Partner Reinsurance Company Ltd.

Consolidated Financial Statements and Independent Auditors' Report

December 31, 2018 and 2017

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Report of Independent Auditors

The Board of Directors and Shareholder
Partner Reinsurance Company Ltd.

We have audited the accompanying consolidated financial statements of Partner Reinsurance Company Ltd. (the Company), which comprise the consolidated balance sheets as of December 31, 2018 and 2017, and the related consolidated statements of operations and comprehensive income, shareholder's equity and cash flows for the years then ended, and the related notes to the consolidated financial statements.

Management's Responsibility for the Financial Statements

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

Auditor's Responsibility

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

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the entity's preparation and fair presentation of the 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 entity'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 financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Building a better working world

Opinion

In our opinion, the financial statements referred to above present fairly, in all material respects, the consolidated financial position of Partner Reinsurance Company Ltd. at December 31, 2018 and 2017, and the consolidated results of its operations and its cash flows for the years then ended in conformity with U.S. generally accepted accounting principles.

Required Supplementary Information

Accounting principles generally accepted in the United States require that the net incurred losses and loss expenses, and net paid losses and loss expenses, for the year ending 2017 and prior and the average annual percentage payout of incurred claims by age, net of reinsurance disclosed on pages 31 through to 34 be presented to supplement the financial statements. Such information, although not a part of the financial statements, is required by the Financial Accounting Standards Board who considers it to be an essential part of financial reporting for placing the financial statements in an appropriate operational, economic, or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States, which consisted of inquiries of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the financial statements, and other knowledge we obtained during our audit of the financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

Ernst & Young Ltd.

Hamilton, Bermuda
April 30, 2019

Partner Reinsurance Company Ltd.

Consolidated Balance Sheets
(Expressed in thousands of U.S. dollars, except parenthetical share data)

	December 31, 2018	December 31, 2017 (As Adjusted)
Assets		
Investments:		
Fixed maturities, at fair value (amortized cost: 2018, $4,704,403; 2017, $4,582,961)	**$ 4,746,959**	$ 4,764,057
Short-term investments, at fair value (amortized cost: 2018, $348,032; 2017, $898)	**347,990**	898
Equities, at fair value (cost: 2018, $576,543; 2017, $531,162)	**648,785**	599,046
Other invested assets	**901,452**	992,888
Total investments	**6,645,186**	6,356,889
Cash and cash equivalents	**305,971**	587,533
Accrued investment income	**39,879**	42,145
Reinsurance balances receivable	**1,656,812**	1,526,602
Reinsurance recoverable on paid and unpaid losses	**506,741**	392,536
Funds held by reinsured companies	**807,324**	816,236
Deferred acquisition costs	**405,263**	417,525
Intercompany loans and balances receivable	**813,611**	870,969
Goodwill	**26,014**	26,014
Intangible Assets	**73,152**	80,229
Net tax assets	**13,920**	19,536
Other assets	**11,066**	4,433
Total assets	**$ 11,304,939**	$ 11,140,647
Liabilities		
Non-life reserves	**$ 4,841,419**	$ 4,606,631
Life and health reserves	**1,299,674**	1,373,348
Unearned premiums	**1,011,696**	1,023,319
Other reinsurance balances payable	**180,947**	149,484
Intercompany loans and balances payable	**214,814**	263,531
Accounts payable, accrued expenses and other	**126,556**	180,454
Total liabilities	**7,675,106**	7,596,767
Shareholder's Equity		
Common shares (par value $1.00; issued: 2018 and 2017, 3,000 shares)	**3,000**	3,000
Additional paid-in capital	**1,643,886**	1,643,886
Accumulated other comprehensive loss	**(117,624)**	(63,689)
Retained earnings	**2,100,571**	1,960,683
Total shareholder's equity	**3,629,833**	3,543,880
Total liabilities and shareholder's equity	**$ 11,304,939**	$ 11,140,647

See accompanying Notes to Consolidated Financial Statements.

Partner Reinsurance Company Ltd.

Consolidated Statements of Operations and Comprehensive Income (Loss)
(Expressed in thousands of U.S. dollars)

	For the year ended December 31, 2018	For the year ended December 31, 2017 (As Adjusted)
Revenues		
Gross premiums written	**$ 3,108,757**	$ 3,157,332
Net premiums written	**$ 2,917,674**	$ 2,994,186
Increase in unearned premiums	**(20,967)**	(231,905)
Net premiums earned	**2,896,707**	2,762,281
Net investment income	**179,304**	166,536
Interest income on intercompany loans	**539**	6,053
Net realized and unrealized investment (losses) gains	**(140,740)**	203,419
Other income	**25,816**	5,048
Total revenues	**2,961,626**	3,143,337
Expenses		
Losses and loss expenses	**2,158,421**	2,235,302
Acquisition costs	**813,010**	745,924
Other operating expenses	**21,830**	36,235
Amortization of intangible assets	**7,160**	1,983
Net foreign exchange (gains) losses	**(184,913)**	250,498
Total expenses	**2,815,508**	3,269,942
Income (loss) before taxes and interest in (losses) earnings of equity investments	**146,118**	(126,605)
Income tax expense	**1,316**	1,465
Interest in (losses) earnings of equity investments	**(4,914)**	74,908
Net income (loss)	**$ 139,888**	$ (53,162)
Comprehensive income (loss)		
Net income (loss)	**$ 139,888**	$ (53,162)
Change in net unrealized gains on investments, net of tax	**691**	1,186
Change in currency translation adjustment	**(54,626)**	40,000
Comprehensive income (loss)	**$ 85,953**	$ (11,976)

See accompanying Notes to Consolidated Financial Statements.

Partner Reinsurance Company Ltd.

Consolidated Statements of Shareholder's Equity
(Expressed in thousands of U.S. dollars)

	For the year ended December 31, 2018	For the year ended December 31, 2017 (As Adjusted)
Common shares		
Balance at beginning and end of year	**$ 3,000**	$ 3,000
Additional paid-in capital		
Balance at beginning of year	**1,643,886**	1,515,898
Merger of ARL	**—**	127,988
Balance at end of year	**1,643,886**	1,643,886
Accumulated other comprehensive loss		
Currency translation adjustment:		
Balance at beginning of year	**(63,689)**	(104,875)
Change in net unrealized gains or losses on investments, net of tax	**691**	1,186
Change in currency translation adjustment	**(54,626)**	40,000
Balance at end of year	**(117,624)**	(63,689)
Retained earnings		
Balance at beginning of year	**1,960,683**	2,416,370
Merger of ARL	**—**	97,475
Net income	**139,888**	(53,162)
Dividends on common shares	**—**	(500,000)
Balance at end of year	**2,100,571**	1,960,683
Total shareholder's equity	**$ 3,629,833**	$ 3,543,880

See accompanying Notes to Consolidated Financial Statements.

Partner Reinsurance Company Ltd.

Consolidated Statements of Cash Flows
(Expressed in thousands of U.S. dollars)

	For the year ended December 31, 2018	For the year ended December 31, 2017 (As Adjusted)
Cash flows from operating activities		
Net income (loss)	**$ 139,888**	$ (53,162)
Adjustments to reconcile net income to net cash provided by operating activities:		
Amortization of intangible assets	**7,160**	1,983
Amortization of deferred gains	**(1,412)**	9,302
Amortization of net discount on investments	**960**	(9,168)
Net realized and unrealized investment (losses) gains	**140,740**	(203,419)
Changes in:		
Reinsurance balances, net	**(165,226)**	(296,410)
Reinsurance recoverable on paid and unpaid losses, net of ceded premiums payable	**(118,580)**	(332,477)
Funds held by reinsured companies	**(33,278)**	(55,212)
Deferred acquisition costs	**(4,607)**	(95,683)
Net tax assets and liabilities	**5,970**	(2,824)
Unpaid losses and loss expenses including life policy benefits	**350,745**	902,000
Unearned premiums	**20,967**	231,905
Other net changes in operating assets and liabilities	**(179,087)**	(90,570)
Net cash provided by operating activities	**164,240**	6,265
Cash flows from investing activities		
Sales of fixed maturities	**6,603,646**	6,078,970
Redemptions of fixed maturities	**127,700**	172,103
Purchases of fixed maturities	**(6,953,191)**	(5,428,667)
Sales and redemptions of short-term investments	**159,577**	83,880
Purchases of short-term investments	**(503,614)**	(74,636)
Sales of equities	**22,656**	8,628
Purchases of equities	**(73,860)**	(516,207)
Net intercompany balances receivable[(1)]	**216,715**	(652,399)
Investments in other invested assets	**(22,656)**	13,753
Other, net	**59,103**	126,680
Net cash used in investing activities	**(363,924)**	(187,895)
Cash flows from financing activities		
Cash dividends paid to Parent[(1)]	**—**	(77,933)
Payments on behalf of Parent	**(94,416)**	(191,453)
Net cash used in financing activities	**(94,416)**	(269,386)
Effect of foreign exchange rate changes on cash	**12,538**	12,632
Decrease in cash and cash equivalents	**(281,562)**	(438,384)
Cash and cash equivalents—beginning of year	**587,533**	1,025,917
Cash and cash equivalents—end of year	**$ 305,971**	$ 587,533
Supplemental cash flow information:		
Taxes paid	**$ 2,932**	$ 4,290

(1) The Company declared non-cash dividends to its Parent, PartnerRe Ltd., of $422 million for the year ended December 31 2017. These dividends were paid by a reduction of intercompany loans and balances receivable.

See accompanying Notes to Consolidated Financial Statements.

1. Organization

Partner Reinsurance Company Ltd. (the Company) is a 100% owned subsidiary of PartnerRe Ltd. (the Parent). The Parent is a wholly-owned subsidiary of EXOR Nederland N.V. and, as such, a subsidiary of the ultimate parent company, EXOR N.V. The Company commenced operations in November 1993.

The Company predominantly provides reinsurance and certain specialty insurance lines on a worldwide basis. Non-life risks reinsured include agriculture, aviation/space, casualty, catastrophe, energy, engineering, financial risks, marine, motor, multiline, and property. Life and health risks include mortality, longevity, and accident and health. Reinsurance of alternative risk products include weather and credit protection to financial, industrial and service companies on a worldwide basis. The Company also enters into reinsurance contracts with subsidiaries of the Parent, including a 65% quota-share agreement with Partner Reinsurance Europe SE (PartnerRe Europe), a 50% quota-share agreement with Partner Reinsurance Asia Pte. Ltd (PartnerRe Asia), a 90% quota-share agreement with PartnerRe Life Reinsurance Company of Canada (PartnerRe Canada) and stop loss agreements with PartnerRe U.S., PartnerRe America Insurance Company, PartnerRe Ireland Insurance dac, PartnerRe Asia and PartnerRe Canada (see Note 15).

On April 3, 2017, after receiving regulatory approvals, the Parent completed the acquisition of 100% of the outstanding ordinary shares of Aurigen Capital Limited (Aurigen Capital), a North American life reinsurance company. This acquisition enabled the Parent to expand its life reinsurance footprint in Canada and the U.S. with limited overlap in market coverage. Aurigen Capital owned 100% of Aurigen Reinsurance Limited (ARL), a Class C insurer licensed under the Insurance Act.

On April 13, 2018, Aurigen Capital merged into PartnerRe Ltd., with PartnerRe Ltd. being the sole survivor. Upon effecting this merger, ARL became a direct wholly-owned subsidiary of PartnerRe Ltd.

On November 26, 2018, Partner Re Ltd.'s share interest in ARL was transferred to the Company and ARL was then merged into Partner Reinsurance Life Company of Bermuda Ltd. (PartnerRe Life), a subsidiary of the Company, with PartnerRe Life being the sole survivor. This merger was effected after the Parent's shares in Aurigen were transferred to the Company and upon receiving regulatory approval (see also Note 2(h)).

2. Significant Accounting Policies

The Company's Consolidated Financial Statements have been prepared in accordance with accounting principles generally accepted in the United States (U.S. GAAP). The Consolidated Financial Statements include the accounts of the Company and its subsidiaries. Intercompany accounts and transactions have been eliminated.

The preparation of financial statements in conformity with U.S. GAAP requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. While management believes that the amounts included in the Consolidated Financial Statements reflect its best estimates and assumptions, actual results could differ from those estimates. The Company's principal estimates include:

- Non-life reserves;
- Life and health reserves;
- Gross and net premiums written and net premiums earned;
- Recoverability of deferred acquisition costs;
- Recoverability of deferred tax assets;
- Valuation of certain investments that are measured using significant unobservable inputs; and
- Valuation of goodwill and intangible assets.

The following are the Company's significant accounting policies:

(a) Premiums

Gross premiums written and earned are based upon reports received from ceding companies, supplemented by the Company's own estimates of premiums written and earned for which ceding company reports have not been received. The determination of premium estimates requires a review of the Company's experience with cedants, familiarity with each market, an understanding of the characteristics of each line of business and management's assessment of the impact of various other factors on the volume of business written and ceded to the Company. Premium estimates are updated as new information is received from cedants and differences between such estimates and actual amounts are recorded in the period in which the estimates are changed or the actual amounts are determined. Net premiums written and earned are presented net of ceded premiums, which represent the cost of retrocessional protection purchased by the Company. Premiums are earned on a basis that is consistent with the risks covered under the terms of the reinsurance contracts, which is generally one to two years. Reinstatement premiums are recognized as written and earned at the time a loss event occurs, where coverage limits for the remaining life of the contract are reinstated under pre-defined contract terms. The accrual of reinstatement premiums is based on management's estimate of losses and loss expenses associated with the loss event. Unearned premiums represent the portion of premiums written which is applicable to the unexpired risks under contracts in force.

