AXIS CAPITAL HOLDINGS LTD
Form 10-K
February 26, 2019
UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 10-K

ý ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For the fiscal year ended December 31, 2018
OR
¨ TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d)
OF THE SECURITIES EXCHANGE ACT OF 1934
For the transition period from to
Commission file number 001-31721

AXIS CAPITAL HOLDINGS LIMITED
(Exact name of registrant as specified in its charter)

BERMUDA
(State or other jurisdiction of incorporation or organization)
98-0395986
(I.R.S. Employer Identification No.)
92 Pitts Bay Road, Pembroke, Bermuda HM 08
(Address of principal executive offices and zip code)
(441) 496-2600
(Registrant's telephone number, including area code)

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

Title of each class	Name of each exchange on which registered
Common shares, par value $0.0125 per share	New York Stock Exchange
5.50% Series D preferred shares	New York Stock Exchange
5.50% Series E preferred shares	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act:
None
Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ý No ¨
Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ¨ No ý
Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ý No ¨
Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ý No ¨
Indicate by check mark if disclosure of delinquent filers pursuant to Item 405 of Regulation S-K (§229.405 of this chapter) is not contained herein, and will not be contained, to the best of registrant's knowledge, in definitive proxy or information statements incorporated by reference in Part III of this Form 10-K or any amendment to this Form 10-K. ¨

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer", "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.
Large accelerated filer ý Accelerated filer ¨
Non-accelerated filer ¨ Smaller reporting company ¨
Emerging growth company ¨
If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ¨
Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ¨ No ý
The aggregate market value of the voting and non-voting common equity held by non-affiliates of the registrant, computed by reference to the closing price as of the last business day of the registrant’s most recently completed second fiscal quarter, June 30, 2018, was approximately $4.6 billion.
As of February 20, 2019, there were outstanding 83,628,651 common shares, $0.0125 par value per share, of the registrant.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant’s definitive proxy statement to be filed with the Securities and Exchange Commission pursuant to Regulation 14A relating to the annual meeting of shareholders to be held on May 2, 2019 are incorporated by reference in response to items 10, 11, 12, 13 and 14 in Part III of this Form 10-K. The definitive proxy statement will be filed with the Securities and Exchange Commission not later than 120 days after the registrant's fiscal year ended December 31, 2018.

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Cautionary Statement Regarding Forward-Looking Statements

This Annual Report on Form 10-K contains forward-looking statements within the meaning of section 27A of the Securities Act of 1933 and section 21E of the Securities Exchange Act of 1934. All statements, other than statements of historical facts included in this report, including statements regarding our estimates, beliefs, expectations, intentions, strategies or projections are "forward-looking statements". We intend these forward-looking statements to be covered by the safe harbor provisions for forward-looking statements in the United States federal securities laws. In some cases, these statements can be identified by the use of forward-looking words such as "may", "should", "could", "anticipate", "estimate", "expect", "plan", "believe", "predict", "potential" and "intend" or similar expressions. These forward-looking statements are not historical facts, and are based on upon current expectations, estimates and projections, and various assumptions, many of which, by their nature, are inherently uncertain and beyond management's control.

Forward-looking statements contained in this report may include, but are not limited to, information regarding our estimates of losses related to catastrophes and other large losses, measurements of potential losses in the fair market value of our investment portfolio and derivative contracts, our expectations regarding the performance of our business, our financial results, our liquidity and capital resources, the outcome of our strategic initiatives, our expectations regarding estimated synergies and the success of the integration of acquired entities, our expectations regarding the estimated benefits and synergies related to the Company's transformation program, our expectations regarding pricing and other market conditions, our growth prospects, and valuations of the potential impact of movements in interest rates, equity securities prices, credit spreads and foreign currency rates.

Forward-looking statements only reflect our expectations and are not guarantees of performance.

These statements involve risks, uncertainties and assumptions. Accordingly, there are or will be important factors that could cause actual results to differ materially from those indicated in such statements. We believe that these factors include, but are not limited to, those described under Item 1A, 'Risk Factors' in this report, as those factors may be updated from time to time in our periodic filings with the Securities and Exchange Commission (the "SEC"), which are accessible on the SEC's website at http://www.sec.gov.

We undertake no obligation to update or revise publicly any forward-looking statements, whether as a result of new information, future events or otherwise.

Website and Social Media Disclosure

We use our website (www.axiscapital.com) and our corporate Twitter (@AXIS_Capital) and LinkedIn (AXIS Capital) accounts as channels of distribution of Company information. The information we post through these channels may be deemed material. Accordingly, investors should monitor these channels, in addition to following our press releases, SEC filings and public conference calls and webcasts. In addition, e-mail alerts and other information about AXIS Capital may be received when enrolled in our "E-mail Alerts" program, which can be found in the Investor Information section of our website (www.axiscapital.com). The contents of our website and social media channels are not, however, a part of this Annual Report on Form 10-K.

PART I

ITEM 1. BUSINESS

In this Form 10-K, references to "AXIS Capital" refer to AXIS Capital Holdings Limited and reference to "we", "us", "our", the "Group" or the "Company" refer to AXIS Capital Holdings Limited and its direct and indirect subsidiaries and branches, including AXIS Specialty Limited ("AXIS Specialty Bermuda"), AXIS Specialty Limited (Singapore Branch), AXIS Specialty Markets Limited, AXIS Managing Agency Ltd., AXIS Corporate Capital U.K. Limited (sole corporate member of AXIS Syndicate 1686 ("Syndicate 1686")), AXIS Ventures Limited ("AXIS Ventures"), AXIS Ventures Reinsurance Limited ("Ventures Re"), AXIS Reinsurance Managers Limited ("AXIS Reinsurance Managers"), AXIS Specialty Europe SE ("AXIS Specialty Europe"), AXIS Specialty Europe SE ("U.K. Branch"), AXIS Re SE (AXIS Re), AXIS Re SE, Dublin (Zurich Branch) ("AXIS Re Europe"), Compagnie Belge d'Assurances Aviation NV/SA ("Aviabel"), AXIS Reinsurance Company ("AXIS Re U.S."), AXIS Reinsurance Company (Canadian Branch), AXIS Insurance Company ("AXIS Insurance Co."), AXIS Surplus Insurance Company ("AXIS Surplus"), AXIS Specialty Insurance Company ("AXIS Specialty U.S."), AXIS Specialty Finance LLC, AXIS Specialty Finance PLC, Novae Corporate Underwriting Limited (sole corporate member of Novae Syndicate 2007 ("Syndicate 2007")), unless the context suggests otherwise.
Tabular dollars are in thousands. Amounts in tables may not reconcile due to rounding differences.

General
AXIS Capital, the Bermuda-based holding company for the AXIS group of companies was incorporated on December 9, 2002. AXIS Specialty Bermuda commenced operations on November 20, 2001. AXIS Specialty Bermuda and its subsidiaries became wholly owned subsidiaries of AXIS Capital pursuant to an exchange offer consummated on December 31, 2002.
We provide a broad range of specialty insurance and reinsurance solutions to our clients on a worldwide basis, through operating subsidiaries and branch networks based in Bermuda, the United States ("U.S."), Europe, Singapore, Canada, Latin America and the Middle East. We also maintain marketing offices in Brazil, France and Spain. Our business consists of two distinct global underwriting platforms, AXIS Insurance and AXIS Re.
The markets in which we operate have historically been cyclical. During periods of excess underwriting capacity, as defined by availability of capital, competition can result in lower pricing and less favorable policy terms and conditions for (re)insurers. During periods of reduced underwriting capacity, pricing and policy terms and conditions are generally more favorable for (re)insurers. Historically, underwriting capacity has been impacted by several factors, including industry losses, catastrophes, changes in legal and regulatory guidelines, investment results and the ratings and financial strength of competitors.
At December 31, 2018, we had common shareholders’ equity of $4.3 billion, total capital of $6.4 billion and total assets of $24.1 billion.
Our Business Strategy
We are a hybrid specialty insurance and global reinsurance company that is a leader in many of the markets where we choose to compete. We provide our clients and distribution partners with a broad range of risk transfer products and services, and meaningful capacity, backed by excellent financial strength. We manage our portfolio holistically, aiming to construct the optimum portfolio of risks, consistent with our risk appetite and the development of our franchise. We nurture an ethical, entrepreneurial and disciplined culture that promotes outstanding client service, intelligent risk taking and the achievement of superior risk-adjusted returns for our shareholders. We believe that the achievement of our objectives will position us as a global leader in specialty risks.
We aim to execute on our business strategy through the following multi-pronged approach:
We offer a diversified range of products and services across market segments and geographies: Our position as a well-balanced hybrid specialty insurance and global reinsurance company gives us insight into the opportunities and

challenges in a variety of markets. Established in Bermuda in 2001, today we have locations across the U.S., Canada and in Europe where
we have offices in Dublin, London, Zurich, Brussels, Barcelona, Madrid and Paris. We are actively pursuing opportunities throughout Latin America, mainly through our Miami office, which enables us to deliver a full range of facultative and treaty reinsurance solutions in Latin America. Our Singapore office serves as our regional hub in Asia and provides both specialty insurance and reinsurance solutions in the Asia Pacific region. Our Dubai office provides accident and health specialty reinsurance solutions to our clients in the Middle East and Africa. We have expanded our presence in the London market and at Lloyd's of London ("Lloyd's") through our acquisition of Novae Group plc ("Novae"), and our acquisition of specialty aviation insurer and reinsurer, Aviabel, has given us a strong foothold in continental Europe.

We underwrite a balanced portfolio of risks, including complex and volatile lines, moderating overall volatility with risk limits, diversification and risk management: Risk management is a strategic priority embedded in our organizational structure and we are continuously monitoring, reviewing and refining our enterprise risk management practices. We combine judgment and experience with data-driven analysis, enhancing our overall risk selection process.

We modulate our risk appetite and deployment of capital across the underwriting cycle, commensurate with available market opportunities and returns: In response to market dynamics, we recognize opportunities as they develop and react quickly as new trends emerge. Our risk analytics provide important and continuous feedback, further assisting with the ongoing assessment of our risk appetite and strategic capital deployment. We have been successful in extending our product lines, finding new distribution channels and entering new geographies. When we do not find sufficiently attractive uses for our capital, we return excess capital to our shareholders through share repurchases or dividends.

We develop and maintain deep, trustful and mutually beneficial relationships with clients and distribution partners, offering high-levels of service and effective solutions for risk management needs: Our management team has extensive industry experience, deep product knowledge and long-standing market relationships. We primarily transact in specialty markets, where risks are complex. Our intellectual capital and proven client-service capability attract clients and distribution partners looking for solutions.

We maintain excellent financial strength, characterized by financial discipline and transparency: Our total capital of $6.4 billion at December 31, 2018, as well as our high-quality and liquid investment portfolio and our operating subsidiary ratings of "A+" ("Strong") by Standard & Poor's and "A+" ("Superior") by the A.M. Best Company, Inc. ("A.M. Best") are key indicators of our financial strength.

We attract, develop, retain and motivate teams of experts: We aim to attract and retain the top talent in the industry and to motivate our employees to make decisions that are in the best interest of both our clients and shareholders. We nurture an ethical, risk-aware, achievement-oriented culture that promotes professionalism, responsibility, integrity, discipline and entrepreneurship. As a result, we believe that our staff is well-positioned to make the best underwriting and strategic decisions for the Company.

In 2018, our key metrics for performance measurement included operating return on average common equity ("operating ROACE") which is reconciled to the most comparable GAAP financial measure, return on average common equity ("ROACE"), in Item 7 'Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A") – Executive Summary – Results of Operations' on an annual basis and book value per diluted common share adjusted for dividends over the long-term. Our goal is to achieve top-quintile industry operating ROACE and growth in book value per diluted common share adjusted for dividends, with volatility consistent with the industry average across underwriting cycles.

Segment Information

Our underwriting operations are organized around our global underwriting platforms, AXIS Insurance and AXIS Re. We have determined that we have two reportable segments, insurance and reinsurance. We do not allocate our assets by segment, with the exception of goodwill and intangible assets, as we evaluate the underwriting results of each segment separately from the results of our investment portfolio.

Refer to Item 7 'Management’s Discussion and Analysis of Financial Condition and Results of Operations' for additional information relating to our reportable segments and Item 8, Note 4 to the Consolidated Financial Statements 'Segment Information' for additional information relating to our reportable segments and a description of the geographic distribution of gross premiums written based on the location of our subsidiaries.

The table below presents gross premiums written in each of our reportable segments for each of the most recent three years.

Year ended December 31,	2018	2017	2016
Insurance	$3,797,592	$2,814,918	$2,432,475
Reinsurance	3,112,473	2,741,355	2,537,733
Total	$6,910,065	$5,556,273	$4,970,208

Insurance Segment

Lines of Business and Distribution

Our insurance segment offers specialty insurance products to a variety of niche markets on a worldwide basis. The following are the lines of business in our insurance segment:

- Property: provides physical loss or damage, business interruption and machinery breakdown cover for virtually all types of property, including commercial buildings, residential premises, construction projects and onshore energy installations. This line of business includes primary and excess risks, some of which are catastrophe-exposed.
- Marine: provides cover for traditional marine classes, including offshore energy, cargo, liability, recreational marine, fine art, specie, and hull and war. Offshore energy coverage includes physical damage, business interruption, operators extra expense and liability coverage for all aspects of offshore upstream energy, from exploration and construction through the operation and distribution phases.
- Terrorism: provides cover for physical damage and business interruption of an insured following an act of terrorism and includes kidnap and ransom, and crisis management insurance.
- Aviation: provides hull and liability, and specific war cover primarily for passenger airlines but also for cargo operations, general aviation operations, airports, aviation authorities, security firms and product manufacturers.
- Credit and Political Risk: provides credit and political risk insurance products for banks, commodity traders, corporations and multilateral and export credit agencies. Cover is provided for a range of risks including sovereign default, credit default, political violence, currency inconvertibility and non-transfer, expropriation, aircraft non-repossession and contract frustration due to political events.
- Professional Lines: provides directors' and officers' liability, errors and omissions liability, employment practices liability, fiduciary liability, crime, professional indemnity, cyber and privacy insurance, medical malpractice and other financial insurance related covers for commercial enterprises, financial institutions, not-for-profit organizations and other professional service providers. This business is predominantly written on a claims-made basis.
- Liability: primarily targets primary and low/mid-level excess and umbrella commercial liability risks in the U.S. wholesale markets in addition to primary and excess of loss employers, public, and products liability predominately in the U.K. Target industry sectors include construction, manufacturing, transportation and trucking and other services.
- Accident and Health: includes accidental death, travel insurance and specialty health products for employer and affinity groups.
- Discontinued Lines - Novae: includes those lines of business that Novae exited or placed into run-off in the fourth quarter of 2016 and in the first quarter of 2017. These discontinued insurance lines include financial institutions, professional indemnity, international liability, and international direct property.

We produce business primarily through wholesale and retail brokers worldwide. Some of our insurance products are also distributed through managing general agents ("MGAs") and managing general underwriters ("MGUs"). In the U.S., we have the ability to write business on an admitted basis using forms and rates filed with state insurance regulators and on a non-admitted or surplus lines basis which provides flexibility in forms and rates, as these are not filed with state regulators. Our ability to write business on a non-admitted basis in the U.S. provides us with the pricing flexibility needed to write non-standard coverages. Substantially all of our insurance business is subject to aggregate limits, in addition to event limits.

Gross premiums written by broker, shown individually where premiums were 10% or more of the total in any of the last three years, were as follows:

Year ended December 31,	2018		2017		2016	
Marsh & McLennan Companies Inc.	$380,238	10 %	$330,057	12 %	$362,151	15 %
Aon plc	405,281	11 %	374,940	13 %	368,876	15 %
Willis Tower Watson PLC	228,643	6 %	246,081	9 %	235,834	10 %
Other brokers [a]	1,838,804	48 %	1,387,363	49 %	1,147,895	47 %
Managing general agencies and underwriters [a]	944,626	25 %	476,477	17 %	317,719	13 %
Total	$3,797,592	100%	$2,814,918	100%	$2,432,475	100%

[a] Reclassified $71,090 of gross premiums written in 2016 from Other brokers to MGAs and MGUs.

No insured accounted for more than 10% of the gross premiums written in the insurance segment.

Competitive Environment

In our insurance segment, where competition is focused on price as well as availability, service and other considerations, we compete with global carriers and U.S. companies in regional and local markets. We believe we can achieve positive differentiation through underwriting expertise in our chosen lines of business and market segments, providing customized solutions for our strategic partners and industry leading claim service levels to our clients and distributors. In addition, our investment in building an agile business model is expected to further position us to capitalize on opportunities and more quickly bring innovative products and services to market; advancing our efforts to strengthen our portfolio and drive profitable growth.

Reinsurance Segment

Lines of Business and Distribution

Our reinsurance segment writes business on a proportional basis, receiving an agreed percentage of the underlying premium and accepting liability for the same percentage of incurred losses. We also write business on an excess of loss basis, whereby we typically provide an indemnification to the reinsured entity for a portion of losses, both individually and in the aggregate, in excess of a specified individual or aggregate loss deductible. Our business is primarily produced through reinsurance brokers worldwide.

Our reinsurance segment provides treaty reinsurance to insurance companies on a worldwide basis. The following are the lines of business in our reinsurance segment:

- Catastrophe: provides protection for most catastrophic losses that are covered in the underlying insurance policies written by our cedants. The underlying policies principally cover property-related exposures but other exposures including workers compensation and personal accident are also covered. The principal perils covered by policies in this portfolio include hurricane and windstorm, earthquake, flood, tornado, hail and fire. In some instances, terrorism may be a covered peril or the only peril. This business is written on a proportional and excess of loss basis.
- Property: provides protection for property damage and related losses resulting from natural and man-made perils that are covered in the underlying personal and commercial lines insurance policies written by our cedants. The predominant exposure is property damage but other risks, including business interruption and other non-property losses, may also be covered when arising from a covered peril. The most significant perils covered by policies in this portfolio include windstorm, tornado and earthquake, but other perils such as freeze, riots, flood, industrial explosions, fire, hail and a number of other loss events are also included. This business is written on a proportional and excess of loss basis.
- Professional Lines: provides cover for directors' and officers' liability, employment practices liability, medical malpractice, professional indemnity, environmental liability and miscellaneous errors and omissions insurance risks. The underlying business is predominantly written on a claims-made basis. This business is written on a proportional and excess of loss basis.

