	142.8	143.1	
2016							98.2	164.4	176.0	177.9	
2017								61.5	150.7	163.0	
2018									89.0	186.1	
2019										128.7	
										Total	1,482.4
										All outstanding liabilities before 2010, net of reinsurance	4.8
										Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	176.9

Global Accident & Health

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	46.1%	42.6%	9.6%	1.4%	0.3%	0.1%	-%	-%	0.1%	-%

Sirius International Group, Ltd.
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Aviation & Space

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance												
Year ended December 31,											December 31, 2019	
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	42.4	47.2	46.9	44.4	42.9	42.0	41.8	41.3	41.6	41.4		NA
2011		46.8	42.2	37.8	35.8	34.6	34.4	35.7	35.0	35.2	(0.4)	NA
2012			35.6	34.3	30.2	28.2	28.4	29.5	29.5	28.5	(0.2)	NA
2013				40.5	36.4	33.3	31.9	32.9	32.9	33.0	(0.3)	NA
2014					37.3	39.9	36.6	35.8	35.9	33.9	(0.5)	NA
2015						37.6	34.0	38.1	37.1	36.5	(3.0)	NA
2016							32.0	32.5	33.5	35.8	(0.9)	NA
2017								33.8	42.8	44.1	2.9	NA
2018									47.9	50.5	1.4	NA
2019										60.5	6.7	NA
											39.9	NA
										Total		
												399.4

Aviation & Space

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance												
Year ended December 31,												
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	12.0	22.0	31.3	36.0	37.5	38.5	39.4	39.6	40.7	41.0		
2011		10.1	22.6	28.5	31.4	32.6	34.0	34.7	34.6	35.5		
2012			7.6	18.4	22.6	24.6	27.3	28.2	28.7	28.4		
2013				13.5	19.8	24.0	26.6	28.4	29.1	30.5		
2014					8.0	17.8	23.5	26.1	28.1	28.8		
2015						10.5	21.0	27.0	33.4	34.9		
2016							7.8	19.6	26.7	29.1		
2017								9.0	23.6	32.5		
2018									14.3	27.4		
2019										8.3		
										Total		
											296.4	
												6.2
												Liabilities for loss and allocated loss adjustment expenses, net of reinsurance
												109.2

Aviation & Space

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	25.3%	29.4%	17.8%	9.6%	5.2%	2.7%	2.5%	(0.3)%	2.6%	0.4%

Sirius International Group, Ltd.
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Trade credit

(Millions)

Incurring losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019	
Year ended December 31,												
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	13.7	12.0	9.3	9.5	9.6	9.4	9.4	9.5	9.6	9.4	(0.3)	NA
2011		28.4	28.2	26.7	26.5	26.5	25.8	25.8	25.6	25.4	(0.3)	NA
2012			33.6	33.9	32.2	32.4	32.0	32.0	31.7	31.3	(0.2)	NA
2013				28.8	27.9	27.1	26.9	27.5	27.0	27.3	0.6	NA
2014					22.2	22.2	23.0	20.9	20.6	20.5	0.5	NA
2015						19.7	19.3	18.8	18.1	17.3	—	NA
2016							14.9	12.9	12.3	11.4	—	NA
2017								18.8	19.8	18.9	2.5	NA
2018									24.6	24.8	4.4	NA
2019										30.1	13.8	NA
										Total		
												216.4

Trade credit

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	1.70	5.1	7.6	8.4	8.8	8.9	9.1	9.2	9.3	9.3	
2011		6.4	17.1	23.1	24.3	25.2	25.5	25.2	25.3	25.3	
2012			14.4	26.2	30.4	31.1	31.5	31.3	31.3	31.2	
2013				11.3	19.4	22.3	23.5	23.9	24.0	24.1	
2014					7.7	13.4	17.4	18.8	19.3	19.3	
2015						4.5	12.0	15.4	16.4	16.3	
2016							4.5	8.8	10.4	11.0	
2017								3.0	8.8	12.6	
2018									7.6	16.2	
2019										8.8	
										Total	
											174.1
											All outstanding liabilities before 2010, net of reinsurance
											4.2
											Liabilities for loss and allocated loss adjustment expenses, net of reinsurance
											46.5

Trade credit

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	32.3%	35.4%	17.6%	4.8%	1.8%	0.3%	0.1%	0.1%	0.3%	(0.2)%

Sirius International Group, Ltd.
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Environmental

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance												
Accident	Year ended December 31,										December 31, 2019	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	-	-	-	-	-	-	-	-	-	-	-	NA
2011	-	-	-	-	-	-	-	-	-	-	-	NA
2012	-	-	-	-	-	-	-	-	-	-	-	NA
2013	-	-	-	-	-	-	-	-	-	-	-	NA
2014	-	-	-	-	-	-	-	-	-	-	-	NA
2015	-	-	-	-	-	-	-	-	-	-	-	NA
2016	-	-	-	-	-	-	-	-	-	-	-	NA
2017	-	-	-	-	-	-	-	-	-	-	-	NA
2018	-	-	-	-	-	-	-	-	0.4	0.1	-	NA
2019	-	-	-	-	-	-	-	-	-	4.6	0.8	NA
									Total	4.7		

Environmental

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance													
Accident	Year ended December 31,										2019		
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	-	-	-	-	-	-	-	-	-	-	-		
2011	-	-	-	-	-	-	-	-	-	-	-		
2012	-	-	-	-	-	-	-	-	-	-	-		
2013	-	-	-	-	-	-	-	-	-	-	-		
2014	-	-	-	-	-	-	-	-	-	-	-		
2015	-	-	-	-	-	-	-	-	-	-	-		
2016	-	-	-	-	-	-	-	-	-	-	-		
2017	-	-	-	-	-	-	-	-	-	-	-		
2018	-	-	-	-	-	-	-	-	-	-	-		
2019	-	-	-	-	-	-	-	-	-	-	0.1		
											Total	0.1	
												All outstanding liabilities before 2010, net of reinsurance	-
												Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	4.6

Environmental

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	1.0%	6.3%	-%	-%	-%	-%	-%	-%	-%	-%

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Marine
(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019		
Accident Year	Year ended December 31,										Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
2010	30.5	33.3	31.0	30.7	32.1	31.7	30.4	30.2	30.0	30.0	30.0	0.1	NA
2011		36.7	33.0	30.7	31.2	32.2	31.6	31.7	31.6	32.3	32.3	(0.3)	NA
2012			27.2	33.4	36.0	37.5	37.9	36.8	36.3	36.2	36.2	1.7	NA
2013				23.2	20.5	19.2	18.2	18.0	18.0	18.1	18.1	0.2	NA
2014					23.2	21.4	19.4	18.2	17.8	18.4	18.4	(0.3)	NA
2015						29.3	31.0	28.9	28.4	28.3	28.3	0.2	NA
2016							28.2	29.1	28.3	28.3	28.3	0.8	NA
2017								37.2	34.8	34.6	34.6	2.2	NA
2018									23.1	25.4	25.4	3.2	NA
2019										18.8	18.8	6.7	NA
										Total	270.4		

Marine
(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance													
Accident Year	Year ended December 31,												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
2010	5.0	12.2	17.1	19.5	21.3	26.7	27.5	28.5	28.7	28.7	28.7		
2011		4.4	14.4	21.8	25.2	28.0	28.8	29.3	29.7	29.7	30.4		
2012			5.2	14.8	24.2	27.1	29.1	31.0	32.6	32.6	33.8		
2013				2.9	9.3	12.6	14.0	14.4	14.9	14.9	15.1		
2014					4.1	10.2	13.6	15.0	15.7	15.7	15.8		
2015						4.3	11.6	21.5	25.9	25.9	26.9		
2016							6.8	17.4	21.3	21.3	24.2		
2017								7.2	18.1	18.1	26.1		
2018									5.2	13.9	13.9		
2019										3.8	3.8		
										Total	218.8		
												All outstanding liabilities before 2010, net of reinsurance	0.8
												Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	52.4

Marine

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	18.1%	30.5%	22.2%	9.7%	5.4%	6.4%	2.6%	2.7%	1.4%	0.7%

Sirius International Group, Ltd.
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Surety

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019	
Year ended December 31,												
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus expected development on reported claims	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	2019	
2010	0.1	0.1	0.2	0.4	0.4	0.3	0.3	0.1	0.1	0.1		NA
2011		0.3	0.5	0.6	0.6	0.4	0.4	0.2	0.2	0.2		NA
2012			0.5	0.6	0.6	0.4	0.4	0.3	0.3	0.3		NA
2013				1.0	0.9	0.7	0.5	0.7	0.9	0.8		NA
2014					1.2	1.1	1.0	1.1	1.3	1.1		NA
2015						1.0	1.2	1.0	0.8	0.7		NA
2016							-	-	0.5	0.3		NA
2017								0.6	0.4	0.4		NA
2018									0.9	1.0		NA
2019										1.2		NA
										Total	6.1	

Surety

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	-	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	
2011		0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	
2012			0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	
2013				0.1	0.1	0.2	0.3	0.5	0.6	0.6	
2014					-	0.2	0.4	0.7	0.9	1.2	
2015						-	0.2	0.3	0.4	0.5	
2016							-	-	0.3	0.3	
2017								-	-	-	
2018									-	-	
2019										-	
										Total	3.1
										All outstanding liabilities before 2010, net of reinsurance	1.9
										Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	4.9

Surety

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	7.3%	9.0%	19.0%	14.7%	12.4%	17.8%	1.7%	2.0%	0.9%	0.3%

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Contingency

(Millions)

Incurring losses and allocated loss adjustment expenses, net of reinsurance												December 31, 2019	
Accident	Year ended December 31,										Total IBNR liabilities plus development on reported claims	Cumulative number of reported claims	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited			
2010	5.5	5.9	4.5	4.4	4.2	4.1	4.1	4.1	4.1	4.1	4.1	—	NA
2011		7.7	7.1	6.6	6.5	4.3	6.6	6.6	6.6	6.6	6.6	—	NA
2012			9.6	8.6	8.7	8.5	8.3	8.1	8.1	8.0	8.0	—	NA
2013				5.5	4.2	3.6	3.6	3.6	3.6	3.6	3.6	0.1	NA
2014					4.2	7.0	5.2	4.7	4.7	4.7	4.7	—	NA
2015						9.9	9.6	9.0	8.9	8.9	8.9	0.1	NA
2016							17.6	18.0	17.0	17.3	17.3	0.2	NA
2017								9.7	10.6	11.2	11.2	0.8	NA
2018									9.4	9.0	9.0	1.4	NA
2019										3.0	3.0	1.4	NA
										Total	76.4		

Contingency

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance												
Accident	Year ended December 31,										2019	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019		
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	1.9	3.4	3.5	3.5	3.9	4.0	4.1	4.1	4.1	4.1	4.1	4.1
2011		2.0	5.7	6.4	6.4	6.5	6.5	6.5	6.5	6.5	6.5	6.5
2012			5.3	7.1	8.5	8.4	8.3	8.1	8.1	8.1	8.1	8.1
2013				1.8	3.0	3.3	3.3	3.3	3.3	3.3	3.3	3.3
2014					1.6	3.7	4.4	4.5	4.5	4.5	4.5	4.5
2015						2.8	7.1	7.8	7.8	7.8	7.8	7.8
2016							11.6	15.2	16.0	16.0	16.0	16.8
2017								3.0	7.0	9.4	9.4	9.4
2018									1.8	6.2	6.2	6.2
2019										0.3	0.3	0.3
										Total	67.9	
												(0.1)
												8.3

All outstanding liabilities before 2010, net of reinsurance (0.1)

Liabilities for loss and allocated loss adjustment expenses, net of reinsurance 8.3

Contingency

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	42.2%	36.2%	10.8%	1.7%	3.2%	-%	0.2%	0.4%	0.4%	-%

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Casualty

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance											December 31, 2019		
Accident	Year ended December 31,										Total IBNR liabilities plus development on reported claims	Cumulative number of reported claims	
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	2019		
2010	1.7	1.5	1.6	1.4	1.1	0.9	0.6	0.6	0.5	0.5		-	NA
2011		0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2		-	NA
2012			0.2	0.2	0.4	0.5	0.5	0.5	0.5	0.4		-	NA
2013				0.4	0.4	0.4	0.4	0.5	0.5	0.5		-	NA
2014					0.4	0.4	0.5	0.5	0.5	0.6		-	NA
2015						0.5	0.8	0.6	0.5	0.6		-	NA
2016							0.2	0.3	0.3	0.1		-	NA
2017								9.7	9.7	12.5		7.2	NA
2018									53.4	63.5		41.3	NA
2019										141.9		116.0	NA
										Total	220.8		

Casualty

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance													
Accident	Year ended December 31,												
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019			
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	2019		
2010	-	-	0.1	0.1	0.2	0.4	0.3	0.4	0.4	0.4	0.3		
2011		-	-	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2		
2012			-	-	0.1	0.2	0.1	0.2	0.2	0.2	0.3		
2013				0.1	0.1	0.2	0.3	0.4	0.4	0.4	0.5		
2014					0.1	0.2	0.4	0.4	0.4	0.4	0.5		
2015						0.2	0.4	0.4	0.4	0.4	0.4		
2016							-	0.1	0.1	0.1	0.2		
2017								-	0.6	0.6	1.6		
2018									2.0	2.0	8.1		
2019											10.6		
										Total	22.7		
												All outstanding liabilities before 2010, net of reinsurance	3.9
												Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	202.0

Casualty

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	5.9%	9.4%	9.5%	11.1%	7.3%	10.0%	0.6%	13.4%	1.0%	0.7%

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Runoff & Other

(Millions)

Incurred losses and allocated loss adjustment expenses, net of reinsurance												
Year ended December 31,											December 31, 2019	
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total IBNR liabilities plus development on reported claims expected	Cumulative number of reported claims
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited		
2010	282.3	283.2	283.4	284.0	285.1	286.6	287.6	287.7	287.0	291.5	5.4	NA
2011		221.5	222.8	223.9	224.5	225.0	225.9	225.4	225.0	223.9	2.9	NA
2012			3.6	4.0	4.1	4.2	4.1	4.1	3.9	3.7	1.1	NA
2013				1.2	0.2	0.2	0.2	0.1	0.2	0.4	-	NA
2014					0.2	0.2	0.3	0.4	0.5	0.5	-	NA
2015						9.5	15.7	17.5	18.0	18.0	0.2	NA
2016							11.8	12.1	11.7	11.6	-	NA
2017								0.6	0.7	0.7	-	NA
2018									30.3	28.6	2.6	NA
2019										0.3	0.2	NA
										Total	579.2	

Runoff & Other

(Millions)

Cumulative paid losses and allocated loss adjustment expenses, net of reinsurance											
Year ended December 31,											
Accident	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Year	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	Unaudited	
2010	160.1	263.2	265.5	269.6	272.8	276.4	278.3	280.2	280.9	281.3	
2011		206.9	209.0	211.2	213.0	214.7	216.7	218.2	218.8	219.3	
2012			0.3	1.3	1.8	2.2	2.4	2.4	2.5	2.7	
2013				0.7	0.1	0.1	0.1	0.1	0.1	0.2	
2014					-	-	0.1	0.2	0.3	0.5	
2015						5.2	10.0	15.3	16.6	17.3	
2016							6.2	10.1	11.0	11.3	
2017								0.4	0.5	0.6	
2018									7.9	12.6	
2019										-	
										Total	545.8
										All outstanding liabilities before 2010, net of reinsurance	397.2
										Liabilities for loss and allocated loss adjustment expenses, net of reinsurance	430.6

Runoff & Other

Average annual percentage payout of incurred losses and allocated LAE by age, net of reinsurance										
Years	1	2	3	4	5	6	7	8	9	10
	66.9%	20.6%	2.0%	1.5%	1.1%	1.1%	0.7%	0.5%	0.2%	0.1%

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Note 6. Third party reinsurance

In the normal course of business, Sirius Group seeks to protect its businesses from losses due to concentration of risk and losses arising from catastrophic events by reinsuring with third-party reinsurers. Sirius Group remains liable for risks reinsured in the event that the reinsurer does not honor its obligations under reinsurance contracts. The effects of reinsurance on Sirius Group's written and earned premiums and on losses and LAE were as follows:

<i>(Millions)</i>	2019	2018	2017
Written premiums:			
Direct	\$ 511.2	\$ 454.5	\$ 450.2
Assumed	1,391.5	1,366.5	989.1
Gross written premiums	1,902.7	1,821.0	1,439.3
Ceded	(400.1)	(463.9)	(349.1)
Net written premiums	\$ 1,502.6	\$ 1,357.1	\$ 1,090.2
Earned premiums:			
Direct	\$ 481.0	\$ 432.6	\$ 405.7
Assumed	1,357.7	1,236.2	942.2
Gross earned premiums	1,838.7	1,668.8	1,347.9
Ceded	(397.1)	(406.5)	(312.6)
Net earned premiums	\$ 1,441.6	\$ 1,262.3	\$ 1,035.3
Losses and LAE:			
Direct	\$ 316.3	\$ 260.5	\$ 294.9
Assumed	1,111.4	819.1	701.3
Gross losses and LAE	1,427.7	1,079.6	996.2
Ceded	(257.4)	(179.6)	(185.0)
Net losses and LAE	\$ 1,170.3	\$ 900.0	\$ 811.2

Sirius Group's reinsurance protection primarily consists of pro-rata and excess of loss protections that protect all of its reportable segments. Attachment points and coverage limits vary by region around the world. Protections by reportable segment are listed below.