Premiums related to individual life and annuity business are recorded over the premium-paying period on the underlying policies. Premiums on contracts for which there is no significant mortality or critical illness risk are accounted for in a manner consistent with accounting for interest-bearing financial instruments and are not reported as revenues, but rather as direct deposits to the contract. Amounts assessed against annuity and universal life policyholders are recognized as revenue in the period assessed.

(b) Losses and Loss Expenses

The reserves for non-life business include amounts determined from loss reports on individual treaties (case reserves), additional case reserves when the Company's loss estimate is higher than reported by the cedants (ACRs) and amounts for losses incurred but not yet reported to the Company (IBNR). Such reserves are estimated by management based upon reports received from ceding companies, supplemented by the Company's own actuarial estimates of reserves for which ceding company reports have not been received, and based on the Company's own historical experience. To the extent that the Company's own historical experience is inadequate for estimating reserves, such estimates may be determined based upon industry experience and management's judgment. The estimates are continually reviewed and the ultimate liability may be in excess of, or less than, the amounts provided. Any adjustments are reflected in the periods in which they are determined, which may affect the Company's operating results in future periods.

The life and health reserves have been established based upon information reported by ceding companies, supplemented by the Company's actuarial estimates, which for life include mortality, morbidity, critical illness, persistency and future investment income, with appropriate provision to reflect uncertainty. For traditional long-duration contracts, the assumptions are locked in at contract inception and modified if the Company deems the reserves to be inadequate. Future policy benefit reserves for annuity and universal life contracts are carried at their accumulated values. Reserves for policy claims and benefits include both mortality, morbidity and critical illness claims in the process of settlement, and claims that have been incurred but not yet reported.

The Company purchases retrocessional contracts to reduce its exposure to risk of losses on reinsurance assumed. Reinsurance recoverable on paid and unpaid losses involves actuarial estimates consistent with those used to establish the associated liabilities for non-life and life and health reserves.

(c) Deferred Acquisition Costs

Acquisition costs, comprising incremental brokerage fees, commissions and excise taxes, which vary directly with, and are related to, the acquisition of reinsurance contracts, are capitalized and charged to expense as the related premium is earned. All other acquisition related costs, including indirect costs, are expensed as incurred.

Acquisition costs related to individual life and annuity contracts are deferred and amortized over the premium-paying periods in proportion to anticipated premium income, allowing for lapses, terminations and anticipated investment income. Acquisition costs related to universal life and single premium annuity contracts for which there is no significant mortality or critical illness risk are deferred and amortized over the lives of the contracts as a percentage of the estimated gross profits expected to be realized on the contracts.

The Company establishes a premium deficiency reserve to the extent the deferred acquisition costs are insufficient to cover the excess of expected losses and loss expenses, settlement costs and deferred acquisition costs over the related unearned premiums.

Actual and anticipated losses and loss expenses, other costs, and investment income related to underlying premiums are considered in determining the recoverability of deferred acquisition costs for the Company's short-duration contracts. Actual and anticipated loss experience, together with the present value of future gross premiums, the present value of future benefits, and settlement and maintenance costs are considered in determining the recoverability of deferred acquisition costs related to the Company's Life business.

(d) Funds Held by Reinsured Companies (Cedants)

The Company writes certain business on a funds held basis. Under such contractual arrangements, the cedant retains the premiums that would have otherwise been paid to the Company and the Company is credited with investment income. The Company generally earns investment income on the funds held balances based upon a predetermined interest rate, either fixed contractually at the inception of the contract or based upon a recognized index (e.g. LIBOR). However, in certain circumstances, the Company may receive an investment return based upon either the result of a pool of assets held by the cedant, generally used to collateralize the funds held balance, or the investment return earned by the cedant on its entire investment portfolio. In these arrangements, gross investment returns are typically reflected in net investment income with a corresponding increase or decrease (net of a spread) being recorded in losses and loss expenses in the Company's Consolidated Statements of Operations. In these arrangements, the Company is exposed, to a limited extent, to the underlying credit risk of the pool of assets inasmuch as the underlying life policies may have guaranteed minimum returns. In such cases, an embedded derivative exists and its fair value is recorded by the Company as an increase or decrease to the funds held balance.

(e) Investments

The Company elects the fair value option for its Fixed maturities and Equities (except for those that are accounted for using the equity method of accounting) with changes in the fair value recorded in Net realized and unrealized investment gains or losses in the Consolidated Statements of Operations.

Other invested assets consists of equity investments in non-publicly traded companies, privately placed corporate loans, notes and loans receivable and notes securitization, and derivative financial instruments. Non-publicly traded entities in which the Company has significant influence, including an ownership of more than 20% and less than 50% of the voting rights, and limited partnerships in which the Company has more than a minor interest (typically more than 3 to 5%), are accounted for using either the equity method or the fair value option. Where the equity method is used, the Company's share of profits or losses of the investee are recorded in Interest in earnings or losses of equity method investees in the Consolidated Statements of Operations. Where the fair value option is elected, the investment is recognized in the Consolidated Balance Sheets with changes in fair value recorded in Net realized and unrealized investment gains or losses in the Consolidated Statement of Operations. See Note 2(l) below for significant accounting policy for derivatives.

Short-term investments, which comprise securities with a maturity greater than three months but less than one year from the date of purchase, are recorded at fair value by electing either the fair value option with changes in fair value recorded in Net realized and unrealized gains or losses included in the Consolidated Statements of Operations or by designating as available-for-sale with changes in fair value recorded in Other comprehensive income or loss.

Net investment income includes interest and dividend income, amortization of premiums and discounts on fixed maturities and short-term investments and is net of investment expenses and withholding taxes. Investment income is recognized when earned and accrued to the balance sheet date. Realized gains or losses on the disposal of investments are determined on a first-in, first-out basis. Investment purchases and sales are recorded on a trade-date basis.

The Company defines fair value as the price received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The Company measures the fair value of financial instruments according to a fair value hierarchy that prioritizes the information used to measure fair value into three broad levels. The Company's policy is to recognize transfers between the hierarchy levels at the beginning of the period. The valuation techniques used by the Company are generally commensurate with standard valuation techniques for each asset class (see Note 3).

(f) Cash and Cash Equivalents

Cash equivalents are carried at fair value and include fixed income securities that, from the date of purchase, have a maturity of three months or less.

(g) Business Combinations

As discussed in Note 1 above, on November 26, 2018, Partner Re Life, a subsidiary of the Company, merged with ARL, with the PartnerRe Life remaining the sole survivor. The results of operations for the Company for the year ended December 31, 2018 include the results of ARL as of the beginning of the year in accordance with US GAAP guidance ASC 805-50 on mergers of entities under common control. In accordance with this US GAAP guidance, the comparative financial information presented for the Company for the prior year 2017 has been retrospectively adjusted from April 3, 2017, the date that the Parent acquired Aurigen, which is the date at which the entities first came under common control. See also Note 16.

(h) Goodwill

Goodwill represents the excess of the purchase price over the fair value of net assets acquired in a historical acquisition by PartnerRe Europe, which was re-allocated from PartnerRe Europe to the Company during 2012. The Company assesses the appropriateness of its valuation of goodwill on at least an annual basis or more frequently if events or changes in circumstances indicate that the carrying amount may not be recoverable. If, as a result of the assessment, the Company determines that the value of its goodwill is impaired, goodwill will be written down in the period in which the determination is made.

(i) Intangible Assets

Intangible assets represent the fair value adjustments related to value of life business acquired (life VOBA) by the Parent and transferred to the Company upon merger with ARL. This intangible asset is being amortized over its expected life of 100 years (see Note 6) and the amortization expense is recorded in the Consolidated Statement of Operations.

(j) Income Taxes

Certain subsidiaries and branches of the Company operate in jurisdictions where they are subject to taxation. Current and deferred income taxes are charged or credited to net income or loss or, in certain cases, to accumulated other comprehensive income or loss, based upon enacted tax laws and rates applicable in the relevant jurisdiction in the period in which the tax becomes accruable or realizable. Deferred income taxes are provided for all temporary differences between the bases of assets and liabilities used in the Consolidated Balance Sheets and those used in the various jurisdictional tax returns. When management's assessment indicates that it is more likely than not that deferred tax assets will not be realized, a valuation allowance is recorded against the deferred tax assets.

The Company recognizes a tax benefit relating to uncertain tax positions only where the position is more likely than not to be sustained assuming examination by tax authorities. A liability is recognized for any tax benefit (along with any interest and penalty, if applicable) claimed in a tax return in excess of the amount recognized in the financial statements under U.S. GAAP. Any changes in amounts recognized are recorded in the period in which they are determined.

(k) Translation of Foreign Currencies

The reporting currency of the Company is the U.S. dollar. The functional currency of the Company's subsidiaries and branch is generally their national currency or the U.S. dollar, except for the Company's wholly owned subsidiary, Partner Reinsurance Life Company of Bermuda Ltd., whose functional currency is the Canadian dollar. In translating the financial statements of these subsidiaries and branch whose functional currency is other than the U.S. dollar, assets and liabilities are converted into U.S. dollars using the rates of exchange in effect at the balance sheet dates, and revenues and expenses are converted using the average foreign exchange rates for the period. The effect of translation adjustments are reported in the Consolidated Balance Sheets as a Currency translation adjustment, a separate component of Accumulated Other comprehensive income or loss. The change in currency translation adjustment is reflected in Other comprehensive income or loss.

In recording foreign currency transactions, revenue and expense items are converted into the functional currency at the average rates of exchange for the period. Assets and liabilities originating in currencies other than the functional currency are translated into the functional currency at the rates of exchange in effect at the balance sheet dates. The resulting foreign exchange transaction gains or losses are included in Net foreign exchange gains or losses in the Consolidated Statements of Operations.

(l) Derivatives

The Company's investment strategy allows for the use of derivative instruments, subject to strict limitations. The Company may use derivative financial instruments such as foreign exchange forward contracts, foreign currency option contracts, futures contracts, to-be-announced mortgage-backed securities (TBAs) and credit default swaps for the purpose of managing overall currency risk, market exposures and portfolio duration, for hedging certain investments, or for enhancing investment performance that would be allowed under the Company's investment policy if implemented in other ways.

On the date the Company enters into a derivative contract, management determines whether or not the derivative is to be used and designated as a hedge of an identified underlying risk exposure (a designated hedge). The Company's derivative instruments designated as hedges are recorded in Other invested assets in the Consolidated Balance Sheets at fair value, with gains and losses associated with changes in fair value recognized in either Net realized and unrealized investment gains or losses or Net foreign exchange gains or losses in the Consolidated Statements of Operations, or in Other comprehensive income, depending on the nature and designation of the derivative instrument, as described below (see also Note 5).

The Company has entered into derivatives, in the form of foreign exchange forward contracts, designated as a highly effective hedge of the foreign exchange rate risk exposure related to certain short-term investments which are foreign currency denominated debt securities purchased in December 2018. The hedged assets were designated as available-for-sale with changes in fair value recorded in Change in unrealized gains or losses on investments, net of tax, within Other comprehensive income. The change in fair value of the designated hedges are recorded in Change in fair value of designated cash flow hedges within Other comprehensive income.

The Company enters from time to time into insurance-linked securities, including weather and longevity related transactions, structured as derivatives, which are recorded at fair value with the changes in fair value reported in Net realized and unrealized investment gains or losses in the Consolidated Statements of Operations.

The Company also enters from time to time into total return and interest rate swaps. Interest rate swaps are used to mitigate exposure to interest rate volatility. Margins related to these swaps are included in Other income or loss in the Consolidated Statements of Operations and any changes in the fair value of the swaps are included in Net realized and unrealized investment gains or losses in the Consolidated Statements of Operations.

Other than the designated cash flow hedge referred to above, for the remaining derivatives employed by the Company to address foreign currency risk exposure related to fixed income securities, and for other reinsurance assets and liabilities, the derivatives are not designated as hedges. The changes in fair value of foreign exchange forward contracts and foreign currency option contracts not designated as hedges are recognized in Net foreign exchange gains or losses in the Consolidated Statements of Operations. Margin balances required by counterparties, which are equal to a percentage of the total value of open futures contracts, are included in Cash and cash equivalents.

The Company formally documents all relationships between designated hedging instruments and hedged items, as well as its risk management objectives and strategy for undertaking various hedge transactions. In this documentation, the Company specifically identifies the asset or liability that has been designated as a hedged item and states how the hedging instrument is expected to hedge the risks related to the hedged item. The Company formally measures effectiveness of its designated hedging relationships both at the hedge inception and on an ongoing basis. The Company's method for assessing the effectiveness of the designated hedge entered in December 2018 is a qualitative assessment as the Company has determined that the hedging instrument (the designated foreign currency forward contracts) and the hedged assets (the available-for-sale foreign currency denominated short-term investments) are perfectly aligned as they relate to the hedged risk, the foreign currency exchange rate risk exposure.

The Company will discontinue hedge accounting prospectively if it is determined that the derivative is no longer effective in hedging the exposure to variability in expected future cash flows that is attributable to the risk it was meant to hedge; if the derivative instruments expires, is sold, or otherwise terminated; or if the Company removes the designation of the hedge. To the extent that the Company discontinues hedge accounting because, based on management's assessment, the derivative no longer qualifies as an effective hedge, or the Company otherwise de-designates the hedge, the derivative will continue to be carried in the Consolidated Balance Sheet at its fair value, with changes in its fair value recognized in in the Consolidated Statements of Operations, or in Other comprehensive income, depending on the type of derivative held.