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- Credit and Surety: provides reinsurance of trade credit insurance products and includes proportional and excess of loss structures. The underlying insurance indemnifies sellers of goods and services in the event of a payment default by the buyer of those goods and services. Credit insurance cover is provided to mortgage guaranty insurers and government sponsored entities. Cover for losses arising from a broad array of surety bonds issued by insurers to satisfy regulatory demands or contract obligations in a variety of jurisdictions around the world is also offered.
- Motor: provides cover to insurers for motor liability and property damage losses arising out of any one occurrence. A loss occurrence can involve one or many claimants where the ceding insurer aggregates the claims from the occurrence. Traditional proportional and non-proportional reinsurance as well as structured solutions are offered.
- Liability: provides cover to insurers of standard casualty business, excess and surplus casualty business and specialty casualty programs. The primary focus of the underlying business is general liability, although workers' compensation and auto liability covers are also written.
- Agriculture: provides protection for risks associated with the production of food and fiber on a global basis for primary insurance companies writing multi-peril crop insurance, crop hail, and named peril covers, as well as custom risk transfer mechanisms for agricultural dependent industries with exposures to crop yield and/or price deviations. This business is written on a proportional and aggregate stop loss reinsurance basis.
- Engineering: provides protection for all types of construction risks and risks associated with erection, testing and commissioning of machinery and plants during the construction stage. This line of business also includes cover for losses arising from operational failures of machinery, plant and equipment, and electronic equipment as well as business interruption.
- Marine and Other: includes marine, aviation and personal accident reinsurance.
- Accident and Health: includes specialty health, accidental death, travel, life and disability reinsurance products which are offered on a proportional and catastrophic or per life excess of events loss basis.
- Discontinued Lines - Novae: includes those lines of business that Novae exited or placed into run-off in the fourth quarter of 2016 and in the first quarter of 2017. These discontinued reinsurance lines include motor reinsurance, general liability reinsurance, international facultative property.

Gross premiums written by broker, shown individually where premiums were 10% or more of the total in any of the last three years, were as follows:

Year ended December 31,	2018			2017			2016		
Marsh & McLennan Companies Inc.	$779,375	25	%	$783,286	29	%	$704,319	28	%
Aon plc	765,779	25	%	583,199	21	%	590,480	23	%
Willis Tower Watson PLC	361,983	12	%	408,188	15	%	356,241	14	%
Other brokers	864,601	28	%	690,337	25	%	679,116	27	%
Direct	178,568	6	%	176,600	6	%	135,604	5	%
Managing general agencies and underwriters	162,167	5	%	99,744	4	%	71,973	3	%
Total	$3,112,473	100	%	$2,741,355	100	%	$2,537,733	100	%

No cedant accounted for more than 10% of the gross premiums written in the reinsurance segment.

Competitive Environment

In our reinsurance segment, competition tends to be focused on availability, service, financial strength and, increasingly, price. We compete with major U.S. and non-U.S. reinsurers and reinsurance departments of numerous multi-line insurance organizations. In addition to traditional market participants, we also compete with new market entrants supported by alternative capital sources offering risk transfer on a collateralized or other non-traditional basis. Our clients may also acquire reinsurance protection through capital market products such as catastrophe bonds and insurance loss warranties. We believe that we achieve a competitive advantage through our diversified global product offering, responsiveness to customer needs and ability to provide sophisticated and innovative products. We offer excellent claims management, strong financial strength

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ratings and an ability to leverage our balance sheet and relationships with strategic capital partners to provide meaningful capacity.

Cash and Investments

We seek to balance the investment portfolios' objectives of (1) increasing book value with (2) the generation of relatively stable investment income, while providing sufficient liquidity to meet our claims and other obligations. Liquidity needs arising from potential claims are of primary importance and are considered in asset class participation and the asset allocation process. Intermediate maturity investment-grade fixed maturities have duration characteristics similar to our expected claim payouts and are, therefore, central to our investment portfolio's asset allocation. At December 31, 2018, the duration of our fixed maturities portfolio was approximately three years, which was lower than the estimated duration of our net insurance liabilities.

To diversify risk and optimize the growth in our book value, we may invest in other asset classes such as equity securities, high yield securities and alternative investments (e.g. hedge funds) which provide higher potential total rates of return. These individual investment classes involve varying degrees of risk, including the potential for more volatile returns and reduced liquidity. However, as part of a balanced portfolio, they also provide diversification from interest rate and credit risk.

With regard to our investment portfolio, we utilize third party investment managers for security selection and trade execution functions, subject to our guidelines and objectives for each asset class. This enables us to actively manage our investment portfolio with access to top performers specializing in various products and markets. We select the managers based on various criteria including investment style, performance history and corporate governance. In addition, we monitor approved investment asset classes for each subsidiary through analysis of our operating environment, including expected volatility of cash flows, overall capital position, regulatory and rating agency considerations. The Finance Committee of our Board of Directors approves our overall group asset allocation targets and investment policy to ensure that they are consistent with our overall goals, strategies and objectives. We also have an Investment and Finance Committee, comprising senior management, which oversees the implementation of our investment strategy.

Refer to Item 7 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Cash and Investments' and Item 8, Note 6 to the Consolidated Financial Statements 'Investments' for additional information regarding our investment portfolio.

Refer to 'Risk and Capital Management' for additional information regarding the management of investment risk.

RISK AND CAPITAL MANAGEMENT

Risk Management Framework – Overview

Mission and Objectives

The mission of Enterprise Risk Management ("ERM") at the Company is to promptly identify, measure, report and monitor risks that affect the achievement of our strategic, operational and financial objectives. The key objectives of our risk management framework are to:

- Protect our capital base and earnings by monitoring our risks against our stated risk appetite and limits;
- Promote a sound risk management culture through disciplined and informed risk taking;
- Enhance value creation and contribute to an optimal risk-return profile by providing the basis for efficient capital deployment;
- Support our group-wide decision making process by providing reliable and timely risk information; and
- Safeguard our reputation.

Risk Governance

At the heart of our risk management framework is a governance process with responsibilities for taking, managing, monitoring and reporting risks. We articulate the roles and responsibilities for risk management throughout the organization, from the Board of Directors and the Chief Executive Officer to our business and functional areas, thus embedding risk management throughout the business (refer to 'Risk Governance and Risk Management Organization' below).

To support our governance process, we rely on our documented policies and guidelines. Our Risk Policies are a formal set of documents we use to specify our approach and risk mitigation/control philosophy for managing individual and aggregate risks. We also have procedures to approve exceptions and procedures for referring risk issues to senior management and the Board of Directors. Our qualitative and quantitative risk reporting framework provides transparency and early warning indicators to senior management with regard to our overall risk profile, adherence to risk appetite and associated limits, and improvement actions both at an operating entity and Group level.

Various governance and control bodies coordinate to help ensure that objectives are being achieved, risks are identified and appropriately managed and internal controls are in place and operating effectively.

Internal Capital Model

An important aspect of our risk management framework is our internal capital model. Utilizing this modeling framework provides us with a holistic view of the capital we put at risk in any year by allowing us to understand the relative interaction among the known risks impacting us. This integrated approach recognizes that a single risk factor can affect different sub-portfolios and that different risk factors can have different mutual dependencies. We continuously review and update our model and its parameters as our risk landscape and external environment continue to evolve.

As well as being used to measure internal risk capital (refer to 'Capital Management' below), our internal capital model is used as a tool in managing our business, planning capital allocations, portfolio monitoring, reinsurance and retrocession (collectively referred to as "reinsurance") purchasing, and investment asset allocations.

Risk Diversification

As a global (re)insurer with a wide product offering across different businesses, diversification is a key component of our business model and risk framework. Diversification enhances our ability to manage our risks by limiting the impact of a single event and contributing to relatively stable long-term results and our general risk profile. The degree to which the diversification effect can be realized depends not only on the correlation between risks but also the level of relative concentration of those risks. Therefore, our aim is to maintain a balanced risk profile without any disproportionately large risks. Our internal capital model considers the level of correlation and diversification between individual risks and we

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measure concentration risk consistently across our business units in terms of pre and post diversified internal risk capital requirements.

Risk Appetite and Limit Framework

Our integrated risk management framework considers material risks that arise from operating our business. Large risks that might accumulate and have the potential to produce substantial losses are subject to our group-wide risk appetite and limit framework. Our risk appetite, as authorized by our Board of Directors, represents the amount of risk that we are willing to accept within the constraints imposed by our capital resources as well as the expectations of our stakeholders as to the type of risk we hold within our business. At an annual aggregated level, we also monitor and manage the potential financial loss from the accumulation of risk exposure in any one year.

Specific risk limits are defined and translated into a consistent framework across our identified risk categories and across our operating entities, and are intended to limit the impact of individual risk types or accumulations of risk. Individual limits are established through an iterative process to ensure that the overall framework complies with our group-wide requirements on capital adequacy and risk accumulation.

We monitor risk through, for example, risk dashboards and limit consumption reports. These are intended to allow us to detect potential deviations from our internal risk limits at an early stage.

External Perspectives

Various external stakeholders, among them regulators, rating agencies, investors and accounting bodies, place emphasis on the importance of sound risk management in the insurance industry. We monitor developments in the external environment and evolve our risk management practices accordingly.

Risk Governance and Risk Management Organization

The key elements of our governance framework, as it relates specifically to risk management, are described below.

Board of Directors’ Level

The Risk Committee of the Board ("Risk Committee") assists the Board of Directors in overseeing the integrity and effectiveness of our ERM framework, and ensuring that our risk assumption and risk mitigation activities are consistent with that framework. The Risk Committee reviews, approves and monitors our overall risk strategy, risk appetite and key risk limits and receives regular reports from the Group Risk Management function ("Group Risk") to ensure any significant risk issues are being addressed by management. The Risk Committee further reviews, with management and Internal Audit, the Group’s general policies and procedures and satisfies itself that effective systems of risk management and controls are established and maintained. Among its other responsibilities, the Risk Committee also reviews and approves our annual Own Risk and Solvency Assessment ("ORSA") report. The Risk Committee assesses the independence and objectivity of our Group Risk function, approves its terms of reference and reviews its ongoing activities.

Following a recommendation by the Chief Executive Officer, the Risk Committee also conducts a review and provides a recommendation to the Board of Directors regarding the appointment and/or removal of the Chief Risk Officer. The Risk Committee meets with the Chief Risk Officer in separate executive sessions on a regular basis.

The Finance Committee of our Board oversees the Group’s investment of funds and adequacy of financing facilities. This includes approval of the Group’s strategic asset allocation plan. The Audit Committee of our Board, which is supported by our internal audit function, is responsible for overseeing internal controls and compliance procedures and also reviews with management and the Chairman of the Risk Committee the Group’s guidelines and policies regarding risk assessment and risk management.

Group Executive Level

Our management Executive Committee formulates our business objectives and risk strategy within the overall risk appetite set by our Board. It allocates capital resources and sets limits across the Group, with the objective of balancing return and risk. While the management Executive Committee is responsible overall for risk management, it has delegated some authority to the executive level Risk Management Committee ("RMC"):

The RMC is responsible for overseeing the integrity and effectiveness of the Group's ERM framework, and ensuring that the Group's risk assumption and risk mitigation activities are consistent with that framework, including a review of the annual business plan relative to our risk limits. In addition to the RMC there is an established framework of separate yet complementary management committees and subcommittees, focusing on particular aspects of ERM including the following:

- The Investment & Finance Committee oversees the Group's investment activities by, among other things, monitoring market risks, the performance of our investment managers and the Group's asset-liability management, liquidity positions and investment policies and guidelines. The Investment & Finance Committee also prepares the Group's strategic asset allocation and presents it to the Finance Committee of the Board for approval.

- The Reinsurance Security Committee ("RSC") sets out the financial security requirements of our reinsurance counterparties and approves our counterparties, as needed.

- The Cyber, Property, and Credit Product Boards, which oversee the exposure management frameworks and views of risk for our cyber, property, and credit underwriting risks. Each Product Board contributes to portfolio management, setting underwriting guidelines and risk appetite, as well as encouraging general knowledge sharing.

- The Internal Model Committee oversees the Group's Internal Model framework, including the key model assumptions, methodology and validation framework.

- The Operational Risk Committee oversees the Group's Operational Risk framework for the identification, management, mitigation and measurement of operational risk and facilitates the embedding of effective operational risk management practices throughout the Group.

- The Emerging Risks Committee oversees the processes for identifying, assessing and monitoring current and potential emerging risks.

- The Capital Management Committee oversees the integrity and effectiveness of the Company's Capital Management Policy, including the capital management policies of the Company's legal entities and branches, ensuring the Company's effective implementation of the annual Capital Management Plan, which is approved by the Finance Committee of the Board, and overseeing the availability of capital within the Group.

Group Risk Management Organization

As a general principle, management in each of our business units is responsible in the first instance for both the risks and returns of its decisions. Management is the 'owner' of risk management processes and is responsible for managing our business within defined risk limits.

Our Chief Risk Officer reports to the Chief Financial Officer and the Chairman of the Board Risk Committee, leads our independent Group Risk function, and is responsible for oversight and implementation of the Group's ERM framework as well as providing guidance and support for risk management practices. Group Risk is responsible for developing methods and processes for identifying, measuring, managing and reporting risk. This forms the basis for informing the Risk Committee and RMC of the Group's risk profile. Group Risk develops our risk management framework and oversees the adherence to this framework at the Group and operating entity level. Our Chief Risk Officer regularly reports risk matters to the Chief Financial Officer, management Executive Committee, RMC and the

Risk Committee.

Internal Audit, an independent, objective function, reports to the Audit Committee of the Board on the effectiveness of our risk management framework. This includes assurance that key business risks have been adequately identified and managed appropriately and that our system of internal control is operating effectively. Internal Audit also provides independent

assurance around the validation of our internal capital model and coordinates risk-based audits, compliance reviews, and other specific initiatives to evaluate and address risk within targeted areas of our business.
Our risk governance structure is further complemented by our Legal Department which seeks to mitigate legal and regulatory compliance risks with support from other departments. This includes ensuring that significant developments in law and regulation are observed and that we react appropriately to impending legislative and regulatory changes and applicable court rulings.

Risk Landscape

Our risk landscape comprises strategic, insurance, credit, market, operational, liquidity and other risks that arise as a result of doing business. We provide definitions of these risk categories in the following sections as well as our related risk management. Across these risk categories, we identify and evaluate emerging threats and opportunities through a framework that includes the assessment of potential surprise factors that could affect known loss potentials.
Our risk landscape is reviewed on a regular basis to ensure that it remains up-to date based on the evolving risk profile of the Company. In addition we undertake ongoing risk assessments across all enterprise risks, the output of which is captured in our risk register which is reviewed and reported through our governance structure.

Strategic Risk

Strategic risk is the risk of loss arising from the adverse effect of management decisions on both business strategies and their implementation. This includes the failure to devise or adapt a business strategy in light of changes in our internal and external environment. We assess any strategic action in the context of our risk framework by reviewing the impact of the strategy, including any incremental risk, prior to the action taking place. In addition, what we learn about risk through our monitoring, reporting and control processes provides important feedback in terms of reevaluating our risks and, therefore, reevaluating our business strategy.
We undertake a strategic business planning process on an annual basis which is overseen by our management Executive Committee, the Business Council, business unit leadership and our Board of Directors. Our internal capital model provides an input into this process by providing an assessment as to whether our prospective business and investment strategies are in line with our defined risk appetite and objectives, at both the group and operating entity level. The model also provides a basis for optimizing our risk-return profile by providing consistent risk measurement across the Group. The model outputs are reviewed and supplemented with management’s judgment and business experience and expertise.
We specifically evaluate the risks of potential merger and acquisition transactions both from a quantitative and qualitative perspective. We conduct risk assessments of merger and acquisition transactions to evaluate risks specifically related to the integration of acquiring a business. In addition, we have governance procedures in place to review and approve strategic investments and potential new initiatives within our existing businesses in order to evaluate whether the risks are well understood and justified by the potential rewards.

Insurance Risk

Insurance risk is the inherent uncertainty as to the occurrence, amount and timing of insurance liabilities transferred to us through the underwriting process.
Since our inception in 2001, we have expanded our international presence, with underwriting offices in Bermuda, the U.S., Europe, Singapore and Canada. Our disciplined underwriting approach coupled with a group-wide peer review process has enabled us to manage this growth in a controlled and consistent manner.
A key component of the Group's underwriting risk governance is our peer review processes which allow for a collaborative review of risk and pricing and ensures that underwriting is within established protocols and guidelines. Underwriting guidelines are in place to provide a framework for consistent pricing and risk analysis and ensuring alignment to the Group's risk appetite. Limits are set on underwriting capacity, and cascade authority to individuals based on their specific roles and expertise.
We also have significant audit coverage across our business units, including Management Initiated Audits ("MIAs"). MIAs are audits of underwriting and claims files performed by teams independent of those who originated the transactions, the

purpose of which is to test the robustness of our underwriting, claims and operating processes and to recognize any early indicators of future trends in our operational risk environment.

Reinsurance Purchasing

Another key component of our mitigation of insurance risk is the purchase of reinsurance on both a treaty (covering a portfolio of risks) and facultative (single risk) basis, on both our short and long tail lines of business.