Global Property

Sirius Group's core proportional property reinsurance programs provide protection for parts of the non proportional treaty accounts written in Europe, the Americas, Caribbean, Asia, the Middle East, and Australia. These reinsurance protections are designed to increase underwriting capacity where appropriate, and to reduce exposure both to large catastrophe losses and to a frequency of smaller loss events.

Sirius Group has in place excess of loss retrocessional coverage for its worldwide earthquake related exposures. This coverage was renewed for one year at June 1, 2019, providing 50% of \$40.0 million of reinsurance protection in excess of Sirius Group's retention of \$35.0 million and a further of 100% of \$35.0 million of coverage in excess of \$75.0 million.

Sirius Group periodically purchases industry loss warranties ("ILW") contracts to augment its overall retrocessional program. The following ILW contracts are currently in force:

Scope	Limit	Trigger	Expiration Date
United States excluding North East, all natural perils	\$5.0 million	\$40.0 billion	July 5, 2020

Sirius Group also purchases excess of loss reinsurance protection for its facultative and primary insurance property books. Almost all of Sirius Group's excess of loss reinsurance protections, excluding ILWs which tend to only cover one loss event, include provisions that reinstate coverage at a cost of 100% or more of the original reinsurance premium.

Global A&H

Sirius Group has excess of loss protection covering its personal accident and life accounts written in the Stockholm, Hamburg, Liege, and Singapore branches. For primary insurance, there are account specific quota share and stop loss reinsurance protections in place of various percentages for the medical benefits and student health business. In addition to these primary insurance protections, there is an excess of loss protection of unlimited dollars in excess of \$1.5 million (per person) is in place.

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Specialty & Casualty

The aviation & space reinsurance program is intended to reduce exposure to a frequency of small losses, a single large loss, or a combination of both. For the proportional and facultative aviation book, reinsurance protection purchased is geared to cover losses from events that cause a market loss in excess of \$150.0 million up to a full policy limit of \$2.0 billion. This program is in place through October 2020. For the non proportional book, reinsurance protection includes a 12.5% quota share treaty. In addition, the non proportional book is protected by ILWs totaling limits of \$27.5 million. The ILWs attach at industry loss levels between \$400.0 million and \$800.0 million.

Other lines of business within the Specialty & Casualty segment are protected through various quota share and excess of loss protections.

Runoff & Other

Within the Runoff & Other segment, there are multiple reinsurance protections in place, primarily excess of loss protections.

Reinsurance recoverables by rating

At December 31, 2019, Sirius Group had reinsurance recoverables on paid losses of \$73.9 million and reinsurance recoverables of \$410.3 million on unpaid losses. At December 31, 2018, Sirius Group had reinsurance recoverables on paid losses of \$55.0 million and reinsurance recoverables of \$350.2 million on unpaid losses. Because retrocessional reinsurance contracts do not relieve Sirius Group of its obligation to its insureds, the collectability of balances due from Sirius Group's reinsurers is important to its financial strength. Sirius Group monitors the financial strength and ratings of retrocessionaires on an ongoing basis. Uncollectible amounts historically have not been significant.

The following tables provide a listing of Sirius Group's gross and net recoverable amounts by the reinsurer's Standard & Poor's Financial Services LLC ("Standard & Poor's") rating and the percentage of total recoverables as of December 31, 2019 and 2018. With certain reinsurers if Standard & Poor's rating was not available, an A.M. Best rating was used.

December 31, 2019				
Rating⁽¹⁾	Gross	Collateral	Net	% of Net Total
AA	\$ 3.4	\$ -	\$ 3.4	1%
AA	117.2	14.3	102.9	42%
A	301.8	195.6	106.2	43%
BBB or lower	14.9	13.7	1.2	1%
Not rated	46.9	13.4	33.5	13%
Total	\$ 484.2	\$ 237.0	\$ 247.2	100%

⁽¹⁾Standard & Poor's ratings as detailed above are: "AAA" (Extremely Strong), "AA" (Very strong), "A" (Strong), and "BBB+" and "BBB" (Adequate).

December 31, 2018				
Rating⁽¹⁾	Gross	Collateral	Net	% of Net Total
AA	\$ 115.1	\$ 1.5	\$ 113.6	35%
A	212.9	45.4	167.5	52%
BBB or lower	19.5	13.3	6.2	2%
Not rated	57.7	23.2	34.5	11%
Total	\$ 405.2	\$ 83.4	\$ 321.8	100%

⁽¹⁾Standard & Poor's ratings as detailed above are: "AA" (Very strong), "A" (Strong), and "BBB+" and "BBB" (Adequate).

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The following tables provide a listing of the five highest gross recoverable amounts by reinsurer, along with percentage of total recoverable amount, the reinsurer's Standard & Poor's reinsurer rating, and the percentage that the recoverable is collateralized as of December 31, 2019 and 2018:

<i>(Millions)</i>	December 31, 2019			
	Balance	% of Total	S&P rating	% Collateralized
Reinsurer:				
General Insurance Corporation of India ⁽¹⁾	\$ 143.0	30%	A-	98%
Swiss Reinsurance Company Ltd.	44.7	9%	AA-	5%
Berkshire Hathaway, Inc.	34.0	7%	AA+	3%
Lloyd's of London	27.0	6%	A+	30%
Argo Capital Group Ltd.	19.1	4%	A-	89%

⁽¹⁾ Reflects an A.M. Best rating of "A-" (Excellent).

<i>(Millions)</i>	December 31, 2018			
	Balance	% of Total	S&P rating	% Collateralized
Reinsurer:				
General Insurance Corporation of India ⁽¹⁾	\$ 82.7	20%	A-	97%
Swiss Reinsurance Company Ltd.	44.1	11%	AA-	-
Berkshire Hathaway, Inc.	39.3	10%	AA+	1%
Argo Capital Group Ltd.	16.7	4%	A-	87%
Lloyd's of London	13.4	3%	A+	5%

⁽¹⁾ Reflects an A.M. Best rating of "A-" (Excellent).

Note 7. Deferred acquisition costs

The following table presents a rollforward of Deferred acquisition costs for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019	2018	2017
Deferred acquisition costs - balance, beginning of the year	\$ 141.6	\$ 120.9	\$ 84.7
Acquisition costs deferred ⁽¹⁾	221.6	202.6	220.7
Amortization expense	(214.4)	(180.4)	(186.7)
Other, including foreign exchange	(0.6)	(1.5)	2.2
Deferred acquisition costs – balance, end of the year	\$ 148.2	\$ 141.6	\$ 120.9

⁽¹⁾ 2017 amount includes \$2.9 from Acquisition of IMG. (See Note 3.)

Note 8. Investment securities

Net Investment Income

Sirius Group's net investment income is comprised primarily of interest income along with associated amortization of premium and accretion of discount on Sirius Group's fixed maturity investments, dividend income from its equity investments, and interest income from its short-term investments.

Net investment income for the years ended December 31, 2019, 2018, and 2017 consisted of the following:

<i>(Millions)</i>	2019	2018	2017
Fixed maturity investments	\$ 51.7	\$ 52.7	\$ 51.3
Short-term investments	15.7	5.0	1.5
Equity securities	15.2	16.5	5.0
Other long-term investments	14.2	8.4	8.5
Interest on funds held under reinsurance treaties	-	(0.5)	-
Total investment income	96.8	82.1	66.3
Investment expenses	(12.5)	(11.2)	(9.8)
Net investment income	\$ 84.3	\$ 70.9	\$ 56.5

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Net Realized and Unrealized Investment Gains (Losses)

Net realized and unrealized investment gains (losses) for the years ended December 31, 2019, 2018, and 2017 consisted of the following:

<i>(Millions)</i>	2019	2018	2017
Gross realized gains	\$ 99.3	\$ 42.3	\$ 23.8
Gross realized (losses)	(42.6)	(40.0)	(51.2)
Net realized gains (losses) on investments⁽¹⁾	56.7	2.3	(27.4)
Net unrealized gains (losses) on investments ⁽²⁾	80.5	(23.1)	(23.3)
Net realized and unrealized investment gains (losses) on investments	\$ 137.2	\$ (20.8)	\$ (50.7)

⁽¹⁾Includes \$50.4, \$17.3, and \$(19.2) of realized gains (losses) due to foreign currency during 2019, 2018, and 2017, respectively.

⁽²⁾Includes \$(5.7), \$35.7, and \$(52.9) of unrealized (losses) gains due to foreign currency during 2019, 2018, and 2017, respectively.

Net realized investment gains (losses)

Net realized investment gains (losses) for the years ended December 31, 2019, 2018, and 2017 consisted of the following:

<i>(Millions)</i>	2019	2018	2017
Fixed maturity investments	\$ 33.7	\$ 3.6	\$ (19.0)
Equity securities	9.4	(6.4)	0.1
Short-term investments	14.8	-	-
Derivative instruments	(2.5)	-	-
Other long-term investments	1.3	5.1	(8.5)
Net realized investment gains (losses)	\$ 56.7	\$ 2.3	\$ (27.4)

Net unrealized investment gains (losses)

The following table summarizes the net unrealized investment gains (losses) and changes in fair value for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019	2018	2017
Fixed maturity investments	\$ 24.0	\$ 14.1	\$ (41.2)
Equity securities	51.4	(51.0)	12.3
Short-term investments	(5.2)	-	-
Derivative instruments	(0.5)	-	-
Other long-term investments	10.8	13.8	5.6
Net unrealized investment gains (losses)	\$ 80.5	\$ (23.1)	\$ (23.3)

The following table summarizes the amount of total gains (losses) included in earnings attributable to unrealized investment gains (losses) for Level 3 investments for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019	2018	2017
Fixed maturity investments	\$ -	\$ (6.1)	\$ (0.2)
Equity securities	-	-	0.1
Other long-term investments	15.9	4.0	(0.6)
Total unrealized investment gains (losses) - Level 3 investments	\$ 15.9	\$ (2.1)	\$ (0.7)

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Investment Holdings

Fixed maturity investments

The cost or amortized cost, gross unrealized investment gains (losses), net foreign currency gains (losses), and fair value of Sirius Group's fixed maturity investments as of December 31, 2019 and 2018, were as follows:

<i>(Millions)</i>	2019				
	Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Net foreign currency gains (losses)	Fair value
Asset-backed securities	\$ 478.3	\$ 1.4	\$ (3.9)	\$ (0.1)	\$ 475.7
Corporate debt securities	458.6	5.2	(1.2)	11.5	474.1
Residential mortgage-backed securities	425.6	10.5	(1.4)	3.6	438.3
U.S. government and government agency	111.5	0.7	(0.4)	(1.3)	110.5
Commercial mortgage-backed securities	88.5	0.9	(0.6)	0.2	89.0
Non-U.S. government and government agency	63.7	-	(0.7)	-	63.0
Preferred stocks	17.0	-	-	-	17.0
U.S. States, municipalities and political subdivision	1.7	-	-	-	1.7
Total fixed maturity investments	\$ 1,644.9	\$ 18.7	\$ (8.2)	\$ 13.9	\$ 1,669.3

<i>(Millions)</i>	2018				
	Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Net foreign currency gains (losses)	Fair value
Asset-backed securities	\$ 496.3	\$ 0.1	\$ (3.8)	\$ 1.9	\$ 494.5
Corporate debt securities	694.1	1.4	(7.3)	7.6	695.8
Residential mortgage-backed securities	410.0	1.7	(7.0)	6.0	410.7
U.S. government and government agency	163.9	0.3	(0.5)	4.2	167.9
Commercial mortgage-backed securities	117.7	0.2	(2.7)	0.7	115.9
Non-U.S. government and government agency	50.6	-	(0.2)	(0.1)	50.3
Preferred stocks	14.5	0.6	(6.8)	0.2	8.5
U.S. States, municipalities and political subdivision	2.8	-	-	-	2.8
Total fixed maturity investments	\$ 1,949.9	\$ 4.3	\$ (28.3)	\$ 20.5	\$ 1,946.4

The weighted average duration of Sirius Group's fixed income portfolio as of December 31, 2019 was approximately 1.6 years, including short-term investments, and approximately 2.5 years excluding short-term investments.

The cost or amortized cost and fair value of Sirius Group's fixed maturity investments as of December 31, 2019 and 2018 are presented below by contractual maturity. Actual maturities could differ from contractual maturities because borrowers may have the right to call or prepay certain obligations with or without call or prepayment penalties.

<i>(Millions)</i>	2019		2018	
	Cost or amortized cost	Fair value	Cost or amortized cost	Fair value
Due in one year or less	\$ 85.0	\$ 88.4	\$ 249.6	\$ 254.6
Due after one year through five years	479.1	490.3	635.6	636.4
Due after five years through ten years	46.3	46.0	26.1	25.7
Due after ten years	25.1	24.6	0.1	0.1
Mortgage-backed and asset-backed securities	992.4	1,003.0	1,024.0	1,021.1
Preferred stocks	17.0	17.0	14.5	8.5
Total	\$ 1,644.9	\$ 1,669.3	\$ 1,949.9	\$ 1,946.4

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The following table summarizes the ratings and fair value of fixed maturity investments held in Sirius Group's investment portfolio as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
AAA	\$ 548.7	\$ 602.0
AA	723.7	815.2
A	219.0	290.0
BBB	95.8	168.2
Other	82.1	71.0
Total fixed maturity investments⁽¹⁾	\$ 1,669.3	\$ 1,946.4

⁽¹⁾ Credit ratings are assigned based on the following hierarchy: 1) Standard & Poor's and 2) Moody's Investor Service.

As of December 31, 2019, the above totals included \$43.3 million of sub-prime securities. Of this total, \$21.7 million was rated AAA, \$18.4 million rated AA, \$3.1 million rated A, and \$0.1 million classified as other. As of December 31, 2018, the above included \$42.6 million of sub-prime securities. Of this total, \$17.1 million was rated AAA, \$9.8 million rated AA, \$6.0 million rated A, \$4.7 million rated BBB and \$5.0 million classified as other.

Equity securities and Other long-term investments

The cost or amortized cost, gross unrealized investment gains and losses, net foreign currency gains and losses, and fair values of Sirius Group's equity securities and other long-term investments as of December 31, 2019 and 2018, were as follows:

<i>(Millions)</i>	2019				
	Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Net foreign currency gains (losses)	Fair value
Equity securities	\$ 379.2	\$ 55.6	\$ (37.3)	\$ 7.7	\$ 405.2
Other long-term investments	\$ 315.4	\$ 49.9	\$ (29.3)	\$ 10.8	\$ 346.8

<i>(Millions)</i>	2018				
	Cost or amortized cost	Gross unrealized gains	Gross unrealized losses	Net foreign currency gains (losses)	Fair value
Equity securities	\$ 409.4	\$ 17.8	\$ (50.8)	\$ 3.6	\$ 380.0
Other long-term investments	\$ 337.6	\$ 32.6	\$ (13.5)	\$ 8.3	\$ 365.0

Equity securities at fair value consisted of the following as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Fixed income mutual funds	\$ 175.3	\$ 157.7
Common stocks	228.1	222.3
Other equity securities	1.8	-
Total other long-term investments	\$ 405.2	\$ 380.0

Other long-term investments at fair value consist of the following as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Hedge funds and private equity funds	\$ 269.0	\$ 301.4
Limited liability companies and private equity securities	77.8	63.6
Total other long-term investments	\$ 346.8	\$ 365.0

Hedge Funds and Private Equity Funds

Sirius Group holds investments in hedge funds and private equity funds, which are included in other long-term investments. The fair value of these investments has been estimated using the net asset value of the funds. As of December 31, 2019, Sirius Group held investments in 9 hedge funds and 29 private equity funds. The largest investment in a single fund was \$51.6 million as of December 31, 2019 and \$54.8 million as of December 31, 2018.

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The following table summarizes investments in hedge funds and private equity interests by investment objective and sector as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019		2018	
	Fair value	Unfunded commitments	Fair value	Unfunded commitments
Hedge funds:				
Long/short multi-sector	\$ 53.0	\$ -	\$ 41.0	\$ -
Distressed mortgage credit	51.6	-	54.8	-
Private credit	21.5	-	20.0	-
Other	1.4	-	2.5	-
Total hedge funds	127.5	-	118.3	-
Private equity funds:				
Energy infrastructure & services	53.6	34.6	93.7	54.2
Multi-sector	8.7	7.8	9.0	0.7
Healthcare	25.9	10.4	31.7	15.6
Life settlement	23.9	-	23.7	-
Manufacturing/Industrial	27.6	3.9	23.6	10.4
Private equity secondaries	0.6	0.8	1.1	1.1
Real estate	-	-	0.3	-
Other	1.2	2.6		
Total private equity funds	141.5	60.1	183.1	82.0
Total hedge and private equity funds included in other long-term investments	\$ 269.0	\$ 60.1	\$ 301.4	\$ 82.0

Redemption of investments in certain hedge funds is subject to restrictions including lock-up periods where no redemptions or withdrawals are allowed, restrictions on redemption frequency, and advance notice periods for redemptions. Amounts requested for redemptions remain subject to market fluctuations until the redemption effective date, which generally falls at the end of the defined redemption period.

The following summarizes the December 31, 2019 fair value of hedge funds subject to restrictions on redemption frequency and advance notice period requirements for investments in active hedge funds:

<i>(Millions)</i>	Notice Period				Total
	30-59 days notice	60-89 days notice	90-119 days notice	120+ days notice	
Monthly	\$ -	\$ 36.2	\$ -	\$ -	\$ 36.2
Quarterly	0.8	-	-	-	0.8
Semi-annual	-	0.3	-	-	0.3
Annual	-	16.8	51.9	21.5	90.2
Total	\$ 0.8	\$ 53.3	\$ 51.9	\$ 21.5	\$ 127.5

Certain of the hedge fund and private equity fund investments in which Sirius Group is invested are no longer active and are in the process of disposing of their underlying investments. Distributions from such funds are remitted to investors as the fund's underlying investments are liquidated. As of December 31, 2019, no distributions were outstanding from these investments.