(m) Variable Interest Entities

The Company is involved in the normal course of business with variable interest entities (VIEs). An assessment is performed as of the date the Company becomes initially involved in the VIE followed by a reassessment upon certain events related to its involvement in the VIE. The Company consolidates a VIE when it is the primary beneficiary having a controlling financial interest as a result of having the power to direct the activities that most significantly impact the economic performance of the VIE and the obligation to absorb losses, or right to receive benefits, that could potentially be significant to the VIE.

(n) Recent Accounting Pronouncements

In January 2016 the Financial Accounting Standards Board (FASB) issued updated guidance that focused on improving the recognition and measurement of financial instruments by adjusting the reporting model for financial instruments to provide improved financial information to readers of the financial statements by requiring equity investments, except for those accounted for using the equity method, to be measured at fair value with changes in fair value recognized in net income rather than other comprehensive income. The guidance was adopted for the year ended December 31, 2018. Upon adoption of this guidance the Company remeasured four equity investments, previously recorded at cost, to fair value recognizing $13 million in Net realized and unrealized (losses) gains in the Consolidated Statement of Operations for the year ended December 31, 2018.

In October 2016, the FASB issued updated guidance on income taxes with respect to intra-entity transfers of assets. This update requires recognition of the income tax consequences of an intra-entity transfer of an asset, other than inventory, when the transfer occurs. The Company adopted this guidance for the year ended December 31, 2018, which did not have a significant impact on the Company’s Consolidated Financial Statements.

In August 2017, the FASB issued updated guidance on accounting for hedging activities. This update expands and refines hedge accounting for both non-financial and financial risk components and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. The amendments also make certain targeted improvements to simplify the application of hedge accounting guidance and ease the administrative burden of hedge documentation requirements and for assessing hedge effectiveness. The Company adopted this guidance for the year ended December 31, 2018 which resulted in changes to the significant accounting policy Note 2(l) for Derivatives above to reflect the new guidance. See also Note 5 for further details of the new foreign exchange forward contracts designated as hedges in December 2018 which are accounted for and disclosed in accordance with this new guidance. The adoption of this guidance did not have a significant impact on the Company’s Consolidated Financial Statements as there were no other designated hedges as at December 31, 2018 or 2017.

In January and April 2017, the FASB issued updated guidance on the accounting for goodwill impairment. This update removes the second step of the goodwill impairment test and requires entities to apply a one-step quantitative test and record the amount of goodwill impairment as the excess of a reporting unit's carrying amount over its fair value, not to exceed the total amount of goodwill allocated to the reporting unit. The new guidance does not amend the optional qualitative assessment of goodwill impairment. The guidance is effective for annual impairment tests performed after December 15, 2020, with early adoption permitted. The Company does not expect the adoption of this guidance to have a significant impact on its Consolidated Financial Statements and disclosures.

In February 2016, the FASB issued updated guidance on the accounting for leases. This update requires the recognition of lease assets and lease liabilities for leases classified as operating leases and expands required disclosures. In July 2018, the FASB issued targeted improvements to the updated guidance, which provide an option to recognize a cumulative effect adjustment to the opening retained earnings in the period of adoption and a practical expedient related to the separation of non-lease components under certain circumstances. In March 2019, the FASB issued further guidance to increase awareness of the amendments and to expedite intended improvements. The guidance is effective for the year ended December 31, 2020, with early adoption permitted. The adoption of this guidance is expected to result in recognition of an asset and liability related to lease assets and liabilities but is not expected to have a significant impact on the Company's Consolidated Statements of Operations.

In June 2016, the FASB issued updated guidance on the recognition of credit losses by replacing the incurred loss impairment methodology with new accounting models related to how credit losses on financial instruments are determined. The new guidance is applicable to financial assets such as loans, reinsurance receivables, trade receivables, debt securities, off-balance sheet credit exposures, and other financial assets that have a contractual right to receive cash. The guidance is effective for the year ended December 31, 2021, with early adoption permitted. The Company is currently evaluating the impact of this guidance on its Consolidated Financial Statements and disclosures.

In August 2016, the FASB issued updated guidance on the classification of certain cash receipts and payments. This update addresses the presentation and classification of certain cash receipts and cash payments in the statement of cash flows. The guidance is effective for the year ended December 31, 2019 and is not expected to have a significant impact on the Company's Consolidated Financial Statements.

In August 2018, the FASB issued updated guidance to the disclosure requirements for fair value measurement as part of the disclosure framework project. The updated guidance allows for the removal and modification of certain disclosures to improve the effectiveness of disclosures in the notes to financial statements. This guidance is effective for the year ended December 31, 2020. The Company is currently evaluating the impact of this guidance on its Consolidated Financial Statements and disclosures.

In August 2018, the FASB issued updated guidance to improve financial reporting for insurance companies that issue long-duration contracts such as life insurance and annuities. The objective of the new guidance is to improve, simplify, and enhance the financial reporting of long-duration contracts by providing financial statement users with useful information in a timely and transparent manner. This guidance is effective for the year ended December 31, 2022. The Company is currently evaluating the impact of this guidance on its Consolidated Financial Statements and disclosures required to be adopted. This guidance could have a material on the measurement recognition of long duration contracts and will result in additional disclosures once adopted.

3. Fair Value

(a) Fair Value of Financial Instrument Assets

The fair value hierarchy prioritizes the inputs to valuation techniques used to measure fair value by maximizing the use of observable inputs and minimizing the use of unobservable inputs by requiring that the most observable inputs be used when available. Observable inputs are inputs that market participants would use in pricing an asset or liability based on market data obtained from sources independent of the Company. Unobservable inputs are inputs that reflect the Company's assumptions about what market participants would use in pricing the asset or liability based on the best information available in the circumstances. The level in the hierarchy within which a given fair value measurement falls is determined based on the lowest level input that is significant to the measurement.

The Company determines the appropriate level in the hierarchy for each financial instrument that it measures at fair value. In determining fair value, the Company uses various valuation approaches, including market, income and cost approaches. The hierarchy is broken down into three levels based on the observability of inputs as follows:

- Level 1 inputs—Unadjusted, quoted prices in active markets for identical assets or liabilities that the Company has the ability to access.

  The Company's financial instruments that it measures at fair value using Level 1 inputs generally include: equities listed on a major exchange and exchange traded derivatives, including futures that are actively traded.

- Level 2 inputs—Quoted prices in active markets for similar assets or liabilities, quoted prices for identical or similar assets or liabilities in inactive markets and significant directly or indirectly observable inputs, other than quoted prices, used in industry accepted models.

  The Company's financial instruments that it measures at fair value using Level 2 inputs generally include: U.S. government issued bonds; U.S. government sponsored enterprises bonds; U.S. state, territory and municipal entities bonds; non-U.S. sovereign government, supranational and government related bonds; investment grade and high yield corporate bonds; asset-backed securities; mortgage-backed securities; short-term investments;

certain common and preferred equities; notes and loans receivable; foreign exchange forward contracts, interest rate swaps and TBAs.

- Level 3 inputs—Unobservable inputs.

  The Company's financial instruments that it measures at fair value using Level 3 inputs generally include: inactively traded fixed maturities including U.S. state, territory and municipal bonds; special purpose financing asset-backed bonds; unlisted or private equities; certain other mutual fund or exchange traded fund equities; privately placed corporate loans, notes and loans receivables; notes securitizations included in Other invested assets; and certain other derivatives, including weather derivatives, longevity insurance-linked securities and total return swaps included in other invested assets.

At December 31, 2018 and 2017, the Company's financial instruments measured at fair value were classified between Levels 1, 2 and 3 as follows (in thousands of U.S. dollars):

December 31, 2018	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Fixed maturities				
U.S. government and government sponsored enterprises	$ —	$ 479,729	$ —	$ 479,729
U.S. states, territories and municipalities	—	9,066	120,898	129,964
Non-U.S. sovereign government, supranational and government related	—	697,995	—	697,995
Corporate bonds	—	2,560,572	21,470	2,582,042
Asset-backed securities	—	40,439	17,596	58,035
Residential mortgage-backed securities	—	799,190	—	799,190
Other mortgage-backed securities	—	4	—	4
Fixed maturities	$ —	$ 4,586,995	$ 159,964	$ 4,746,959
Short-term investments[(1)]	$ —	$ 347,990	$ —	$ 347,990
Equities				
Finance		$ —	$ 13,581	$ 13,581
Technology		—	12,256	12,256
Insurance	—	1,189	—	1,189
Mutual funds and exchange traded funds			621,759	621,759
Equities	$ —	$ 1,189	$ 647,596	$ 648,785
Other invested assets				
Derivative assets				
Foreign exchange forward contracts	$ —	$ 17,820	$ —	$ 17,820
Insurance-linked securities	—	—	2,824	2,824
Futures contracts	—	—	—	0
Total return swaps	—	—	1,697	1,697
Interest rate swaps	—	10	—	10
Other				
Notes and loan receivables and notes securitization	—		6,507	6,507
Private equities	—	—	265,651	265,651
Derivative liabilities				
Interest rate swaps	—	(9,193)	—	(9,193)
Insurance-linked securities	—	—	(2,568)	(2,568)
Foreign exchange forward contracts	—	(2,738)	—	(2,738)
Total return swaps	—	—	(3,232)	(3,232)
TBAs	—	—	—	—
Other invested assets	$ —	$ 5,899	$ 270,879	$ 276,778
Total	$ —	$ 4,942,073	$ 1,078,439	$ 6,020,512

(1) Short-term investments includes $229 million of available-for-sale securities with readily determinable fair values. These securities were purchased in 2018 and are recorded at fair value, which approximated amortized cost given the short term to maturity of approximately three to four months.

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December 31, 2017	Quoted prices in active markets for identical assets (Level 1)	Significant other observable inputs (Level 2)	Significant unobservable inputs (Level 3)	Total
Fixed maturities				
U.S. government and government sponsored enterprises	$ —	$ 639,843	$ —	$ 639,843
U.S. states, territories and municipalities	—	7,409	128,806	$ 136,215
Non-U.S. sovereign government, supranational and government related	—	735,363	—	$ 735,363
Corporate bonds	—	2,864,777	—	$ 2,864,777
Asset-backed securities	—	22,187	20,738	$ 42,925
Residential mortgage-backed securities	—	344,934	—	$ 344,934
Fixed maturities	$ —	$ 4,614,513	$ 149,544	$ 4,764,057
Short-term investments	$ —	$ 898	$ —	$ 898
Equities				
Finance		—	21,792	$ 21,792
Technology		—	10,960	$ 10,960
Insurance	$ —	$ 7,558	$ —	$ 7,558
Mutual funds and exchange traded funds			558,736	558,736
Equities	$ —	$ 7,558	$ 591,488	$ 599,046
Other invested assets				
Derivative assets				
Foreign exchange forward contracts	—	5,726	—	5,726
Insurance-linked securities	—	—	11,985	11,985
Futures contracts	3,367	—	—	3,367
Total return swaps	—	—	2,505	2,505
TBAs		81	—	81
Other				
Notes and loan receivables and notes securitization	—	3,425	108,563	111,988
Private equities	—	—	213,038	213,038
Derivative liabilities				
Interest rate swaps	—	(12,298)	—	(12,298)
Foreign exchange forward contracts	—	(15,215)	—	(15,215)
Total return swaps	—	—	(3,269)	(3,269)
TBAs	—	(64)	—	(64)
Other invested assets	$ 3,367	$ (18,345)	$ 332,822	$ 317,844
Total	$ 3,367	$ 4,604,624	$ 1,073,854	$ 5,681,845

At December 31, 2018 and 2017, the aggregate carrying amounts of items included in Other invested assets that the Company did not measure at fair value were $624.7 million and $675.0 million, respectively, which related to the Company's investments that are accounted for using the equity method of accounting.

At December 31, 2018 and 2017, the carrying value of accrued investment income approximated fair value due to its short-term nature.

During the year ended December 31, 2018, a corporate longevity bond valued at $25 million was transferred from Level 2 to Level 3 due to the lack of multiple independent pricing services (see in table below). Transfers into Level 3 also included four private equity securities valued at $31 million that were previously held at cost and were measured to fair value upon adoption of new accounting guidance described in Note 2(o).

During the years ended December 31, 2018 and 2017, there were no transfers between Level 1 and Level 2.

Disclosures about the fair value of financial instruments that the Company does not measure at fair value exclude insurance contracts and certain other financial instruments. At December 31, 2018 and 2017, the fair values of financial instrument assets recorded in the Consolidated Balance Sheets not described above approximate their carrying values.

The reconciliations of the beginning and ending balances for all financial instruments measured at fair value using Level 3 inputs for the years ended December 31, 2018 and 2017, were as follows (in thousands of U.S. dollars):

For the year ended December 31, 2018	Balance at beginning of year	Realized and unrealized investment (losses) gains included in net income	Purchases and issuances (1)	Settlements and sales (2)	Net transfers into/ (out of) Level 3	Balance at end of year	Change in unrealized investment (losses) gains relating to assets held at end of year
Fixed maturities							
U.S. states, territories and municipalities	$ 128,806	$ (4,417)	$ —	$ (3,491)	$ —	$ 120,898	$ (4,320)
Corporate Bonds	—	(139)	—	(3,745)	25,354	21,470	(139)
Asset-backed securities	20,738	(2,552)	—	(590)	—	17,596	(2,552)
Fixed maturities	$ 149,544	$ (7,108)	$ —	$ (7,826)	$ 25,354	$ 159,964	$ (7,011)
Equities							
Finance	$ 21,792	$ 5,071	$ —	$ (13,281)	$ —	$ 13,582	$ (3,539)
Technology	10,960	1,295	—	—	—	12,255	1,295
Mutual funds and exchange traded funds	558,736	10,996	55,027	(3,000)	—	621,759	10,996
Equities	$ 591,488	$ 17,362	$ 55,027	$ (16,281)	$ —	$ 647,596	$ 8,752
Other invested assets							
Derivatives, net	$ 11,221	$ 5,038	$ (1,623)	$ (15,915)	$ —	$ (1,279)	$ 372
Notes and loan receivables and notes securitization	108,563	(4,054)	—	(98,002)	—	6,507	(3,884)
Private equities	213,038	15,684	31,981	(26,132)	31,080	265,651	13,058
Other invested assets	$ 332,822	$ 16,668	$ 30,358	$ (140,049)	$ 31,080	$ 270,879	$ 9,546
Total	$ 1,073,854	$ 26,922	$ 85,385	$ (164,156)	$ 56,434	$ 1,078,439	$ 11,287

(1) Purchases and issuances of derivatives include issuances of $2 million.