For treaty reinsurance, we purchase both proportional and non-proportional cover. Under proportional reinsurance, we cede an agreed proportion of the premiums and the losses and loss adjustment expenses on the policies we underwrite. We primarily use proportional reinsurance on our liability, professional lines, and cyber portfolios, as well as on select property portfolios, whereby we protect against higher loss frequency rather than specific events. We also purchase proportional reinsurance on our assumed property catastrophe reinsurance portfolio, casualty, and credit and bond portfolios, which includes our cessions to Strategic Capital Partners. We also use non-proportional reinsurance, whereby losses up to a certain amount (i.e. our retention) are borne by us. By using non-proportional reinsurance, we can limit our liability with a retention, which reflects our willingness and ability to bear risk, and therefore in line with our risk appetite. We primarily purchase the following forms of non-proportional reinsurance:

- Excess of loss per risk – the reinsurer indemnifies us for loss amounts of all individual policies effected, defined in the treaty terms and conditions. Per risk treaties are an effective means of risk mitigation against large single losses (e.g. a large fire claim). This includes our Northshore Re catastrophe bond program, which provides a combined $550 million of limit across the Group. Refer to Item 7 'Management's Discussion and Analysis of Financial Condition and Results of Operations' – Underwriting Results – Consolidated – Underwriting Expenses' for additional information on our Northshore Re catastrophe bond program.

- Catastrophe excess of loss – provides aggregate loss cover for our insurance portfolio against the accumulation of losses incurred from a single event (e.g. windstorm).

We have a centralized Risk Funding department, which coordinates external treaty reinsurance purchasing across the Group and is overseen by our Reinsurance Purchasing Group ("RPG"). The RPG, which includes among others, our Chief Executive Officer, Chief Financial Officer, Chief Risk Officer and business unit leadership, approves each treaty placement, and aims to ensure that appropriate diversification exists within our RSC approved counterparty panels.

Facultative reinsurance is case by case risk transfer, which we may also use to complement treaty reinsurance by covering additional risks above and beyond what is already covered in treaties. Facultative reinsurance is monitored by the Risk Funding department.

Natural Peril Catastrophe Risk

Natural catastrophes such as earthquakes, storms, tsunamis and floods represent a challenge for risk management due to their accumulation potential and occurrence volatility. In managing natural catastrophe risk, our internal risk limit framework aims to limit both the loss of capital due to a single event and the loss of capital that would occur from multiple (but perhaps smaller events) in any year. Within this framework, we have an established risk limit for single event, single zone probable maximum loss ("PML") within defined zones and at various return periods. For example, at the 1-in-250 year return period, we are not willing to expose more than 20% of our prior quarter-end common-equity from a single event within a single zone.

The table below shows our mean PML estimates for certain defined single zones which correspond to peak industry catastrophe exposures at January 1, 2019 and 2018:

At January 1, (in millions of U.S. dollars)		2019			2018		
Single zone/single event	Perils	50 Year Return Period	100 Year Return Period	250 Year Return Period	50 Year Return Period	100 Year Return Period	250 Year Return Period
Southeast	U.S. Hurricane	$383	$ 441	$ 620	$350	$ 430	$ 848
Northeast	U.S. Hurricane	52	156	290	58	164	297
Mid-Atlantic	U.S. Hurricane	133	315	449	121	273	401
Gulf of Mexico	U.S. Hurricane	258	316	394	237	302	400
California	Earthquake	253	369	468	241	328	527
Europe	Windstorm	231	301	376	232	327	467
Japan	Earthquake	147	227	359	168	232	336
Japan	Windstorm	60	109	158	60	99	140

The return period refers to the frequency with which losses of a given amount or greater are expected to occur. A zone is a geographic area in which the insurance risks are considered to be correlated to a single catastrophic event. Estimated losses from a modeled event are grouped into a single zone, as shown above, based on where the majority of the total estimated industry loss is expected to occur. In managing zonal concentrations, we aim to ensure that the geography of single events is suitably captured, but distinct enough that they track specific types of events. For example, our definition of Southeast wind encompasses five states, including Florida, while our definition of Gulf Wind encompasses four states, including Texas.

Our PMLs take into account the fact that an event may trigger claims in a number of lines of business. For instance, our U.S. hurricane modeling includes the estimated pre-tax impact to our financial results arising from our catastrophe, property, engineering, energy, marine and aviation lines of business. Our PMLs include assumptions regarding the location, size and magnitude of an event, the frequency of events, the construction type and a property's susceptibility to damage, and the cost of rebuilding the property. Loss estimates for non-U.S. zones will be subject to foreign exchange rates, although we may mitigate this currency variability from a book value perspective.

As indicated in the table above, our modeled single occurrence 1-in-100 year return period PML for a Southeast U.S. hurricane, net of reinsurance, is approximately $0.4 billion. According to our modeling, there is a one percent chance that on an annual basis, our losses incurred from a Southeast hurricane event could be in excess of $0.4 billion. Conversely, there is a 99% chance that on an annual basis, the loss from a Southeast hurricane will fall below $0.4 billion.

We have developed our PML estimates using multiple commercially available vendor models, including AIR Worldwide ("AIR") and Risk Management Solutions ("RMS") (which we also use for pricing catastrophe risk). These models cover the major peril regions where we face potential exposure. We combine the outputs of catastrophe models with our estimate of non-modeled perils and other factors which we believe, from our experience, provides us with a more complete view of natural peril catastrophe risk.

Our PML estimates are based on assumptions that are inherently subject to significant uncertainties and contingencies. These uncertainties and contingencies can affect actual losses and could cause actual losses to differ materially from those expressed above. We aim to reduce the potential for model error in a number of ways, the most important of which is by ensuring that management's judgment supplements the model outputs. We also perform ongoing model validation both within our business units and at a group level including through our catastrophe model validation unit. These validation procedures include sensitivity testing of models to understand their key variables and, where possible, back testing the model outputs to actual results.

Our estimated net losses from peak zone catastrophes may change from period to period as a result of several factors, which include but are not limited to, updates to vendor catastrophe models, changes in our own modeling, changes in our underwriting portfolios, changes to our reinsurance purchasing strategy and changes in foreign exchange rates. Several of the aforementioned factors, including the acquisition of Novae and opportunistic purchase of more reinsurance protection, drove the changes to our natural catastrophe PMLs during 2018.

Man-made Catastrophe Risk

Similar to our management of natural peril catastrophe exposures, we also take a similar focused and analytical approach to our management of man-made catastrophes. Man-made catastrophes, which include such risks as train collisions, airplane crashes or terrorism, are harder to model in terms of assumptions regarding intensity and frequency. For these risks we couple the vendor models (where available) with our bespoke modeling and underwriting judgment and expertise. This allows us to take advantage of business opportunities relating to man-made catastrophe exposures particularly where we can measure and limit the risk sufficiently as well as obtain risk-adequate pricing.

As an example of our approach, our assessment of terrorism risk is based on a mixture of qualitative and quantitative data (e.g. for estimating property damage, business interruption, mortality and morbidity subsequent to an attack of a predefined magnitude), which we use to control, limit and manage our aggregate terrorism exposure. We use commercially available vendor modeling and bespoke modeling tools to measure accumulations around potential terrorism accumulation zones on a deterministic and probabilistic basis. We supplement the results of our modeling with underwriting judgment.

Reserving Risk

The estimation of reserves is subject to uncertainty due to the fact that the settlement of claims that have arisen before the balance sheet date is dependent on future events and developments. Unforeseen loss trends resulting from court rulings, changes in the law, medical and long-term care costs, and economic factors such as inflation can have an impact on the ultimate cost to settle our claim liabilities.

We calculate the reserves for losses and claims settlement costs in accordance with actuarial practice based on substantiated assumptions, methods and assessments. The assumptions are regularly reviewed and updated, and the application of our Group reserving policy and standards of practice ensures a reliable and consistent procedure. Our loss reserving process demands data quality and reliability and requires a quantitative and qualitative review of both our overall reserves and individual large claims. Within a structured control framework, claims information is communicated on a regular basis throughout our organization, including to senior management, to provide an increased awareness regarding the losses that have taken place throughout the insurance markets. The detailed and analytical reserving approach that follows is designed to absorb and understand the latest information on our reported and unreported claims, to recognize the resultant exposure as quickly as possible, and to make appropriate and realistic provisions in our financial statements. We have well established processes for determining carried reserves, which we ensure are applied consistently over time.

Reserving for long-tail lines of business represents a significant component of reserving risk. When loss trends prove to be higher than those underlying our reserving assumptions, the risk is greater because of a stacking-up effect: we carry reserves to cover claims arising from several years of underwriting activity and these reserves are likely to be adversely affected by unfavorable loss trends. We manage and mitigate reserving risk on long-tail business in a variety of ways. First, the long-tail business we write is part of a well-balanced and diversified global portfolio of business. In 2018, our long-tail net premiums written (namely liability and motor business) represented 22% of our total premiums written and 33% of total net reserves. We also purchase reinsurance on liability business to reduce our net positions. Secondly, we follow a disciplined underwriting process that utilizes available information, including industry trends.

Another significant component of reserving risk relates to the estimation of losses in the aftermath of a major catastrophe event. Refer to Item 7 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Critical Accounting Estimates – Reserves for Losses and Loss Expenses' for further details including a description of our reserving process.

Claims Handling Risk

In accepting risk, we are committing to the payment of claims and therefore these risks must be understood and controlled. We have claims teams located throughout our main business units. Our claim teams include a diverse group of experienced professionals, including claims adjusters and attorneys. We also use approved external service providers, such as independent adjusters and appraisers, surveyors, accountants, investigators and specialist attorneys, as appropriate.

We maintain claims handling guidelines and claims reporting control and escalation procedures in all our claims units. Large claims matters are reviewed during weekly claims meetings. The minutes from each meeting are circulated to our underwriters, senior management and others involved in the reserving process. To maintain communication between

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underwriting and claims teams, claims personnel regularly report at underwriting meetings and frequently attend client meetings.

We foster a strong culture of review among our claims teams. This includes MIAs, whereby senior claims handlers audit a sample of claim files. The process is designed to ensure consistency between the claims units and to develop Group-wide best practices.

When we receive notice of a claim, regardless of size, it is recorded within our underwriting and claims systems. To assist with the reporting of significant claims, we have also developed a standard format and procedure to produce "flash reports" for significant events and potential losses, regardless of whether we have exposure. Our process for flash reporting allows a direct notification to be communicated to underwriters and senior management worldwide. Similarly, for natural peril catastrophes, we have developed a catastrophe database, along with catastrophe coding in certain systems, that allows for the gathering, blending and reporting of loss information as it develops from early modeled results to fully adjusted and paid losses.

Credit Risk

Credit risk represents the risk of incurring financial loss due to the diminished creditworthiness (eroding credit rating and, ultimately, default) of our third party counterparties. We distinguish between various forms of credit exposure; the risk of issuer default from instruments in which we invest or trade, such as corporate bonds; counterparty exposure in a direct contractual relationship, such as reinsurance; the credit risk related to our receivables, including those from brokers and other intermediaries; and the risk we assume through our insurance contracts, such as our credit and political risk and trade credit and bond lines of business.

Credit Risk Aggregation

We monitor and manage the aggregation of credit risk on a Group-wide basis allowing us to consider exposure management strategies for individual companies, countries, regions, sectors and any other relevant inter-dependencies. Our credit exposures are aggregated based on the origin of risk. Credit risk aggregation is managed through minimizing overlaps in underwriting, financing and investing activities. As part of our credit aggregation framework, we assign aggregate credit limits by country and for any individual counterparty. These limits are based and adjusted on a variety of factors including the prevailing economic environment and the nature of the underlying credit exposures.

Our credit aggregation measurement and reporting process is facilitated by our credit risk exposure database, which contains relevant information on counterparty details and credit risk exposures. The database is accessible by management throughout the Group, thus providing transparency to allow for the implementation of active exposure management strategies. We also license third party tools to provide credit risk assessments. We monitor all our credit aggregations and, where appropriate, adjust our internal risk limits and/or have taken specific actions to reduce our risk exposures.

Credit Risk Relating to Investing Activities

Within our fixed maturity investment portfolio, which represents approximately $11 billion or 47% of our total assets, we are exposed to potential losses arising from the diminished creditworthiness of issuers of bonds as well as third party counterparties such as custodians. We limit such credit risk through diversification, issuer exposure limits graded by ratings and, with respect to custodians, through contractual and other legal remedies. Excluding U.S. Treasury and Agency securities, we limit our concentration of credit risk to any single corporate issuer to 2% or less of our investment grade fixed maturities portfolio for securities rated A- or above and 1% or less of our investment grade fixed maturities portfolio for securities rated below A-.

We also have credit risk relating to our cash and cash equivalents. In order to mitigate concentration and operational risks related to cash and cash equivalents, we limit the maximum amount of cash that can be deposited with a single counterparty and additionally limit acceptable counterparties based on current rating, outlook and other relevant factors.

Credit Risk Relating to Reinsurance Recoverable Assets

Within our reinsurance purchasing activities, we are exposed to the credit risk of a reinsurer failing to meet its obligations under our reinsurance contracts. To help mitigate this, all of our reinsurance purchasing is subject to financial security requirements specified by our RSC. The RSC maintains a list of approved reinsurers, reviews credit risk assessments for

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potential new reinsurers, regularly monitors approved reinsurers with consideration for events which may have a material impact on their creditworthiness, recommends counterparty limits for different types of ceded business and monitors concentrations of credit risk. This assessment considers a wide range of individual attributes, including a review of the counterparty's financial strength, industry position and other qualitative factors.

We monitor counterparty credit quality and exposures, with special monitoring of those cases that merit close attention.

Credit Risk Relating to Receivables

Our largest credit risk exposure to receivables is from brokers and other intermediaries; the risk arises where they collect premiums from customers to be paid to us or we pay claims to them for onward settlement to customers on our behalf. We have policies and standards in place to manage and monitor credit risk from intermediaries with a focus on day-to-day monitoring of the largest positions.

Credit Risk Relating to our Underwriting Portfolio

In our insurance segment, we provide credit insurance primarily for lenders (financial institutions) seeking to mitigate the risk of non-payment from their borrowers. This product has complemented our more traditional political risk insurance business. For the credit insurance contracts, it is necessary for the buyer of the insurance, most often a bank, to hold an insured asset, most often an underlying loan, in order to claim compensation under the insurance contract. The vast majority of the credit insurance provided is for single-name illiquid risks, primarily in the form of senior secured bank loans that can be individually analyzed and underwritten. As part of this underwriting process, an evaluation of credit-worthiness and reputation of the obligor is critical and forms the cornerstone of the underwriting process. We generally require that our clients retain a share of each transaction that we insure. A key element to our underwriting analysis is the assessment of recovery in the event of default and, accordingly, the strength of the collateral and the enforceability of rights to the collateral are paramount. We avoid insurance for structured finance products defined by pools of risks and insurance for synthetic products that would expose us to mark-to-market losses. We also seek to avoid terms in our credit insurance contracts which introduce liquidity risk, most notably, in the form of a collateralization requirement upon a ratings downgrade. We also provide protection against sovereign default or sovereign actions that result in impairment of cross-border investments for banks and corporations. Our contracts generally include conditions precedent to our liability relating to the enforceability of the insured transaction and restricting amendments to the transaction documentation, obligations on the insured to prevent and minimize losses, subrogation rights (including rights to have the insured asset transferred to us) and waiting periods. Under most of our policies, a loss payment is made in the event the debtor failed to pay our client when payment is due subject to a waiting period of up to 180 days.

In our reinsurance segment, we provide reinsurance of credit and bond insurers exposed to the risks of financial loss arising from non-payment of trade receivables covered by a policy (credit insurance) or non-performance (bonding). Our credit insurance exposures are concentrated primarily within developed economies, while our surety bond exposures are concentrated primarily within Latin American and developed economies. We also provide coverage to the mortgage industry through insurance and reinsurance of mortgage insurance companies and U.S. Government Sponsored Entity credit risk sharing transactions. We focus on credit risk transfer from Freddie Mac and Fannie Mae, in the single-family, fixed rate, conforming mortgage space. We provide this cover on a proportional and non-proportional basis globally through AXIS Reinsurance Company, AXIS Specialty Bermuda and AXIS Managing Agency. Our exposure to mortgage risk is monitored and managed through robust underwriting within defined parameters for mortgage credit quality and concentration, continuous monitoring of the housing market, as well as limits on our PML resulting from a severe economic downturn in the housing market.

Market Risk

Market risk is the risk that our financial instruments may be negatively impacted by movements in financial market prices or rates such as equity prices, interest rates, credit spreads and foreign exchange rates. Fluctuations in market rates primarily affect our investment portfolio.

Through asset and liability management, we aim to ensure that market risks influence the economic value of our investments and that of our loss reserves and other liabilities in the same way, thus mitigating the effect of market fluctuations. For example, we reflect important features of our liabilities, such as maturity patterns and currency structures, on the assets side of the balance sheet by acquiring investments with similar characteristics.

We supplement our asset-liability management with various internal policies and limits. As part of our strategic asset allocation process, different asset strategies are simulated and stressed in order to evaluate the ‘optimal’ portfolio (given return objectives and risk constraints). In our investment department, we centralize the management of asset classes to control aggregation of risk, and provide a consistent approach to constructing portfolios as well as the selection process of external asset managers. We have limits on the concentration of investments by single issuers and certain asset classes, and we limit the level of illiquid investments (refer to 'Liquidity Risk' below). Further, our investment guidelines do not permit the use of leverage in any of our fixed maturity portfolios.

We stress test our investment portfolios using historical and hypothetical scenarios to analyze the impact of unusual market conditions and to ensure potential investment losses remain within our risk appetite. At an annual aggregated level, we manage the total risk exposure to our investment portfolio so that the ‘total return’ investment loss in any one year is unlikely to exceed a defined percentage of our common equity at a defined return period.