Investments in private equity funds are generally subject to a "lock-up" period during which investors may not request a redemption. Distributions prior to the expected termination date of the fund may be limited to dividends or proceeds arising from the liquidation of the fund's underlying investments. In addition, certain private equity funds provide an option to extend the lock-up period at either the sole discretion of the fund manager or upon agreement between the fund and the investors.

As of December 31, 2019, investments in private equity funds were subject to lock-up periods as follows:

<i>(Millions)</i>	1 - 3 years	3 - 5 years	5 - 10 years	Total
Private Equity Funds – expected lock up period remaining	\$ 4.7	\$ 1.4	\$ 135.4	\$ 141.5

Investments Held on Deposit or as Collateral

As of December 31, 2019 and 2018, investments of \$1,309.5 million and \$792.4 million, respectively, were held in trusts required to be maintained in relation to various reinsurance agreements. Sirius Group's consolidated reinsurance operations are required to maintain deposits with certain insurance regulatory agencies in order to maintain their insurance licenses. The fair value of such deposits which are included within total investments totaled \$1,315.5 million and \$801.2 million as of December 31, 2019 and 2018, respectively.

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As of December 31, 2019, Sirius Group held \$0.2 million of collateral in the form short-term investments associated with Interest Rate Cap agreements. (See **Note 13.**)

Unsettled investment purchases and sales

As of December 31, 2019 and 2018, Sirius Group reported \$2.3 million and \$3.2 million, respectively, in Accounts payable on unsettled investment purchases.

As of December 31, 2019 and 2018, Sirius Group reported \$6.7 million and \$5.0 million, respectively, in Accounts receivable on unsettled investment sales.

Note 9. Fair value measurements

Fair value measurements

Fair value measurements are categorized into a hierarchy that distinguishes between inputs based on market data from independent sources (“observable inputs”) and a reporting entity’s internal assumptions based upon the best information available when external market data is limited or unavailable (“unobservable inputs”). Quoted prices in active markets for identical assets or liabilities have the highest priority (“Level 1”), followed by observable inputs other than quoted prices, including prices for similar but not identical assets or liabilities (“Level 2”), and unobservable inputs, including the reporting entity’s estimates of the assumptions that market participants would use, having the lowest priority (“Level 3”).

The availability of observable inputs can vary from financial instrument to financial instrument and is affected by a wide variety factors including, for example, the type of financial instrument, whether the financial instrument is new and not yet established in the marketplace, and other characteristics particular to the instrument. To the extent that valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires significantly more judgment.

Accordingly, the degree of judgment exercised by management in determining fair value is greatest for instruments categorized in Level 3. In periods of market dislocation, the observability of prices and inputs may be reduced for many instruments. This may lead the Company to change the selection of the valuation technique (for example, from market to cash flow approach) or to use multiple valuation techniques to estimate the fair value of a financial instrument. These circumstances could cause an instrument to be reclassified between levels within fair value hierarchy. Investments valued using Level 1 inputs include fixed maturity investments, primarily investments in U.S. Treasuries Bills and Notes, equity securities, and short-term investments. Investments valued using Level 2 inputs are primarily comprised of fixed maturity investments, which have been disaggregated into classes, including U.S. government and government agency, corporate debt securities, mortgage-backed and asset-backed securities, non-U.S. government and government agency, U.S. state and municipalities and political sub division and preferred stocks. Investments valued using Level 2 inputs also include certain ETFs that track U.S. stock indices such as the S&P 500 but are traded on foreign exchanges. Fair value estimates for investments that trade infrequently and have few or no observable market prices are classified as Level 3 measurements. Sirius Group determines when transfers between levels have occurred as of the beginning of the period.

Valuation techniques

Sirius Group uses outside pricing services to assist in determining fair values for its investments. For investments in active markets, Sirius Group uses the quoted market prices provided by outside pricing services to determine fair value. The outside pricing services Sirius Group uses have indicated that they will only provide prices where observable inputs are available. In circumstances where quoted market prices are unavailable or are not considered reasonable, Sirius Group estimates the fair value using industry standard pricing models and observable inputs such as benchmark yields, reported trades, broker-dealer quotes, issuer spreads, benchmark securities, bids, offers, prepayment speeds, reference data including research publications, and other relevant inputs. Given that many fixed maturity investments do not trade on a daily basis, the outside pricing services evaluate a wide range of fixed maturity investments by regularly drawing parallels from recent trades and quotes of comparable securities with similar features. The characteristics used to identify comparable fixed maturity investments vary by asset type and take into account market convention.

The valuation process above is generally applicable to all of Sirius Group’s fixed maturity investments. The techniques and inputs specific to asset classes within Sirius Group’s fixed maturity investments for Level 2 securities that use observable inputs are as follows:

U.S. government and government agency

U.S. government and government agency securities consist primarily of debt securities issued by the U.S. Treasury and mortgage pass-through agencies such as the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation and the Government National Mortgage Association. Fixed maturity investments included in U.S. government and government agency securities are primarily priced by pricing services. When evaluating these securities, the pricing services gather information from market sources and integrate other observations from markets and sector news. Evaluations are updated by obtaining broker dealer quotes and other market information including actual trade volumes, when available. The fair value of each security is individually computed using analytical models which incorporate option adjusted spreads and other daily interest rate data.

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Non-U.S. government and government agency

Non-U.S. government and government agency securities consist of debt securities issued by non-U.S. governments and their agencies along with supranational organizations (also known as sovereign debt securities). Securities held in these sectors are primarily priced by pricing services who employ proprietary discounted cash flow models to value the securities. Key quantitative inputs for these models are daily observed benchmark curves for treasury, swap, and high issuance credits. The pricing services then apply a credit spread for each security which is developed by in-depth and real time market analysis. For securities in which trade volume is low, the pricing services utilize data from more frequently traded securities with similar attributes. These models may also be supplemented by daily market and credit research for international markets.

Corporate debt securities

Corporate debt securities consist primarily of investment-grade debt of a wide variety of U.S. and non-U.S. corporate issuers and industries. The corporate fixed maturity investments are primarily priced by pricing services. When evaluating these securities, the pricing services gather information from market sources regarding the issuer of the security and obtain credit data, as well as other observations, from markets and sector news. Evaluations are updated by obtaining broker dealer quotes and other market information including actual trade volumes, when available. The pricing services also consider the specific terms and conditions of the securities, including any specific features which may influence risk.

Mortgage-backed and asset-backed securities

The fair value of mortgage and asset-backed securities is primarily priced by pricing services using a pricing model that uses information from market sources and leveraging similar securities. Key inputs include benchmark yields, reported trades, underlying tranche cash flow data, collateral performance, plus new issue data, as well as broker-dealer quotes, issuer spreads, two-sided markets, benchmark securities, bids, offers, and reference data including issuer, vintage, loan type, collateral attributes, prepayment speeds, default rates, recovery rates, cash flow stress testing, credit quality ratings, and market research publications.

U.S. states, municipalities, and political subdivisions

The U.S. states, municipalities, and political subdivisions portfolio contains debt securities issued by U.S. domiciled state and municipal entities. These securities are generally priced by independent pricing services using the techniques for U.S. government and government agency securities.

Preferred stocks

The fair value of preferred stocks is generally priced by independent pricing services using an evaluated pricing model that calculates the appropriate spread over a comparable security for each issue. Key inputs include exchange prices (underlying and common stock of same issuer), benchmark yields, reported trades, broker-dealer quotes, issuer spreads, two-sided markets, benchmark securities, bids, offers, and reference data including sector, coupon, credit quality ratings, duration, credit enhancements, early redemption features, and market research publications.

Level 3 Investments

Level 3 valuations are generated from techniques that use assumptions not observable in the market. These unobservable assumptions reflect Sirius Group's assumptions, that market participants would use in valuing the investment. Generally, certain securities may start out as Level 3 when they are originally issued but as observable inputs become available in the market, they may be reclassified to Level 2.

Sirius Group employs a number of procedures to assess the reasonableness of the fair value measurements for its other long-term investments, including obtaining and reviewing the audited annual financial statements of hedge funds and private equity funds and periodically discussing each fund's pricing with the fund manager. However, since the fund managers do not provide sufficient information to evaluate the pricing inputs and methods for each underlying investment, the inputs are considered to be unobservable.

The fair values of Sirius Group's investments in private equity securities and private debt instruments have been classified as Level 3 measurements. They are carried at fair value and are initially valued based on transaction price and their valuation is subsequently estimated based on available evidence such as a market transaction in similar instruments and other financial information for the issuer.

Investments measured using Net Asset Value

The fair value of Sirius Group's investments in hedge funds and private equity funds has been determined using net asset value. The hedge fund's administrator provides quarterly updates of fair value in the form of Sirius Group's proportional interest in the underlying fund's net asset value (collectively "NAV"), which is deemed to approximate fair value, generally with a three month delay in valuation. The fair value of investment in hedge funds is measured using the NAV practical expedient and therefore has been not categorized within the fair value hierarchy. The private equity funds provide quarterly or semi-annual partnership capital statements with a three or six month delay which are used as a basis for valuation. These private equity investments vary in investment strategies and are not actively traded in any open markets.

The fair value of these investments are measured using NAV practical expedient and therefore have not been categorized with the fair value hierarchy. Due to a lag in reporting, some of the fund managers, fund administrators, or both, are unable to provide final fund valuations as of the Company's reporting date. In these circumstances, Sirius Group estimates the return of the current period and uses all credible information available. This includes utilizing preliminary estimates reported by its fund managers and using other information that is available to Sirius Group with respect to the underlying investments, as necessary.

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Fair Value Measurements by Level

The following tables summarize Sirius Group's financial assets and liabilities measured at fair value as of December 31, 2019 and 2018 by level:

<i>(Millions)</i>	2019			
	Fair value	Level 1 inputs	Level 2 inputs	Level 3 inputs
Assets measured at fair value				
Fixed maturity investments:				
U.S. Government and government agency	\$ 110.5	\$ 109.1	\$ 1.4	\$ -
Corporate debt securities	474.1	-	474.1	-
Asset-backed securities	475.7	-	475.7	-
Residential mortgage-backed securities	438.3	-	438.3	-
Commercial mortgage-backed securities	89.0	-	89.0	-
Non-U.S. government and government agency	63.0	31.7	31.3	-
Preferred stocks	17.0	-	-	17.0
U.S. States, municipalities, and political subdivision	1.7	-	1.7	-
Total fixed maturity investments	1,669.3	140.8	1,511.5	17.0
Equity securities:				
Fixed income mutual funds	175.3	175.3	-	-
Common stocks	228.1	228.1	-	-
Other equity securities	1.8	-	1.8	-
Total equity securities	405.2	403.4	1.8	-
Short-term investments	1,084.0	1,072.5	11.5	-
Other long-term investments ⁽¹⁾	77.8	-	-	77.8
Total investments	\$ 3,236.3	1,616.7	\$ 1,524.8	\$ 94.8
Loan Participation	20.0	-	-	20.0
Derivative instruments	11.4	1.3	-	10.1
Total assets measured at fair value	\$ 3,267.7	1,618.0	\$ 1,524.8	\$ 124.9
Liabilities measured at fair value				
Contingent consideration liabilities	\$ 9.7	\$ -	\$ -	\$ 9.7
Derivative instruments	9.5	0.2	-	9.3
Total liabilities measured at fair value	\$ 19.2	\$ 0.2	\$ -	\$ 19.0

⁽¹⁾ Excludes fair value of \$269.0 associated with hedge funds and private equity funds which fair value is measured at net asset value using the practical expedient.

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<i>(Millions)</i>	2018			
	Fair value	Level 1 inputs	Level 2 inputs	Level 3 inputs
Assets measured at fair value				
Fixed maturity investments:				
U.S. Government and government agency	\$ 167.9	\$ 164.7	\$ 3.2	\$ -
Corporate debt securities	695.8	-	695.8	-
Asset-backed securities	494.5	-	494.5	-
Residential mortgage-backed securities	410.7	-	410.7	-
Commercial mortgage-backed securities	115.9	-	115.9	-
Non-U.S. government and government agency	50.3	42.9	7.4	-
Preferred stocks	8.5	-	3.1	5.4
U.S. States, municipalities, and political subdivision	2.8	-	2.8	-
Total fixed maturity investments	1,946.4	207.6	1,733.4	5.4
Equity securities:				
Fixed income mutual funds	157.7	157.7	-	-
Common stocks	222.3	222.3	-	-
Other equity securities	-	-	-	-
Total equity securities	380.0	380.0	-	-
Short-term investments	710.2	674.1	36.1	-
Other long-term investments ⁽¹⁾	63.6	-	-	63.6
Total investments	\$ 3,100.2	\$ 1,261.7	\$ 1,769.5	\$ 69.0
Loan Participation	-	-	-	-
Derivative instruments	4.1	-	-	4.1
Total assets measured at fair value	\$ 3,104.3	\$ 1,261.7	\$ 1,769.5	\$ 73.1
Liabilities measured at fair value				
Contingent consideration liabilities	\$ 8.9	\$ -	\$ -	\$ 8.9
Derivative instruments	5.1	0.5	-	4.6
Total liabilities measured at fair value	\$ 14.0	\$ 0.5	\$ -	\$ 13.5

⁽¹⁾ Excludes fair value of \$301.4 associated with hedge funds and private equity funds which fair value is measured at net asset value using the practical expedient.

Rollforward of Level 3 Fair Value Measurements

The following tables present changes in Level 3 for financial instruments measured at fair value for the years ended December 31, 2019 and 2018:

<i>(Millions)</i>	2019				
	Fixed maturities	Other long-term investments ⁽¹⁾	Loan participation	Derivative instruments assets & (liabilities)	Contingent consideration (liabilities)
Balance at January 1, 2019	\$ 5.4	\$ 63.6	\$ -	\$ (0.5)	\$ (8.9)
Total realized and unrealized gains	-	7.3	-	(7.1)	(0.8)
Foreign currency losses through Other Comprehensive Income	-	(0.6)	-	-	-
Purchases	17.0	15.7	20.0	-	-
Sales/settlements	(5.4)	(8.2)	-	8.4	-
Balance at December 31, 2019	\$ 17.0	\$ 77.8	\$ 20.0	\$ 0.8	\$ (9.7)

⁽¹⁾ Excludes fair value of \$269.0 associated with hedge funds and private equity funds which fair value is measured at net asset value using the practical expedient.

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<i>(Millions)</i>	2018			
	Fixed maturities	Other long-term investments ⁽¹⁾	Derivative instruments assets & (liabilities)	Contingent consideration (liabilities)
Balance at January 1, 2018	\$ 8.0	\$ 64.2	\$ (6.1)	\$ (13.3)
Fair value of contingent consideration liabilities at date of purchase (See Note 3)	-	-	-	-
Total realized and unrealized gains	(6.1)	6.8	12.0	3.5
Foreign currency losses through Other Comprehensive Income	-	(4.4)	-	-
Purchases	4.0	1.2	-	-
Sales/settlements	(0.5)	(4.2)	(6.4)	0.9
Balance at December 31, 2018	\$ 5.4	\$ 63.6	\$ (0.5)	\$ (8.9)

⁽¹⁾ Excludes fair value of \$301.5 associated with hedge funds and private equity funds which fair value is measured at net asset value using the practical expedient.

Fair Value Measurements – transfers between levels

There were no transfers between Level 3 and Level 2 measurements for the years ended December 31, 2019 or December 31, 2018.

Significant Unobservable Inputs

The table below presents information about the significant unobservable inputs used for recurring fair value measurements for certain Level 3 instruments as of December 31, 2019 and 2018, and includes only those instruments for which information about the inputs is reasonably available to Sirius Group, such as data from independent third-party valuation service providers and from internal valuation models.

<i>(Millions)</i>	2019			
	Description	Valuation technique(s)	Fair value	Unobservable input
Private equity securities ⁽¹⁾	Share price of recent transaction	\$32.5	Purchase share price	\$40.6
Loan participation ⁽¹⁾	Purchase price of recent transaction	\$20.0	Purchase price	\$20.0
Preferred stock ⁽¹⁾	Share price of recent transaction	\$17.5	Purchase price	\$7.74
Private equity securities ⁽¹⁾	Multiple of GAAP book value	\$14.2	Book value multiple	0.9X
Preferred stock ⁽¹⁾	Purchase price of recent transaction	\$12.2	Purchase price	\$12.2
Private debt instrument ⁽¹⁾	Purchase price of recent transaction	\$7.2	Purchase price	\$9.0
Weather derivatives ⁽²⁾	Third party appraisal	\$7.0	Broker quote	\$7.0
Private equity securities ⁽¹⁾	Purchase price of recent transaction	\$5.1	Purchase price	\$7.74
Preferred stock ⁽¹⁾	Purchase price of recent transaction	\$4.8	Purchase price	\$4.80
Currency forwards ⁽²⁾	Third party appraisal	\$2.7	Broker quote	\$2.7
Private equity securities ⁽¹⁾	Purchase price of recent transaction	\$1.0	Purchase price	\$10.0
Equity warrants ⁽²⁾	Option pricing model	\$0.4	Strike price	\$0.2
Private equity securities ⁽¹⁾	Purchase price of recent transaction	\$0.3	Purchase price	\$0.3
Currency swaps ⁽²⁾	Third party appraisal	\$(3.6)	Broker quote	\$(3.6)
Currency forwards ⁽²⁾	Third party appraisal	\$(5.7)	Broker quote	\$(5.7)
Contingent consideration	External valuation model	\$(9.7)	Discounted future payments	\$(9.7)

⁽¹⁾ As of December 31, 2019 each asset type consists of one security.