(2) Settlements and sales of Equities and Other invested assets include sales of $16.3 million, and $138.5 million, respectively. Sales of Other invested assets of $138.5 million included sales of derivatives of $16.0 million, notes and loan receivables and notes securitization of $96.0 million, and private equities of $26.1 million.

For the year ended December 31, 2017	Balance at beginning of year	Realized and unrealized investment gains (losses) included in net income	Purchases and issuances [(1)]	Settlements and sales [(2)]	Net transfers into/ (out of) Level 3	Balance at end of year	Change in unrealized investment gains (losses) relating to assets held at end of year
Fixed maturities							
U.S. states, territories and municipalities	$ 123,827	$ 5,804	$ —	$ (825)	$ —	$ 128,806	$ 5,804
Asset-backed securities	27,684	1,327	—	(8,273)	—	20,738	1,316
Fixed maturities	$ 151,511	$ 7,131	$ —	$ (9,098)	$ —	$ 149,544	$ 7,120
Equities							
Finance	$ 20,817	$ 975	$ —	$ —	$ —	$ 21,792	$ 858
Technology	9,800	1,610	—	(450)	—	10,960	1,611
Mutual funds and exchange traded funds	154	51,475	507,250	(143)	—	558,736	51,486
Equities	$ 30,771	$ 54,060	$ 507,250	$ (593)	$ —	$ 591,488	$ 53,955
Other invested assets							
Derivatives, net	$ 8,805	$ 5,977	$ 1,793	$ (5,354)	$ —	$ 11,221	$ 3,231
Notes and loan receivables and notes securitization	141,693	2,744	2,040	(37,914)	—	108,563	6,977
Private equities	174,855	38,907	14,633	(15,357)	—	213,038	36,996
Other invested assets	$ 325,353	$ 47,628	$ 18,466	$ (58,625)	$ —	$ 332,822	$ 47,204
Total	$ 507,635	$ 108,819	$ 525,716	$ (68,316)	$ —	$ 1,073,854	$ 108,279

(1) There were no issuances.

(2) Settlements and sales of fixed maturities, equities and other invested assets include sales of $nil, $0.6 million and $nil, respectively.

The significant unobservable inputs used in the valuation of financial instruments measured at fair value using Level 3 inputs at December 31, 2018 and 2017 were as follows (fair value in thousands of U.S. dollars):

December 31, 2018	Fair value	Valuation techniques	Unobservable inputs	Range (Weighted average)
Fixed maturities				
U.S. states, territories and municipalities	$120,898	Discounted cash flow	Credit spreads	0.2% – 10.2% (4.3%)
Corporate bonds				
Asset-backed securities	17,596	Discounted cash flow	Credit spreads	6.7% (6.7%)
Equities				
Finance [(1)]	13,581	Lag reported market value	Transaction price	12.0 (12.0)
Technology	12,256	Reported market value	Tangible book value multiple	1.0 (1.0)
Other invested assets				
Total return swaps, net	(1,535)	Discounted cash flow	Credit spreads	2.5% – 23.0% (16.0%)
Insurance-linked securities - longevity swaps	2,824	Discounted cash flow	Credit spreads	2.6% (2.6%)
Insurance-linked securities - pandemic swaps	(1,301)	Discounted cash flow	Credit spreads	27.3% (27.3%)
Insurance-linked securities - weather index swap	(1,267)	Proprietary option model	Index value (temperature)	80.7 - 3,293.8 (175.3)
Notes and loan receivables	2,660	Discounted cash flow	Credit spreads	41.5%-41.9% (41.5%)
Notes and loan receivables	2,688	Discounted cash flow	Credit spreads	17.5% (17.5%)
			Gross revenue/fair value	1.1 (1.1)
Notes securitization	1,159	Discounted cash flow	Credit spreads	0.8% (0.8%)

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(1) *During the year, the Company sold a portion of its investment and used the arm's length transaction price as an estimate of the fair value of the remaining holdings. This change was not considered material to the Company's financial position or results of operations.*

December 31, 2017	Fair value	Valuation techniques	Unobservable inputs	Range (Weighted average)
Fixed maturities				
U.S. states, territories and municipalities	$128,806	Discounted cash flow	Credit spreads	0.15% – 10.2% (4.7%)
Asset-backed securities	20,738	Discounted cash flow	Credit spreads	4.7% – 4.7% (4.7%)
Equities				
Finance	21,792	Weighted market comparables	Net income multiple	16.7 (16.7)
			Tangible book value multiple	2.0 (2.0)
			Liquidity discount	25.0% (25.0%)
			Comparable return	4.1% (4.1%)
Technology	10,960	Reported market value	Tangible book value multiple	1.0(1.0)
Other invested assets				
Total return swaps, net	(764)	Discounted cash flow	Credit spreads	2.4% – 30.8% (18.5%)
Insurance-linked securities - longevity swaps	11,962	Discounted cash flow	Credit spreads	1.7% (1.7%)
Notes and loan receivables	102,906	Discounted cash flow	Credit spreads	3.9% – 39.3% (6.1%)
Notes and loan receivables	4,265	Discounted cash flow	Credit spreads	17.5% (17.5%)
			Gross revenue/fair value	1.1 (1.1)
Notes securitization	1,392	Discounted cash flow	Credit spreads	1.5% (1.5%)
Private equity – direct	3,011	Discounted cash flow and weighted market comparables	Tangible book value multiple	0.8 (0.8)
			Recoverability of intangible assets	0% (0%)

The tables above do not include financial instruments that are measured using unobservable inputs (Level 3) where the unobservable inputs were obtained from external sources and used without adjustment. These financial instruments include corporate bonds (included within Fixed maturities), mutual fund and exchange traded fund investments (included within Equities), certain private equity funds (private equity funds included within Other invested assets), privately placed corporate loans (included within Other invested assets), and certain derivatives (included within Other invested assets).

The Parent has established a Valuation Committee which is responsible for determining the invested asset valuation procedures for the Parent and its subsidiaries, including the Company, reviewing significant changes in the fair value measurements of securities classified as Level 3 and ensuring that there is an appropriate independent peer analysis, on at least an annual basis, on the fair value measurements of significant securities that are classified as Level 3.The Valuation Committee is comprised of members of the Parent’s senior management team.

Changes in the fair value of the Company’s financial instruments subject to the fair value option during the years ended December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	2018	2017
Fixed maturities and short-term investments	**$ (100,814)**	$ 82,091
Equities	**4,299**	57,599
Other invested assets	**26,761**	40,145
Total	**$ (69,754)**	$ 179,835

Substantially all of the above changes in fair value are included in the Consolidated Statements of Operations under the caption Net realized and unrealized investment (losses) gains.

The following methods and assumptions were used by the Company in estimating the fair value of each class of financial instrument recorded in the Consolidated Balance Sheets. There have been no material changes in the Company’s valuation techniques during the periods presented.

Fixed maturities

- *U.S. government and government sponsored enterprises*—consists primarily of bonds issued by the U.S. Treasury and corporate debt securities issued by government sponsored enterprises and federally owned or established corporations. These securities are generally priced by independent pricing services. The independent pricing services may use actual transaction prices for securities that have been actively traded. For securities that have not been actively traded, each pricing source has its own proprietary method to determine the fair value, which may incorporate option adjusted spreads (OAS), interest rate data and market news. The Company generally classifies these securities in Level 2.
- *U.S. states, territories and municipalities*—consists primarily of bonds issued by U.S. states, territories and municipalities and the Federal Home Loan Mortgage Corporation. These securities are generally priced by independent pricing services using the techniques described for U.S. government and government sponsored enterprises above. The Company generally classifies these securities in Level 2. Certain of the bonds that are issued by municipal housing authorities and the Federal Home Loan Mortgage Corporation are not actively traded and are priced based on internal models using unobservable inputs (credit spreads). Accordingly, the Company classifies these securities in Level 3. A significant increase (decrease) in credit spreads in isolation could result in a significantly lower (higher) fair value measurement.
- *Non-U.S. sovereign government, supranational and government related*—consists primarily of bonds issued by non-U.S. national governments and their agencies, non-U.S. regional governments and supranational organizations. These securities are generally priced by independent pricing services using the techniques described for U.S. government and government sponsored enterprises above. The Company generally classifies these securities in Level 2.
- *Corporate bonds*—consists primarily of bonds issued by U.S. and foreign corporations covering a variety of industries and issuing countries. Corporate securities also include real estate investment trusts, catastrophe bonds, longevity and mortality bonds and government guarantee corporate debt. These securities are generally priced by independent pricing services and brokers. The pricing provider incorporates information including credit spreads, interest rate data and market news into the valuation of each security. The Company generally classifies these securities in Level 2. When a corporate security is inactively traded or the valuation model uses unobservable inputs, the Company classifies the security in Level 3.
- *Asset-backed securities*—consists primarily of bonds issued by U.S. and foreign corporations that are predominantly backed by student loans, automobile loans, credit card receivables, equipment leases, and special purpose financing. With the exception of special purpose financing securities, these asset-backed securities are generally priced by independent pricing services and brokers. The pricing provider applies dealer quotes and other available trade information, prepayment speeds, yield curves and credit spreads to the valuation. The Company generally classifies these securities in Level 2. Special purpose financing securities are generally inactively traded and are priced based on valuation models using unobservable inputs. The Company generally classifies these securities in Level 3. The significant unobservable input used in the fair value measurement of these asset-backed securities classified as Level 3 is credit spreads. A significant increase (decrease) in credit spreads in isolation could result in a significantly lower (higher) fair value measurement.
- *Residential mortgage-backed securities*—consists primarily of bonds issued by the Government National Mortgage Association, the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation, as well as private, non-agency issuers. These residential mortgage-backed securities are generally priced by independent pricing services and brokers. When current market trades are not available, the pricing provider or the Company will employ proprietary models with observable inputs including other trade information, prepayment speeds, yield curves and credit spreads. The Company generally classifies these securities in Level 2.
- *Other mortgage-backed securities*—consists primarily of commercial mortgage-backed securities. These securities are generally priced by independent pricing services and brokers. The pricing provider applies dealer quotes and other available trade information, prepayment speeds, yield curves and credit spreads to the valuation. The Company generally classifies these securities in Level 2.

In general, the methods employed by the independent pricing services to determine the fair value of the securities that have not been actively traded primarily involve the use of “matrix pricing” in which the independent pricing source applies the credit spread for a comparable security that has traded recently to the current yield curve to determine a reasonable fair value. The Company generally uses one pricing source per security and uses a pricing service ranking to consistently select the most appropriate pricing service in instances where it receives multiple quotes on the same security. When fair values are unavailable from these independent pricing sources, quotes are obtained directly from broker-dealers who are active in the corresponding markets. Most of the Company’s fixed maturities are priced from the pricing services or dealer quotes. The Company will typically not make adjustments to prices received from pricing services or dealer quotes; however, in instances where the quoted external price for a security uses significant unobservable inputs, the Company will classify that security as Level 3. The methods used to develop and substantiate the unobservable inputs used are based on the Company’s valuation policy and are dependent upon the facts and circumstances surrounding the individual investments which are generally transaction specific. The Company’s inactively traded fixed maturities are classified as Level 3. For all fixed maturity investments, the bid price is used for estimating fair value.

To validate prices, the Company compares the fair value estimates to its knowledge of the current market and will investigate prices that it considers not to be representative of fair value. The Company also reviews an internally generated fixed maturity price validation report which converts prices received for fixed maturity investments from the independent pricing sources and from broker-dealers quotes and plots OAS and duration on a sector and rating basis. The OAS is calculated using established algorithms developed by an independent risk analytics platform vendor. The OAS on the fixed maturity price validation report are compared for securities in a similar sector and having a similar rating, and outliers are identified and investigated for price reasonableness. In addition, the Company completes quantitative analyses to compare the performance of each fixed maturity investment portfolio to the performance of an appropriate benchmark, with significant differences identified and investigated.

Short-term investments

Short-term investments are valued in a manner similar to the Company’s fixed maturity investments and are generally classified in Level 2. Short-term investments at December 31, 2018 includes investments in foreign currency denominated bonds issued by a foreign government with durations to maturity of three to four months, as discussed in footnote (1) to the fair value table above. See also Notes 2(f) and 2(m) for further details.