We mitigate foreign currency risk by seeking to match our estimated (re)insurance liabilities payable in foreign currencies with assets, including cash and investments that are also denominated in such currencies. Where necessary, we use derivative financial instruments for economic hedging purposes. For example, in certain circumstances, we use forward contracts and currency options, to economically hedge portions of our un-matched foreign currency exposures.

Operational Risk

Operational risk represents the risk of financial loss as a result of inadequate processes, system failures, human error or external events.

Group Risk is responsible for coordinating and overseeing a Group-wide framework for operational risk management. As part of this, we maintain an operational loss-event database which helps us better monitor and analyze potential operational risk, identify any trends, and, where necessary, put in place improvement actions to avoid occurrence or recurrence of operational loss events.

We manage transaction type operational risks through the application of process controls throughout our business. In testing these controls, we supplement the work of our internal audit team, with regular underwriting and claim MIAs (as discussed above).

We have specific processes and systems in place to focus on high priority operational matters such as information security, managing business continuity, and third party vendor risk:

- Major failures and disasters which could cause a severe disruption to working environments, facilities and personnel, represent a significant operational risk to us. Our Business Continuity Management framework strives to protect critical business functions from these effects to enable us to carry out our core tasks in time and at the quality required. During 2018, we continued to review our Business Continuity Planning procedures through cyclical planned tests.

- We have developed a number of Information Technology ("IT") platforms, applications and security controls to support our business activities worldwide. Dedicated security standards are in place for our IT systems to ensure the proper use, availability and protection of our information assets.

- Our use of third party vendors exposes us to a number of increased operational risks, including the risk of security breaches, fraud, non-compliance with laws and regulations or internal guidelines and inadequate service. We manage material third party vendor risk, by, among other things, performing a thorough risk assessment on potential large vendors, reviewing a vendor’s financial stability, ability to provide ongoing service and business continuity planning.

Liquidity Risk

Liquidity risk is the risk that we may not have sufficient financial resources to meet our obligations when they fall due, or would have to incur excessive costs to do so. As a (re)insurer, our core business generates liquidity primarily through premium, investment income and the maturity/sale of investments. Our exposure to liquidity risk stems mainly from the need to cover potential extreme loss events and regulatory constraints that limit the flow of funds within the Group. To manage these risks, we have a range of liquidity policies and measures in place:

- We maintain cash and cash equivalents and high quality, liquid investment portfolios to meet expected outflows, as well as those that could result from a range of potential stress events. We place internal limits on the maximum percentage of cash and investments which may be in an illiquid form as well as a minimum percentage of our investment portfolio to mature within a defined timeframe.

- We maintain committed borrowing facilities, as well as access to diverse funding sources to cover contingencies. Funding sources include asset sales, external debt issuances and lines of credit.

Capital Management

Our capital management strategy is to maximize long-term shareholder value by, among other things, optimizing capital allocation and minimizing our cost of capital. We manage our capital in accordance with our Target Capital Range ("TCR") concept. The TCR defines the preferred level of capital needed to absorb shock losses and still satisfy our minimum solvency targets in relation to key capital benchmarks including our "own view" of risk from our internal capital model and regulatory and rating agency capital requirements:

- Internal risk capital - We use our internal capital model to assess the capital consumption of our business, measuring and monitoring the potential aggregation of risk at extreme return periods.
- Regulatory capital requirements - In each country in which we operate, the local regulator specifies the minimum amount and type of capital that each of the regulated entities must hold in support of their liabilities and business plans. We target to hold, in addition to the minimum capital required to comply with the solvency requirements, an adequate buffer to ensure that each of our operating entities meets its local capital requirements. Refer to Item 8, Note 20 to the Consolidated Financial Statements, 'Statutory Financial Information' for further details.
- Rating agency capital requirements - Rating agencies apply their own models to evaluate the relationship between the required risk capital of a company and its available capital resources. The assessment of capital adequacy is usually an integral part of the rating agency process. Meeting rating agency capital requirements and maintaining strong credit ratings are strategic business objectives of the Company. Refer to Item 7 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources' for further information on our financial strength.

The TCR identifies the point at which management needs to consider raising capital, amending our business plan or executing capital management activities well before capital approaches the minimum requirements ("early warning indicator"). This allows us to take appropriate measures to ensure the continued strength and appropriateness of our capital and solvency positions, and also enables us to take advantage of opportunities as they arise. Such measures are performed as and when required and include traditional capital management tools (e.g. dividends, share buy-backs, issuance of shares or debt) or through changes to our risk exposure (e.g. recalibration of our investment portfolio or changes to our reinsurance purchasing strategy).

The TCR also considers an amount of capital beyond which capital could be considered "excess". Where we do not find sufficiently attractive opportunities and returns for our excess capital, we may return capital back to our shareholders through repurchases and dividends. In doing so, we seek to maintain an appropriate balance between higher returns for our shareholders and the security provided by a sound capital position.

REGULATION

General

The business of (re)insurance is regulated in most countries, although the degree and type of regulation varies significantly from one jurisdiction to another. In addition, some jurisdictions are currently evaluating changes to their regulation and we are monitoring these potential developments. To the extent we are aware of impending changes in regulation, designated project teams prepare us to comply on a timely basis with such anticipated changes. The following describes the current material regulations under which the Company operates.

Bermuda

Our Bermuda insurance operating subsidiary, AXIS Specialty Bermuda, is a Class 4 general business insurer subject to the Insurance Act 1978 of Bermuda and related regulations, as amended (the "Insurance Act"). The Insurance Act provides that no person may carry on any insurance or reinsurance business in or from within Bermuda unless registered as an insurer by the Bermuda Monetary Authority (the "BMA") under the Insurance Act. The Insurance Act imposes upon Bermuda insurance companies solvency and liquidity standards and auditing and reporting requirements, and grants the BMA powers to supervise, investigate, require information and demand the production of documents and intervene in the affairs of insurance companies. Significant requirements pertaining to Class 4 insurers include the appointment of an independent auditor, the appointment of a loss reserve specialist, the appointment of a principal representative in Bermuda, the filing of annual Statutory Financial Returns, the filing of annual GAAP financial statements, the filing of an annual capital and solvency return, compliance with minimum and enhanced capital requirements, compliance with certain restrictions on reductions of capital and the payment of dividends and distributions, compliance with group solvency and supervision rules, if applicable, and compliance with the Insurance Code of Conduct. On July 30, 2018, the Insurance Amendment (No. 2) Act 2018 amended the Insurance Act to provide for the prior payment of policyholders' liabilities ahead of general unsecured creditors in the event of the liquidation or winding up of an insurer. Effective January 1, 2019, this amendment applies to general business insurers and provides among other things that, subject to certain statutorily preferred debts, the insurance debts of an insurer must be paid in priority to all other unsecured debts of the insurer. Insurance debt is defined as a debt to which an insurer is or may become liable pursuant to an insurance contract excluding debts owed to an insurer under an insurance contract where the insurer is the person insured.

Effective January 1, 2016, the BMA was granted full "equivalence" under Solvency II (as more fully described below under "Ireland") for Bermuda's commercial insurance sector, including Class 4 insurers.

The BMA acts as group supervisor of AXIS Capital and has designated AXIS Specialty Bermuda as the 'designated insurer' of the AXIS Capital insurance companies. In accordance with the group supervision and insurance group solvency rules, AXIS Capital is required to prepare and submit annual audited group GAAP financial statements, an annual group Statutory Financial Return, an annual group Capital and Solvency Return and quarterly group unaudited GAAP financial statements, and to appoint both a group actuary and a group auditor. Enhanced group capital requirements ("ECR") have been phased in since the financial year ending December 31, 2013, when the applicable ECR was 50% of the amount prescribed by the BMA, with an additional 10% applicable each subsequent year through 2018, when the full ECR will be required.

Ventures Re is registered as a Class 3A insurer subject to the Insurance Act and is a registered segregated accounts company under the Bermuda Segregated Accounts Companies Act 2000, as amended.

AXIS Ventures and AXIS Reinsurance Managers are regulated by the BMA as insurance managers. Insurance managers are subject to the Insurance Act which provides that no person may carry on business as an insurance manager unless registered for the purpose by the BMA under the Insurance Act. Insurance managers are required to comply with the Insurance Manager Code of Conduct.

In November 2017, Glen Rock Holdings Ltd. and Glen Rock Re Ltd. were formed as direct subsidiaries of AXIS Ventures and subsequently merged in December 2018 with Glen Rock Holdings Ltd. as the surviving entity.

AXIS Capital Holdings Limited, AXIS Specialty Bermuda, AXIS Specialty Holdings Bermuda Limited, AXIS

Specialty Investments Limited, AXIS Specialty Markets Limited, AXIS Ventures, Ventures Re, AXIS Specialty Investments II Limited, AXIS Reinsurance Managers, Novae Bermuda Holdings Limited, Novae Bermuda Underwriting Limited and Glen Rock

Holdings Ltd. must also comply with provisions of the Bermuda Companies Act 1981, as amended (the "Companies Act"), regulating the payment of dividends and distributions. A Bermuda company may not declare or pay a dividend or make a distribution out of contributed surplus if there are reasonable grounds for believing that: (a) the company is, or would after the payment be, unable to pay its liabilities as they become due; or (b) the realizable value of the company's assets would thereby be less than its liabilities.

The Singapore branch of AXIS Specialty Bermuda, AXIS Specialty Limited (Singapore Branch), established in 2008, is regulated by the Monetary Authority of Singapore (the "MAS") pursuant to The Insurance Act of Singapore which imposes significant regulations relating to capital adequacy, risk management, governance, audit and actuarial requirements. AXIS Specialty Limited (Singapore Branch) is registered by the Accounting and Corporate Regulatory Authority ("ACRA") as a foreign company in Singapore and is also regulated by ACRA pursuant to the Singapore Companies Act. Prior to establishing its Singapore branch, AXIS Specialty Bermuda had maintained a representative office in Singapore since 2004.

AXIS Specialty Bermuda has reinsurance permissions in China and the Netherlands. AXIS Specialty Limited (Singapore Branch) has separate reinsurance permission in China.

AXIS Managing Agency Ltd. may write general insurance and reinsurance in Bermuda using Lloyd's licenses (refer to 'U.K. and Lloyd's of London' below).

United States

U.S. Insurance Holding Company Regulation of AXIS Capital's Insurance Subsidiaries

As members of an insurance holding company system, each of AXIS Insurance Company, AXIS Reinsurance Company, AXIS Specialty Insurance Company and AXIS Surplus Insurance Company, collectively AXIS Capital's U.S. insurance subsidiaries ("U.S. Insurance Subsidiaries") are subject to the insurance holding company system laws and regulations of the states in which they do business. These laws generally require each of the U.S. Insurance Subsidiaries to register with its respective domestic state insurance department and to furnish financial and other information which may materially affect the operations, management or financial condition within the holding company system. All transactions within a holding company system that involve an insurance company must be fair and equitable. Notice to the insurance departments is required prior to the consummation of transactions affecting the ownership or control of an insurer and of certain material transactions between an insurer and an entity in its holding company system, and certain transactions may not be consummated without the department's prior approval.

State Insurance Regulation

AXIS Reinsurance Company is licensed to transact insurance and reinsurance throughout the U.S. including the District of Columbia and Puerto Rico. AXIS Reinsurance Company is also authorized to transact insurance and reinsurance throughout Canada through its Canadian branch and has reinsurance permissions in Brazil, Ecuador, Guatemala, Panama, India and Mexico. AXIS Insurance Company is licensed to transact insurance and reinsurance throughout the U.S. including the District of Columbia. AXIS Specialty Insurance Company is licensed to transact insurance and reinsurance throughout the U.S., except California, Iowa, Maine, New Mexico, New York and Wyoming. AXIS Surplus Insurance Company is eligible to write insurance on a surplus lines basis in all 50 states of the U.S., the District of Columbia, the U.S. Virgin Islands and Puerto Rico.

Our U.S. Insurance Subsidiaries also are subject to regulation and supervision by their respective states of domicile and by other jurisdictions in which they do business. The regulations generally are derived from statutes that delegate regulatory and supervisory powers to an insurance official. The regulatory framework varies from state to state, but generally relates to approval of policy forms and rates, the standards of solvency that must be met and maintained, including risk-based capital standards, material transactions between an insurer and its affiliates, the licensing of insurers, agents and brokers, restrictions on insurance policy terminations, the nature of and limitations on the amount of certain investments, limitations on the net amount of insurance of a single risk compared to the insurer's surplus, deposits of securities for the benefit of policyholders, methods of accounting, periodic examinations of the financial condition and market conduct of insurance companies, the form and content of reports of financial condition required to be filed, reserves for unearned premiums, losses, expenses and other obligations.

Our U.S. Insurance Subsidiaries are required to file detailed quarterly statutory financial statements with state insurance regulators in each of the states in which they conduct business. In addition, the U.S. Insurance Subsidiaries' operations and accounts are subject to financial condition and market conduct examination at regular intervals by state regulators.

Regulators and rating agencies use statutory surplus as a measure to assess our U.S. Insurance Subsidiaries' ability to support business operations and pay dividends. Our U.S. Insurance Subsidiaries are subject to various state statutory and regulatory restrictions that limit the amount of dividends that may be paid from earned surplus without prior approval from regulatory authorities. These restrictions differ by state, but generally are based on calculations using statutory surplus, statutory net income and investment income. In addition, many state regulators use the National Association of Insurance Commissioners promulgated risk-based capital requirements as a means of identifying insurance companies which may be under-capitalized.

Although the insurance industry generally is not directly regulated by the federal government, federal legislation and initiatives can affect the industry and our business. Certain sections of the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 ("Dodd-Frank") pertain to the regulation and business of insurance. Specifically, the Federal Insurance Office was created ("FIO") has limited authority and serves to collect information and report on the business of insurance to Congress. In addition, Dodd-Frank contains the Non-admitted and Reinsurance Reform Act of 2010 ("NRRA"). NRRA attempts to coordinate the payment of surplus lines taxes, simplify the granting of alien insurers to become surplus lines authorized and coordinates the credit for certain reinsurance. Various sections of Dodd-Frank become effective over time and regulations have yet to be drafted for certain provisions. AXIS does not anticipate that Dodd-Frank will have any material effect on its operations or financial condition this year, but will continue to monitor its implementation.

Ternian Insurance Group LLC, a leading provider of voluntary, limited benefit, affordable health plans and other employee benefits coverage for hourly and part-time workers and their families, is an authorized insurance producer in all 50 of the U.S. except Hawaii. As a resident insurance producer in Arizona, Ternian Insurance Group LLC is subject to regulation and supervision by the Arizona Department of Insurance and is also subject to the regulation and supervision of the other states in which Ternian transacts business.

AXIS Specialty Underwriters, Inc., a Florida licensed reinsurance intermediary is subject to regulation and supervision by the Florida Department of Financial Services. AXIS Specialty Underwriters, Inc. operates as the Latin American and Caribbean regional coverholder for AXIS Syndicate providing facultative reinsurance coverage to the Latin American and Caribbean market with a focus on energy and property business.

U.S. Authorizations of our Non-U.S. Insurance Subsidiaries

The insurance laws of each state of the U.S. regulate or prohibit the sale of (re)insurance within their jurisdictions by (re)insurers that are not admitted to do business within such jurisdictions, or conduct business pursuant to exemptions. AXIS Specialty Europe is eligible to write surplus lines business in all 50 of the U.S., the District of Columbia and Puerto Rico. AXIS Managing Agency Ltd. is eligible to use Lloyd's of London licenses to (i) write surplus lines business in all 50 of the U.S., in the District of Columbia and in all U.S. territories, (ii) to write insurance business, except life insurance business, in the states of Illinois, Kentucky and in the U.S. Virgin Islands and (iii) to write non-life reinsurance business in all 50 of the U.S., the District of Columbia and in all U.S. territories, except for accident and health reinsurance in New York.

In addition to the regulatory requirements imposed by the jurisdictions in which they are licensed, reinsurers' business operations are affected by regulatory requirements in various states of the U.S. governing "credit for reinsurance" that are imposed on their ceding companies. In general, a ceding company obtaining reinsurance from a reinsurer that is licensed, accredited or approved by the jurisdiction or state in which the ceding company files statutory financial statements is permitted to reflect in its statutory financial statements a credit in an aggregate amount equal to the ceding company's liability for unearned premiums (which are that portion of premiums written which applies to the unexpired portion of the policy period), loss reserves and loss expense reserves ceded to the reinsurer. The great majority of states, however, permit a credit to statutory surplus resulting from reinsurance obtained from a non-licensed or non-accredited reinsurer to be recognized to the extent that the reinsurer provides a letter of credit, trust fund or other acceptable security arrangement. A few states do not allow credit for reinsurance ceded to non-licensed reinsurers except in certain limited circumstances and others impose additional requirements that make it difficult to become accredited. In connection with the establishment of a Multi-Beneficiary Reinsurance Trust, AXIS Specialty Bermuda obtained accredited or trusteed reinsurer status in all U.S. jurisdictions except for New York.

Ireland

On November 4, 2015, Ireland transposed the Solvency II Directive (Directive 2009/138/EC) as amended by the Omnibus II Directive (2014/51/EC) (together "the Solvency II Directive") into Irish Law effective January 1, 2016. This transposition took the form of secondary Irish legislation in the form of a Statutory Instrument, the European Communities (Insurance and Reinsurance) Regulations 2015, which together with the Solvency II Directive are collectively referred to herein as "Solvency II". Solvency II represents a consolidation and modernization of existing European Commission Solvency I (re)insurance regulation and supervision and includes a new harmonized European Union-wide risk based solvency and reporting regime for the (re)insurance sector. Solvency II covers three main areas: (i) the valuation of assets and liabilities and related solvency capital requirements; (ii) governance requirements including key functions of compliance, internal audit, actuarial and risk management; and (iii) new legal entity and European Union ("E.U.") group reporting and disclosure requirements including public disclosures. The new capital requirement must be computed using the Solvency II standard formula unless the Central Bank of Ireland ("CBI") has previously authorized a company to use its own internal model. Certain of our European legal entities are subject to Solvency II.