⁽²⁾ See **Note 13** for discussion of derivative instruments.

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<i>(Millions)</i>	2018			
Description	Valuation technique(s)	Fair value	Unobservable input	
Private equity securities ⁽¹⁾	Share price of recent transaction	\$32.5	Purchase share price	\$40.63
Private equity securities ⁽¹⁾	Multiple of GAAP book value	\$14.7	Book value multiple	0.9X
Private debt instrument ⁽¹⁾	Purchase price of recent transaction	\$9.0	Purchase price	\$9.0
Private debt instrument ⁽¹⁾	Purchase price of recent transaction	\$6.0	Purchase price	\$6.0
Preferred stock ⁽¹⁾	Share price of recent transaction	\$4.6	Purchase price	\$1.88
Weather derivatives ⁽²⁾	Third party appraisal	\$3.9	Broker quote	\$3.9
Common stock ⁽¹⁾	Purchase price of recent transaction	\$0.9	Purchase price	\$1.88
Preferred stock ⁽¹⁾	Share price of recent transaction	\$0.8	Purchase price	\$0.8
Common stock ⁽¹⁾	Share price of recent transaction	\$0.3	Purchase price	\$10.0
Private debt instrument ⁽¹⁾	Purchase price of recent transaction	\$0.2	Purchase price	\$0.2
Interest rate cap ⁽²⁾	Third party appraisal	\$0.2	Broker quote	\$0.2
Currency swaps ⁽²⁾	Third party appraisal	\$(4.6)	Broker quote	\$(4.6)
Contingent consideration	External valuation model	\$(8.9)	Discounted future payments	\$(8.9)

⁽¹⁾ As of December 31, 2018, each asset type consists of one security.

⁽²⁾ See **Note 13** for discussion of derivative instruments.

Financial instruments disclosed, but not carried at fair value

Sirius Group uses various financial instruments in the normal course of its business. The carrying values of Cash, Accrued investment income, certain other assets, Accounts payable on unsettled investment purchases, certain other liabilities, and other financial instruments not included in the table below approximated their fair values at December 31, 2019 and 2018, due to their respective short maturities. As these financial instruments are not actively traded, their respective fair values are classified within Level 3. The following table includes financial instruments for which the carrying value differs from the estimated fair values at December 31, 2019 and 2018:

<i>(Millions)</i>	2019		2018	
	Fair value⁽¹⁾	Carrying value	Fair value⁽¹⁾	Carrying value
Liabilities:				
2017 SEK Subordinated Notes	\$ 294.5	\$ 291.2	\$ 309.5	\$ 303.6
2016 SIG Senior Notes	\$ 394.5	\$ 394.0	\$ 347.6	\$ 393.2

⁽¹⁾ Fair value estimated by internal pricing and considered a Level 3 measurement.

Fair Value Measurements on a Non-Recurring Basis

Sirius Group 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 include goodwill, indefinite-lived intangible assets, and long-lived assets. Sirius Group uses a variety of techniques to measure the fair value of these assets when appropriate, as described below:

Goodwill and Indefinite-Lived Intangible Assets: The preliminary fair value of the goodwill and indefinite-lived intangible asset acquired as part of the acquisitions of both IMG and Armada (see **Note 3**) was determined using the income valuation and market valuation methodologies. The income approach determines value for an asset based on the present value of cash flows projected to be generated over the remaining economic life of the asset being measured. The net cash flows are discounted to present value using a discount rate that reflects the relative risk of achieving the cash flow and the time value of money. The market approach is a valuation technique that uses prices and other relevant information generated by market transactions involving identical or comparable assets or group of assets.

Determining the fair value goodwill and indefinite-lived intangible assets acquired requires the exercise of significant judgment, including the amount and timing of expected future cash flows, long-term growth rates and discount rates. The cash flows employed in the valuation are based on Sirius Group's best estimates of future sales, earnings, and cash flows after considering factors such as general market conditions, changes in working capital, long term business plans, and recent operating performance. Use of different estimates and judgments could yield different results.

Sirius Group tests goodwill and indefinite-lived intangible assets for impairment whenever events or changes in circumstances indicate the carrying amount may not be recoverable. When Sirius Group determines goodwill and indefinite-lived intangible assets may be impaired, Sirius Group uses techniques, including discounted expected future cash flows, to measure fair value. Sirius Group used Level 3 inputs to measure and did not record any impairments of goodwill or indefinite-lived intangible assets. Sirius Group recorded an \$8.0 million and \$5.0 million of impairment of Trade Names indefinite-lived intangible asset during 2018 and 2017, respectively, that was recorded in Impairment of Intangible Assets in the Consolidated Statements of (Loss). (See **Note 10**).

Long-Lived Assets: Sirius Group 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.

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Note 10. Goodwill and intangible assets

Goodwill represents the excess of the amount paid to acquire subsidiaries over the fair value of identifiable net assets at the date of acquisition. Intangible assets consist primarily of distribution relationships, trade names, customer relationships, technology, and insurance licenses. Finite-life intangible assets are measured at their acquisition date fair values, are amortized over their economic lives, and presented net of accumulated amortization on the balance sheet.

Goodwill is not amortized, but rather is evaluated for impairment on an annual basis, or whenever indications of potential impairment exist. In the absence of any indications of potential impairment, the evaluation of goodwill is performed during the fourth quarter of each year. Sirius Group uses widely accepted valuation techniques to determine the fair value of its reporting units used in its annual goodwill impairment analysis. Sirius Group's valuation is primarily based on qualitative and quantitative assessments regarding the fair value of the reporting unit relative to its carrying value. Sirius Group models the fair value of the reporting unit based on projected earnings and cash flows of the reporting unit.

Intangible assets with indefinite lives are evaluated for impairment at least annually and when events or changes in circumstances indicate that it is more likely than not that the asset is impaired.

The following table shows the change in goodwill, intangible assets with an indefinite life, and intangible assets with a finite life during the years ended December 31, 2019 and 2018:

<i>(Millions)</i>	Goodwill	Intangible assets with an indefinite life	Intangible assets with a finite life	Total
Net balance at December 31, 2017	\$ 401.0	\$ 27.0	\$ 189.3	\$ 617.3
Additions ⁽¹⁾	-	3.1	-	3.1
Foreign currency translation ⁽²⁾	(0.4)	-	-	(0.4)
Impairments ⁽²⁾	-	(8.0)	-	(8.0)
Amortization ⁽²⁾	-	-	(15.8)	(15.8)
Net balance at December 31, 2018	400.6	22.1	173.5	596.2
Additions	-	-	-	-
Foreign currency translation ⁽²⁾	0.2	-	-	0.2
Impairments ⁽²⁾	-	-	-	-
Amortization ⁽²⁾	-	-	(15.8)	(15.8)
Net balance at December 31, 2019	\$ 400.8	\$ 22.1	\$ 157.7	\$ 580.6

⁽¹⁾ Additions in 2018 relate to insurance licenses allocated to the Runoff & Other segment.

⁽²⁾ Foreign currency translation, impairments, and amortization in 2019 and 2018 relate to Armada and IMG and are allocated to the Global A&H segment.

For the year ended December 31, 2019, Sirius Group did not recognize any impairments on Intangible assets with an indefinite life. For the year ended December 31, 2018, Sirius Group recognized an impairment of Intangible assets with an indefinite life that related to a trade name intangible asset acquired as part of the acquisition of IMG. The impairments resulted from lower than anticipated growth when comparing the forecasted results against a reforecast of results at year end. A quantitative impairment review of the IMG trade name intangible asset was performed by applying the royalty replacement method to determine the asset's fair value as of December 31, 2019 and 2018, respectively. Under the royalty replacement method, the fair value of IMG's trade name intangible asset was determined based on a market participant's view of the royalty that would be paid to license the right to use the trade name. This quantitative analysis incorporated several assumptions including forecasted future revenues and cash flows, estimated royalty rate, based on similar licensing transactions and market royalty rates, and discount rate, which incorporates assumptions such as weighted-average cost of capital and risk premium. As a result of the impairment testing, the carrying value of IMG's trade name intangible asset exceeded its estimated fair value in 2018 and an impairment of \$8.0 million was recorded as Impairment of intangible assets on the Consolidated Statements of (Loss).

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The following tables presents the components of goodwill and intangible assets as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019				
	Gross balance	Accumulated amortization	Impairments	Foreign currency translation	Net balance
Customer relationships – finite life ⁽¹⁾	\$ 17.0	\$ (3.5)	\$ -	\$ -	\$ 13.5
Distribution relationships – finite life ⁽¹⁾	151.0	(25.5)	-	-	125.5
Goodwill – infinite life ⁽¹⁾	400.7	-	-	0.1	400.8
Insurance licenses – infinite life ⁽²⁾	8.1	-	-	-	8.1
Technology – finite life ⁽¹⁾	15.5	(6.9)	-	-	8.6
Trade names – finite life ⁽¹⁾	16.0	(5.9)	-	-	10.1
Trade names – infinite life ⁽¹⁾	14.0	-	-	-	14.0
Net balance at December 31, 2019	\$ 622.3	\$ (41.8)	\$ -	\$ 0.1	\$ 580.6

⁽¹⁾Allocated to the Global A&H segment.

⁽²⁾Allocated to the Runoff & Other segment.

<i>(Millions)</i>	2018				
	Gross balance	Accumulated amortization	Impairments	Foreign currency translation	Net balance
Customer relationships – finite life ⁽¹⁾	\$ 17.0	\$ (2.2)	\$ -	\$ -	\$ 14.8
Distribution relationships – finite life ⁽¹⁾	151.0	(15.8)	-	-	135.2
Goodwill – infinite life ⁽¹⁾	400.7	-	-	(0.1)	400.6
Insurance licenses – infinite life ⁽²⁾	8.1	-	-	-	8.1
Technology – finite life ⁽¹⁾	15.5	(4.3)	-	-	11.2
Trade names – finite life ⁽¹⁾	16.0	(3.7)	-	-	12.3
Trade names – infinite life ⁽¹⁾	27.0	-	(13.0)	-	14.0
Net balance at December 31, 2018	\$ 635.3	\$ (26.0)	\$ (13.0)	\$ (0.1)	\$ 596.2

⁽¹⁾Allocated to the Global A&H segment.

⁽²⁾Allocated to the Runoff & Other segment.

The amortization of intangibles assets for the year ended December 31, 2019, 2018, and 2017 was \$15.8 million and \$15.8 million, and \$10.2 million respectively.

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

<i>(Millions)</i>	
2020	\$ 15.8
2021	15.8
2022	14.6
2023	13.8
2024	13.2
2025 and thereafter	84.5
Total remaining amortization expense	\$ 157.7

The estimated remaining useful lives of these intangible assets range from 2.3 to 19.9 years.

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Note 11. Debt and standby letters of credit facilities

Sirius Group's debt outstanding as of December 31, 2019 and 2018 consisted of the following:

<i>(Millions)</i>	December 31, 2019	Effective rate ⁽¹⁾	December 31, 2018	Effective rate ⁽¹⁾
2017 SEK Subordinated Notes, at face value	\$ 295.0	4.0%	\$ 307.6	3.8%
Unamortized issuance costs	(3.8)		(4.0)	
2017 SEK Subordinated Notes, carrying value	<u>291.2</u>		<u>303.6</u>	
2016 SIG Senior Notes, at face value	400.0	4.7%	400.0	4.7%
Unamortized discount	(2.3)		(2.6)	
Unamortized issuance costs	(3.7)		(4.2)	
2016 SIG Senior Notes, carrying value	<u>394.0</u>		<u>393.2</u>	
Total debt	\$ 685.2		\$ 696.8	

⁽¹⁾ Effective rate considers the effect of the debt issuance costs.

A schedule of contractual repayments of Sirius Group's debt as of December 31, 2019 follows:

<i>(Millions)</i>	December 31, 2019
Due in one year or less	\$ -
Due in one to three years	-
Due in three to five years	-
Due after five years	695.0
Total	\$ 695.0

2017 SEK Subordinated Notes

On September 22, 2017, Sirius Group issued floating rate callable subordinated notes denominated in Swedish kronor ("SEK") in the amount of SEK 2,750.0 million (or \$346.1 million on date of issuance) at a 100% issue price ("2017 SEK Subordinated Notes"). The 2017 SEK Subordinated Notes were issued in an offering that was exempt from the registration requirements of the Securities Act of 1933. The 2017 SEK Subordinated Notes bear interest on their principal amount at a floating rate equal to the applicable Stockholm Interbank Offered Rate ("STIBOR") for the relevant interest period plus an applicable margin, payable quarterly in arrears on March 22, June 22, September 22, and December 22 in each year commencing on December 22, 2017, until maturity in September 2047.

Beginning on September 22, 2022, the 2017 SEK Subordinated Notes may be redeemed, in whole or in part, at Sirius Group's option. In addition, within 90 days following the occurrence of a Specified Event (as defined below), the 2017 SEK Subordinated Notes may be redeemed, in whole but not in part, at Sirius Group's option. "Specified Event" means (a) an "Additional Amounts Event" in connection with a change in laws, rules or regulations as a result of which Sirius Group is obligated to pay additional amounts on the notes in respect of any withholding or deduction for taxes, (b) a "Tax Event" in connection with a change in laws, rules or regulations as a result of which interest on the notes is no longer fully deductible by Sirius Group for income tax purposes in the applicable jurisdiction (to the extent that such interest was so deductible as of the time of such Tax Event), (c) a "Rating Methodology Event" in connection with a change in, or clarification to, the rating methodology of Standard & Poor's or Fitch that results in a materially unfavorable capital treatment of the notes, or (d) a "Regulatory Event" in connection with a change in, or clarification to, applicable supervisory regulations that results in the notes no longer qualifying as Tier 2 Capital.

Sirius Group incurred \$4.6 million in expenses related to the issuance of the 2017 SEK Subordinated Notes (including SEK 27.5 million, or \$3.5 million, in underwriting fees), which have been deferred and are being recognized into interest expense over the life of the 2017 SEK Subordinated Notes.

A portion of the proceeds were used to fully redeem the outstanding \$250.0 million Sirius International Group, Ltd. Preference Shares. (See **Note 15**).

Taking into effect the amortization of all underwriting and issuance expenses, and applicable STIBOR, the 2017 SEK Subordinated Notes yielded an effective rate of approximately 4.0% and 3.8% for the years ended December 31, 2019 and 2018, respectively. Sirius Group recorded \$11.9 million, \$11.7 million and \$3.3 million of interest expense, inclusive of amortization of issuance costs, on the 2017 SEK Subordinated Notes for the years ended December 31, 2019, 2018, and 2017, respectively.

2016 SIG Senior Notes

On November 1, 2016, Sirius Group issued \$400.0 million face value of senior unsecured notes ("2016 SIG Senior Notes") at an issue price of 99.209% for net proceeds of \$392.4 million after taking into effect both deferrable and non-deferrable issuance costs. The SIG Senior Notes were issued in an offering that was exempt from the registration requirements of the Securities Act of 1933. The 2016 SIG Senior Notes bear an annual interest rate of 4.6%, payable semi-annually in arrears on May 1 and November 1, in each year commencing on May 1, 2017, until maturity in November 2026.

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Sirius Group incurred \$5.1 million in expenses related to the issuance of the 2016 SIG Senior Notes (including \$3.4 million in underwriting fees), which have been deferred and are being recognized into interest expense over the life of the 2016 SIG Senior Notes.

Taking into effect the amortization of the original issue discount and all underwriting and issuance expenses, the 2016 SIG Senior Notes yield an effective rate of approximately 4.7% per annum. Sirius Group recorded \$19.1 million of interest expense, inclusive of amortization of issuance costs on the 2016 SIG Senior Notes for each the years ended December 31, 2019, 2018, and 2017.

Old Lyme Note

On April 25, 2017, Sirius Group made a payment of \$3.8 million to retire the Old Lyme Note that was originally issued as part of the acquisition of the runoff loss reserve portfolio of Old Lyme Insurance Company Ltd. As part of the acquisition in 2011, Sirius Group entered into a five-year \$2.1 million note that was subject to upward adjustments for favorable loss reserve development (up to 50.0% of \$6.0 million) and downward adjustments for any adverse loss reserve development. From inception, Sirius Group had favorable loss reserve development of \$3.4 million on the Old Lyme loss reserve position that resulted in an increase of \$1.7 million on the Old Lyme Note.

Standby Letter of Credit Facilities

On November 6, 2019, Sirius International agreed to renew two standby letter of credit facility agreements totaling \$125 million to provide capital support for Lloyd's Syndicate 1945. The first letter of credit is a \$90 million facility with Nordea Bank Abp, London Branch, which is issued on an unsecured basis. The second letter of credit is a \$35 million facility with DNB Bank ASA, Sweden Branch, \$25 million of which is issued on an unsecured basis. Each facility is renewable annually. The above referenced facilities are subject to various affirmative, negative and financial covenants that the Company considers to be customary for such borrowings, including certain minimum net worth and maximum debt to capitalization standards.