Equities

Equity securities include U.S. and foreign common and preferred stocks, real estate investment trusts, mutual funds and exchange traded funds. Equities classified as Level 2 include certain common and preferred equities. Equities classified as Level 3 are generally mutual funds invested in securities other than the common stock of publicly traded companies, where the net asset value is not provided on a daily basis, and inactively traded common stocks. The significant unobservable inputs used in the fair value measurement of inactively traded common stocks classified as Level 3 include market return information, weighted using management’s judgment, from comparable selected publicly traded companies in the same industry, in a similar region and of a similar size, including transactional prices, net income multiples, tangible book value multiples, comparable returns, revenue multiples, adjusted earnings multiples and projected return on equity ratios. Significant increases (decreases) in any of these inputs could result in a significantly higher (lower) fair value measurement. Significant unobservable inputs used in measuring the fair value measurement of inactively traded common stocks also include a liquidity discount. A significant increase (decrease) in the liquidity discount could result in a significantly lower (higher) fair value measurement.

To validate prices, the Company completes quantitative analyses to compare the performance of each equity investment portfolio to the performance of an appropriate benchmark, with significant differences identified and investigated.

Other invested assets

The Company’s exchange traded derivatives, such as futures, are generally classified as Level 1 as their fair values are quoted prices in active markets. The Company’s foreign exchange forward contracts, interest rate swaps and TBAs are generally classified as Level 2 within the fair value hierarchy and are priced by independent pricing services.

Included in the Company’s Level 3 classification, in general, are certain derivatives, including weather derivative insurance-linked securities and total return swaps; notes and loan receivables and notes securitizations; and private equities. For Level 3 instruments, the Company will generally (i) receive a price based on a manager’s or trustee’s valuation for the asset; (ii) develop an internal discounted cash flow model to measure fair value; or (iii) use market return information, adjusted if necessary and weighted using management's judgment, from comparable selected publicly traded equity funds in a similar region and of a similar size. Where the Company receives prices from the manager or trustee, these prices are based on the manager's or trustee's estimate of fair value for the assets and are generally audited on an annual basis. Where the Company develops its own discounted cash flow models, the inputs will be specific to the asset in question, based on appropriate historical information, adjusted as necessary, and using appropriate discount rates. The significant unobservable inputs used in the fair value measurement of other invested assets classified as Level 3 include variation in regional temperatures credit spreads, gross revenue to fair value ratios, net income multiples, effective yields, tangible book value multiples and other valuation ratios. Significant increases (decreases) in any of these inputs in isolation could result in a significantly lower (higher) fair value measurement. Significant unobservable inputs used in the fair value measurement of other invested assets classified as Level 3 also include an assessment of the recoverability of intangible assets and market return information, weighted using management's judgment, from comparable selected publicly traded companies in the same industry, in a similar region and of a similar size. Significant increases (decreases) in these inputs in isolation could result in a significantly higher (lower) fair value measurement. As part of the Company's modeling to determine the fair value of an investment, the Company considers counterparty credit risk as an input to the model, however, the majority of the Company's counterparties are investment grade rated institutions and the failure of any one counterparty would not have a significant impact on the Company's consolidated financial statements.

To validate prices, the Company will compare them to benchmarks, where appropriate, or to the business results generally within that asset class and specifically to those particular assets.

(b) Fair Value of Financial Instrument Liabilities

At December 31, 2018 and 2017, the carrying values of financial instrument liabilities recorded in the Consolidated Balance Sheets approximate their fair values. Disclosures about the fair value of financial instrument liabilities exclude insurance contracts and certain other financial instruments.

4. Investments

(a) Net Realized and Unrealized Investment (Losses) Gains

The components of the net realized and unrealized investment (losses) gains for the years ended December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	2018	2017
Net realized investment (losses) gains on fixed maturities and short-term investments	**$ (88,755)**	$ 36,832
Net realized investment gains (losses) on equities	**13,107**	(4,883)
Net realized gains (losses) on other invested assets	**17,087**	(8,180)
Change in net unrealized gains on other invested assets	**14,336**	45,630
Change in net unrealized investment (losses) gains on fixed maturities and short-term investments	**(100,814)**	76,421
Change in net unrealized investment gains on equities	**4,299**	57,599
Total net realized and unrealized investment (losses) gains	**$ (140,740)**	$ 203,419

(b) Net Investment Income

The components of net investment income for the years ended December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	2018	2017
Fixed maturities	**$ 171,316**	$ 174,839
Short-term investments, cash and cash equivalents	**7,440**	2,504
Equities	**3,176**	(6)
Funds held and other(1)	**16,077**	16,641
Investment expenses	**(18,705)**	(27,442)
Net investment income	**$ 179,304**	$ 166,536

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(1) The Company generally earns investment income on funds held by reinsured companies, including the 65% quota-share agreement with PartnerRe Europe (see Note 16), based upon a predetermined interest rate, either fixed contractually at the inception of the contract or based upon a recognized index (e.g., LIBOR). Interest rates ranged from 0.3% to 4.6% for the year ended December 31, 2018 and from 1.2% to 4.5% for the year ended December 31, 2017.

(c) Pledged and Restricted Assets

At December 31, 2018 and 2017, approximately $54.3 million and $103.4 million, respectively, of cash and cash equivalents and approximately $1,802.6 million and $1,725.5 million, respectively, of securities were deposited, pledged, held in trust or escrow accounts in favor of ceding companies and other counterparties or government authorities to comply with reinsurance contract provisions and insurance laws. The increase during 2018 was mainly driven by collateral required to secure payment for claims related to hurricane Michael and the California wildfires.

The Company operates a multi-beneficiary U.S. reinsurance trust (the trust) to enable its U.S. cedants to take statutory financial statement credit without the need to post contract-specific security. The trust is required to maintain sufficient assets to support both its liabilities related to some of its U.S. cedants, for contracts incepting after June 2010, and a minimum surplus of $20.0 million. At December 31, 2018 and 2017, assets held by the trust exceeded liabilities and minimum surplus by $22.5 million and $143.2 million, respectively. The Company is currently approved to utilize the trust in all U.S. jurisdictions.

(d) Net (Payable)/Receivable for Securities Purchased/Sold

Included within Accounts payable, accrued expenses and other in the Consolidated Balance Sheet at December 31, 2018 and 2017 were amounts of gross payable balances for securities purchased and gross receivable balances for securities sold as follows (in thousands of U.S. dollars):

	2018	2017
Payable for securities purchased	**$ (43,721)**	$ (115,215)
Receivable for securities sold	**15,458**	84,905
Net payable for securities purchased	**$ (28,263)**	$ (30,310)

(e) Variable Interest Entities

The Company holds variable interests in VIEs including certain limited liability companies or partnerships, fixed maturity investments and asset-backed securities. The holdings in these VIEs are reported within fixed maturities and other invested assets in the Company's Consolidated Balance Sheets. The Company's involvement in these entities is, for the most part, passive in nature. The Company's maximum exposure to loss with respect to these investments is limited to the amounts invested in and advanced to the VIEs, and any unfunded commitments.

(f) Significant Equity Method Investee

In March 2016, the Company purchased from Exor S.A. a 36% shareholding in the privately held United Kingdom real estate investment and development group, Almacantar Group S.A. (Almacantar) for total cash consideration of approximately $539 million. At December 31, 2018 and 2017, the total carrying value of this investment, accounted for under the equity, method was $498 million and $538 million, respectively, included within other invested assets in the Consolidated Balance Sheets.

5. Derivatives

The Company's objectives for holding or issuing derivatives are as follows:

Foreign *Exchange Forward Contracts*—The Company utilizes foreign exchange forward contracts as part of its overall currency risk management and investment strategies and, in December 2018, specifically designated certain foreign exchange forward contracts as a highly effective hedge of certain foreign currency denominated short-term investments.

Futures *Contracts*—The Company uses exchange traded treasury note futures contracts to manage portfolio duration and equity futures to hedge certain investments.

Insurance-linked Securities—The Company enters into various derivatives for which the underlying risks reference parametric weather risks in addition to longevity total return swaps for which the underlying risks reference longevity risks.

Total Return and Interest Rate Swaps—The Company enters into total return swaps referencing certain investments in Other invested assets. The Company enters into interest rate swaps to mitigate the interest rate risk on certain of the total return swaps and certain fixed maturity investments.

TBAs—The Company utilizes TBAs as part of its overall investment strategy and to enhance investment performance.

The net fair values and the related net notional values of derivatives included in the Company's Consolidated Balance Sheets at December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

December 31, 2018	Asset derivatives at fair value	Liability derivatives at fair value	Net derivatives	
			Fair value	Net notional exposure
Derivatives designated as hedges				
Foreign exchange forward contracts	**$ —**	**$ (2,464)**	**$ (2,464)**	**$ 226,019**
Total derivatives designated as hedges	**$ —**	**$ (2,464)**	**$ (2,464)**	
Derivatives not designated as hedges				
Foreign exchange forward contracts	**$ 17,820**	**$ (273)**	**$ 17,547**	**$ 3,018,165**
Insurance-linked securities (1)	**2,824**	**(2,568)**	**256**	**59,257**
Total return swaps	**1,697**	**(3,232)**	**(1,535)**	**41,980**
Interest rate swaps (2)	**10**	**(9,194)**	**(9,184)**	**1,840**
Total derivatives not designated as hedges	**$ 22,351**	**$ (15,267)**	**$ 7,084**	
Total derivatives	**$ 22,351**	**$ (17,731)**	**$ 4,620**	

December 31, 2017	Asset derivatives at fair value	Liability derivatives at fair value	Net derivatives	
			Fair value	Net notional exposure
Foreign exchange forward contracts	$ 5,726	$ (15,215)	$ (9,489)	$ 3,013,294
Insurance-linked securities (1)	11,985	—	$ 11,985	138,840
Total return swaps	2,505	(3,269)	$ (764)	42,147
Interest rate swaps (2)	—	(12,298)	$ (12,298)	192,215
TBAs	81	(64)	17	122,840
Total derivatives	$ 23,664	$ (30,846)	$ (7,182)	

(1) *Insurance-linked securities include longevity swaps for which the notional amount is not reflective of the overall potential exposure of the swap. The net notional exposure above included the Company's best estimate of the present value of future expected claims.*

(2) *The Company enters into interest rate swaps to mitigate notional exposures on certain total return swaps and certain fixed maturities. The net notional exposure for interest rate swaps above relates to fixed maturities.*

The fair value of derivatives is recorded in other invested assets in the Company's Consolidated Balance Sheets. At December 31, 2018 and 2017, the Company held foreign exchange forward contracts, which were not designated as hedges, for the purpose of managing overall foreign currency risk exposure against the U.S. dollar. At December 31, 2018, the Company also held foreign exchange forward contracts which were designated as highly effective hedges of the Japanese Yen foreign exchange rate risk exposure against the U.S. dollar related to specific Japanese government issued bonds recorded in Short-term investments. The gain on foreign exchange forward contracts designated as cash flow hedges recognized in Accumulated other comprehensive loss at December 31, 2018 was less than $2 million. There were no amounts reclassified to income and no amounts excluded from the effectiveness assessment. The time value of money was not considered material to include as the duration to maturity is short (approximately three to four months). There were no derivatives designated as hedges at December 31, 2017.

The gains and (losses) in the Consolidated Statements of Operations for derivatives not designated as hedges for the years ended December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	2018	2017
Foreign exchange forward contracts	**$ 92,395**	$ (200,666)
Total included in net foreign exchange gains and losses	**$ 92,395**	$ (200,666)
Futures contracts	**11,043**	(11,683)
Insurance-linked securities	**6,134**	(563)
Total return swaps	**—**	464
Interest rate swaps	**2,332**	1,105
TBAs	**(4,095)**	1,450
Total included in net realized and unrealized investment gains and losses	**$ 15,414**	$ (9,227)
Total gains (losses) on derivatives not designated as hedges	**$ 107,809**	$ (209,893)

Offsetting of Derivatives

The gross and net fair values of derivatives that are subject to offsetting in the Consolidated Balance Sheets at December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

				Gross amounts not offset in the balance sheet		
December 31, 2018	**Gross amounts recognized (1)**	**Gross amounts offset in the balance sheet**	**Net amounts of assets / liabilities presented in the balance sheet**	**Financial instruments**	**Cash collateral received / pledged**	**Net amount**
Total derivative assets	**$ 22,351**	**$ —**	**$ 22,351**	**$ —**	**$ (24,704)**	**$ (2,353)**
Total derivative liabilities	**$ (17,731)**	**$ —**	**$ (17,731)**	**$ —**	**$ 1,290**	**$ (16,441)**
December 31, 2017						
Total derivative assets	$ 23,664	$ —	$ 23,664	$ (816)	$ (43,943)	$ (21,095)
Total derivative liabilities	$ (30,846)	$ —	$ (30,846)	$ 816	$ 24,319	$ (5,711)

(1) *Amounts include all derivative instruments, irrespective of whether there is a legally enforceable master netting arrangement in place.*

6. Goodwill and Intangible Assets

The Company's goodwill re-allocated from PartnerRe Europe (see Note 2(i)) and intangible asset related to the merger of ARL with PartnerRe Life, subsequent to the merger of Aurigen Capital with the Parent (see Note 2(g) and (i)),were as follows at December 31, 2018 and 2017:

	Goodwill	Intangible assets[3]
Balance at January 1, 2018	$ 26,014	$ 80,229
Write-off of VOBA related to novated business[(2)]	n/a	(4,476)
Intangible assets amortization	n/a	(2,601)
Balance at December 31, 2018	$ 26,014	$ 73,152

	Goodwill	Intangible assets
Balance at January 1, 2017	$ 26,014	$ —
Transferred upon merger[(1)]	n/a	82,212
Intangible assets amortization [(1)]	n/a	(1,983)
Balance at December 31, 2017	$ 26,014	$ 80,229

(1) On November 26, 2018, upon the merger of ARL into PartnerRe Life, the life VOBA related to business written by ARL was transferred to the Company. The results of operations for the Company include the results of the ARL as of the beginning of the period in accordance with the U.S. GAAP guidance on mergers of entities under common control. The comparative financial information presented has been retrospectively adjusted from April 3, 2017, the date at which the entities first came under common control.