AXIS Specialty Europe

AXIS Specialty Europe is a European public limited liability company incorporated as a non-life insurer under the laws of Ireland. It is a Societas Europaea (SE), or European society company, and has been registered in accordance with company law of the E.U. As a SE company, AXIS Specialty Europe can more easily merge with companies in European member states and also transfer its domicile to other member states of the E.U. AXIS Specialty Europe is authorized and regulated by the CBI pursuant to the Insurance Acts 1909 to 2000, as amended, repealed or replaced, the Central Bank Acts 1942 – 2014, as amended, repealed or replaced and E.U. regulation relating to general insurance and statutory instruments made thereunder. AXIS Specialty Europe is authorized to conduct business in 16 non-life insurance classes throughout the E.U. and the European Economic Area ("EEA") which includes each of the member countries of the E.U. with the addition of Iceland, Liechtenstein and Norway. AXIS Specialty Europe may also write reinsurance business within the classes of insurance business for which it is authorized. Significant additional regulation and guidelines apply in relation to compliance with corporate governance requirements as well as fitness to perform assessments.

AXIS Specialty Europe is subject to Solvency II. In accordance with Solvency II, AXIS Specialty Europe is permitted to provide insurance services to clients located in any EEA member state ("Freedom of Services"), provided it has first notified the CBI and subject to compliance with any "general good requirements" as may be established by the applicable EEA Member State regulator. AXIS Specialty Europe has notified the CBI of its intention to provide insurance services on a Freedom of Services basis in all EEA countries.

Solvency II also permits AXIS Specialty Europe to carry on insurance business in any EEA Member State under the principle of "Freedom of Establishment."

AXIS Specialty Europe's U.K. branch transacts general insurance business in the U.K. The CBI remains responsible for the prudential supervision of the branch; however, the branch is subject to limited regulation by the U.K. Financial Conduct Authority ("FCA") and the Prudential Regulation Authority ("PRA"). Upon the U.K.'s withdrawal from the E.U. ("Brexit"), AXIS Specialty Europe expects to lose its Freedom of Establishment rights in the U.K. In order to maintain business continuity upon the exit of the U.K. from the E.U., AXIS Specialty Europe has submitted an application to the PRA for authorization of a third country branch in the U.K., which, if approved, would be regulated by the PRA and the FCA.

Effective January 1, 2019, the shares of Compagnie Belge d’Assurances Aviation NV/SA ("Aviabel") were transferred to AXIS Specialty Europe from AXIS Specialty Holdings Ireland Limited and Aviabel was merged into AXIS Specialty Europe by way of merger by absorption and dissolved without going into liquidation (the "Aviabel Merger").

In connection with the Aviabel Merger, AXIS Specialty Europe established two new branches in Belgium and the Netherlands. These new branches are subject to CBI prudential supervision and limited regulation by the National

Bank of Belgium and the Dutch National Bank, respectively.

In October 2015, AXIS Specialty Europe's Australia branch, trading as AXIS Specialty Australia, ceased writing new and renewal business and completed a portfolio transfer of all the insurance policies, assets and liabilities with effect from February 13, 2017.

AXIS Specialty Europe has local regulatory permission to carry on insurance business in Jersey and has reinsurance permissions in India, China, Argentina, Mexico, Panama, Paraguay, Chile, Honduras, Ecuador, Colombia and Guatemala.

AXIS Re SE

AXIS Re SE is a European public limited liability company incorporated as a reinsurer under the laws of Ireland. AXIS Re SE is also a Societas Europaea (SE), or European society company, registered in accordance with the corporate law of the E.U. AXIS Re SE is authorized by the CBI as a composite reinsurer (non-life and life) in accordance with the Insurance Acts 1909 to 2000, as amended, repealed or replaced, the Central Bank Acts 1942 - 2014 as amended, repealed or replaced and E.U. regulation applicable to reinsurance and statutory instruments made thereunder. AXIS Re SE is authorized to transact reinsurance throughout the E.U. and the EEA and is subject to Solvency II. Significant additional regulation and guidelines apply to AXIS Re SE in relation to compliance with corporate governance requirements as well as performing assessments of fitness and probity.

AXIS Re SE's branch in Zurich, Switzerland trades as AXIS Re Europe and is registered in Zurich as AXIS Re SE, Dublin (Zurich branch). The CBI remains responsible for the prudential supervision of the branch. The Swiss Financial Market Supervisory Authority does not impose additional regulation upon a Swiss branch of an EEA reinsurer.

AXIS Re SE has reinsurance permissions in Argentina, Bolivia, Brazil, China, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, India, Mexico, Nicaragua, Panama, Paraguay, Peru and Venezuela.

AXIS Re SE has marketing offices in Brazil, France and Spain. These offices are representative offices only and no business may be written or any regulated activity conducted from these offices.

AXIS Re SE Escritório de Representação No Brasil Ltda. was established in Brazil as a subsidiary of AXIS Re SE to facilitate the Brazilian Superintendence of Private Insurance ("SUSEP") regulatory requirements for approval of a representative office of AXIS Re SE and for the registration of AXIS Re SE with SUSEP as an Admitted Reinsurer.

AXIS Specialty Holdings Ireland Limited

AXIS Specialty Holdings Ireland Limited is the limited liability holding company for AXIS Specialty Europe and AXIS Re SE, each incorporated under the laws of Ireland, Contessa Limited, a U.K. licensed insurance intermediary and AXIS Reinsurance (DIFC) Limited, a Dubai licensed insurance intermediary.

Effective January 1, 2019, AXIS Specialty Holdings Ireland Limited transferred the shares of Aviabel to AXIS Specialty Europe, described above under AXIS Specialty Europe as the Aviabel Merger.

AXIS Managing Agency Ltd. is eligible to use Lloyd's of London licenses to write insurance, except permanent health, and reinsurance business on a Freedom of Services basis in Ireland.

U.K. and Lloyd's of London

In the U.K., under the Financial Services and Markets Act 2000 ("FSMA"), no person may carry on a regulated activity unless authorized or exempt. Effecting or intermediating contracts of insurance or reinsurance are regulated activities requiring authorization. Effecting contracts of insurance requires authorization by the PRA and is regulated by the FCA. Intermediating contracts of insurance requires authorization by the FCA.

Under the Financial Services Act 2012, the FCA is a conduct regulator for all U.K. firms carrying on a regulated activity in the U.K. while the PRA is the prudential regulator of U.K. banks, building societies, credit unions, insurers and major investment firms. As a prudential regulator, the PRA has a general objective to promote the safety and soundness of the firms it regulates. The PRA rules require financial firms to hold sufficient capital and have adequate risk controls in place. Close supervision of firms ensures that the PRA has a comprehensive overview of their activities. The PRA can step in if it believes an insurer is not protecting policyholders adequately.

The FCA has a statutory strategic objective to ensure that relevant markets function well and have operational objectives to: protect consumers; protect financial markets; and promote competition. It makes rules covering how the firm must be managed and requirements relating to the firm’s systems and controls; how business must be conducted; and the firm’s arrangements to manage financial crime risk. The PRA and the FCA require regular and ad hoc reporting and monitor compliance with their respective rulebooks through a variety of means including the collection of data, industry reviews, and

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site visits. The directors and senior managers of AXIS Managing Agency Ltd. must be “approved persons” under FSMA making them directly and personally accountable for ensuring compliance with the requirements of the PRA and the FCA.

AXIS Managing Agency Ltd.

AXIS Managing Agency Ltd. is authorized and regulated by the PRA and regulated by the FCA to conduct insurance and reinsurance business and is a Lloyd's managing agent authorized by Lloyd's to manage AXIS Syndicate 1686, Syndicate 2007 and Special Purpose Arrangement 6129.

Effective January 1, 2019, Syndicate 2007 will no longer be accepting new business as we consolidate our Lloyd's business under Syndicate 1686.

Lloyd’s is a society of members both corporate and individual, which underwrite insurance and reinsurance (each for its own account) as members of syndicates. A syndicate is made up of one or more members that join together as a group to accept insurance and reinsurance risks. Each syndicate is managed by a managing agent. Managing agents write insurance business on behalf of the member(s) of the syndicate, which member(s) receive profits or bear losses in proportion to their share in the syndicate for each underwriting year of account.

The Society of Lloyd’s is subject to U.K. law and is authorized under the FSMA. The Lloyd’s Act 1982 defines the governance structure and rules under which the society operates. Under the Lloyd's Act 1982, the Council of Lloyd’s is responsible for the management and supervision of the Lloyd’s market. The Council of Lloyd's overseas and supports the Lloyd's market. Lloyd's manages and protects the Lloyd's network of international licenses. Lloyd's agrees to syndicates' business plans and evaluates performance against those plans. Syndicates are required to underwrite only in accordance with their agreed business plans. If they fail to do so, Lloyd’s can take a range of actions including, as a last resort, stopping a syndicate from underwriting. Lloyd’s monitors syndicates’ compliance with Lloyd’s minimum standards. In addition, Lloyd's is responsible for setting both member and central capital levels.

Lloyd’s has a global network of licenses and authorizations and underwriters at Lloyd's may write business in and from countries where Lloyd’s has authorized status or exemptions available to non-admitted insurers or reinsurers. Lloyd’s licenses can only be used if the Syndicate Business Forecast, agreed annually with Lloyd’s, names those countries. AXIS Managing Agency Ltd. operates an underwriting division at Lloyd’s Insurance Company (China) Limited, a wholly owned subsidiary of the Corporation of Lloyd’s which allows it to underwrite reinsurance in China.

AXIS Corporate Capital UK Limited

Until December 31, 2018, AXIS Corporate Capital UK Limited was the sole (100%) corporate member of AXIS Syndicate 1686. Effective as of January 1, 2019, AXIS Corporate Capital UK Limited and Novae Corporate Underwriting Limited are the corporate members of AXIS Syndicate 1686, providing 70% and 30% capital support, respectively. AXIS Syndicate 1686 is managed by AXIS Managing Agency Ltd.

Novae Corporate Underwriting Limited

Following the acquisition of Novae Group Limited in October 2017, management of Syndicate 2007 was transferred from Novae Syndicates Limited to AXIS Managing Agency Ltd. on January 1, 2018. Novae Corporate Underwriting Limited is the sole corporate member of Syndicate 2007.

AXIS Underwriting Limited

AXIS Underwriting Limited, formerly known as Novae Underwriting Limited, is authorized and regulated by the FCA as an insurance intermediary and underwrites insurance on behalf of Syndicate 1686 at Lloyd’s.

Contessa Limited

Contessa Limited is authorized and regulated by the FCA as an insurance intermediary with offices in London and Belfast and underwrites insurance on behalf of AXIS Specialty Europe in the U.K and in Ireland.

AXIS Specialty UK Holdings Limited

AXIS Specialty UK Holdings Limited is a limited liability holding company for AXIS Managing Agency Ltd., AXIS Corporate Capital UK Limited and Novae Group Limited, incorporated under the laws of England and Wales.

Regulatory Impact due to Brexit

Insurance

AXIS Specialty Europe transacts direct insurance business in the EEA on a Freedom of Services basis and on a Freedom of Establishment basis through its branch in the U.K. Post Brexit, it is expected that AXIS Specialty Europe will lose its authorization to conduct business in the U.K. In order to ensure continuity of services, AXIS Specialty Europe is seeking authorization from the PRA to license its existing U.K. branch as a third-country branch in the U.K. As an Ireland domiciled insurer authorized to transact insurance in the E.U., AXIS Specialty Europe will remain authorized to service customers within and outside of the EEA to the extent permitted by local law. Post Brexit, AXIS Specialty Europe’s customers based in the EEA will be serviced from AXIS Specialty Europe's head office in Dublin, Ireland or through either of AXIS Specialty Europe’s branches in Belgium or the Netherlands.

AXIS Managing Agency Ltd. transacts direct insurance business in the EEA on a Freedom of Services basis from the U.K. Post Brexit, it is expected that AXIS Managing Agency Ltd. will lose its authorization to conduct direct insurance business in the EEA under a Freedom of Services basis. However, AXIS Managing Agency Ltd. will remain able to access the EEA markets via Lloyd's Insurance Company S.A in Brussels (“Lloyd’s Brussels”) to ensure continuity of services in the EEA post Brexit. Lloyd's Brussels has been approved by the National Bank of Belgium and the Financial Services and Markets Authority with authorization to write non-life insurance risks throughout the EEA via Lloyd's existing distribution channels.

Reinsurance

AXIS Managing Agency Ltd. currently transacts worldwide reinsurance at Lloyd’s including in the EEA. It is expected that full equivalence under Solvency II will be granted by the European Commission to the U.K. as a result of the European Union (Withdrawal) Bill and the transposition of Solvency II into U.K law. In the unlikely event that full equivalence under Solvency II is not granted, AXIS Managing Agency Ltd. will remain able to conduct non-life facultative and proportional excess of loss reinsurance throughout the EEA via Lloyd's Brussels.

AXIS Re SE currently transacts reinsurance business in the EEA and the U.K. Pursuant to the European Union (Withdrawal) Bill and the transposition of Solvency II into U.K law, we anticipate that the PRA will grant full equivalence under Solvency II to EEA supervised reinsurers, including AXIS Re SE, allowing AXIS Re SE to continue its operations without disruption post Brexit.

In the unlikely event that full equivalence under Solvency II is not granted to the U.K., AXIS Capital will continue its reinsurance operations through its entities authorized to conduct reinsurance in the EEA and in the U.K.

Switzerland

AXIS Re SE conducts reinsurance business from its branch, AXIS Re Europe, in Zurich, Switzerland, subject to the supervision of the CBI.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses to write all classes of insurance business, except life, sickness and legal expenses and is authorized to write all classes of reinsurance business in Switzerland.

Singapore

AXIS Specialty Bermuda conducts (re)insurance business from its branch in Singapore, AXIS Specialty Limited (Singapore Branch), subject to the supervision of the BMA and the MAS which imposes significant regulations relating to capital adequacy, risk management, governance and audit and actuarial requirements. AXIS Specialty Limited (Singapore Branch) is registered by ACRA as a foreign company in Singapore and regulated by ACRA pursuant to the Singapore Companies Act.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses to write insurance from Singapore with the exception of certain compulsory classes and life business. Singaporean business may also be written from outside of Singapore in certain circumstances where it is placed with a Singapore intermediary licensed by the MAS to place business at Lloyd's or by dealing directly with the insured.

Canada

AXIS Reinsurance Company conducts (re)insurance business from AXIS Reinsurance Company (Canadian Branch), its branch in Canada, subject to the supervision of the New York State Department of Financial Services and the Office of the Superintendent of Financial Institutions Canada ("OSFI"), the federal regulatory authority that supervises federal Canadian and non-Canadian insurance companies operating in Canada pursuant to the Insurance Companies Act (Canada). The branch is authorized by OSFI to transact insurance and reinsurance. In addition, the branch is subject to the laws and regulations of each of the provinces and territories in which it is licensed.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses subject to the laws and regulations of each of the provinces and territories in which it is licensed, to write insurance in or from Canada, with the following exceptions: hail insurance in respect of crop in the province of Quebec; home warranty insurance in the province of British Columbia; life insurance; credit protection insurance; title insurance; surety; and mortgage default insurance. AXIS Syndicate, through Lloyd's, is authorized to write reinsurance in or from Canada subject to certain restrictions relating to life reinsurance.

Belgium

Through December 31, 2018, Aviabel was authorized to conduct general property and casualty insurance and maintained its registered office in Brussels, Belgium. Aviabel was regulated by the National Bank of Belgium pursuant to the Belgian Act of 2016 and was subject to Solvency II. Aviabel also exercised certain insurance activities through its branch registered in the Netherlands and had a captive subsidiary in Luxembourg, Aviabel RE S.A. Through 2018, Aviabel was permitted to provide insurance across the EEA on a cross-border basis and had reinsurance permissions in Argentina, Chile, Colombia, Ecuador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, Venezuela, India, China and South Korea.

As a result of the Aviabel Merger, described above under "AXIS Specialty Europe", the insurance and reinsurance portfolio of Aviabel was transferred to AXIS Specialty Europe, a process overseen and coordinated by the National Bank of Belgium in cooperation with other European regulators.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses to write insurance (except permanent health) and reinsurance business on a Freedom of Establishment basis in Belgium.

AXIS Specialty Europe has permission to write insurance and reinsurance on a Freedom of Services basis in Belgium.

AXIS Re SE has permission to write reinsurance on a Freedom of Services basis in Belgium.

Luxembourg

Aviabel Re S.A. is a captive reinsurance company in Luxembourg and is authorized by the Commissariat aux Assurances. Aviabel Re S.A. was a wholly owned subsidiary of Aviabel until 1 October 2018, when ownership was transferred to AXIS Specialty Holdings Ireland Limited.

AXIS Specialty Europe has permission to write insurance and reinsurance on a Freedom of Services basis in Luxembourg.

AXIS Re SE has permission to write reinsurance on a Freedom of Services basis in Luxembourg.

Dubai

AXIS Specialty Holdings Ireland Limited recently established AXIS Reinsurance (DIFC) Limited which was granted a prudential Category 4 license from the Dubai Financial Services Authority on December 25, 2017 to provide insurance intermediation and insurance management services. AXIS Reinsurance (DIFC) Limited has been established within the Dubai International Financial Centre and is required to comply with Regulatory Law DIFC Law No. 1 2004 and any amendments.

AXIS Reinsurance (DIFC) Limited will operate as an intermediary under binding authority granted by the Board of Directors of AXIS Re SE to underwrite several lines of business.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses to write reinsurance in or from Dubai with certain exceptions.