Sirius International has other secured letter of credit and trust arrangements with various financial institutions to support its insurance operations. As of December 31, 2019 and 2018, respectively, these secured letter of credit and trust arrangements were collateralized by pledged assets and assets in trust of SEK 3.4 billion and SEK 2.9 billion, or \$363.3 million and \$321.3 million (based on the December 31, 2019 and December 31, 2018 SEK to USD exchange rates). As of December 31, 2019 and 2018, respectively, Sirius America's trust arrangements were collateralized by pledged assets and assets in trust of \$57.7 million and \$56.2 million. As of December 31, 2019 and 2018, respectively, Sirius Bermuda Insurance Company's ("Sirius Bermuda") trust arrangements were collateralized by pledged assets and assets in trust of \$784.0 million and \$319.7 million.

Revolving Credit Facility

In February 2018, the Company entered into a three-year, \$300 million senior unsecured revolving credit facility (the "Facility"). The Facility provides access to loans for working capital and general corporate purposes, and letters of credit to support obligations under insurance and reinsurance agreements and retrocessional agreements. The Facility is subject to various affirmative, negative and financial covenants that Sirius Group considers to be customary for such borrowings, including certain minimum net worth, maximum debt to capitalization and financial strength rating standards. As of December 31, 2019, there were no outstanding borrowings under the Facility.

Debt and Standby Letter of Credit Facility Covenants

As of December 31, 2019, Sirius Group was in compliance with all of the covenants under the 2017 SEK Subordinated Notes, the 2016 SIG Senior Notes, the Nordea Bank Finland Abp, London Branch facility, and the DNB Bank ASA, Sweden Branch facility. In addition, as of December 31, 2019, Sirius Group was in compliance with all of the covenants under the Facility.

Interest

Total interest expense incurred by Sirius Group for its indebtedness was \$31.0 million, \$30.8 million, and \$22.4 million in 2019, 2018, and 2017. Total interest paid by Sirius Group for its indebtedness was \$29.9 million, \$30.0 million, and \$22.0 million in 2019, 2018, and 2017, respectively.

Note 12. Income taxes

The Company and its Bermuda domiciled subsidiaries are not subject to Bermuda income tax under current Bermuda law. In the event there is a change in the current law such that taxes are imposed, the Company and its Bermuda domiciled subsidiaries would be exempt from such tax until March 31, 2035, pursuant to the Bermuda Exempted Undertakings Tax Protection Act of 1966. The Company has subsidiaries and branches that operate in various other jurisdictions around the world that are subject to tax in the jurisdictions in which they operate. The jurisdictions in which the Company's subsidiaries and branches are subject to tax are Australia, Belgium, Canada, Denmark, Germany, Gibraltar, Hong Kong (China), Ireland, Luxembourg, Malaysia, Shanghai (China), Singapore, Spain, Sweden, Switzerland, the United Kingdom, and the United States.

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Sirius Group's net income (loss) before income taxes for the years ended December 31, 2019, 2018, and 2017 was generated in the following domestic and foreign jurisdictions:

<i>(Millions)</i>	2019	2018	2017
Domestic:			
Bermuda	\$ 19.7	\$ 28.3	\$ (112.9)
Foreign:			
U.S.	(5.4)	(10.1)	(19.2)
U.K.	(29.1)	(14.9)	(27.0)
Sweden	(22.4)	(74.2)	(26.1)
Luxembourg	56.0	60.3	43.4
Netherlands	-	(0.1)	18.2
Other	-	-	(1.0)
Total income (loss) before income taxes	\$ 18.8	\$ (10.7)	\$ (124.6)

The total income tax (expense) benefit for the years ended December 31, 2019, 2018, and 2017 consisted of the following:

<i>(Millions)</i>	2019	2018	2017
Current tax (expense):			
U.S. Federal	\$ (1.6)	\$ (7.0)	\$ (0.9)
State	(2.0)	(2.2)	(2.0)
Non-U.S.	(1.5)	(19.8)	(3.6)
Total current tax (expense)	(5.1)	(29.0)	(6.5)
Deferred tax (expense) benefit:			
U.S. Federal	(8.8)	14.3	(8.7)
State	0.9	0.2	(2.0)
Non-U.S.	1.1	(25.9)	(9.2)
Total deferred tax (expense) benefit	(6.8)	(11.4)	(19.9)
Total income tax (expense) benefit	\$ (11.9)	\$ (40.4)	\$ (26.4)

Effective Rate Reconciliation

A reconciliation of taxes calculated using the 21.4% Swedish statutory rate (the rate at which the majority of Sirius Group's worldwide operations are taxed) to the income tax (expense) benefit on pre-tax income follows:

<i>(Millions)</i>	2019	2018	2017
Tax benefit (expense) at the statutory rate	\$ (4.0)	\$ 2.3	\$ 27.4
Differences in taxes resulting from:			
Change in valuation allowance	(20.7)	2.3	1.4
Non-Sweden earnings	(8.4)	(5.2)	(21.7)
Tax reserve adjustments	13.9	(42.0)	(1.2)
Foreign tax credits	12.2	10.8	2.2
Results from internal restructuring	7.4	(9.1)	—
Tax rate change enacted in Luxembourg	(5.8)	—	0.2
State taxes expense	(1.7)	(2.9)	(0.6)
Withholding taxes	(1.7)	(1.9)	(0.8)
Tax rate change—other	(1.6)	0.1	(29.7)
Tax on Safety Reserve	(0.6)	(15.3)	—
Tax rate change enacted in Sweden	(0.2)	15.4	—
Section 197 Intangible as result of internal restructuring	—	6.9	—
Other, net	(0.7)	(1.8)	(3.6)
Total income tax (expense) on pre-tax earnings	\$ (11.9)	\$ (40.4)	\$ (26.4)

The non-Sweden component of pre-tax (loss) income was \$(41.1) million, \$63.6 million, and \$(98.6) million for the years ended December 31, 2019, 2018, and 2017, respectively.

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The TCJA includes a new BEAT provision, which is essentially a minimum tax that is potentially applicable to certain otherwise deductible payments made by U.S. entities to non-U.S. affiliates, including cross-border interest payments and reinsurance premiums. The statutory BEAT rate is 10% in 2019-2025, and then rises to 12.5% in 2026 and thereafter. The TCJA also includes provisions for GILTI under which taxes on foreign income are imposed on the excess of a deemed return on tangible assets of certain foreign subsidiaries. Consistent with accounting guidance, Sirius Group will treat BEAT as an in period tax charge when incurred in future periods for which no deferred taxes need to be provided and has made an accounting policy election to treat GILTI taxes in a similar manner. No provision for income taxes related to BEAT or GILTI was recorded as of December 31, 2019 or December 31, 2018.

Sirius Group has capital and liquidity in many of its subsidiaries, some of which may reflect undistributed earnings. If such capital or liquidity were to be paid or distributed to the Company or Sirius Group's subsidiaries, as dividends or otherwise, they may be subject to income or withholding taxes. Sirius Group generally intends to operate, and manage its capital and liquidity, in a tax-efficient manner. However, the applicable tax laws in relevant countries are still evolving, including in response to guidance from the OECD. Accordingly, such payments or earnings may be subject to income or withholding tax in jurisdictions where they are not currently taxed or at higher rates of tax than currently taxed, and the applicable tax authorities could attempt to apply income or withholding tax to past earnings or payments.

Tax Payments and Receipts

Net income tax payments to national, state, and local governments totaled \$9.3 million, \$19.1 million, and \$16.7 million for the years ended December 31, 2019, 2018, and 2017, respectively.

Deferred Tax Inventory

Deferred income taxes reflect the net tax effects of temporary differences between the carrying amounts of assets and liabilities for financial reporting purposes and the amounts for tax purposes. An outline of the significant components of Sirius Group's deferred tax assets and liabilities follows:

<i>(Millions)</i>	2019	2018
Deferred income tax assets related to:		
Non-U.S. net operating loss carry forwards	\$ 211.1	\$ 249.8
Tax credit carry forwards	41.6	28.7
U.S. federal net operating loss and capital carry forwards	40.2	33.8
Loss reserve discount	6.6	7.3
Unearned premiums	4.3	3.1
Investment basis differences	3.6	
Foreign currency translation on investments and other assets	3.4	0.8
Incentive compensation and benefit accruals	2.8	1.9
Deferred interest	2.6	2.1
Allowance for doubtful accounts	1.5	1.4
Other items	3.9	2.7
Total gross deferred income tax assets	321.6	331.6
Valuation allowance	(79.8)	(64.3)
Total adjusted deferred tax asset	241.8	267.3
Deferred income tax liabilities related to:		
Safety reserve (See Note 16)	239.4	261.1
Intangible assets	25.7	28.7
Deferred acquisition costs	4.6	3.1
Net unrealized investment gains	3.7	0.3
Purchase accounting	3.6	3.0
Investment basis differences	-	2.4
Other items	4.0	3.6
Total deferred income tax liabilities	281.0	302.2
Net deferred tax (liability) asset	\$ (39.2)	\$ (34.9)

Sirius Group's deferred tax assets are net of U.S. federal and non-U.S. valuation allowances and, to the extent they relate to non-U.S. jurisdictions, they are shown at year-end exchange rates.

Of the \$39.2 million net deferred tax liability as of December 31, 2019, \$25.1 million relates to net deferred tax assets in U.S. subsidiaries, \$141.6 million relates to net deferred tax assets in Luxembourg subsidiaries, and \$205.9 million relates to net deferred tax liabilities in Sweden subsidiaries.

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Net Operating Loss and Capital Loss Carryforwards

Net operating loss and capital loss carryforwards as of December 31, 2019, the expiration dates, and the deferred tax assets thereon are as follows:

<i>(Millions)</i>	2019				
	United States	Luxembourg	Sweden	U.K.	Total
2019-2023	\$ 1.5	\$ -	\$ -	\$ -	\$ 1.5
2024-2038	171.4	0.1	-	-	171.5
No expiration date	21.5	764.9	230.1	97.0	1,113.5
Total	194.4	765.0	230.1	97.0	1,286.5
Gross deferred tax asset	40.2	190.8	3.8	16.5	251.3
Valuation allowance	-	(50.2)	-	(16.5)	(66.7)
Net deferred tax asset	\$ 40.2	\$ 140.6	\$ 3.8	\$ -	\$ 184.6

Sirius Group expects to utilize net operating loss carryforwards in Luxembourg of \$573.3 million but does not expect to utilize the remainder as they belong to companies that are not expected to have sufficient taxable income in the future. Included in the U.S. net operating loss carryforwards are losses of \$115.4 million subject to an annual limitation on utilization under Internal Revenue Code Section 382 and \$11.0 million are subject to separately return limitation year ("SRLY") provisions of the consolidated return regulations. Of the Section 382 limited loss carryforwards, \$9.6 million will expire between 2022 and 2025 and \$94.8 million will expire between 2030 and 2032. The SRLY limited losses will expire between 2036 and 2037. Sirius Group expects to utilize all of the U.S. net operating loss carryforwards.

Foreign Tax Credits

As of December 31, 2019, there are U.S. foreign tax credits carryforwards available of \$16.4 million, of which an insignificant amount expires in 2020 and 2021, and the remaining will begin to expire in 2022. As of December 31, 2019, there are alternative minimum tax credit carryforwards of \$0.1 million which do not expire and are expected to become fully refundable beginning in the 2023 tax year under the TCJA. Further, there are Swedish foreign tax credits carryforwards available of \$25.1 million, which Sirius Group expects to use, and will expire between 2021 and 2024.

Valuation Allowance

Sirius Group records a valuation allowance against deferred tax assets if it becomes more likely than not that all or a portion of a deferred tax asset will not be realized. Changes in valuation allowances from period to period are included in income tax expense in the period of change. In determining whether or not a valuation allowance, or change therein, is warranted, Sirius Group considers factors such as prior earnings history, expected future earnings, carryback and carryforward periods, and strategies that if executed would result in the realization of a deferred tax asset. It is possible that certain planning strategies or projected earnings in certain subsidiaries may not be feasible to utilize the entire deferred tax asset, which could result in material changes to Sirius Group's deferred tax assets and tax expense.

Of the \$79.8 million valuation allowance as of December 31, 2019, \$50.2 million relates to net operating loss carryforwards in Luxembourg subsidiaries, \$16.5 million relates primarily to net operating loss carryforward in the United Kingdom, \$13.0 million relates to foreign tax credits in the United States and \$0.1 million relates to net operating losses in a Belgium subsidiary.

Uncertain Tax Positions

Recognition of the benefit of a given tax position is based upon whether a company determines that it is more likely than not that a tax position will be sustained upon examination based upon the technical merits of the position. In evaluating the more likely than not recognition threshold, Sirius Group must presume that the tax position will be subject to examination by a taxing authority with full knowledge of all relevant information. If the recognition threshold is met, then the tax position is measured at the largest amount of benefit that is more than 50% likely of being realized upon ultimate settlement.

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A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

<i>(Millions)</i>	Permanent differences⁽¹⁾	Temporary differences⁽²⁾	Interest and penalties⁽³⁾	Total
Balance at January 1, 2017	\$ 24.2	\$ 4.1	\$ 0.2	\$ 28.5
Changes in prior year tax positions	0.2	(0.1)	0.1	0.2
Tax positions taken during the current year	3.8	(2.2)	-	1.6
Lapse in statute of limitations	(0.5)	-	-	(0.5)
Settlements with tax authorities	(0.3)	-	(0.2)	(0.5)
Balance at December 31, 2017	\$ 27.4	\$ 1.8	\$ 0.1	\$ 29.3
Changes in prior year tax positions	1.4	-	0.1	1.5
Tax positions taken during the current year	36.2	(1.7)	-	34.5
Lapse in statute of limitations	-	-	-	-
Settlements with tax authorities	(0.1)	-	-	(0.1)
Balance at December 31, 2018	\$ 64.9	\$ 0.1	\$ 0.2	\$ 65.2
Changes in prior year tax positions	(17.1)	-	0.1	(17.1)
Tax positions taken during the current year	(0.5)	-	-	(0.5)
Lapse in statute of limitations	(0.1)	-	-	(0.1)
Settlements with tax authorities	-	-	-	-
Balance at December 31, 2019	\$ 47.2	\$ 0.1	\$ 0.2	\$ 47.5

⁽¹⁾ Represents the amount of unrecognized tax benefits that, if recognized, would impact the effective tax rate.

⁽²⁾ Represents the amount of unrecognized tax benefits that, if recognized, would create a temporary difference between the reported amount of an item in the Consolidated Balance Sheets and its tax basis.

⁽³⁾ Net of tax benefit.

If Sirius Group determines in the future that its reserves for unrecognized tax benefits on permanent differences and interest and penalties are not needed, the reversal of \$47.2 million of such reserves as of December 31, 2019 would be recorded as an income tax benefit and would impact the effective tax rate. If Sirius Group determines in the future that its reserves for unrecognized tax benefits on temporary differences are not needed, the reversal of \$0.1 million of such reserves as of December 31, 2019 would not impact the effective tax rate due to deferred tax accounting but would accelerate the payment of cash to the taxing authority. Most of Sirius Group's reserves for unrecognized tax benefits on permanent differences relate to interest deductions denied by the Swedish Tax Authority ("STA"), as described further below.

Sirius Group classifies all interest and penalties on unrecognized tax benefits as part of income tax expense. During the years ended December 31, 2019, 2018, and 2017, Sirius Group recognized \$0.0 million, \$0.1 million, and \$(0.1) million in interest income (expense), respectively, net of any tax benefit. The balance of accrued interest as of December 31, 2019 and 2018 is \$0.2 million and \$0.2 million, respectively, net of any tax benefit.

Tax Examinations

The STA has denied deductions claimed by two of the Company's Swedish subsidiaries in certain tax years for interest paid on intra-group debt instruments. Sirius Group has challenged the STA's denial in court based on the technical merits. In October 2018, one of the Swedish subsidiaries received an adverse decision from Sweden's Administrative Court, which Sirius Group has appealed. Sirius Group has taken into account this and other relevant developments in applicable Swedish tax law and has established a reserve for this uncertain tax position. As of December 31, 2019, the total amount of such reserve was \$45.1 million.

In connection with this matter, Sirius Group has also taken into account the Stock Purchase Agreement ("SPA") by which Sirius Group was sold to CMIG International Holding Pte. Ltd. ("CMIG International") in 2016 and has recorded an indemnification asset. Pursuant to the SPA, the seller agreed to indemnify Sirius Group and the buyer for, among other things, (1) any additional tax liability in excess of Sirius Group's accounting for uncertain tax positions for tax periods prior to the sale of Sirius Group to CMIG International, and (2) an impairment in Sirius Group's net deferred tax assets resulting from a final determination by a tax authority. While Sirius Group is continuing to challenge the STA's denial based on the technical merits (including appealing the adverse court decision received in October 2018), the ultimate resolution of these tax disputes is uncertain and no assurance can be given that there will be no material changes to Sirius Group's operating results or balance sheet in connection with these uncertain tax positions or the related indemnification.

With few exceptions, Sirius Group is no longer subject to U.S. federal, state or non-U.S. income tax examinations by tax authorities for years before 2015.

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Note 13. Derivatives

Interest Rate Cap

Sirius Group entered into an interest rate swap ("Interest Rate Cap") with two financial institutions where it paid an upfront premium and in return receives a series of quarterly payments based on the 3-month London Interbank Offered Rate ("LIBOR") at the time of payment. The Interest Rate Cap does not qualify for hedge accounting. Changes in fair value are recognized as unrealized gains or losses and are presented within Other revenue. The fair value of the interest rate cap has been estimated using a non-binding single broker quote and, accordingly, has been classified as a Level 3 measurement as of December 31, 2019 and 2018. Collateral held is recorded within short-term investments with an equal amount recognized as a liability to return collateral. Sirius Group's liability to return that collateral is based on the amounts provided by the counterparties and investment earnings thereon. As of December 31, 2019 and 2018, Sirius Group held collateral balances of \$0.2 million and \$0.3 million, respectively.