(2) On October 23, 2018, prior to the merger, ARL novated a portion of its U.S. life business and recorded a reduction in intangible assets of $4.5 million for the VOBA related to this novated business. An offsetting amount is included in intangible assets amortization. The ARL received a ceding commission of $12.5 million related to this novated business which is included within other income in the Consolidated Statement of Operations for the year ended December 31, 2018.

(3) The life VOBA is a definite-lived intangible asset which is being amortized over 100 years from the date of acquisition of Aurigen Capital by PartnerRe Ltd. on April 3, 2017.

7. Non-life and Life and Health Reserves

(a) Non-life Reserves

Non-life reserves are categorized into three types of reserves: case reserves, ACRs and IBNR reserves. Case reserves represent unpaid losses reported by the Company’s cedants and recorded by the Company. ACRs are established for particular circumstances where, on the basis of individual loss reports, the Company estimates that the particular loss or collection of losses covered by a treaty may be greater than those advised by the cedant. IBNR reserves represent a provision for claims that have been incurred but not yet reported to the Company, as well as future loss development on losses already reported, in excess of the case reserves and ACRs.

The reconciliation of the beginning and ending gross and net liability for unpaid losses and loss expenses, excluding policy benefits for life and annuity contracts, for the years ended December 31, 2018 and 2017 was as follows (in thousands of U.S. dollars):

	2018	2017
Gross liability at beginning of year	**$ 4,606,631**	$ 3,668,786
Reinsurance recoverable at beginning of year	**364,954**	56,129
Net liability at beginning of year	**4,241,677**	3,612,657
Net incurred losses related to:		
Current year	**1,723,433**	1,804,804
Prior years	**(162,606)**	(205,771)
	1,560,827	1,599,033
Net paid losses related to:		
Current year	**140,286**	266,585
Prior years	**1,193,699**	912,774
	1,333,985	1,179,359
Effects of foreign exchange rate changes and other(1)	**(111,384)**	209,346
Net liability at end of year	**4,357,135**	4,241,677
Reinsurance recoverable at end of year	**484,284**	364,954
Gross liability at end of year	**$ 4,841,419**	$ 4,606,631

(1) In 2018, U.S. health business was reallocated from Life and Health to Non-life as part of an internal organizational change. The net impact of this reallocation was $48 million for the year ended December 31, 2018. The 2017 comparatives have not been reclassified to conform to current presentation.

During the years ended December 31, 2018 and 2017, the Company's Non-life business reported net favorable loss development of $162.6 million and $205.8 million for prior accident years, respectively. Losses reported by cedants during 2018 and 2017 regarding prior accident years were lower than the Company expected in most lines of business, which led the Company to decrease its expected ultimate loss ratios and estimates.

Asbestos and Environmental Claims

The Company's net reserves for unpaid losses and loss expenses at December 31, 2018 and 2017 included $24 million, that represent estimates of its net ultimate liability for asbestos and environmental claims.

Ultimate loss estimates for such claims cannot be estimated using traditional reserving techniques and there are significant uncertainties in estimating the amount of the Company's potential losses for these claims. In view of the legal and tort environment that affect the development of such claims, the uncertainties inherent in estimating asbestos and environmental claims are not likely to be resolved in the near future. There can be no assurance that the reserves established by the Company will not be adversely affected by development of other latent exposures, and further, there can be no assurance that the reserves established by the Company will be adequate. The Company does, however, actively evaluate potential exposure to asbestos and environmental claims and establishes additional reserves as appropriate. The Company believes that it has made a reasonable provision for these exposures and is unaware of any specific issues that would materially affect its unpaid losses and loss expense reserves related to this exposure.

Reserving methods

The reserving methods commonly employed by the Company are summarized as follows:

Chain Ladder (CL) Development Methods (Reported or Paid)

These methods use the underlying assumption that losses reported (paid) for each underwriting year at a particular development stage follow a stable pattern. The CL development method assumes that on average, every underwriting year will display the same percentage of ultimate liabilities reported by the Company's cedants at 24 months after the inception of the underwriting year. The percentages reported (paid) are established for each development stage after examining historical averages from the loss development data. These are sometimes supplemented by external benchmark information. Ultimate liabilities are estimated by multiplying the actual reported (paid) losses by the reciprocal of the assumed reported (paid) percentage. Reserves are then calculated by subtracting paid claims from the estimated ultimate liabilities.

Expected Loss Ratio (ELR) Method

This method estimates ultimate losses for an underwriting year by applying an estimated loss ratio to the earned premium for that underwriting year. Although the method is insensitive to actual reported or paid losses, it can often be useful at the early stages of development when very few losses have been reported or paid, and the principal sources of information available to the Company consist of information obtained during pricing and qualitative information supplied by the cedant. However, the lack of sensitivity to reported or paid losses means that the method is usually inappropriate at later stages of development.

Bornhuetter-Ferguson (B-F) Methods (Reported or Paid)

These methods aim to address the variability at early stages of development and incorporates external information such as pricing. The B-F methods are more sensitive to reported and paid losses than the ELR method, and can be seen as a blend of the ELR and CL development methods. Unreported (unpaid) claims are calculated using an expected reporting (payment) pattern and an externally determined estimate of ultimate liabilities (usually determined by multiplying an a priori loss ratio with estimates of premium volume). The accuracy of the a priori loss ratio is a critical assumption in this method. Usually a priori loss ratios are initially determined on the basis of pricing information, but may also be adjusted to reflect other information that subsequently emerges about underlying loss experience.

Benktander (B-K) Methods (Reported or Paid)

These methods can be viewed as a blend between the CL Development and the B-F methods described above. The blend is based on predetermined weights at each development stage that depend on the reported (paid) development patterns.

Loss Event Specific Method

The ultimate losses estimated under this method are derived from estimates of specific events based on reported claims, client and broker discussions, review of potential exposures, market loss estimates, modeled analysis and other event specific criteria.

Method Weights

In determining the loss reserves, the Company often relies on a blend of the results from two or more methods (e.g., weighted averages). The judgment as to which of the above method(s) is most appropriate for a particular underwriting year and reserving cell could change over time as new information emerges regarding underlying loss activity and other data issues. Furthermore, as each line is typically composed of several reserving cells, it is likely that the reserves for the line will be dependent on several reserving methods. This is because reserves for a line are the result of aggregating the reserves for each constituent reserving cell and that a different method could be selected for each reserving cell. The principal reserving methods used for each of the Specialty segment and P&C segment were ELR, Reported/Paid B-F, Reported/Paid B-K and Reported/Paid CL, with the exception of catastrophe risks within the P&C segment where the principal reserving methods used were ELR based on exposure analysis and Loss event specific methods.

(b) Life and Health Reserves

The reconciliation of the beginning and ending gross and net liability for life and health reserves for the years ended December 31, 2018 and 2017 was as follows (in thousands of U.S. dollars):

	2018	2017
Net liability at beginning of period	**$ 1,373,348**	$ 1,089,238
Liability acquired related to the Merger of ARL	**—**	48,699
Net incurred losses	**597,594**	636,269
Net losses paid	**(512,402)**	(497,752)
Effects of foreign exchange rate changes and other[1]	**(158,866)**	96,894
Net liability at end of period	**$ 1,299,674**	$ 1,373,348

(1) In 2018, U.S. health business was reallocated from Life and Health to Non-life as part of an internal organizational change. The net impact of this reallocation was $48 million for the year ended December 31, 2018. The 2017 comparatives have not been reclassified to conform to current presentation.

The Company used interest rate assumptions to estimate its liabilities for policy benefits for life and annuity contracts which ranged from 0% to 7% at December 31, 2018 and 2017.

(c) Losses and Loss Expenses

Losses and loss expenses in the Consolidated Statements of Operations for the years ended December 31, 2018 and 2017 was as follows (in thousands of U.S. dollars):

	2018	2017
Net incurred losses related to:		
Non-life	**$ 1,560,827**	$ 1,599,033
Life and Health	**597,594**	636,269
Losses and loss expenses	**$ 2,158,421**	$ 2,235,302

Non-life net incurred and paid losses and loss expense development

The net incurred and paid losses and loss expenses development by accident year for each of the years ended December 31, 2012 through 2017, and the total of IBNR plus expected development on reported claims included within the net incurred claims amounts, as at each of the years ended December 31, 2012 through 2018, are presented in the tables below (in thousands of U.S. dollars).

The information presented below for incurred and paid claims development and the average annual percentage payout of incurred claims by age, net of reinsurance, for each of the years ended December 31, 2012 through 2017 is presented as supplementary information and is unaudited.

NET INCURRED LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - NON-LIFE

	For the year ended December 31,							December 31, 2018
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total of IBNR plus expected development on reported claims**
2012	$ 1,180,422	$ 1,059,283	$ 977,567	$ 925,936	$ 910,234	$ 905,439	$ 890,909	$ 36,656
2013		1,290,697	1,193,913	1,115,705	1,088,874	1,065,884	1,049,054	63,732
2014			1,289,752	1,180,484	1,129,091	1,114,148	1,116,137	94,306
2015				1,312,604	1,172,498	1,125,327	1,118,801	137,806
2016					1,332,007	1,218,332	1,172,411	194,009
2017						1,756,400	1,725,134	438,828
2018							1,623,196	1,199,909
Total							**$ 8,695,642**	**$ 2,165,246**

NET PAID LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - NON-LIFE

	For the year ended December 31,						
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	$ 131,328	$ 461,170	$ 613,869	$ 681,840	$ 721,264	$ 755,789	775,474
2013		116,321	567,963	727,921	816,658	869,586	906,366
2014			147,015	609,271	748,029	837,381	895,452
2015				142,212	550,238	732,861	831,112
2016					147,900	607,497	775,336
2017						262,984	935,328
2018							139,106
Total							**$ 5,258,174**

Net reserves for Accident Years and exposures included in the triangles	3,437,468
All outstanding liabilities before Accident Year 2012, net of reinsurance	826,210
Total outstanding net liabilities for unpaid claims	**$ 4,263,678**

AVERAGE ANNUAL PERCENTAGE PAYOUT OF INCURRED CLAIMS BY AGE, NET OF REINSURANCE - NON-LIFE

Years	1	2	3	4	5	6	7
Non-life	12%	39%	15%	8%	5%	4%	2%

(1) The table above (and each of the three tables below for property, casualty and specialty) reflects losses incurred and paid losses translated to U.S. dollars at the exchange rate as of the balance sheet date whereas the losses and loss expenses in the Consolidated Statement of Operations reflected losses incurred at the average exchange rate for the period.

NET INCURRED LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - PROPERTY

	For the year ended December 31,							December 31, 2018
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total of IBNR plus expected development on**
2012	$ 306,175	$ 321,590	$ 269,521	$ 260,138	$ 253,645	$ 252,648	$ 245,277	$ (2,840)
2013		384,195	318,661	304,437	295,700	292,082	285,527	(278)
2014			256,614	226,282	216,405	215,929	214,345	370
2015				288,625	260,774	248,951	242,255	4,805
2016					337,964	307,415	276,323	191
2017						717,254	725,915	54,926
2018							548,904	377,361
Total							**$ 2,538,546**	**$ 434,535**

NET PAID LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - PROPERTY

	For the year ended December 31,						
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	$ 47,388	$ 164,302	$ 204,828	$ 221,998	$ 227,915	$ 232,147	$ 234,130
2013		44,707	186,451	242,549	261,811	272,068	273,937
2014			40,182	154,804	186,273	199,929	205,113
2015				42,201	165,584	207,154	220,136
2016					55,569	197,949	232,206
2017						170,367	515,641
2018							33,270
Total							**$ 1,714,433**

Net reserves for Accident Years and exposures included in the triangles	824,113
All outstanding liabilities before Accident Year 2012, net of reinsurance	46,924
Total outstanding net liabilities for unpaid claims	**$ 871,037**

AVERAGE ANNUAL PERCENTAGE PAYOUT OF INCURRED CLAIMS BY AGE, NET OF REINSURANCE - PROPERTY

Years	1	2	3	4	5	6	7
Property	17%	49%	16%	6%	3%	1%	1%

NET INCURRED LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - CASUALTY

	For the year ended December 31,							December 31, 2018
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total of IBNR plus expected development on**
2012	$ 239,081	$ 232,141	$ 226,987	$ 210,711	$ 202,837	$ 202,855	$ 200,883	$ 29,917
2013		287,940	292,108	277,179	269,819	263,503	260,042	51,089
2014			348,488	344,351	338,436	340,750	345,205	74,540
2015				354,510	335,842	327,902	338,999	100,686
2016					338,293	327,460	330,582	121,877
2017						349,312	334,470	171,968
2018							417,652	340,441
Total							**$ 2,227,833**	**$ 890,518**

NET PAID LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - CASUALTY

	For the year ended December 31,						
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	$ 22,518	$ 55,650	$ 76,045	$ 96,029	$ 111,021	$ 128,883	138,487
2013		23,627	68,337	103,105	127,711	148,837	168,828
2014			31,754	91,613	129,052	163,040	194,088
2015				30,979	82,402	124,371	157,403
2016					14,163	68,049	104,863
2017						32,210	89,868
2018							37,064
Total							**890,601**

Net reserves for Accident Years and exposures included in the triangles	1,337,232
All outstanding liabilities before Accident Year 2012, net of reinsurance	668,679
Total outstanding net liabilities for unpaid claims	2,005,911