Non-Admitted (Re)Insurance

The AXIS Capital (re)insurance companies also (re)insure risks in many countries, including the above countries, pursuant to regulatory permissions and exemptions available to non-admitted (re)insurers.

AXIS Managing Agency Ltd. is eligible to use Lloyd's licenses to write insurance and reinsurance business where Lloyd's has authorized status or pursuant to regulatory exemptions available to non-admitted (re)insurers.

Employees

As of February 20, 2019 we had approximately 1,567 employees. We believe that relations with our employees are excellent. We aim to attract and retain the top talent in the industry and to motivate our employees to make decisions that are in the best interest of both our clients and shareholders. We nurture an ethical, risk-aware, achievement-oriented culture that promotes professionalism, responsibility, integrity, discipline and entrepreneurship.

Trademarks

We use our trademarks, including among others, our "AXIS" trademarks for the global marketing of our products and services and believe that we sufficiently safeguard our trademark portfolio to protect our rights.

Available Information

Our Internet website address is http://www.axiscapital.com. Information contained in our website is not part of this report.

We make available free of charge, through our internet website, our Annual Report on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to those reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act as soon as reasonably practicable after such material is electronically filed with, or furnished to, the SEC. Current copies of the charter for each of our Audit Committee, Corporate Governance and Nominating Committee, Compensation Committee, Finance Committee, Executive Committee and Risk Committee, as well as our Corporate Governance Guidelines and Code of Business Conduct, are available on our internet website at http://www.axiscapital.com.

ITEM 1A. RISK FACTORS

You should carefully consider the following risks and all of the other information set forth in this report, including our consolidated financial statements and the notes thereto:

The (re)insurance business is historically cyclical, and we expect to experience periods with excess underwriting capacity and unfavorable premium rates.

The (re)insurance business historically has been a cyclical industry characterized by periods of intense price competition due to excessive underwriting capacity as well as periods when shortages of capacity permitted favorable premium levels. An increase in premium rates is often offset by an increasing supply of (re)insurance capacity, via capital provided by new entrants, new capital market instruments and structures and/or the commitment of additional capital by existing (re)insurers, which may cause prices to decrease. Any of these factors could lead to a significant reduction in premium rates, less favorable policy terms and fewer submissions for our underwriting services. In addition to these considerations, changes in the frequency and severity of losses suffered by insureds and insurers may affect the cycles of the (re)insurance business significantly.

Competition and consolidation in the (re)insurance industry could reduce our growth and profitability.

The (re)insurance industry is highly competitive. We compete on an international and regional basis with major U.S., Bermuda, European and other international (re)insurers and underwriting syndicates, including Lloyd's, some of which have greater financial, marketing and management resources than we do. We also compete with new companies that continue to be formed to enter the (re)insurance markets. In addition, capital market participants have created alternative products that are intended to compete with reinsurance products. New and alternative capital inflows in the (re)insurance industry and the retention by cedants of more business have caused an excess supply of (re)insurance capital. There has been a large amount of merger and acquisition activity in the (re)insurance sector in recent years which may continue and we may experience increased competition as a result of that consolidation with consolidated entities having enhanced market power. Increased competition could result in fewer submissions, lower premium rates, less favorable policy terms and conditions and greater costs of customer acquisition and retention. In addition, if industry pricing does not meet our hurdle rate, we may reduce our future underwriting activities. These factors could have a material adverse effect on our growth and profitability.

Global economic conditions could materially and adversely affect our business, results of operations and financial condition.

Worldwide financial markets can be volatile. In 2008 and 2009, for example, there was volatility and disruption including, among other things, dislocation in the mortgage and asset-backed securities markets, deleveraging and decreased liquidity generally, widening of credit spreads, bankruptcies and government intervention in a number of large financial institutions. These events resulted in extraordinary responses by governments worldwide, including the enactment of the Emergency Economic Stabilization Act of 2008 and the U.S. Recovery and Reinvestment Act in 2009 and Dodd Frank. Uncertainty and market turmoil has affected and may in the future affect, among other aspects of our business, the demand for and claims made under our products, the ability of customers, counterparties and others to establish or maintain their relationships with us, our ability to access and efficiently use internal and external capital resources and our investment performance and portfolio. We also provide coverage to the mortgage industry through insurance and reinsurance of mortgage insurance companies and U.S. Government Sponsored Entity credit risk sharing transactions, and deteriorating economic conditions could cause our mortgage insurance losses to increase and adversely affect our results of operations and financial condition.

In addition, steps taken by governments to stabilize financial markets and improve economic conditions may be ineffective and actual or anticipated efforts to continue to unwind some of such steps could disrupt financial markets and/or could adversely impact the value of our investment portfolio. While inflation has recently been moderate and that trend may continue, it is possible that expansionary monetary policies, recent changes to the U.S. tax law, improving economic conditions, higher commodity prices and tighter labor markets could lead to an inflationary environment.

The current U.S. administration has called for comprehensive regulatory reform and questioned certain existing legislation, including the Affordable Care Act and Dodd Frank. It is uncertain how any such reform could affect our business. Governmental action and legislation resulting from the U.S. administration, including the recently enacted U.S. tax reform commonly referred to as the 2017 Tax Cuts and Jobs Act ("U.S. Tax Reform") as well as political debate, conflicts and compromises related to such actions, may impact the financial markets and consumer confidence and spending or adversely impact the U.S. economy (refer to 'Changes in U.S. federal income tax law could materially adversely affect us' below).

Given the ongoing global economic uncertainties, evolving market conditions may continue to affect our results of operations, financial position and capital resources. In the event that there is additional deterioration or volatility in financial markets or general economic conditions, our results of operations, financial position, capital resources and competitive landscape could be materially and adversely affected.

Our results of operations and financial condition could be materially adversely affected by the occurrence of natural and man-made disasters.

We have substantial exposure to unexpected losses resulting from natural disasters, man-made catastrophes and other catastrophe events. Catastrophes can be caused by various events, including hurricanes, typhoons, earthquakes, tsunamis, hailstorms, floods, explosions, severe winter weather, fires, drought, and other natural or man-made disasters. Catastrophes can also be man-made, such as terrorist attacks and other intentionally destructive acts, including those involving nuclear, biological, chemical or radiological events, cyber-attacks, explosions and infrastructure failures. The incidence and severity of catastrophes are inherently unpredictable and our losses from catastrophes could be substantial.

Increases in the values and concentrations of insured property, particularly along coastal regions and increases in the cost of construction materials required to rebuild affected properties, may increase the impact of these occurrences on us in the future. Changes in global climate conditions may further increase the frequency and severity of catastrophe activity and losses in the future. Similarly, changes in global political and economic conditions may increase both the frequency and severity of man-made catastrophe events in the future. Examples of the impact of catastrophe events include our recognition of the net losses and loss expenses of:

- $430M in aggregate, primarily related to Hurricanes Michael and Florence, the California Wildfires, and Typhoon Jebi in 2018;
- $835 million, in aggregate, primarily related to U.S. weather-related events, Hurricanes Harvey, Irma and Maria, Mexico earthquakes and California wildfires in 2017;
- $204 million, in aggregate, relating to U.S. weather-related events, Hurricane Matthew, Fort McMurray wildfires, the Japanese, Ecuadorian and South Island earthquakes, North Calgary hailstorm and European floods in 2016;

These events materially reduced our net income in the years noted above. Although we attempt to manage our exposure to such events through the use of underwriting controls and the purchase of third-party reinsurance, catastrophe events are inherently unpredictable and the actual nature of such events when they occur could be more frequent or severe than contemplated in our pricing and risk management expectations. As a result, the occurrence of one or more catastrophe events could have a material adverse effect on our results of operations or financial condition.
With regard to cyber-attacks, this is an area where the threat landscape is evolving, and there is a risk that increases in the frequency and severity of cyber-attacks on our clients could adversely affect our financial condition and operating results. This risk is also dependent on our clients' cybersecurity defenses, and our issuance of policy terms which respond to the evolving threat landscape. In addition, our exposure to cyber-attacks includes exposure to silent cyber risks, meaning risks and potential losses associated with policies where cyber risk is not specifically included nor excluded in the policies. Even in cases where we attempt to exclude losses from cyber-related risks, there can be no assurance that a court or arbitration panel will interpret policy language or otherwise issue a ruling favorable to us.
Global climate change may have a material adverse effect on our results of operations and financial condition if we are not able to adequately assess and reserve for the increased frequency and severity of catastrophes resulting from these environmental factors.
The frequency and severity of natural catastrophe activity, including hurricanes, tsunamis, tornadoes, floods and droughts, has been greater in recent years. Atmospheric concentrations of carbon dioxide and other greenhouse gases have increased dramatically since the industrial revolution and there is debate as to whether this has caused a gradual increase in global average temperatures. Increasing global average temperatures may continue in the future and could impact our business in the long-term.
We attempt to mitigate the risk of financial exposure from climate change through our underwriting risk management practices. This includes sensitivity to geographic concentrations of risks, the purchase of protective reinsurance and selective underwriting criteria which can include, but is not limited to, higher premiums and deductibles and more specifically excluded policy risks. However, due to lack of scientific certainty about the causes of increased frequency and severity of catastrophes and the lack of adequate predictive tools, a continuation and worsening of recent trends may have a material impact on our results of operations and/or financial condition.
We could face unanticipated losses from war, terrorism, political unrest, and geopolitical uncertainty and these or other unanticipated losses could have a material adverse effect on our financial condition, results of operations and/or liquidity.
We have substantial exposure to unexpected losses resulting from war, acts of terrorism, political unrest and geopolitical instability in many regions of the world. In certain instances, we specifically (re)insure risks resulting from acts of terrorism. Even in cases where we attempt to exclude losses from terrorism and certain other similar risks from some coverages written by us, there can be no assurance that a court or arbitration panel will interpret policy language or otherwise issue a ruling favorable to us. Accordingly, we can offer no assurance that our reserves will be adequate to cover losses should they materialize.

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We have limited terrorism coverage in our own reinsurance program for our exposure to catastrophe losses related to acts of terrorism. Furthermore, although the Terrorism Risk Insurance Extension Act of 2005 ("TRIEA") provides benefits in the event of certain acts of terrorism, those benefits are subject to a deductible and to other limitations. Under TRIEA, once our losses attributable to certain acts of terrorism exceed 20% of our direct commercial property and liability insurance premiums for the preceding calendar year, the federal government will reimburse us for 85% of such losses in excess of this deductible. Notably, TRIEA does not provide coverage for reinsurance losses. Given the unpredictable frequency and severity of terrorism losses, as well as the limited terrorism coverage in our own reinsurance program, future losses from acts of terrorism could materially and adversely affect our results of operations, financial condition and/or liquidity in future periods. TRIEA expired at the end of 2014 but was reauthorized, with some adjustments to its provisions, in January 2015 for six years through December 31, 2020. Over the six-year life of the reauthorized program, the federal government reimbursement percentage will drop from 85% to 80%.
Our credit and political risk insurance line of business protects insureds with interests in foreign jurisdictions in the event governmental action prevents them from exercising their contractual rights and may also protect their assets against physical damage perils. The insurance provided may include cover for loss arising from expropriation, forced abandonment, license cancellation, trade embargo, contract frustration, non-payment, war on land or political violence (including terrorism, revolution, insurrection and civil unrest).

Our credit and political risk line of business also provides non-payment coverage on specific loan obligations. We insure sovereign non-payment and corporate non-payment as a result of commercial as well as political risk events. The vast majority of the corporate non-payment credit insurance provided is for single-named illiquid risks, primarily in the form of senior bank loans that can be individually analyzed and underwritten. We avoid insurance for structured finance products defined by pools of risks and insurance for synthetic products that would expose us to mark-to-market losses. We also avoid terms in our credit insurance contracts which introduce liquidity risk, most notably, in the form of a collateralization requirement upon a ratings downgrade. We also attempt to manage our exposure, by among other things, setting credit limits by country, region, industry and individual counterparty and regularly reviewing our aggregate exposures. However, due to globalization, political instability in one region can spread to other regions. Geopolitical uncertainty regarding a variety of domestic and international matters, such as the U.S. political and regulatory environment, the potential for default by one or more European sovereign debt issuers and Brexit (as defined below) could have a material adverse effect on our results of operations or financial condition.
A downgrade in our financial strength or credit ratings by one or more rating agencies could materially and negatively impact our business, financial condition, results of operations and/or liquidity.
Our ability to underwrite business is dependent upon the quality of our claims paying and financial strength ratings as evaluated by independent rating agencies. A downgrade, withdrawal or negative watch/outlook by any of these institutions could cause our competitive position in the (re)insurance industry to suffer and make it more difficult for us to market our products. If we experience a credit rating downgrade, withdrawal or negative watch/outlook in the future, we could incur higher borrowing costs and may have more limited means to access capital. A downgrade, withdrawal or negative watch/outlook could also result in a substantial loss of business for us, as ceding companies and brokers that place such business may move to other (re)insurers with higher ratings. We would also be required to post collateral under the terms of certain of our policies of reinsurance.

If actual claims exceed our loss reserves, our financial results could be adversely affected.
While we believe that our loss reserves at December 31, 2018 are adequate, new information, events or circumstances, unknown at the original valuation date, may lead to future developments in our ultimate losses being significantly greater or less than the reserves currently provided. The actual final cost of settling claims outstanding at December 31, 2018 as well as claims expected to arise from the unexpired period of risk is uncertain. There are many other factors that would cause our reserves to increase or decrease, which include, but are not limited to, changes in claim severity, changes in the expected level of reported claims, judicial action changing the scope and/or liability of coverage, changes in the legislative, regulatory, social and economic environment and unexpected changes in loss

inflation.

Our operating history, which includes periods of rapid growth, means that our loss reserve estimates, particularly on the longer tailed classes of business, may place more reliance on industry benchmarks than might be the case for companies with longer operating histories; as a result, the potential for volatility in our estimated loss reserves may be more pronounced than for more established companies. When establishing our single point best estimate of loss reserves at December 31, 2018, our management considered actuarial estimates and applied informed judgment regarding qualitative factors that may not be fully captured in actuarial estimates. Such factors included, but were not limited to: the timing of the emergence of claims, volume and complexity of claims, social and judicial trends, potential severity of individual claims and the extent of internal historical loss data versus industry information.

Changes to our previous estimate of prior year loss reserves can adversely impact the reported calendar year underwriting results if reserves prove to be insufficient or favorably impact our reported results if loss reserves prove to be higher than actual claim payments. If our net income is insufficient to absorb a required increase in our loss reserves, we would incur an operating loss and could incur a reduction of our capital.

The effects of emerging claim and coverage issues on our business are uncertain.

As industry practices and legal, judicial, social, political, technological and other environmental conditions change, unexpected issues related to claims and coverage may emerge. These issues may adversely affect our business by either extending coverage beyond our underwriting intent or by increasing the frequency and/or severity of claims. For example, the last global financial crisis resulted in a higher level of claim activity on professional lines (re)insurance business. In some instances, these changes may not become apparent until sometime after we have issued the insurance or reinsurance contracts that are affected by the changes. In addition, our actual losses may vary materially from our current estimate of the loss based on a number of factors (refer to ‘If actual claims exceed our loss reserves, our financial results could be adversely affected’ above). As a result, the full extent of liability under an insurance or reinsurance contract may not be known for many years after such contract is issued and a loss occurs.

Our investment and derivative instrument portfolios are exposed to significant capital markets risk related to changes in interest rates, credit spreads and equity prices as well as other risks, which may adversely affect our results of operations, financial condition or cash flows.

The performance of our cash and investments portfolio has a significant impact on our financial results. A failure to successfully execute our investment strategy could have a significant impact on our results of operations or financial condition.

Our investment portfolio is subject to a variety of market risks, including risks relating to general economic conditions, interest rate fluctuations, equity price risk, foreign currency movements, pre-payment or reinvestment risk, liquidity risk and credit risk. Although we attempt to manage market risks through, among other things, stressing diversification and conservation of principal and liquidity in our investment guidelines, it is possible that, in periods of economic weakness or periods of turmoil in capital markets, we may experience significant losses in our portfolio.

Our fixed maturities, which represent 87% of our total investments and 76% of total cash and investments at December 31, 2018, may be adversely impacted by changes in interest rates. Increases in interest rates could cause the fair value of our investment portfolio to decrease, resulting in a lower book value (refer to Item 7A 'Quantitative and Qualitative Disclosure About Market Risk' for a related sensitivity analysis) and capital resources. In addition, a lower interest rate environment can result in reductions in our investment yield as new funds and proceeds from sales and maturities of fixed income securities are reinvested at lower rates. This reduces our overall future profitability. Interest rates are highly sensitive to many factors, including governmental and central bank monetary policies, inflation, domestic and international economic and political conditions and other factors beyond our control.

Regulators and law-enforcement agencies from a number of governments, including entities in the United States, Japan, Canada and the United Kingdom, have been conducting civil and criminal investigations into whether the banks that contributed to the British Bankers’ Association (the BBA), in connection with the calculation of daily London Interbank Overnight Offering Rate (LIBOR) may have underreported or otherwise manipulated or attempted to manipulate LIBOR. Several financial institutions have reached settlements with the U.S. Commodity Futures Trading Commission, the U.S. Department of Justice Fraud Section and the U.K. Financial Conduct Authority in connection with investigations by such authorities into submissions made by such financial institutions to the bodies that set LIBOR and other interbank offered rates. In such settlements, such financial institutions admitted to submitting rates to the BBA that were lower than the actual rates at which such financial institutions could borrow funds from other banks. Additional investigations remain ongoing with respect to other major banks and no assurance can be made that there will not be further admissions or findings of rate setting manipulation or that improper manipulation of LIBOR or other similar inter-bank lending rates will not occur in the future.