Foreign Currency Swaps

Sirius Group executes foreign currency swaps to manage foreign currency exposure. The foreign currency swaps have not been designated or accounted for under hedge accounting. Changes in fair value are recognized as unrealized gains or losses and are presented within Net foreign exchange gains. The fair value of the foreign currency swaps has been estimated using a non-binding single broker quote and accordingly, has been classified as a Level 3 measurement as of December 31, 2019 and 2018. Sirius Group does not provide or hold any collateral associated with the swaps.

Foreign Currency Forward

Sirius Group executes foreign currency forwards to manage currency exposure against a foreign currency investment. The foreign currency forwards are not designated or accounted for under hedge accounting. Changes in fair value are recognized as unrealized gains or losses and are presented within Net foreign exchange gains. The fair value of the foreign currency forwards are estimated using a single broker quote and accordingly, classified as a Level 3 measurement. Sirius Group did not provide or hold any collateral associated with the forwards.

Weather Derivatives

Sirius Group holds assets and assumes liabilities related to weather and weather contingent risk management products. Weather and weather contingent derivative contracts are entered into with the objective of generating profits in normal climatic conditions. Accordingly, Sirius Group's weather and weather contingent derivatives are not designed to meet the criteria for hedge accounting under GAAP. Sirius Group receives payment of premium at the contract inception in exchange for bearing the risk of variations in a quantifiable weather index. Changes in fair value are recognized as unrealized gains or losses and are presented within Other revenue. Management uses available market data and internal pricing models based upon consistent statistical methodologies to estimate the fair value. Because of the significance of the unobservable inputs used to estimate the fair value of Sirius Group's weather risk contracts, the fair value measurements of the contracts are deemed to be Level 3 measurements in the fair value hierarchy as of December 31, 2019 and 2018. Sirius Group does not provide or hold any collateral associated with the weather derivatives.

Equity Futures Contracts

Sirius Group holds restricted equity warrants as part of its investment strategy. The equity warrants are not designated or accounted for under hedge accounting. Changes in fair value are presented within Net unrealized investment gains (losses). The fair value of the equity warrants is estimated using a single broker quote and accordingly, classified as a Level 3 measurement. Sirius Group did not provide or hold any collateral associated with the equity warrants.

Equity Put Options

Sirius Group sells equity put options as part of its investment strategy. The equity put options were not designated or accounted for under hedge accounting. Changes in fair value are presented within Net unrealized investment (losses) gains. The fair value of the equity put options is widely available and have quoted prices in active markets and accordingly, were classified as a Level 1 measurement.

The following tables summarize information on the classification and amount of the fair value of derivatives not designated as hedging instruments within the Company's Consolidated Balance Sheets as at December 31, 2019 and 2018:

<i>(Millions)</i>	2019			2018		
Derivatives not designated as hedging instruments	Notional value	Asset derivative at fair value⁽¹⁾	Liability derivative at fair value⁽²⁾	Notional value	Asset derivative at fair value⁽¹⁾	Liability derivative at fair value⁽²⁾
Interest rate cap	\$ 250.0	\$ -	\$ -	\$ 250.0	\$ 0.2	\$ -
Foreign currency swaps	\$ 90.0	\$ -	\$ 3.6	\$ 45.0	\$ -	\$ 4.6
Foreign currency forwards	\$ (30.0)	\$ 2.7	\$ 5.7	\$ -	\$ -	\$ -
Weather derivatives	\$ 110.7	\$ 7.0	\$ -	\$ 150.5	\$ 3.9	\$ -
Equity futures contracts	\$ 34.5	\$ -	\$ -	\$ -	\$ -	\$ -
Equity warrants	\$ 0.4	\$ 0.4	\$ -	\$ -	\$ -	\$ -
Equity put options	\$ 31.0	\$ 1.3	\$ 0.2	\$ 6.2	\$ -	\$ 0.5

⁽¹⁾Asset derivatives are classified within Other assets within the Company's Consolidated Balance Sheets as of December 31, 2019 and 2018.

⁽²⁾Liability derivatives are classified within Other liabilities within the Company's Consolidated Balance Sheets as of December 31, 2019 and 2018.

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The following table summarizes information on the classification and net impact on earnings, recognized in the Company's Consolidated Statements of (Loss) relating to derivatives during the years ended December 31, 2019, 2018 and 2017:

<i>(Millions)</i>					
Derivatives not designated as hedging instruments	Classification of gains (losses) recognized in earnings	2019	2018	2017	
Interest rate cap	Other revenues	\$ (0.2)	\$ 0.1	\$ (1.5)	
Foreign currency swaps	Net foreign exchange gains	\$ 4.2	\$ 6.9	\$ (11.3)	
Foreign currency forwards	Net foreign exchange gains	\$ (10.4)	\$ -	\$ -	
Weather derivatives	Other revenues	\$ (1.1)	\$ 5.2	\$ (1.5)	
Equity futures contracts	Net realized investment gains (losses)	\$ (1.7)	\$ 1.7	\$ -	
Equity put options	Net realized investment gains (losses)	\$ (0.8)	\$ -	\$ -	
Equity put options	Net unrealized investment gains (losses)	\$ (0.8)	\$ -	\$ -	
Equity warrants	Net unrealized investment gains (losses)	\$ 0.4	\$ -	\$ -	

Note 14. Employee benefit plans and compensation plans

Employee Benefit Plans

Sirius Group operates several retirement plans in accordance with the local regulations and practices. These plans cover substantially all Sirius Group employees and provide benefits to employees in event of death, disability, or retirement.

Defined benefit plans

Swedish and German employees of Sirius International can participate in defined benefit plans which are based on the employees' pension entitlements and length of employment. In Sweden, where a defined benefit pension plan is mandated by the government, Sirius International's employees participate in collective agreements funded by Sirius International. These collective agreements are managed by third party trustees who calculate the pension obligation, invoice Sirius International for additional funding, and invest the funds. All employees in Germany are covered by defined benefit pension plans sponsored by Sirius International called Sirius Rückversicherungs Service GmbH Pension Plan. Paid pension premiums are invested with Skandia Liv for employees in Sweden and with Allianz for employees in Germany. Skandia Liv held 94% of total plan assets in both 2019 and 2018. Allianz held 6% of total plan assets in both 2019 and 2018. Skandia manages the portfolio to be able to pay a guaranteed amount and a favorable return over time with the goal of getting the highest possible return along with well-balanced risk. The average return for the period 2017 through 2019 was 7.0%. The investment directive is decided by the Skandia Liv board of directors. To achieve the goals the portfolio is diversified with the asset allocation shown below.

The breakdown of the investment of plan assets for the years ended December 31, 2019 and 2018 are as follows:

	2019	2018
International equities	13.0%	11.4%
Swedish equities	8.9%	7.5%
Swedish nominal bonds	40.7%	40.3%
Real estate	10.2%	11.2%
Private equity	9.4%	10.4%
Other	17.8%	19.2%

The assumptions used to determine Swedish benefit obligations for the years ended December 31, 2019 and 2018 are as follows:

	2019	2018
Discount rate	2.3%	2.5%
Increase in compensation levels rate	3.3%	3.2%
Turnover rate	3.0%	3.0%

The Swedish actuaries follow the Swedish industry DUS14 mortality rate. The discount rate used to calculate the Swedish benefit obligation was derived from the expected return of an investment in Swedish covered mortgage bonds with a duration in accordance with the duration of the pension obligation. The duration of the Swedish pension liability is approximately 20 years.

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The assumptions used to determine German benefit obligations for the years ended December 31, 2019 and 2018 are as follows:

	2019	2018
Discount rate	1.9%	1.7%
Increase in compensation levels rate	2.0%	2.0%

The German actuaries follow the Germany industry Richttafeln 2018 G mortality rates and standard turnover values for the years ended December 31, 2019 and 2018. The discount rate used to calculate the German benefit obligation was derived from markets yields on high quality corporate bonds with durations consistent with plan obligations. The duration of the German pension liability is approximately 17 years.

The following tables present a reconciliation of the beginning and ending funded status and the net amounts recognized for the defined benefit plans for the years ended December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Change in benefit obligation		
Projected benefit obligation, beginning of year	\$ 17.5	\$ 17.4
Service cost	1.5	1.0
Interest cost	0.4	0.4
Actuarial losses	2.9	0.6
Benefit payments	(1.2)	(0.4)
Tax payments	(0.3)	(0.2)
Currency revaluation effect	(0.6)	(1.3)
Projected benefit obligation, end of year	<u>20.3</u>	<u>17.5</u>
Change in plan assets		
Fair value of plan assets, beginning of year	16.4	16.1
Employer contributions	1.4	1.2
Benefit payments	(0.4)	(0.3)
Interest income	1.0	0.8
Currency revaluation effect	(0.6)	(1.4)
Fair value of plan assets, end of year	<u>17.7</u>	<u>16.4</u>
Funded status at end of year⁽¹⁾	\$ (2.6)	\$ (1.1)

⁽¹⁾At December 31, 2019, the Swedish plan had a funding status of \$2.5 million and the German plan had a funding status of \$(5.1) million. At December 31, 2018, the Swedish plan had a funding status of \$3.0 million and the German plan had a funding status of \$(4.1) million.

Under the Swedish plan, a 100 basis point discount rate decrease would increase the 2019 defined benefit obligation by \$2.7 million, with all other items remaining the same. Under the German plan, a 50 basis point decrease in the discount rate would increase the benefit obligation by \$0.7 million, with all other items remaining the same. Conversely, a 50 basis point increase in the discount rate would decrease the benefit obligation by \$0.6 million.

The accumulated benefit obligation for the years ended December 31, 2019 and 2018 was \$20.3 million and \$17.5 million, respectively.

The components of net periodic pension expense for the years ended December 31, 2019, 2018, and 2017 are as follows:

<i>(Millions)</i>	2019	2018	2017
Service cost	\$ (0.9)	\$ (1.2)	\$ (0.8)
Interest cost	0.1	0.1	2.2
Actuarial (loss)	(0.5)	(0.8)	(0.3)
Net periodic pension expense	\$ (1.3)	\$ (1.9)	\$ 1.1

The employer benefit payments/settlements for the years ended December 31, 2019 and 2018 were \$0.3 million and \$0.4 million, respectively. As at December 31, 2019, the projected benefit payments required for the defined pension benefits plans are as follows:

<i>(Millions)</i>	December 31, 2019
2020	\$ 0.5
2021	0.4
2022	0.4
2023	0.4
2024	0.5
2025-2029	3.1
Total benefit payments required	\$ 5.3

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Defined contributions plans

Non-U.S.

In the United Kingdom, Sirius International contributes 12% of the employee's salary. Contributed funds are invested into an annuity of the employee's choice. In Belgium, Sirius International contributes 6.5%-8.5% of the employee's salary. Employees in Switzerland are eligible to participate in the industry-sponsored Swisscanto pension plan ("Swisscanto plan"). The Swisscanto plan is a combination of a defined contribution and a defined benefit plan. For the Swisscanto plan, Sirius International incurs 60%-70% of the total premium charges and the employees incur the remaining 30-40%. As of December 31, 2019 and 2018, the projected benefit obligation of Sirius International's various benefit plans was \$20.3 million and \$17.5 million, and the funded status was \$(2.6) million and \$(1.1) million, respectively. Sirius International recognized expenses related to these various plans of \$8.3 million, \$7.6 million, and \$4.9 million in 2019, 2018, and 2017, respectively.

Sirius Bermuda sponsors defined contribution plans, which cover substantially all of the employees of Sirius Bermuda. Under these plans, Sirius Bermuda is required to contribute 10% of each participant's salary into an individual account maintained by an independent pension administrator. Employees become vested in the Sirius Bermuda contributions after two years of service. Sirius Bermuda recognized expenses of \$0.6 million, \$0.5 million, and \$0.4 million during the years ended December 31, 2019, 2018, and 2017, respectively.

U.S.

Sirius International Holding Company, Inc. ("SIHC") sponsors a defined contribution plan (the "SIHC 401(k) Plan") which offers participants the ability to invest their balances in several different investment options. The SIHC 401(k) Plan provides qualifying employees with matching contributions of 100% up to the first 2% and 50% of the next 4% of salary (subject to U.S. federal limits on allowable contributions in a given year). Total expense for matching contributions to the SIHC 401(k) Plan was \$0.8 million, \$0.8 million, and \$1.3 million in 2019, 2018, and 2017, respectively. Additionally, all participants in the SIHC 401(k) Plan can earn a variable contribution of up to 7% of their salary, subject to the applicable IRS annual covered compensation limits (\$0.3 million for 2019) and contingent upon Sirius Group's performance. During 2019 and 2018, there were no variable contributions to the SIHC 401(k) Plan. Total expense for variable contributions to the SIHC 401(k) Plan was \$0.3 million in 2017.

IMG sponsors a 401(k) retirement savings plan (the "IMG 401(k) Plan"). IMG 401(k) Plan participants may elect to have a percentage of their salaries contributed to the IMG 401(k) Plan on a pre-tax basis subject to annual limits prescribed under the Internal Revenue Code. IMG makes safe harbor matching contributions to the IMG 401(k) Plan equal to 100% of participants' deferrals up to the first 1% of eligible compensation and 50% of participants' deferrals between 1% and 6% of eligible compensation. IMG may also elect to make discretionary contributions to the IMG 401(k) Plan which are allocated based on compensation. IMG made matching contributions to the IMG 401(k) Plan of \$0.7 million and \$0.6 million during 2019 and 2018, respectively, and \$0.3 million from the date of acquisition to December 31, 2017.

Armada maintains a qualified 401(k) plan (the "Armada 401(k) Plan"). Under provisions of the Armada 401(k) Plan, Armada may make discretionary, matching contributions. Matching contributions into the Armada 401(k) Plan totaled \$0.2 million and \$0.2 million during 2019 and 2018, respectively, and \$0.1 million from the date of acquisition to December 31, 2017.

Share-Based and Other Long-Term Incentive Compensation Plans

Sirius Group's compensation plans include grants for various types of share-based and non-share-based compensation awards to key employees of Sirius Group. Share-based awards are issued to employees of Sirius Group and indexed to and settled in the equity of the Company's indirect parent, Sirius Ltd. As of December 31, 2019, Sirius Group's share-based compensation awards consist of performance shares units, restricted share units, and restricted stock.

2018 Omnibus Incentive Plan

The 2018 Omnibus Incentive Plan ("Plan"), which governs share-based awards to be issued to employees, was adopted by Sirius Ltd.'s Board on August 6, 2018. The total number of shares authorized to be issued by Sirius Ltd. under the Plan was 14,114,904. As of December 31, 2019, the total number of shares available for issuance by Sirius Ltd. under the share-based awards was 8,416,533, including shares that remained available under 2016 Long Term Incentive Plan.

2019 Long Term Incentive Awards

In 2019, Sirius Group through Sirius Ltd. granted 2019 Long Term Incentive Awards ("2019 LTI") to certain employees which are comprised of Restricted Share Units ("RSUs") and Performance Share Units ("PSUs"). The PSUs provide the opportunity for the participant to receive shares of Sirius Ltd.'s common stock based on Sirius Group achieving specified performance goals at the end of a three-year performance period. These performance goals are pre-established by Sirius Ltd.'s Compensation Committee at the grant date of the award. The actual number of PSUs earned can vary from 0% to 200% of the target depending on Sirius Group's performance against the pre-established goals. RSUs are earned based solely on continued service by the participant.

Grant date fair value of the PSUs and RSUs is equal to the closing price of Sirius Ltd.'s common stock on the grant date of the award. Grant date fair value of the awards was \$12.75 per unit.

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Supplemental Awards

Sirius Ltd. has also granted supplemental incentive compensation awards ("Supplemental Awards") to certain members of Sirius Group's senior management in the form of RSUs. Supplemental awards are retention-based and have no performance conditions. The units can only be settled in common shares and vest on either the second or third anniversary of the date of the grant and contain certain restrictions, related to, among other things, forfeitures in the event of termination of employment and transferability.

IPO Incentive Awards

Sirius Ltd. granted incentive compensation awards to certain members of senior management ("IPO Incentive Awards") through its 2018 Omnibus Incentive Plan. The original terms of the IPO Incentive Award required employees to purchase Sirius Ltd.'s common stock in order to be issued corresponding PSUs. On February 27, 2019, Sirius Ltd. modified the plan to terminate the obligation that required participants to purchase shares in order to receive the award shares. Modification applied to all recipients of the award.

PSUs vest over three years, 25% based on return of equity ("ROE") performance during each of the 2019, 2020, and 2021 fiscal years and 25% based on the average ROE performance during the 2019 through 2021 period. Payouts begin at 0% of awarded shares for a 4.5% ROE, 100% at a 9.0% ROE and 150% at a 13.5% ROE with linear interpolation in between. The employee must remain employed through the end of the applicable performance period to vest in the shares earned in that performance period.

The grant date fair value of the award was equal to the closing price of Sirius Ltd.'s common stock on the grant date of the award or \$12.75 per unit.