AVERAGE ANNUAL PERCENTAGE PAYOUT OF INCURRED CLAIMS BY AGE, NET OF REINSURANCE - CASUALTY

Years	1	2	3	4	5	6	7
Casualty	9%	17%	12%	10%	8%	8%	5%

NET INCURRED LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE - SPECIALTY

	For the year ended December 31,							December 31, 2018
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**Total of IBNR plus expected development on**
2012	$ 635,167	$ 505,553	$ 481,058	$ 455,087	$ 453,752	$ 449,936	$ 444,749	$ 9,579
2013		618,562	583,143	534,089	523,355	510,300	503,485	12,922
2014			684,650	609,851	574,250	557,469	556,587	19,396
2015				669,469	575,882	548,474	537,547	32,314
2016					655,750	583,457	565,506	71,941
2017						689,833	664,748	211,934
2018							656,640	482,108
Total							**$ 3,929,262**	**$ 840,194**

NET PAID LOSSES AND LOSS EXPENSES DEVELOPMENT TABLE -SPECIALTY

	For the year ended December 31,						
Accident year	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
2012	$ 61,423	$ 241,218	$ 332,996	$ 363,813	$ 382,328	$ 394,760	$ 402,857
2013		47,987	313,175	382,267	427,135	448,681	463,600
2014			75,080	362,854	432,704	474,412	496,250
2015				69,032	302,252	401,337	453,573
2016					78,168	341,500	438,267
2017						60,407	329,819
2018							68,772
Total							**$ 2,653,138**

Net reserves for Accident Years and exposures included in the triangles	1,276,124
All outstanding liabilities before Accident Year 2012, net of reinsurance	110,606
Total outstanding net liabilities for unpaid claims	**$ 1,386,730**

AVERAGE ANNUAL PERCENTAGE PAYOUT OF INCURRED CLAIMS BY AGE, NET OF REINSURANCE - SPECIALTY

Years	1	2	3	4	5	6	7
Specialty	12%	46%	16%	8%	4%	3%	2%

The Company is predominantly a reinsurer of other reinsurers and primary insurers and thus does not have access to claim frequency information held by our cedants due to the majority of the Company's business being written on a proportional basis. As such, the Company considers it impracticable to disclose information on the frequency of claims.

The Company has concluded that it is impracticable to provide net incurred and paid losses and loss expenses development data for 10 years and has therefore presented the data for 7 years. An additional year of data for each subsequent year will be included such that by 2021 a full 10 years of data will be disclosed.

The reconciliation of the net incurred and paid claims development information above to the Non-life reserves in the Consolidated Balance Sheet at December 31, 2018 was as follows (in thousands of U.S. dollars):

	December 31, 2018
Total outstanding liability for unpaid claims	
Property	871,037
Casualty	2,005,911
Specialty	1,386,730
Total outstanding liabilities for unpaid claims	**4,263,678**
U.S. health reserves [(1)]	47,930
Other liabilities [(2)]	45,527
Net liability at end of year	**4,357,135**
Reinsurance recoverable on unpaid claims	
Property	477,513
Casualty	1
Specialty	6,770
Reinsurance recoverable at end of year	**484,284**
Gross liability at end of year	**4,841,419**

[(1)] *U.S. health business is not meaningful to include in the development tables as the estimated average duration of the health reserves is less than one year and substantially all claims are expected to be paid within two years, based on historical payout patterns.*
[(2)] *Other liabilities included in the reconciliation relate primarily to unallocated loss expenses.*

8. Reinsurance

(a) Reinsurance Recoverable on Paid and Unpaid Losses

The Company uses retrocessional agreements to reduce its exposure to risk of loss on reinsurance assumed. These agreements provide for recovery from retrocessionaires of a portion of losses and loss expenses. The Company remains liable to its cedants to the extent that the retrocessionaires do not meet their obligations under these agreements, and therefore the Company evaluates the financial condition of its reinsurers and monitors concentration of credit risk on an ongoing basis. The Company actively manages its reinsurance exposures by generally selecting retrocessionaires having a credit rating of A- or higher. In certain cases where an otherwise suitable retrocessionaire has a credit rating lower than A-, the Company generally requires the posting of collateral, including escrow funds and letters of credit, as a condition to its entering into a retrocession agreement. The Company regularly reviews its reinsurance recoverable balances to estimate an allowance for uncollectible amounts based on quantitative and qualitative factors. There was no allowance for uncollectible reinsurance recoverable at December 31, 2018 and 2017 deemed necessary based on the quantitative and qualitative analysis as collectability was determined to be reasonably assured and given that any recoverables related to reinsurers with ratings below A- or unrated are collateralized.

(b) Ceded Reinsurance

Net premiums written, net premiums earned and losses and loss expenses and life policy benefits are reported net of reinsurance in the Company’s Consolidated Statements of Operations. Assumed, ceded and net amounts for the years ended December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	Premiums Written	Premiums Earned	Losses and Loss Expenses
2018			
Assumed	**$ 3,108,757**	**$ 3,080,966**	**$ 2,273,578**
Ceded	**191,083**	**184,259**	**115,157**
Net	**$ 2,917,674**	**$ 2,896,707**	**$ 2,158,421**
2017			
Assumed	$ 3,157,332	$ 2,930,408	$ 2,617,707
Ceded	163,146	168,127	382,405
Net	$ 2,994,186	$ 2,762,281	$ 2,235,302

9. Shareholder's Equity

At December 31, 2018 and 2017, the total authorized and issued shares of the Company were 3,000,000 shares with a par value of $1.00 per share.

10. Dividend Restrictions and Statutory Requirements

The Company is licensed as a Class 4 and Class E insurer and is therefore authorized to carry on general and long-term insurance business in Bermuda. The Insurance Act 1978, amendments thereto and related regulations, regulates insurance business in Bermuda and requires the Company to maintain minimum levels of solvency and liquidity and to comply with risk-based capital requirements and licensing rules. As at December 31, 2018, the Company's solvency, liquidity and risk-based capital levels were in excess of the minimum levels required.

The Company may declare dividends subject to it continuing to meet these minimum levels of solvency, liquidity, and its risk-based capital requirement, which is to hold statutory capital and surplus equal to or exceeding the Target Capital Level (equivalent to 120% of the Enhanced Capital Requirement (ECR)). The ECR is calculated using the Bermuda Solvency Capital Requirement model which is a risk-based capital model. At December 31, 2018, the maximum dividend that PartnerRe Bermuda could pay out of retained earnings was approximately $921 million.

The Company is required to file annual statements with the Bermuda Monetary Authority (BMA) on an accounting basis as prescribed by the BMA. The typical adjustments to insurance statutory basis amounts to convert to U.S. GAAP include deferral of certain acquisition costs, recognition of goodwill, intangible assets and deferred income taxes, and presentation of ceded reinsurance balances gross of assumed balances. The statutory financial return and capital and solvency return of the Company as at, and for the year ended, December 31, 2018 are due to be submitted to the BMA by April 30, 2019. The statutory financial return and capital and solvency return are subject to the review and final approval of the BMA.

The required and actual statutory capital and surplus of the Company at December 31, 2018 and 2017 was as follows (in millions of U.S. dollars):

	2018	2017
Required statutory capital and surplus	**2,145**	$ 1,767
Actual statutory capital and surplus	**4,233**	3,683

In addition to the required statutory capital and surplus requirements in the table above, the Company assesses its own solvency capital needs taking into account factors which may not be fully reflected in statutory requirements. The Company's solvency capital requirements determined under these self assessments may impact the level of dividends paid to its Parent.

11. Taxation

The Company is not subject to Bermuda income or capital gains tax under current Bermuda law. In the event that there is a change in current law such that taxes on income or capital gains are imposed, the Company would be exempt from such tax until March 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 significant jurisdictions in which the Company's subsidiaries and branches are subject to tax are Canada and the United States.

Income tax returns are open for examination for the tax years 2014 - 2018 in Canada and the United States. As a global organization, the Company may be subject to a variety of transfer pricing or permanent establishment challenges by taxing authorities in various jurisdictions. While management believes that adequate provision has been made in the Consolidated Financial Statements for any potential assessments that may result from tax examinations for all open tax years, the completion of tax examinations for open years may result in changes to the amounts recognized in the Consolidated Financial Statements.

Income tax expense for the years ended December 31, 2018 and 2017 was as follows (in thousands of U.S. dollars):

	2018	2017
Current income tax expense	**$ 2,849**	$ 3,073
Deferred income tax benefit	**(1,533)**	(1,608)
Total income tax expense	**$ 1,316**	$ 1,465

The reconciliation of the actual income tax rate for the years ended December 31, 2018 and 2017 to the amount computed by applying the effective tax rate of 0% under Bermuda law to net (loss) income before taxes was as follows (in thousands of U.S. dollars):

	2018	2017
Net income	**$ 139,888**	$ (53,162)
Income tax expense	**1,316**	1,465
Net income before taxes	**$ 141,204**	$ (51,697)
Reconciliation of effective tax rate (% of income before taxes)		
Expected tax rate	0.0%	0.0 %
Foreign taxes at local expected tax rates	3.4	(19.3)
Tax exempt income	(1.9)	8.8
Impact of enacted change in tax law	—	5.4
Ceding commission	(1.0)	2.7
Other	0.4	(0.4)
Actual tax rate	0.9%	(2.8)%

On December 22, 2017, the United States enacted the Tax Cuts and Jobs Act ("TCJA") to reduce the corporate income tax rate from 35% to 21% effective for taxable years beginning after December 31, 2017. As a result, deferred tax assets and liabilities in the United States were revalued at December 31, 2017, resulting in an income tax benefit of $3 million for the year ended December 31, 2017. During the year ended December 31, 2018, the Company completed its review of income tax enactment-date effects, including the revaluation of December 31, 2017 deferred tax assets and liabilities in the United States, and determined no significant measurement period adjustments were required.

The net tax assets (liabilities) and their components at December 31, 2018 and 2017 were as follows (in thousands of U.S. dollars):

	2018	2016
Net current tax assets	**$ 16,215**	$ 23,862
Net deferred tax liabilities	**(2,295)**	(4,326)
Net tax assets	**$ 13,920**	$ 19,536

Deferred tax liabilities reflect the tax impact of temporary differences between the carrying amounts of assets (liabilities) for financial reporting and income tax purposes. Net deferred tax liabilities of $2.3 million and $4.3 million at December 31, 2018 and 2017, respectively, primarily relate to life and health reserves and deductible expenses; partially offset by tax loss carryforwards and tax credits

The total amount of unrecognized tax benefits for the years ended December 31, 2018 and 2017 was $nil.

12. Retirement Benefit Arrangements

For employee retirement benefits, the Company maintains certain defined contribution plans. Contributions are made by the Company, and in some locations, these contributions are supplemented by the local plan participants. Contributions are based on a percentage of the participant’s base salary depending upon competitive local market practice and vesting provisions meeting legal compliance standards and market trends. The accumulated benefits for the majority of these plans vest immediately or over a two-year period. As required by law, certain retirement plans also provide for death and disability benefits and lump sum indemnities to employees upon retirement.

The Company incurred expenses for these defined contribution arrangements of $0.6 million and $0.8 million for the years ended December 31, 2018 and 2017, respectively, within Other Operating Expenses in the Consolidated Statements of Operations and Comprehensive Income.

13. Commitments and Contingencies

(a) Concentration of Credit Risk

Fixed maturities

The Company's investment portfolio is managed following prudent standards of diversification and a prudent investment philosophy. The Company is not exposed to any significant credit concentration risk on its investments, except for debt securities issued by the U.S. government and other highly rated non-U.S. sovereign governments' securities. At December 31, 2018 and 2017, other than the U.S. and Canadian governments, the Company's fixed maturity investment portfolio did not contain exposure to any non-U.S. sovereign government or any other issuer that accounted for more than 10% of the Company's shareholder's equity. The Company keeps cash and cash equivalents in several banks and ensures that there are no significant concentrations at any point in time, in any one bank.

Equities

In 2017, the Company invested $500 million in two Exor managed equity funds. At December 31, 2018 and 2017, the carrying value of these investments totaled $563 million and $551 million, respectively. These investments are recorded at fair value and are included within Equities in the Consolidated Balance Sheets (see Note 15(d)).

Other Invested Assets

In March 2016, the Company purchased from Exor S.A. a 36% shareholding in the privately held United Kingdom real estate investment and development group, Almacantar Group S.A. (Almacantar) for total cash consideration of approximately $539 million. At December 31, 2018 and 2017, the total carrying value of the Almacantar investment accounted for under the equity method was $498 million and $538 million, respectively. See Note 16(d).

Derivatives

The Company's investment strategy allows for the use of derivative instruments, subject to strict limitations. Derivative instruments may be used to replicate investment positions and for the purpose of managing overall currency risk, market exposures and portfolio duration, for hedging certain investments, or for enhancing investment performance that would be allowed under the Company's investment policy if implemented in other ways. The Company is exposed to credit risk in the event of non-performance by the counterparties to the Company's derivative contracts. However, the Company diversifies the counterparties to its derivative contracts to reduce credit risk, and because the counterparties to these contracts are high credit quality international banks, the Company does not anticipate non-performance. These contracts are generally of short duration and settle on a net basis. The difference between the contract amounts and the related market value represents the Company's maximum credit exposure.

Underwriting operations

The Company is also exposed to credit risk in its underwriting operations, most notably in the credit/surety line. Loss experience in these lines of business is cyclical and is affected by the state of the general economic environment. The Company provides its clients in these lines of business with reinsurance protection against credit deterioration, defaults or other types of financial non-performance of or by the underlying credits that are the subject of the reinsurance provided and, accordingly, the Company is exposed to the credit risk of those credits. The Company mitigates the risks associated with these credit-sensitive lines of business through the use of risk management techniques such as risk diversification, careful monitoring of risk aggregations and accumulations and, at times, through the use of retrocessional reinsurance protection and the purchase of credit default, total return and interest rate swaps.