Based on a review conducted by the UK Financial Conduct Authority (FCA), and a consultation conducted by the European Commission, proposals have been made for governance and institutional reform, regulation, technical changes and contingency planning. In addition, pursuant to authorization from the FCA, ICE Benchmark Administration Limited (formerly NYSE Euronext Rate Administration Limited) (the IBA) took over the administration of LIBOR from the BBA on February 1, 2014. Any new administrator of LIBOR may make methodological changes to the way in which LIBOR is calculated or may alter, discontinue or suspend calculation or dissemination of LIBOR.

In addition, on July 27, 2017, the FCA announced its intention to cease sustaining LIBOR after 2021. The FCA has statutory powers to require panel banks to contribute to LIBOR where necessary. The FCA has decided not to ask, or to require, that panel banks continue to submit contributions to LIBOR beyond the end of 2021. The FCA has indicated that it expects that the current panel banks will voluntarily sustain LIBOR until the end of 2021. The FCA's intention is that after 2021, it will no longer be necessary for the FCA to ask, or to require, banks to submit contributions to LIBOR. The FCA does not intend to sustain LIBOR through using its influence or legal powers beyond that date. It is possible that the IBA and the panel banks could continue to produce LIBOR on the current basis after 2021, if they are willing and able to do so, but we cannot make assurances that LIBOR will survive in its current form, or at all.

Uncertainty as to the nature of such potential changes, alternative reference rates or other reforms may adversely affect the trading market for LIBOR-based securities, including those held in our investment portfolio. In addition, changes or reforms to the determination or supervision of LIBOR may result in a sudden or prolonged increase or decrease in reported LIBOR, which could have an adverse impact on the market for LIBOR-based securities and the value of our investment portfolio.

Our portfolios of "other investments" and equity securities expose us to market price variability, driven by a number of factors outside our control including, but not limited to, global equity market performance.

Given our reliance on external investment managers, we are also exposed to operational risks, which may include, but are not limited to, a failure to follow our investment guidelines, technological and staffing deficiencies and inadequate disaster recovery plans.

Our derivative instrument counterparties may default on amounts owed to us due to bankruptcy, insolvency, lack of liquidity, adverse economic conditions, operational failure, fraud or other reasons. Even if we are entitled to collateral in circumstances of default, such collateral may be illiquid or proceeds from such collateral when liquidated may not be sufficient to recover the full amount of the obligation.

We may be adversely impacted by inflation.

Our operations, like those of other insurer and reinsurers, are susceptible to the effects of inflation because premiums are established before the ultimate amounts of losses and loss adjustment expense are known. Although we consider the potential effects of inflation when setting premium rates, our premiums may not fully offset the effects of inflation and essentially result in our underpricing the risks we insure and reinsure. Our reserve for losses and loss adjustment expenses includes assumptions about future payments for settlement of claims and claims-handling expenses, such as the value of replacing property and associated labor costs for the property business we write and litigation costs. To the extent inflation causes costs to increase above reserves established for claims, we will be required to increase our loss reserves with a corresponding reduction in our net income in the period in which the deficiency is identified, which may have a material adverse effect on our financial condition or results of operations. Unanticipated higher inflation could also lead to higher interest rates, which would negatively impact the value of our fixed income securities and potentially other investments.

The failure of our loss limitation strategy could have a material adverse effect on our results of operations or financial condition.

We seek to mitigate our loss exposure through multiple methods. For example, we write a number of our (re)insurance contracts on an excess of loss basis. Excess of loss (re)insurance indemnifies the insured against losses in excess of a specified amount. We generally limit the line size for each client and line of business on our insurance business and purchase reinsurance for many of our lines of business. In the case of proportional reinsurance treaties, we seek per occurrence limitations or loss and loss expense ratio caps to limit the impact of losses from any one event. In proportional reinsurance, the reinsurer shares a proportional part of the premiums and losses of the reinsured. We also seek to limit our loss exposure through geographic diversification. Geographic zone limitations involve significant underwriting judgments, including the determination of the area of the zones and the inclusion of a particular policy within a particular zone's limits. In addition, various provisions of our insurance policies and reinsurance contracts, such as limitations or exclusions from coverage or choice of forum negotiated to limit our risks may not be enforceable in the manner we intend. We cannot be sure that these loss limitation methods will effectively prevent a material loss exposure which could have a material adverse effect on our results of operations or financial condition.

If we choose to purchase reinsurance, we may be unable to do so, and if we successfully purchase reinsurance, we may be unable to collect amounts due to us.

We purchase reinsurance for our (re)insurance operations in order to mitigate the volatility of losses upon our financial results. From time to time, market conditions have limited, and in some cases have prevented, (re)insurers from obtaining the types and amounts of reinsurance that they consider adequate for their business needs. There is no guarantee that our desired amounts of reinsurance or retrocessional reinsurance will be available in the marketplace in the future. In addition to capacity risk, the remaining capacity may not be on terms we deem appropriate or acceptable or with companies with whom we want to do business.

Also, a reinsurer’s insolvency, or inability or refusal to make payments under the terms of its reinsurance agreement with us, could have a material adverse effect on our business because we remain liable to the insured. We face counterparty risk whenever we purchase reinsurance or retrocessional reinsurance. Consequently, the insolvency, inability or unwillingness of any of our present or future reinsurers to make timely payments to us under the terms of our reinsurance or retrocessional agreements could have an adverse effect on our financial condition or results of operations.

We utilize models to assist our decision making in key areas such as underwriting, reserving, reinsurance purchasing and the evaluation of our catastrophe risk but actual results could differ materially from model output.

We employ various modeling techniques (e.g. scenarios, predictive, stochastic and/or forecasting) to analyze and estimate exposures, loss trends and other risks associated with our assets and liabilities. We utilize modeled outputs and related analyses to assist us in decision-making, for example related to underwriting and pricing, reserving, reinsurance purchasing and the evaluation of our catastrophe risk through estimates of probable maximum losses, or "PMLs". The modeled outputs and related analyses, both from proprietary and third party models, are subject to various assumptions, professional judgment, uncertainties and the inherent limitations of any statistical analysis, including the use and quality of historical internal and industry data. Consequently, our actual losses from loss events, whether from individual components (e.g. wind, flood, earthquake, etc.) or in the aggregate, may differ materially from our modeled results. If, based upon these models or other factors, we misprice our products or underestimate the frequency and/or severity of loss events, our results of operations or financial condition may be adversely affected.

With respect to the evaluation of our catastrophe risk, our modeling utilizes a mix of historical data, scientific theory and mathematical methods. Output from multiple commercially available vendor models serves as a key input in our PML estimation process. We believe that there is considerable uncertainty in the data and parameter inputs for these vendor models. In that regard, there is no universal standard in the preparation of insured data for use in the models and the running of modeling software. In our view, the accuracy of the models depends heavily on the availability of detailed insured loss data from actual recent large catastrophes. Due to the limited number of events, there is significant potential for substantial differences between the modeled loss estimate and actual company experience for a single large catastrophe event. This potential difference could be even greater for perils with limited or no modeled annual frequency. We perform our own vendor model validation (including sensitivity analysis and backtesting, where possible) and supplement model output with historical loss information and analysis and management judgment. In addition, we derive our own estimates for non-modeled perils. Despite this, our PML estimates are subject to a high degree of uncertainty and our actual losses from catastrophe events may differ materially.

The risk associated with reinsurance underwriting could adversely affect us.
We do not always separately evaluate each of the individual risks assumed under reinsurance treaties, which is common among reinsurers. Therefore, we are largely dependent on the original underwriting decisions made by ceding companies. We are subject to the risk that the ceding companies may not have adequately evaluated the risks to be reinsured and that the premiums ceded may not adequately compensate us for the risks we assume. We also have exposure to a range of risks in connection with alternative capital arrangements.
We could be materially adversely affected if managing general agents, general agents, coverholders, other producers and third party administrators in our program business exceed their underwriting and/or claims settlement authorities or otherwise breach obligations owed to us.
In program business conducted by our insurance segment, following our underwriting, financial, claims and information technology due diligence reviews, we authorize managing general agents, general agents, coverholders and other producers to write business on our behalf within underwriting authorities prescribed by us. Once a program/coverholder commences, we must rely on the underwriting controls of these entities to write business within the underwriting authorities provided by us. Although we monitor our programs/coverholders on an ongoing basis, our monitoring efforts may not be adequate or these entities may exceed their underwriting or claims settlement authorities or otherwise breach obligations owed to us. To the extent that these entities exceed their authorities or otherwise breach obligations owed to us in the future, our results of operations and financial condition could be materially adversely affected.
If we experience difficulties with technology and/or data security, our ability to conduct our business might be negatively impacted.
While technology can streamline many business processes and ultimately reduce the cost of operations, technology initiatives present certain risks. Our business is dependent upon our employees' and outsourcers' ability to perform, in an efficient and uninterrupted fashion, necessary business functions such as processing policies and paying claims. A shutdown or inability to access one or more of our facilities, a power outage, or a failure of one or more of our information technology, telecommunications or other systems could significantly impair our ability to perform such functions on a timely basis. If sustained or repeated, such a business interruption, system failure or service denial could result in a deterioration of our ability to write and process business, provide customer service, pay claims in a timely manner or perform other necessary business functions. Unauthorized access, computer viruses, deceptive communications (phishing), malware, hackers and other external hazards including catastrophe events could expose our data systems to security breaches. These risks could expose us to data loss and damages.
Like other global companies, we may be regularly the target of attempted cyber and other security threats and must continuously monitor and develop our information technology networks and infrastructure to prevent, detect, address and mitigate the risk of threats to our data and systems. Over time, and particularly recently, the sophistication of these threats continues to increase. While administrative and technical controls, along with other preventive actions, reduce the risk of cyber incidents and protect our information technology, they may be insufficient to thwart cyber attacks and/or prevent other security breaches to our systems.
To the extent any disruption or security breach results in a loss or damage to our data, or inappropriate disclosure of our confidential information or that of others, it could impact our operations, cause significant damage to our reputation, affect our relationships with our customers and clients, lead to claims against us under various data privacy laws, result in regulatory action and ultimately have a material adverse effect on our business or operations. In addition, we may be required to incur significant costs to mitigate the damage caused by any security breach, to address any interruptions in our business, or to protect against future damage.
We also operate in a number of jurisdictions with strict data privacy and other related laws, which could be violated in the event of a significant cybersecurity incident, or by personnel. Failure to comply with these obligations can give rise to monetary fines and other penalties which could be significant.

Compliance with laws and regulations governing the processing of personal data and information may impede our services or result in increased costs. Failure to comply with such data privacy laws and regulations could result in material fines or penalties imposed by data protection or financial services conduct regulators and/or awards of civil

damages and any data breach may have a material adverse effect on our reputation, results of operations or financial condition, or have other adverse consequences.

Our business relies on the processing of data in many jurisdictions and the movement of data across national borders. The collection, storage, handling, disclosure, use, transfer and security of personal information that occurs in connection with our business is subject to federal, state and foreign data privacy laws. These legal requirements are not uniform and continue to evolve, and regulatory scrutiny in this area is increasing around the world. In many cases, these laws apply not only to third-party transactions, but also to transfers of information among the Company and its subsidiaries. Privacy and data protection laws may be interpreted and applied differently from country to country and may create inconsistent or conflicting requirements.

The General Data Privacy Regulation ("GDPR") came into force throughout the E.U. in May 2018 and has extra-territorial effect. It requires all companies processing data of E.U. citizens to comply with the GDPR, regardless of the company's location; it also imposes obligations on EU companies processing data of non-E.U. citizens. The GDPR imposes new requirements regarding the processing of personal data, and confers new rights on data subjects including the "right to be forgotten" and the right to "portability" of personal data.

Compliance with the enhanced obligations imposed by the GDPR requires investment in appropriate technical or organizational measures to safeguard the rights and freedoms of data subjects, may result in significant costs to our business and may require us to amend certain of our business practices. Enforcement actions, investigations and the imposition of substantial fines and penalties by regulatory authorities as a result of data security incidents and privacy violations have increased dramatically during 2018. The enactment of more restrictive laws, rules, regulations, or future enforcement actions or investigations could impact us through increased costs or restrictions on our business, and noncompliance could result in regulatory penalties and significant legal liability.

In addition, unauthorized disclosure or transfer of sensitive or confidential client or Company data, whether through systems failure, employee negligence, fraud or misappropriation, by the Company or other parties with whom we do business, could subject us to significant litigation, monetary damages, regulatory enforcement actions, fines and criminal prosecution in one or more jurisdictions. Such events could also result in negative publicity and damage to our reputation and cause us to lose business, which could therefore have a material adverse effect on our results of operations.

Our business may be adversely affected if third-party outsourced service providers fail to satisfactorily perform certain technology and business process functions.

We outsource certain technology and business process functions to third parties and may do so increasingly in the future. If we do not effectively develop and implement our outsourcing strategy, third party providers do not perform as anticipated or we experience technological or other problems with a transition, we may not realize productivity improvements or cost efficiencies and may experience operational difficulties, increased costs and a loss of business. Our outsourcing of certain technology and business process functions to third parties may expose us to enhanced risk related to data security, which could result in monetary and reputational damages. In addition, our ability to receive services from third party providers might be impacted by cultural differences, political instability, unanticipated regulatory requirements or policies. As a result, our ability to conduct our business might be adversely affected.

Our operating results may be adversely affected by currency fluctuations.

Our reporting currency is the U.S. dollar. However, a portion of our gross premiums are written in currencies other than the U.S. dollar and a portion of our loss reserves are in non-U.S. currencies. In addition, a portion of our investment portfolio is denominated in currencies other than the U.S dollar. From time to time, we may experience losses resulting from fluctuations in the values of these non-U.S. currencies, which could adversely affect our operating results. Although we attempt to manage our foreign currency exposure through matching of our major foreign-denominated assets and liabilities, as well as through use of currency derivatives, there is no guarantee that we will successfully mitigate our exposure to foreign exchange losses. Sovereign debt concerns in Europe and related financial restructuring efforts, which may cause the value of the euro to deteriorate, and Brexit (defined below), which caused significant volatility in currency exchange rates, especially between the U.S. dollar and the British pound, may magnify these risks.

Acquisitions that we made or may make could turn out to be unsuccessful.
As part of our strategy, we have pursued and may continue to pursue growth through acquisitions. For example, as part of AXIS Insurance's international specialty insurance growth strategy, in 2017, we acquired Novae Group plc, a specialty (re)insurer that operates through Lloyd's of London. The negotiation of potential acquisitions as well as the integration of an acquired business or new personnel could result in a substantial diversion of management resources. Successful integration will depend on, among other things, our ability to effectively integrate acquired businesses or new personnel into our existing risk management and financial and operational reporting systems, our ability to effectively manage any regulatory issues created by our entry into new markets and geographic locations, our ability to retain key personnel and other operation economic factors. There can be no assurance that the integration of acquired businesses, including Novae Group plc, or new personnel will be successful, that we will realize anticipated synergies, cost savings and operational efficiencies, or that the business acquired will prove to be profitable or sustainable. The failure to integrate acquired businesses successfully or to manage the challenges presented by the integration process may adversely impact our financial results. Acquisitions could involve numerous additional risks such as potential losses from unanticipated litigation or levels of claims and inability to generate sufficient revenue to offset acquisition costs.
Our ability to grow through acquisitions will depend, in part, on our success in addressing these risks. Any failure by us to effectively implement our acquisitions strategy could have a material adverse effect on our business, financial condition or results of operations.

The exit of the U.K. from the E.U. could adversely affect us.

On June 23, 2016, the U.K. voted to exit the E.U. ("Brexit") and in March 2017, the U.K. government gave official notice of its intention to leave the E.U., commencing the period of up to two years during which the U.K. and the E.U. would negotiate the terms of the U.K.’s withdrawal from the E.U. The effects of Brexit will depend on the outcome of the negotiations regarding the “withdrawal agreement” and the future trading relationship to be agreed between the E.U. and the U.K. The U.K. is due to exit the E.U. in March 2019.

The Brexit vote had an immediate adverse effect on global financial markets, including foreign currency markets, and could continue to contribute to instability in global financial markets and in European and worldwide economic or market conditions, both during and after the Brexit process. The long-term effect of Brexit on the value of our investment portfolio at this time is uncertain and such volatility and uncertainty will likely continue as negotiations progress to determine the future terms of the U.K.’s relationship with the E.U.

We have significant operations in the U.K. and other E.U. member states. Depending on the final terms of Brexit, we may be required to reorganize our operations, legal entity structure and capitalization in the U.K. and the E.U. in a manner that could be less efficient and more expensive. Brexit may disrupt our U.K. domiciled entities’, including our Lloyd’s managing agency and its syndicates', ability to "passport" within the E.U., which is the system by which our insurance entities currently provide insurance across E.U. member states while only being subject to regulation by their "home state" regulators. Brexit may disrupt the ability of our E.U. operating entities to access U.K. business.

Any of these effects of Brexit, and others we cannot anticipate, could adversely affect our business, business opportunities, results of operations, financial condition and cash flows.
We may require additional capital in the future, which may not be available or may only be available on unfavorable terms.
Our future capital requirements depend on many factors, including rating agency and regulatory requirements, the performance of our investment portfolio, our ability to write new business successfully, the frequency and severity of catastrophe events and our ability to establish premium rates and reserves at levels sufficient to cover losses. We may need to raise additional funds through financings. If we are unable to do so, it may curtail our ability to conduct our business. Any equity or debt financing, if available at all, may be on terms that are not favorable to us. Equity

financings could be dilutive to our existing shareholders and could result in the issuance of securities that have rights, preferences and privileges that are senior to those of our other securities. If we cannot obtain adequate capital on favorable terms or at all, our business, operating results and financial condition could be adversely affected.