Employee Share Purchase Plan

Effective August 22, 2018, Sirius Ltd. established an employee share purchase plan ("ESPP") which allowed all employees of Sirius Ltd. and its subsidiaries to purchase up to 1,000, but no less than 100 shares of Sirius Ltd. The purchase price of each common share of Sirius Ltd. purchased by a participant is equal to 85% of market value for the first 100 shares and 100% of market value for any additional shares purchased. Participants can either purchase the shares in cash or be issued a full-recourse promissory note by Sirius Ltd., secured by the shares, payable via payroll deductions. 149,236 shares were purchased under the ESPP during 2018. No further purchases are permitted under the ESPP.

Net promissory notes as of December 31, 2019 and 2018 total \$0.4 million and \$0.9 million, respectively.

2016 Long Term Incentive Plan

Sirius Group has historically awarded long-term incentive compensation in the form of three-year, cliff-vested, performance units or phantom performance shares that can be paid in cash, or upon Sirius Ltd. becoming public, Sirius Ltd.'s common shares, at the discretion of Sirius Ltd.'s Compensation Committee. Performance shares compound through the end of the three-year award period based on a selection performance metrics during the period. The performance goals were determined by the Sirius Ltd.'s Compensation upon granting of awards.

There was no 2019 award issued under the 2016 Long Term Incentive Plan ("2016 LTIP") as it was replaced by the 2018 Omnibus Incentive Plan on a go-forward basis. Additionally, for the two three-year performance cycles still outstanding under the legacy 2016 LTIP, now that Sirius Ltd.'s common shares are publicly traded, upon vesting of these awards, (i) each phantom performance share will be valued at the market price of a common share at the time of payout and (ii) the Compensation Committee has discretion to settle these awards in common shares rather than cash.

During the year ended December 31, 2019, Sirius Group paid \$1.6 million to employees for share-based awards. No payments were made for share-based awards during the years ended December 31, 2018 and 2017.

The following tables present pre-tax and after-tax share-based compensation expense recognized under the above plans:

<i>(Millions)</i>	2019	2018	2017
PSUs - IPO Incentive Awards ⁽¹⁾	\$ 0.4	\$ 1.1	\$ -
PSUs - 2019 LTI	0.5	-	-
RSUs	4.2	-	-
LTIP ⁽²⁾⁽³⁾	(2.2)	0.8	-
Total share-based compensation expense - pre-tax	\$ 2.9	\$ 1.9	\$ -

⁽¹⁾2019 includes a reversal of 2018 accrual of \$1.1 related to modification of the award.

⁽²⁾Legacy 2016 LTIP includes two open cycles in 2019 and three open cycles in 2018.

⁽³⁾For the year ended December 31, 2017, expense associated with phantom share awards has been excluded.

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<i>(Millions)</i>	2019	2018	2017
PSUs - IPO Incentive Awards ⁽¹⁾	\$ 0.3	\$ 0.9	\$ -
PSUs - 2019 LTI	0.4	-	-
RSUs	3.4	-	-
LTIP ⁽²⁾⁽³⁾	(1.8)	0.6	-
Total share-based compensation expense - after-tax	\$ 2.3	\$ 1.5	\$ -

⁽¹⁾2019 includes a reversal of 2018 accrual of \$0.9 related to modification of the award.

⁽²⁾Legacy 2016 LTIP includes two open cycles in 2019 and three open cycles in 2018.

⁽³⁾For the year ended December 31, 2017, expense associated with phantom share awards has been excluded.

The following tables present unrecognized compensation cost associated with unvested awards and weighted average period over which it is expected to be recognized:

<i>(Millions)</i>	2019			
	PSUs - IPO Incentive Awards	PSUs - 2019 LTI	RSUs	LTIP
Unrecognized compensation cost related to unvested awards	\$ 2.7	\$ 1.2	\$ 9.0	\$ 0.4
Weighted average recognition period (years)	2.0 years	2.0 years	1.9 years	1.0 year

The following table summarizes outstanding share-settled awards as of the end of the year ended December 31, 2019:

As of and for the year ended December 31, 2019	Number of Shares			
	PSUs - IPO Incentive Awards	PSUs - 2019 LTI	RSUs	LTIP⁽¹⁾
Unvested, beginning of the year	—	—	—	1,765,637
Granted ⁽²⁾	756,183	408,370	1,428,185	—
Vested	—	—	—	33,307
Forfeited ⁽³⁾	201,020	17,234	74,333	861,859
Unvested, end of the year	555,163	391,136	1,353,852	870,471

⁽¹⁾Includes 2017 and 2018 legacy LTIP award cycles. Unearned portion of the 2017 LTIP was included in forfeited shares.

⁽²⁾IPO Incentive Award was included in the granted line due to its modification during 2019.

⁽³⁾Shares that are unearned as a result of missing minimum performance indicators are included in forfeited shares.

Transaction and Retention Bonuses

From time to time, Sirius Group may issue cash-settled retention awards to its employees. In 2019, Sirius Group issued retention awards to certain key employees that will vest and be paid in equal proportions on or prior to March 15, 2020 and on or prior to March 15, 2021, subject to continued employment on the applicable vesting date. During the year ended December 31, 2019, the Company recognized \$1.5 million in General and administrative expenses in connection with the retention awards issued.

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Note 15. Common shareholders' equity and non-controlling interests

Common shareholder's equity

At December 31, 2019, the Company is an indirect wholly-owned subsidiary of Sirius Ltd. through Sirius International Holdings, Ltd., both exempted Bermuda limited liability companies.

Additional paid-in surplus

The following table shows the change in Additional paid-in surplus for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	Total
Additional paid-in surplus as of December 31, 2016	\$ 1,384.0
Capital contributions from parent ⁽¹⁾	275.8
Redemption of preference shares (See Note 2)	(250.0)
Other, net	(0.1)
Additional paid-in surplus as of December 31, 2017	\$ 1,409.7
Capital contributions from parent ⁽²⁾	143.5
Other, net	0.1
Additional paid-in surplus as of December 31, 2018	\$ 1,553.3
Capital contributions from parent	-
Other, net	-
Additional paid-in surplus as of December 31, 2019	\$ 1,553.3

⁽¹⁾ Includes \$193.1 from the contribution of the common shares of SAHC2 (See Note 2)

⁽²⁾ Includes \$28.5 from the contribution of the common shares of SAHC3 (See Note 2)

Dividends

The Company paid common dividends of \$35.0 million, \$150.0 million, and \$110.0 million during the years ended December 31, 2019, 2018, and 2017, respectively.

Non-controlling interests

Non-controlling interests consist of the ownership interests of non-controlling shareholders in consolidated entities and are presented separately on the balance sheet. At December 31, 2019 and 2018, Sirius Group's balance sheet included \$2.4 million and \$1.7 million, respectively, in non-controlling interests.

The following table shows the change in non-controlling interest for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	Total
Non-controlling interests as of December 31, 2016	\$ 1.3
Net income attributable to non-controlling interests	(0.4)
Other, net	(0.7)
Non-controlling interests as of December 31, 2017	\$ 0.2
Net income attributable to non-controlling interests	1.4
Other, net	0.1
Non-controlling interests as of December 31, 2018	\$ 1.7
Net income attributable to non-controlling interests	1.7
Dividends to non-controlling interests	(1.0)
Other, net	-
Non-controlling interests as of December 31, 2019	\$ 2.4

Alstead Re

As of December 31, 2019 and 2018, Sirius Group recorded non-controlling interest of \$2.3 million and \$1.7 million, respectively, in Alstead Re Insurance Company ("Alstead Re"). (See Note 18.)

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Note 16. Statutory capital and surplus

Sirius Group's insurance and reinsurance operations are subject to regulation and supervision in each of the jurisdictions where they are domiciled and licensed to conduct business. Generally, regulatory authorities have broad supervisory and administrative powers over such matters as licenses, standards of solvency, premium rates, policy forms, investments, security deposits, methods of accounting, form and content of financial statements, reserves for unpaid loss and LAE, reinsurance, minimum capital and surplus requirements, dividends and other distributions to shareholders, periodic examinations, and annual and other report filings. In general, such regulation is for the protection of policyholders rather than shareholders.

Non-U.S.

The Insurance Act 1978 of Bermuda and related regulations, as amended ("Insurance Act"), regulates the insurance business of Bermuda-domiciled insurers and reinsurers. The Insurance Act imposes solvency and liquidity standards on Bermuda insurance companies, as well as auditing and reporting requirements. The Bermuda Monetary Authority ("BMA"), a Solvency II-equivalent regulatory regime, has confirmed that it will act as the primary group supervisor effective July 1, 2016 and has designated Sirius Bermuda as the designated insurer. Therefore, Sirius Group is subject to the BMA's group supervision and solvency rules. Under the Insurance Act, insurers and reinsurers are required to maintain minimum statutory capital and surplus at a level equal to the greater of a minimum solvency margin ("MSM") and the Enhanced Capital Requirement ("ECR") which is established by reference to either a Bermuda Solvency Capital Requirement ("BSCR") model or an approved internal capital model. The BSCR model is a risk-based capital model that provides a method for determining an insurer's minimum required capital taking into account the risk characteristics of different aspects of the company's business. As of December 31, 2019, the eligible capital for Sirius Group exceeded the required capital as measured by the BSCR model.

Management has also evaluated the group and principal operating subsidiaries' ability to maintain adequate levels of statutory capital, liquidity, and rating agency capital and believes they will be able to do so. In performing this analysis, management has considered the most recent statutory capital position of each of the principal operating subsidiaries as well as the group overall, through its holding companies as a result of BMA group regulation. In addition, management has evaluated the ability of the holding companies to allocate capital and liquidity around the group as and when needed.

Sirius Group has two Bermuda based insurance subsidiaries: Sirius Bermuda, a Class 4 insurer, and Alstead Re, a Class 3A insurer. Each of these Bermuda insurance subsidiaries are registered under the Insurance Act and are subject to regulation and supervision of the BMA. The BSCR and actual statutory capital and surplus for Sirius Bermuda and Alstead Re as of December 31, 2019 has not been determined as of this report. The BSCR for Sirius Bermuda and Alstead Re as of December 31, 2018 was \$839.1 million and \$2.5 million, respectively. Actual statutory capital and surplus of the Bermuda based insurance subsidiaries as of December 31, 2018 was \$2.2 billion. In addition, the Bermuda based insurance subsidiaries are required to maintain a minimum liquidity ratio. As of December 31, 2019, all liquidity ratio requirements were met.

Sirius International is subject to regulation and supervision by the Swedish Financial Supervisory Authority ("SFS"). Sirius International's total regulatory capital as of December 31, 2019 was \$1.6 billion. In accordance with SFS regulations, Sirius International holds restricted equity of \$1.2 billion as a component of Swedish regulatory capital. This restricted equity cannot be paid as dividends. Under Solvency II, the SFS also acts as the European Economic Area group supervisor, with Sirius International UK Holding Ltd. ("SIUK") serving as the highest European entity subject to the SFS's group supervision. Solvency II regulation in Europe gives the SFS the option to waive European-level group supervision if certain legal requirements are met. As of December 31, 2019, the SFS has not exercised this option.

The financial services industry in the United Kingdom is dual-regulated by the Financial Conduct Authority and the Prudential Regulation Authority (collectively, the "U.K. Regulators"). The U.K. Regulators regulate insurers, insurance intermediaries and Lloyd's. The U.K. Regulators and Lloyd's have common objectives in ensuring that the Lloyd's market is appropriately regulated. Lloyd's is required to implement certain rules prescribed by the U.K. Regulators by the powers it has under the Lloyd's Act of 1982 relating to the operation of the Lloyd's market. In addition, each year the U.K. Regulators require Lloyd's to satisfy an annual solvency test that measures whether Lloyd's has sufficient assets in the aggregate to meet all the outstanding liabilities of its members.

Lloyd's permits its corporate and individual members ("Members") to underwrite insurance risks through Lloyd's syndicates. Members of Lloyd's may participate in a syndicate for one or more underwriting years by providing capital to support the syndicate's underwriting. All syndicates are managed by Lloyd's approved managing agents. Managing agents receive fees and profit commissions in respect of the underwriting and administrative services they provide to the syndicates. Lloyd's prescribes, in respect of its managing agents and Members, certain minimum standards relating to their management and control, solvency and various other requirements.

Sirius Group participates in the Lloyd's market through the 100% ownership of Sirius International Corporate Member Ltd., a Lloyd's corporate member, which in turn provides underwriting capacity to Syndicate 1945. Sirius Group has its own Lloyd's managing agent, Sirius International Managing Agency, which manages Syndicate 1945. Lloyd's approved net capacity for 2020 is £91.0 million, or approximately \$120.0 million (based on the December 31, 2019 GBP to USD exchange rate). Stamp capacity is a measure of the amount of net premium (premiums written less acquisition costs) that a syndicate is authorized by Lloyd's to write.

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U.S.

Sirius America and the insurance subsidiaries of Sirius Global Solutions are subject to regulation and supervision by the National Association of Insurance Commissioners ("NAIC") and the department of insurance in the state of domicile. The NAIC uses risk-based capital ("RBC") standards for U.S. property and casualty insurers as a means of monitoring certain aspects affecting the overall financial condition of insurance companies. As of December 31, 2019, the available capital of Sirius Group's U.S. insurance and reinsurance operating subsidiaries exceeded their respective RBC requirements.

Sirius America's policyholders' surplus, as reported to regulatory authorities as of December 31, 2019 and 2018, was \$522.1 million and \$522.2 million. Sirius America's statutory net (loss) income for the years ended December 31, 2019, 2018, and 2017 was \$(25.0) million, \$(9.9) million, and \$(6.4) million, respectively. The principal differences between Sirius America's statutory amounts and the amounts reported in accordance with GAAP include deferred acquisition costs, deferred taxes, gains recognized under retroactive reinsurance contracts, and market value adjustments for debt securities. The minimum policyholders' surplus necessary to satisfy Sirius America's regulatory requirements was \$110.1 million as of December 31, 2019, which equals the authorized control level of the NAIC risk-based capital based on Sirius America's policyholders' surplus.

Oakwood Insurance Company ("Oakwood") policyholders' surplus, as reported to regulatory authorities as of December 31, 2019 and 2018 was \$39.7 million and \$40.5 million, respectively. Oakwood's statutory net (loss) income for the years ended December 31, 2019, 2018, and 2017 was \$(1.0) million, \$(1.1) million and \$0.5 million, respectively. The minimum policyholders' surplus necessary to satisfy Oakwood's regulatory requirements was \$4.1 million as of December 31, 2019, which equals the authorized control level of the NAIC risk-based capital. During 2017, Mount Beacon was merged into Oakwood.

Empire Insurance Company ("Empire") policyholders' surplus, as reported to regulatory authorities as of December 31, 2019 and 2018 was \$10.8 million and \$10.7 million, respectively. Empire's statutory net income (loss) for the years ended December 31, 2019, 2018, and 2017 was \$0.2 million, \$0.1 million and \$(0.3) million, respectively. The minimum policyholders' surplus necessary to satisfy Empire's regulatory requirements was \$8.9 million as of December 31, 2019, and the NAIC risk-based capital authorized control level was \$0.7 million.

Cedar's policyholders' surplus, as reported to regulatory authorities as of each of the years ended December 31, 2019 and 2018 was \$13.9 million. Cedar's statutory net income (loss) for the years ended December 31, 2019 and 2018 was \$0.0 million and \$(0.6) million, respectively. The minimum policyholders' surplus necessary to satisfy Cedar's regulatory requirements was \$9.8 million as of December 31, 2019, and the NAIC risk-based capital authorized control level was \$0.1 million.

Dividend Capacity

Sirius Group's top tier regulated insurance and reinsurance operating subsidiary is Sirius Bermuda. Sirius Bermuda's ability to pay dividends is limited under Bermuda law and regulations. Under the Insurance Act, Sirius Bermuda is restricted with respect to the payment of dividends. Sirius 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. As of December 31, 2019, Sirius Bermuda can pay approximately \$523.8 million to its parent company, Sirius International Group, Ltd., during 2020. Sirius Bermuda indirectly owns Sirius International, Sirius America, and Sirius Group's other insurance and reinsurance operating companies, each of which are limited in their ability to pay dividends by the insurance laws of their relevant jurisdictions. CMIG International, which is approximately 82% owned by China Minsheng Investment Group Corp., Ltd. ("CMIG"), indirectly holds approximately 87% of the voting and dispositive control over the Sirius Group common shares as of December 31, 2019, through CMIG International's wholly-owned Bermuda holding company, CM Bermuda Ltd. ("CM Bermuda"). During 2019, CMIG made several public announcements relating to defaults and cross-defaults on certain bonds and other debt obligations issued by certain subsidiaries of CMIG (the "CMIG Defaults"), the failure and uncertainty of CMIG's subsidiaries to repay their debt obligations as they become due and the existence of certain asset freeze orders relating to the equity interests of CMIG in certain Chinese subsidiaries not within the chain of control of Sirius Group. On May 3, 2019, in connection with the CMIG Defaults, Sirius Bermuda and Sirius Group entered into a voluntary undertaking with the BMA to provide further comfort to the BMA as the group supervisor of Sirius Group and primary regulator of Sirius Bermuda, the designated insurer for group supervisory purposes regarding the potential risks to Sirius Group in connection with the CMIG Defaults. Pursuant to the voluntary undertaking, each of Sirius Group and Sirius Bermuda have agreed, until May 3, 2020, (a) to provide ten days prior written notice to the BMA prior to declaring any dividend or capital distribution, which notice shall include an affidavit confirming that the declaration and payment of such dividend would not be in breach of (i) the provisions of section 54 of the Companies Act 1981 in the case of Sirius Bermuda, (ii) the Minimum Liquidity Ratio as defined in the Insurance Act 1978 in the case of Sirius Bermuda; and (iii) the Target Capital Level of 120% of the Enhanced Capital Requirement as defined by the Bermuda Solvency Capital Requirement promulgated by the BMA for Sirius Group and Sirius Bermuda, and a summary description of the use proceeds from such declaration or dividend or capital distribution within Sirius Group or Sirius Bermuda; (b) not to enter into any guarantees, keepwells, loans or other financial arrangements between Sirius Group and CMIG, or provide any credit support with respect to any obligations of CMIG; and (c) not to enter into any related party transaction with CMIG. During 2019, Sirius Bermuda paid \$80.0 million of dividends to its immediate parent.