The Company has exposure to credit risk as it relates to its business written through brokers, if any of the Company's brokers is unable to fulfill their contractual obligations with respect to payments to the Company. In addition, in some jurisdictions, if the broker fails to make payments to the insured under the Company's policy, the Company might remain liable to the insured for the deficiency. The Company's exposure to such credit risk is somewhat mitigated in certain jurisdictions by contractual terms.

The Company has exposure to credit risk related to reinsurance balances receivable and reinsurance recoverable on paid and unpaid losses. The credit risk exposure related to these balances is mitigated by several factors, including but not limited to, credit checks performed as part of the underwriting process, monitoring of aged receivable balances and the contractual right to offset premiums receivable or funds held balances against non-life reserves. The Company regularly reviews its reinsurance recoverable balances to estimate an allowance for uncollectible amounts based on quantitative and qualitative factors. At December 31, 2018 and 2017, the Company has recorded a provision for uncollectible premiums receivable of $1.5 million and $1.2 million, respectively. The majority of the funds held balances are intercompany or collateralised with cash. See also Note 7 for discussion of credit risk related to reinsurance recoverable on paid and unpaid losses.

The Company is also subject to the credit risk of its cedants in the event of insolvency or the cedant's failure to honor the value of funds held balances for any other reason. However, the Company's credit risk in some jurisdictions is mitigated by a mandatory right of offset of amounts payable by the Company to a cedant against amounts due to the Company. In certain other jurisdictions the Company is able to mitigate this risk, depending on the nature of the funds held arrangements, to the extent that the Company has the contractual ability to offset any shortfall in the payment of the funds held balances with amounts owed by the Company to cedants for losses payable and other amounts contractually due.

(b) Lease Arrangements

The Company leases office space under an operating lease expiring in 2023. The lease is renewable at the option of the lessee under certain circumstances. The following is a schedule of future minimum rental payments, exclusive of escalation clauses, on the non-cancelable lease at December 31, 2018 (in thousands of U.S. dollars):

Period	Amount
2019	$ 748
2020	749
2021	767
2022	797
2023	675
Total future minimum rental payments	$ 3,736

Included in the above future minimum rental payments is a lease that is contractually payable by the Company, while a portion of the lease expense is paid for by the Parent. Rent expense for the years ended December 31, 2018 and 2017 was $0.8 million and $1.4 million, respectively.

(c) Other Agreements

The Company has entered into strategic investments with unfunded capital commitments. In the next five years, the Company expects to fund capital commitments totaling $392.1 million, with $183.3 million, $92.6 million, $85.1 million, $23.4 million and $7.7 to be paid during 2019, 2020, 2021, 2022 and 2023, respectively.

The Company has committed to a 10 year structured letter of credit facility issued by a high credit quality international bank which has a final maturity of December 29, 2020. At December 31, 2018 and 2017, the Company's participation in the facility was $67 million. At December 31, 2018, the letter of credit facility has not been drawn down and can only be drawn down in the event of certain specific scenarios, which the Company considers remote. Unless canceled by the bank, the credit facility automatically extends for one year, each year until maturity.

On December 31, 2013, the Company entered into an agreement to guarantee the financial obligations of an affiliated company in the event of non-performance on ceded reinsurance agreements. At December 31, 2018, there were no cedants in default.

On June 2, 2017, the Company entered into an agreement to guarantee and indemnify any and all of the obligations of an affiliated company under reinsurance agreements with third party cedents, in the event of non-payment or non-performance. There were no amounts due under this guarantee at December 31, 2018.

(d) Legal Proceedings

Litigation

The Company and its subsidiaries and branch, and the insurance and reinsurance industry in general, are subject to litigation and arbitration in the normal course of their business operations. In addition to claims litigation, the Company and its subsidiaries and branch may be subject to lawsuits and regulatory actions in the normal course of business that do not arise from or directly relate to claims on reinsurance treaties. This category of business litigation typically involves, among other things, allegations of underwriting errors or omissions, employment claims or regulatory activity. While the outcome of business litigation cannot be predicted with certainty, the Company will dispute all allegations against the Company and/or its subsidiaries and branch that management believes are without merit.

At December 31, 2018, the Company was not a party to any litigation or arbitration that it believes could have a material effect on the financial condition, results of operations or liquidity of the Company.

14. Credit Agreements

In the normal course of its operations, the Parent enters into agreements with financial institutions to obtain unsecured and secured credit facilities. At December 31, 2018, the total amount of such credit facilities available to the Company was approximately $65 million. Under the terms of certain reinsurance agreements, irrevocable letters of credit were issued by the Company on an unsecured and secured basis in the amount of $5 million and $33 million, respectively, at December 31, 2018, in respect of reported loss and unearned premium reserves.

15. Agreements with Related Parties

(a) Reinsurance Agreements

The Company enters into reinsurance contracts with subsidiaries of the Parent. As at December 31, 2018, the Company had the following quota-share reinsurance agreements with affiliated companies:

- a 65% quota-share agreement to assume existing and new business from PartnerRe Europe. PartnerRe Europe is a limited liability company incorporated and domiciled in Ireland, and regulated by the Central Bank of Ireland.
- a 50% quota-share agreement to assume new and renewal business from PartnerRe Asia. PartnerRe Asia is licensed by the Monetary Authority of Singapore (MAS) to operate as a non-life and life reinsurer in Singapore and is the principal reinsurance carrier for the Parent's business underwritten in the Asia Pacific region.
- a 90% quota-share agreement to assume existing and renewal business from PartnerRe Canada. PartnerRe Canada is licensed by the Office of the Superintendent of Financial Institutions (OSFI) to operate as a health and life reinsurer in Canada.

In addition, the company has stop loss agreements with PartnerRe U.S., PartnerRe America Insurance Company, PartnerRe Ireland Insurance dac, PartnerRe Asia and PartnerRe Canada.

The activity included in the Consolidated Statements of Operations related to subsidiaries of the Parent for the years ended December 31, 2018 and 2017 was as follows (in thousands of U.S. dollars):

	2018	2017
Gross premiums written	**$ 2,368,334**	$ 2,549,784
Net premiums written	**2,368,334**	2,549,784
Net premiums earned	**2,442,671**	2,356,197
Net investment income on funds held	**8,334**	7,897
Losses and loss expenses	**1,667,178**	1,677,221
Acquisition costs	**720,130**	745,691

Included in the Consolidated Balance Sheets at December 31, 2018 and 2017 were the following balances related to subsidiaries of the Parent (in thousands of U.S. dollars):

	2018	2017
Reinsurance balances receivable	**$ 1,079,585**	$ 1,145,950
Funds held by reinsured companies	**770,295**	757,798
Deferred acquisition costs	**341,626**	376,682
Non-life Reserves	**3,568,094**	3,594,299
Life and Health Reserves	**1,055,748**	1,110,310
Unearned premiums	**807,070**	908,844
Other reinsurance balances payable	**153,325**	105,674

(b) Loan Agreements

During 2017, a loan agreement for €167 million with PartnerRe Holdings B.V., an affiliate was settled. The loan accrued interest at 5.4% per annum and the amount of interest income on the loan during 2017 amounted to $4.8 million.

The Company has other advances to affiliates totaling $813.6 million and $831.6 million at December 31, 2018 and 2017, which are primarily related to amounts advanced to or paid on behalf of its Parent. These amounts bear no interest, have no fixed repayment terms and no collateral has been given. In 2017, the Company had a loan facility of $50 million with Aurigen Capital Limited, an affiliate. The loan accrued interest at the 3-month Libor plus 375 basis points per annum and the amount of interest income on the loan during 2018 and 2017 amounted to $0.5 million and $1.3 million, respectively. The amount due under this facility at December 31, 2017 of $39.4 million was forgiven by the Company upon the merger of Aurigen Capital Limited with the Parent.

On April 27, 2017, ARL received a loan from the Parent of Canadian $270.6 million (approximately U.S. $207.8 million) to repay the Valins I Limited (Valins) Noteholder long-term operational debt in full. Valins was a special purpose vehicle which provided reinsurance coverage to ARL. On April 28, 2017 Valins became inactive and its reinsurance coverage was recaptured by ARL. At December 31, 2018 and 2017, the amount due to the Parent related to this loan was $198.5 million and $214.7 million, respectively. The loan is non-interest bearing and repayable on or before April 28, 2022.

On June 14, 2017, ARL entered into a Revolving Credit Agreement with the Parent to borrow up to an aggregated principal amount not exceeding one hundred million U.S. dollars for general business use with a termination date of June 30, 2022. At December 31, 2018 and 2017, the amount due to the Parent related to this loan was $16.3 million and $48.8 million, respectively.

Included within accounts payable and accrued liabilities are other liabilities to affiliates totaling $19.4 million and $27.2 million, respectively, at December 31, 2018 and 2017. These represent expenses incurred in the normal course of operations. Amounts due to affiliates bear no interest, have no fixed repayment terms and no collateral has been given.

In addition, accounts payable, accrued expenses and other at December 31, 2018 and 2017 also includes a deferred gain of $74.1 million and $85.3 million, respectively, related to an Assumption Reinsurance Agreement with the Canadian Life branch of PartnerRe Europe entered into in 2014.

(c) Service Agreements

In the normal course of its operations, the Company entered into service agreements with other subsidiaries of the Parent. Revenues earned under the service agreements for the years ended December 31, 2018 and 2017 were $1.1 million and $0.9 million, respectively. Expenses incurred under the service agreements for the years ended December 31, 2018 and 2017 were $11.3 million and $9.8 million, respectively.

(d) Other

Almacantar Group S.A.

In March 2016, the Company purchased from Exor S.A. a 36% shareholding in the privately held United Kingdom real estate investment and development group, Almacantar Group S.A. (Almacantar) for total cash consideration of approximately $539 million. At December 31, 2018 and 2017, the total carrying value of this investment, accounted for under the equity, method was $498 million and $538 million, respectively, included within other invested assets in the Consolidated Balance Sheets.

Exor Funds

In 2017, the Company invested $500 million in two Exor managed equity funds. At December 31, 2018 and 2017, the carrying value of these investments totaled $563 million and $551 million, respectively. These investments are recorded at fair value and are included within Equities in the Consolidated Balance Sheets.

In 2018, the Company entered into an agreement with Exor to invest in a newly formed limited partnership. At December 31, 2018, the carrying value of the Company's investment in the limited partnership was $11 million. This investment is accounted for using the equity method and is included within Other invested assets in the Consolidated Balance Sheet.

These transactions between related parties were entered into at arms-length.

16. Prior Year Comparatives as adjusted

As discussed in Note 2(g) above, the 2017 comparatives were adjusted to reflect the impacts of the merger of ARL into the Company as required by US GAAP. The impact on the Consolidated Balance Sheet and Statement of Operations for the 2017 year end is summarized as follows:

Impact of Merger on 2017 Consolidated Balance Sheet

(in US $000's)	December 31, 2017 As Reported	Adjusted for Merger	As Adjusted
Assets			
Total investments	5,884,283	472,606	6,356,889
Cash and cash equivalents	585,066	2,467	587,533
Accrued investment income	39,675	2,470	42,145
Funds held by reinsured companies	814,218	2,018	816,236
Deferred acquisition costs	406,153	11,372	417,525
Intangible Assets	—	80,229	80,229
All other assets	2,840,090	—	2,840,090
Total assets	$ 10,569,485	$ 571,162	$ 11,140,647
Liabilities			
Non-life reserves	$ 4,606,631	$ —	$ 4,606,631
Life and health reserves	1,323,795	49,553	1,373,348
Unearned premiums	1,023,319	0	1,023,319
Other reinsurance balances payable	143,543	5,941	149,484
Intercompany loans and balances payable	—	263,531	263,531
Accounts payable, accrued expenses and other	152,575	27,879	180,454
Total liabilities	7,249,863	346,904	7,596,767
Shareholder's Equity			
Common shares	3,000	—	3,000
Additional paid-in capital	1,515,898	127,988	1,643,886
Accumulated other comprehensive loss	(50,887)	(12,802)	(63,689)
Retained earnings	1,851,611	109,072	1,960,683
Total shareholder's equity	3,319,622	224,258	3,543,880
Total liabilities and shareholder's equity	$ 10,569,485	$ 571,162	$ 11,140,647

Impact of Merger on 2017 Consolidated Statement of Operations	**For the year ended December 31, 2017**		
(in US $000's)	**As Reported**	**Adjusted for Merger**	**As Adjusted**
Revenues			
Net premiums earned	2,687,822	74,459	2,762,281
Net investment income	158,455	8,081	166,536
Net realized and unrealized investment (losses) gains	194,211	9,208	203,419
Other	11,100	1	11,101
Total revenues	3,051,588	91,749	3,143,337
Expenses			
Losses and loss expenses	2,168,911	66,391	2,235,302
Acquisition costs	736,335	9,589	745,924
Other operating expenses	33,579	2,656	36,235
Amortization of intangible assets	—	1,983	1,983
Net foreign exchange (gains) losses	250,965	(467)	250,498
Total expenses	3,189,790	80,152	3,269,942
Income tax expense	1,465	—	1,465
Interest in (losses) earnings of equity investments	74,908	—	74,908
Net income (loss)	$ (64,759)	$ 11,597	$ (53,162)

17. Subsequent Events

The Company has evaluated subsequent events from the balance sheet date through to April 30, 2019, which is the date the consolidated financial statements were available to be issued. There were no material subsequent events arising during this period.