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Sirius International has the ability to pay dividends to its immediate parent subject to the availability of unrestricted equity, calculated in accordance with the Swedish Act on Annual Accounts in Insurance Companies and the Swedish Financial Supervisory Authority (the "SFSA"). Unrestricted equity is calculated on a consolidated group account basis and on a parent account basis. Differences between the two include but are not limited to accounting for goodwill, subsidiaries (with parent accounts stated at original foreign exchange rates), taxes and pensions. Sirius International's ability to pay dividends is limited to the "lower of" unrestricted equity as calculated within the group and parent accounts. As of December 31, 2019, Sirius International had \$401.5 million (based on the December 31, 2019 SEK to USD exchange rate) of unrestricted equity on a parent account basis (the lower of the two approaches) available to pay dividends in 2020. The amount of dividends available to be paid by Sirius International in any given year is also subject to cash flow and earnings generated by Sirius International's business, the maintenance of adequate solvency capital ratios for Sirius International and the consolidated SIUK group, as well as to dividends received from its subsidiaries. Earnings generated by Sirius International's business that are allocated to the Safety Reserve are not available to pay dividends (see "Safety Reserve" below). During 2019, Sirius International did not declare a dividend and paid SEK 167.1 million (or \$17.7 million on date of payment) of dividends declared prior to 2018.

Under the normal course of business, Sirius America has the ability to pay dividends to its immediate parent during any twelve-month period without the prior approval of regulatory authorities in an amount set by a formula based on the lesser of net investment income, as defined by statute, or 10% of statutory surplus, in both cases as most recently reported to regulatory authorities, subject to the availability of earned surplus and subject to dividends paid in prior periods. Based on this formula, Sirius America has dividend capacity as of December 31, 2019, without prior regulatory approval. As of December 31, 2019, Sirius America had \$522.1 million of statutory surplus and \$88.8 million of earned surplus. During 2019, Sirius America did not pay any dividends to its immediate parent.

As of December 31, 2019, Sirius Group had \$29.8 million of net unrestricted cash, short-term investments, and fixed maturity investments outside of its regulated and unregulated insurance and reinsurance operating subsidiaries.

Capital Maintenance

Effective August 27, 2019, the capital maintenance agreement between Sirius International and Sirius America, which obligated Sirius International to make contributions to Sirius America's surplus in order for Sirius America to maintain surplus equal to at least 125% of the company action level risk-based capital as defined in the National Association of Insurance Commissioners' Property/Casualty Risk-Based Capital Report was terminated. Sirius International did not make any contributions to the surplus of Sirius America up to and including the termination date.

Safety Reserve

Subject to certain limitations under Swedish law, Sirius International is permitted to transfer pre-tax income amounts into a reserve referred to as a "Safety Reserve." Under local statutory requirements, an amount equal to the deferred tax liability on Sirius International's Safety Reserve is included in Solvency Capital. Access to the Safety Reserve is restricted to cover insurance and reinsurance losses and to cover a breach of the Solvency Capital Requirement. Access for any other purpose requires the approval of Swedish regulatory authorities. Similar to the approach taken by Swedish regulatory authorities, most major rating agencies generally include the balance of the Safety Reserve, without any provision for deferred taxes, in Sirius International's regulatory capital when assessing Sirius International and Sirius Group's financial strength.

As of December 31, 2019, Sirius International's Safety Reserve amounted to SEK 10.2 billion, or \$1.1 billion (based on the December 31, 2019 SEK to USD exchange rate). Under Swedish GAAP, an amount equal to the Safety Reserve, net of a related deferred tax liability established at the Swedish tax rate, is classified as common shareholders' equity. Generally, this deferred tax liability (\$225.9 million based on the December 31, 2019 SEK to USD exchange rate) is only required to be paid by Sirius International if it fails to maintain prescribed levels of premium writings and loss reserves in future years. As a result of the indefinite deferral of these taxes, the related deferred tax liability is not taken into account by Swedish regulatory authorities for purposes of calculating Solvency Capital under Swedish insurance regulations.

Pursuant to tax legislation enacted in Sweden in June 2018, the tax rate applicable to Swedish corporations decreased to 21.4% effective as of January 1, 2019, and then will further reduce to 20.6% starting in 2021. The tax legislation also introduced an annual tax on the Safety Reserve effective as of January 1, 2019. This provision adds additional taxable income for the Company annually. The calculation applies the Government Borrowing Rate (with a floor rate of +0.5%) to the Safety Reserve balance at the beginning of the year. At the current year tax rate of 21.4% the additional tax expense for 2019 is SEK 11.4 million, or \$1.2 million (based on the December 31, 2019 SEK to USD exchange rate).

Further, the enacted legislation also included a new provision treating an amount equal to 6% of the Safety Reserve balance as of January 1, 2021, as additional taxable income in tax year 2021 only, subject to tax at the applicable 20.6% rate. Based on this provision and Sirius International's Safety Reserve balance as of December 31, 2019, Sirius International has recorded an additional deferred tax liability as of December 31, 2019 in the amount of SEK 131.2 million, or \$13.5 million (based on the December 31, 2019 SEK to USD exchange rate).

Note 17. Investments in unconsolidated entities

Sirius Group's investments in unconsolidated entities are included within Other long-term investments and consist of investments in common equity securities or similar instruments, which give Sirius Group the ability to exert significant influence over the investee's operating and financial policies ("equity method eligible unconsolidated entities"). Such investments may be accounted for under either the equity method or, alternatively, Sirius Group may elect to account for them under the fair value option.

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The following table presents the components of Other long-term investments as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Equity method eligible unconsolidated entities, at fair value	\$ 151.9	\$ 169.4
Other unconsolidated investments, at fair value ⁽¹⁾	194.9	195.6
Total Other long-term investments⁽²⁾	\$ 346.8	\$ 365.0

⁽¹⁾Includes Other long-term investments that are not equity method eligible.

⁽²⁾There were no investments accounted for using the equity method as of December 31, 2019 and 2018.

Equity method eligible unconsolidated entities, at fair value

Sirius Group has elected the Fair Value Option to account for its equity method eligible investments accounted for as part of Other long-term investments for consistency of presentation with rest of its investment portfolio. The following table presents Sirius Group's investments in equity method eligible unconsolidated entities as of December 31, 2019 and 2018:

Investee	Ownership interest at December 31,		
	2019	2018	Instrument Held
BE Reinsurance Limited	24.9%	25.0%	Common shares
BioVentures Investors (Offshore) IV LP	73.0%	73.0%	Units
Camden Partners Strategic Fund V (Cayman), LP	39.4%	36.4%	Units
Diamond LS I LP	16.0%	3.9%	Units
Gateway Fund LP	15.0%	-%	Units
Monarch	12.8%	12.8%	Units
NEC Cypress Buyer LLC ⁽¹⁾	-%	13.3%	Units
New Energy Capital Infrastructure Credit Fund LP	30.5%	22.9%	Units
New Energy Capital Infrastructure Offshore Credit Fund LP	30.5%	54.9%	Units
Pie Preferred Stock ⁽²⁾	30.1%	-%	Preferred shares
Pie Series B Preferred Stock ⁽²⁾	22.4%	-%	Preferred shares
Quintana Energy Partners	21.8%	21.8%	Units
Tuckerman Capital V LP	48.3%	47.6%	Units
Tuckerman Capital V Co-Investment I LP	48.1%	47.7%	Units

⁽¹⁾The ownership of NEC Cypress Buyer LLC was liquidated in 2019.

⁽²⁾Sirius Group holds investments in several financing instruments of Pie Insurance Holdings, Inc.

The following tables present aggregated summarized financial information for Sirius Group's investments in equity method eligible unconsolidated entities:

<i>(Millions)</i>	As of December 31,	
	2019	2018
Balance sheet data:		
Total assets	\$ 594.5	\$ 591.1
Total liabilities	\$ 47.6	\$ 28.7

<i>(Millions)</i>	For the years ended December 31,		
	2019	2018	2017
Income statement data:			
Revenues	\$ 72.7	\$ 55.4	\$ 60.3
Expenses	\$ (30.2)	\$ (25.1)	\$ (28.8)

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Note 18. Variable interest entities

Sirius Group consolidates the results of operations and financial position of every voting interest entity ("VOE") in which it has a controlling financial interest and VIEs in which it is considered to be the primary beneficiary. The consolidation assessment, including the determination as to whether an entity qualifies as a VOE or VIE, depends on the facts and circumstances surrounding each entity.

Sirius Group has determined that Alstead Re is a VIE for which Sirius Group is the primary beneficiary and is required to consolidate it. The following table presents Alstead Re's assets and liabilities, as classified in the Consolidated Balance Sheets as of December 31, 2019 and 2018:

<i>(Millions)</i>	2019	2018
Assets:		
Fixed maturity investments	\$ 3.9	\$ 4.0
Short-term investments	0.5	0.3
Cash	0.1	0.2
Total investments	4.5	4.5
Accrued investment income	-	0.1
Insurance and reinsurance premiums receivable	(0.3)	3.7
Funds held by ceding companies	3.4	5.2
Deferred acquisition costs	0.3	0.9
Total assets	\$ 7.9	\$ 14.4
Liabilities		
Loss and loss adjustment expense reserves	\$ 0.5	\$ 4.6
Unearned insurance and reinsurance premiums	0.6	3.7
Other liabilities	0.1	-
Total liabilities	\$ 1.2	\$ 8.3

Sirius Group is a passive investor in certain third-party-managed hedge and private equity funds, some of which are VIEs. Sirius Group is not involved in the design or establishment of these VIEs, nor does it actively participate in the management of the VIEs. The exposure to loss from these investments is limited to the carrying value of the investments at the balance sheet date.

Sirius Group calculates maximum exposure to loss to be (i) the amount invested in the debt or equity of the VIE, (ii) the notional amount of VIE assets or liabilities where Sirius Group has also provided credit protection to the VIE with the VIE as the referenced obligation, and (iii) other commitments and guarantees to the VIE. Sirius Group does not have any VIEs that it sponsors nor any VIEs where it has recourse to it or has provided a guarantee to the VIE interest holders.

The following table presents total assets of unconsolidated VIEs in which Sirius Group holds a variable interest, as well as the maximum exposure to loss associated with these VIEs:

<i>(Millions)</i>	Maximum Exposure to Loss			
	Total VIE Assets	On-Balance Sheet	Off-Balance Sheet	Total
December 31, 2019				
Other long-term investments ⁽¹⁾	\$ 257.8	\$ 102.6	\$ 16.3	\$ 118.9
Total at December 31, 2019	\$ 257.8	\$ 102.6	\$ 16.3	\$ 118.9
December 31, 2018				
Other long-term investments ⁽¹⁾	\$ 209.1	\$ 103.1	\$ 32.0	\$ 135.1
Total at December 31, 2018	\$ 209.1	\$ 103.1	\$ 32.0	\$ 135.1

⁽¹⁾Comprised primarily of hedge funds and private equity funds.

Note 19. Transactions with related parties

(Re)insurance contracts

In the normal course of business, Sirius Group enters into insurance and reinsurance contracts with certain of its insurance and MGU affiliates, or their subsidiaries. During the years ended December 31, 2019 and 2018 and 2017, these contracts with related parties resulted in gross written premiums of \$88.6 million, \$67.9 million and \$3.5 million, respectively. As of December 31, 2019 and 2018, Sirius Group had total receivables due from related parties of \$16.1 million and \$14.3 million, respectively. As of December 31, 2019, Sirius Group had total payables due to related parties of \$0.9 million. As of December 31, 2018, Sirius Group did not have any payables due to related parties.

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Note 20. Commitments and contingencies

Concentrations of credit risk

Sirius Group underwrites a significant amount of its reinsurance business through reinsurance intermediaries that represent the ceding company. There is credit risk associated with payments of (re)insurance balances to Sirius Group in regards to these brokers' ability to fulfill their contractual obligations. These intermediaries are fairly large and well established, and there are no indications they are financially distressed.

During the years ended December 31, 2019, 2018, and 2017, Sirius Group received its gross reinsurance premiums written from three major, third-party reinsurance intermediaries as detailed in the following table:

Gross written premium by intermediary	2019	2018	2017
AON Corporation and subsidiaries	24%	26%	22%
Guy Carpenter & Company and subsidiaries	24%	26%	25%
WT Butler and Co. Ltd.	11%	10%	10%
Willis Towers Watson plc and subsidiaries	10%	8%	8%
Total	69%	70%	65%

Geographic Concentration

The following table shows Sirius Group's net written premiums by geographic region based on the location of the ceding company for the years ended December 31, 2019, 2018, and 2017:

<i>(Millions)</i>	2019	2018	2017
United States	\$ 922.3	\$ 794.7	\$ 563.1
Europe	268.9	276.5	262.3
Canada, the Caribbean, Bermuda and Latin America	102.5	103.6	111.4
Asia and Other	208.9	182.3	153.4
Total	\$ 1,502.6	\$ 1,357.1	\$ 1,090.2

Sirius Group conducts a significant portion of its business outside of the United States. As a result, a significant portion of Sirius Group's assets, liabilities, revenues, and expenses are denominated in currencies other than the U.S. dollar and are therefore subject to foreign currency risk. Sirius Group's foreign currency risk cannot be eliminated entirely and significant changes in foreign exchange rates may adversely affect Sirius Group's results of operations and financial condition.

Sirius Group's foreign operations are subject to legal, political, and operational risks that may be greater than those present in the United States. As a result, certain of Sirius Group's operations at these foreign locations could be temporarily or permanently disrupted.

Lloyd's Central Fund

The Lloyd's Central Fund is available to satisfy claims if a member of Lloyd's is unable to meet its obligations to policyholders. Sirius Group has an obligation to pay contributions to the Lloyd's Central Fund each year based on gross written premium. For 2020, Sirius Group estimates the Lloyd's Central Fund contributions to be \$0.5 million (based on the December 31, 2019 GBP to USD exchange rate) which is 0.35% of gross written premium. The Council of Lloyd's have the power to levy an additional contribution on members if it considered necessary, and the maximum additional contribution is currently 3% of capacity.

Leases

Sirius Group leases office space and equipment under various noncancelable operating lease agreements. The average life of the office leases is 7 years and the equipment leases is 3 years.

During the year ended December 31, 2019, Sirius Group recognized operating lease expense \$12.6 million, including property taxes and routine maintenance expense as well as rental expenses related to short term leases. Total rental expense for the years ended December 31, 2018 and 2017 were \$11.7 million and \$10.2 million, respectively. As of December 31, 2019, Sirius Group had \$27.4 million operating lease right-of-use assets included in Other assets. As of December 31, 2019, Sirius Group had \$29.3 million operating lease liability included in Other liabilities.

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The following table presents the lease balances within the Consolidated Balance Sheets as of December 31, 2019:

<i>(Millions)</i>	Balance Sheet Classification	December 31, 2019
Operating lease right-of-use assets	Other assets	\$ 27.4
Current lease liabilities	Other liabilities	\$ 8.3
Non-current lease liabilities	Other liabilities	\$ 21.0

The following table presents weighted average remaining lease term and weighted average discount rate as at December 31, 2019:

Weighted average lease term (years) as of December 31, 2019	
Leased offices	7 years
Leased equipment	3 years
Weighted average discount rate:	
Leased offices	3.7%
Leased equipment	3.4%

The following table presents future annual minimum rental payments required under non-cancellable leases and the present value discount to arrive at total lease liability as of December 31, 2019:

<i>(Millions)</i>	Future Payments
2020	\$ 9.3
2021	8.0
2022	7.1
2023	4.4
2024	2.0
2025	0.6
2026 and after	0.2
Total future annual minimum rental payments as at December 31, 2019	31.6
Less: present value discount	(2.3)
Total lease liability as of December 31, 2019	\$ 29.3

As of December 31, 2019, the Company's future operating lease obligations that have not yet commenced are immaterial.

Legal Proceedings

Sirius Group, and the insurance and reinsurance industry in general, are routinely subject to claims related litigation and arbitration in the normal course of business, as well as litigation and arbitration that do not arise from, or are directly related to, claims activity. Sirius Group estimates of the costs of settling matters routinely encountered in claims activity are reflected in the reserves for unpaid loss and LAE. (See Note 5.)

Sirius Group considers the requirements of ASC 450, *Contingencies* ("ASC 450"), when evaluating its exposure to non-claims related litigation and arbitration. ASC 450 requires that accruals be established for litigation and arbitration if it is probable that a loss has been incurred and it can be reasonably estimated. ASC 450 also requires that litigation and arbitration be disclosed if it is probable that a loss has been incurred or it there is a reasonable possibility that a loss may have been incurred.

Note 21. Subsequent events

Subsequent Events (ASC 855) established general standards for accounting and disclosures of events occurring subsequent to the balance sheet date but prior to issuance of financial statements. The Company has evaluated subsequent events through March 19, 2020, the date on which the Consolidated Financial Statements were issued.