Our inability to obtain the necessary credit could affect our ability to offer reinsurance in certain markets.
Neither AXIS Specialty Bermuda nor AXIS Re SE is licensed or admitted as a (re)insurer in any jurisdiction other than Bermuda, Ireland, Singapore and Brazil. Because the U.S. and some other jurisdictions do not permit insurance companies to take credit on their statutory financial statements for reinsurance obtained from unlicensed or non-admitted insurers unless appropriate security mechanisms are in place, our reinsurance clients in these jurisdictions typically require AXIS Specialty Bermuda and AXIS Re SE to provide letters of credit or other collateral. Our credit facilities are used to post letters of credit. However, if our credit facilities are not sufficient or if we are unable to renew our credit facilities or arrange for other types of security on commercially affordable terms, AXIS Specialty Bermuda and AXIS Re SE could be limited in their ability to write business for some of our clients.
The regulatory system under which we operate, and potential changes thereto, could have a material adverse effect on our business.
Our (re)insurance subsidiaries conduct business globally and we are subject to varying degrees of regulation and supervision from these jurisdictions. Additionally, as a result of the Novae acquisition, our presence at Lloyd's has substantially increased. Lloyd's has supervisory powers that pose unique regulatory risks. The laws and regulations of the jurisdictions and markets, including Lloyd's in which our (re)insurance subsidiaries are domiciled or operate require, among other things, that our subsidiaries maintain minimum levels of statutory capital and liquidity, meet solvency standards, participate in guaranty funds and submit to periodic examinations of their financial condition and compliance with underwriting and other regulations. These laws and regulations also limit or restrict payments of dividends and reductions in capital. Statutes, regulations and policies may also restrict the ability of these subsidiaries to write (re)insurance contracts, to make certain investments and to distribute funds. The purpose of insurance laws and regulations generally is to protect insureds and ceding insurance companies, not our shareholders. We may not be able to comply fully with, or obtain appropriate exemptions from, these statutes and regulations. Failure to comply with or to obtain appropriate authorizations and/or exemptions under any applicable laws could result in restrictions on our ability to do business or undertake activities that are regulated in one or more of the jurisdictions in which we conduct business and could subject us to fines and other sanctions. In addition, changes in the laws or regulations to which our (re)insurance subsidiaries are subject or in the interpretation thereof by enforcement or regulatory agencies could have an adverse effect on our business.
Potential government intervention in our industry as a result of recent events and instability in the marketplace for insurance products could hinder our flexibility and negatively affect the business opportunities that may be available to us in the market.
Government intervention and the possibility of future government intervention have created uncertainty in the (re)insurance markets. Government and regulators are generally concerned with having (re)insurers with high solvency ratios and localized capital to ensure the protection of policyholders to the possible detriment of other constituents, including shareholders of (re)insurers. An example of such intervention was the December 2007 extension of the material provisions of TRIA for an additional seven years to December 31, 2014 and expansion of coverage to include domestic acts of terrorism. TRIA expired at the end of 2014 but was reauthorized, with some adjustments to its provisions, in January 2015 for six years through December 31, 2020.
In recent years certain U.S. and non-U.S. judicial and regulatory authorities, including U.S. Attorney’s Offices and certain state attorneys general, have commenced investigations into other business practices in the insurance industry. In addition, although the U.S. federal government has not historically regulated insurance, there have been proposals from time to time, and especially after the most recent global financial crisis, to impose federal regulation on the U.S. insurance industry. For example, in 2010, Dodd-Frank established a Federal Insurance Office ("FIO") within the U.S. Treasury. The FIO has limited regulatory authority and is empowered to gather data and information regarding the insurance industry, and has conducted and submitted a study to the U.S. Congress on how to modernize and improve insurance regulation in the U.S. This study's findings are not expected to have a significant impact on the Company. Further, Dodd-Frank gives the Federal Reserve supervisory authority over a number of U.S. financial services companies, including insurance companies, if they are designated by a two-thirds vote of a Financial Stability Oversight Council as ‘systemically important’. While we do not believe that we are systemically important, as defined in Dodd-Frank, Dodd-Frank or additional federal or state regulation that is adopted in the future could impose

significant burdens on us, impact the ways in which we conduct our business and govern our subsidiaries, increase compliance costs, increase the levels of capital required to operate our subsidiaries, duplicate state regulation and/or result in a competitive disadvantage.

Certain of our European legal entities are subject to local laws that implement the Solvency II Directive. Solvency II covers three main areas: (i) the valuation of assets and liabilities on a Solvency II economic basis and risk based solvency and capital requirements; (ii) governance requirements including key function of compliance, internal audit, actuarial and risk management; and (iii) new supervisory legal entity and group reporting and disclosure requirements including public disclosures. The BMA is fully "equivalent" under the Solvency II Directive for Bermuda's commercial insurance sector, including Class 4 insurers.
While we cannot predict the exact nature, timing or scope of possible governmental initiatives, such proposals could adversely affect our business by, among other things:

- Providing reinsurance capacity in markets and to consumers that we target;
- Requiring our further participation in industry pools and guaranty associations;
- Expanding the scope of coverage under existing policies; e.g., following large disasters;
- Further regulating the terms of (re)insurance contracts; or
- Disproportionately benefiting the companies of one country over those of another.

Our international business is subject to applicable laws and regulations relating to sanctions and foreign corrupt practices, the violation of which could adversely affect our operations.

We must comply with all applicable economic and financial sanctions, other trade controls and anti-bribery laws and regulations of the U.S. and other foreign jurisdictions where we operate, including Bermuda, U.K. and the European Community, which apply to our business where we operate. U.S. laws and regulations applicable to us include the economic trade sanctions laws and regulations administered by the U.S. Department of Treasury’s Office of Foreign Assets Control as well as certain laws administered by the U.S. Department of State. In addition, we are subject to the Foreign Corrupt Practices Act and other anti-bribery laws, such as the Bermuda Bribery Act and the U.K. Bribery Act that generally bar corrupt payments or unreasonable gifts. Although we have policies and controls in place that are designed to ensure compliance with these laws and regulations, it is possible that an employee or an agent acting on our behalf, could fail to comply with applicable laws and regulations and due to the complex nature of the risks, it may not always be possible for us to ascertain compliance with such laws and regulations. In such event, we could be exposed to civil penalties, criminal penalties and other sanctions, including fines or other unintended punitive actions. In addition, such violations could damage our business and/or our reputation. All of the foregoing could have a material adverse effect on our financial condition and operating results.
Since we depend on a few brokers for a large portion of our revenues, loss of business provided by any one of them could adversely affect us.
We market our (re)insurance worldwide primarily through (re)insurance brokers and derive a significant portion of our business from a limited number of brokers. Marsh & McLennan Companies, Inc., including its subsidiary Guy Carpenter & Company, Inc., Aon plc and Willis Towers Watson PLC, provided a total of 43% of our gross premiums written during 2018. Our relationships with these brokers are based on the quality of our underwriting and claim services, as well as our financial strength ratings. Any deterioration in these factors could result in the brokers advising our clients to place their business with other (re)insurers. In addition, these brokers also have, or may in the future acquire, ownership interests in insurance and reinsurance companies that may compete with us and these brokers may favor their own (re)insurers over other companies. Loss of all or a substantial portion of the business provided by one or more of these brokers could have a material adverse effect on our business.
Our reliance on brokers subjects us to credit risk.
In accordance with industry practice, we pay amounts owed on claims under our (re)insurance contracts to brokers, and these brokers pay these amounts over to the clients that have purchased (re)insurance from us. Although the law is

unsettled and depends upon the facts and circumstances of the particular case, in some jurisdictions, if a broker fails to make such a payment, we might remain liable to the insured or ceding insurer for the deficiency.

Conversely, in certain jurisdictions, when the insured or ceding insurer pays premiums for these policies to brokers for payment over to us, these premiums might be considered to have been paid to us and the insured or ceding insurer will no longer be liable to us for those amounts, whether or not we have actually received the premiums from the broker. Consequently, we assume a degree of credit risk associated with brokers with whom we transact business. These risks are heightened during periods characterized by financial market instability and/or an economic downturn or recession.
Certain of our policyholders and intermediaries may not pay premiums owed to us due to insolvency or other reasons.
Insolvency, liquidity problems, distressed financial condition or the general effects of economic recession may increase the risk that policyholders or intermediaries, such as insurance brokers, may not pay a part of or the full amount of premiums owed to us, despite an obligation to do so. The terms of our contracts may not permit us to cancel our insurance even though we have not received payment. If non-payment becomes widespread, whether as a result of insolvency, lack of liquidity, adverse economic conditions, operational failure or otherwise, it could have a material adverse impact on our revenues and results of operations.
We could be adversely affected by the loss of one or more key executives or by an inability to attract and retain qualified personnel or by the inability of an executive to obtain a Bermuda work permit.
Our success depends on our ability to retain the services of our existing key executives and to attract and retain additional qualified personnel in the future. The loss of the services of any of our key executives or the inability to hire and retain other highly qualified personnel in the future could adversely affect our ability to conduct our business. Changes in local employment legislation, taxation and the approach of regulatory bodies to compensation practice within our operating jurisdictions may impact our ability to recruit and retain qualified personnel or the cost to us of doing so. There can be no assurance that we will be successful in identifying, hiring or retaining successors on terms acceptable to us.
With a few exceptions generally under Bermuda law only Bermudians, spouses of Bermudians or Permanent Resident Certificate holders (collectively "Residents") may engage in any gainful occupation in Bermuda without an appropriate governmental work permit. Work permits may be granted or extended by the Bermuda government only upon showing that, after proper public advertisement (in most cases), no Residents who meet the minimum standard requirements for the advertised position have applied for the position. Work permits are generally granted for one, three or five year durations. In January 2013, the Bermuda government abolished term limits, meaning expatriate workers can (subject to the above) continue to be employed in Bermuda indefinitely by reapplying for work permits. This removed the immigration policy put in place in 2001, which limited the total duration expatriate workers could remain in Bermuda. All executive officers who work in our Bermuda office who require work permits have obtained them.
Our ability to pay dividends and to make payments on indebtedness may be constrained by our holding company structure.
AXIS Capital is a holding company and has no direct operations of its own. AXIS Capital has no significant operations or assets other than its ownership of the shares of its operating (re)insurance subsidiaries, AXIS Specialty Bermuda, Ventures Re, AXIS Re SE, AXIS Specialty Europe, Compagnie Belge d'Assurances, Aviation NV/SA, Aviabel Re S.A., the Members of Lloyd's (AXIS Corporate Capital UK Limited and Novae Corporate Underwriting Limited), AXIS Re U.S., AXIS Specialty U.S., AXIS Surplus and AXIS Insurance Co. (collectively, our "Insurance Subsidiaries"). Dividends and other permitted distributions from our Insurance Subsidiaries (in some cases through our subsidiary holding companies), are our primary source of funds to meet ongoing cash requirements, including debt service payments and other expenses, and to pay dividends to our shareholders. Our Insurance Subsidiaries are subject to significant regulatory restrictions limiting their ability to declare and pay dividends and make distributions. The inability of our Insurance Subsidiaries to pay dividends in an amount sufficient to enable us to meet our cash requirements at the holding company level could have a material adverse effect on our business and our ability to pay dividends and make payments on our indebtedness.
AXIS Capital is a Bermuda company and it may be difficult for you to enforce judgments against it or its directors and executive officers.
AXIS Capital is incorporated pursuant to the laws of Bermuda and our business is based in Bermuda. In addition, some of our directors and officers reside outside the U.S., and all or a substantial portion of our assets and the assets of

such persons are located in jurisdictions outside the U.S. As a result, it may be difficult or impossible to effect service of process within the U.S. upon those persons or to recover against us or them on judgments of U.S. courts, including judgments predicated upon civil liability provisions of the U.S. federal securities laws. Further, it may not be possible to bring a claim in Bermuda against us or our directors and officers for violation of U.S. federal securities laws because these laws may have no extraterritorial application under Bermuda law and do not have force of law in Bermuda. A Bermuda court may, however, impose civil liability, including the possibility of monetary damages, on us or our directors and officers if the facts alleged in a complaint constitute or give rise to a cause of action under Bermuda law.

There are provisions in our organizational documents that may reduce or increase the voting rights of our shares.

Our bye-laws generally provide that shareholders have one vote for each common share held by them and are entitled to vote, on a non-cumulative basis, at all meetings of shareholders. However, the voting rights exercisable by a shareholder may be limited so that certain persons or groups are not deemed to hold 9.5% or more of the voting power conferred by our shares. Under these provisions, some shareholders may have the right to exercise their voting rights limited to less than one vote per share. Moreover, these provisions could have the effect of reducing the voting power of some shareholders who would not otherwise be subject to the limitation by virtue of their direct share ownership. In addition, our board of directors may limit a shareholder’s exercise of voting rights where it deems it necessary to do so to avoid adverse tax, legal or regulatory consequences.

We also have the authority under our bye-laws to request information from any shareholder for the purpose of determining whether a shareholder’s voting rights are to be limited pursuant to the bye-laws. If a shareholder fails to respond to our request for information or submits incomplete or inaccurate information in response to a request by us, we may, in our sole discretion, eliminate the shareholder’s voting rights.

There are provisions in our bye-laws that may restrict the ability to transfer common shares and which may require shareholders to sell their common shares.

Our board of directors may decline to register a transfer of any common shares under some circumstances, including if they have reason to believe that any non-de minimis adverse tax, regulatory or legal consequences to us, any of our subsidiaries or any of our shareholders may occur as a result of such transfer. Our bye-laws also provide that if our board of directors determines that share ownership by a person may result in non-de minimis adverse tax, legal or regulatory consequences to us, any of our subsidiaries or any of our shareholders, then we have the option, but not the obligation, to require that shareholder to sell to us or to third parties to whom we assign the repurchase right for fair value the minimum number of common shares held by such person which is necessary to eliminate the non-de minimis adverse tax, legal or regulatory consequences.

Applicable insurance laws may make it difficult to effect a change of control of our company.

Before a person can acquire control of a U.S. insurance company, prior written approval must be obtained from the insurance commissioner of the state where the domestic insurer is domiciled. Prior to granting approval of an application to acquire control of a domestic insurer, the state insurance commissioner will consider such factors as the financial strength of the acquirer, the integrity and management of the acquirer’s board of directors and executive officers, the acquirer’s plans for the future operations of the domestic insurer and any anti-competitive results that may arise from the consummation of the acquisition of control. Generally, state statutes provide that control over a domestic insurer is presumed to exist if any person, directly or indirectly, owns, controls, holds with the power to vote, or holds proxies representing, 10% or more of the voting securities of the domestic insurer. Because a person acquiring 10% or more of our common shares would indirectly control the same percentage of the stock of the AXIS U.S. Subsidiaries, the insurance change of control laws of Connecticut, Illinois and New York would likely apply to such a transaction.

The Insurance Act in Bermuda requires that any person acquiring or disposing of a direct or indirect holding in a Bermuda registered (re)insurance company (such as AXIS Specialty Bermuda) that represents 10% or more of the voting power at a shareholders’ meeting of such registered insurer or its parent company, or any person who is able to exercise significant influence over the management of the registered insurer or its parent company by virtue of its shareholding or its entitlement to exercise, or control the exercise of, the voting power at any shareholders’ meeting, or any person who has increased or decreased that holding to specified levels, must notify the Bermuda Monetary Authority of such acquisition or disposal within 45 days. The Insurance Act also requires that a Bermuda registered (re)insurance company that becomes aware of any acquisitions or disposals of its or its parent company’s shares involving the specified levels must notify the Bermuda Monetary Authority of such acquisition or disposal within 45 days. The specified levels are direct or indirect shareholdings of 10%, 20%, 33% and 50% of such Bermuda registered (re)insurance company. The Bermuda Monetary Authority may object to any person who has become a shareholder at a specified level where it appears that such person is not, or is no longer, a fit and proper person to be a shareholder of the Bermuda registered (re)insurance company.

In addition, the Insurance Acts and Regulations in Ireland require that anyone acquiring or disposing of a direct or indirect holding in an Irish authorized (re)insurance company (such as AXIS Specialty Europe or AXIS Re SE) that represents 10% or more of the capital or of the voting rights of such company or that makes it possible to exercise a significant influence over the management of such company, or anyone who proposes to decrease or increase that holding to specified levels, must first notify the CBI of their intention to do so. They also require any Irish authorized (re)insurance company that becomes aware of any acquisitions or disposals of its capital involving the specified levels to notify the CBI. The specified levels are 20%, 33% and 50% or such other level of ownership that results in the company becoming the acquirer’s subsidiary within the meaning of article 20 of the European Communities (non-Life Insurance) Framework Regulations 1994.

The CBI has three months from the date of submission of a notification within which to oppose the proposed transaction if the CBI is not satisfied as to the suitability of the acquirer in view of the necessity "to ensure prudent and sound management of the (re)insurance undertaking concerned." Any person owning 10% or more of the capital or voting rights or an amount that makes it possible to exercise a significant influence over the management of AXIS Capital would be considered to have a "qualifying holding" in AXIS Specialty Europe and AXIS Re SE.

The U.K. Prudential Regulation Authority ("PRA") and the U.K. Financial Conduct Authority ("FCA") regulate the acquisition of "control" of any U.K. Insurance companies and Lloyd's managing agents which are authorized under the Financial Services and Markets Act 2000 ("FSMA"). Any legal entity or individual that (together with any person with whom it or he is "acting in concert") directly or indirectly acquires 10% or more of the shares in a U.K. authorized insurance company or Lloyd's managing agent, or their parent company, or is entitled to exercise or control the exercise of 10% or more of the voting power in such authorized insurance company or Lloyd's managing agent or their parent company, would be considered to have acquired "control" for the purposes of the relevant legislation, as would a person who had significant influence over the management of such authorized insurance company or their parent company by virtue of his shareholding or voting power in either. A purchase of 10% or more of the ordinary shares of the Company would therefore be considered to have acquired "control" of AXIS Managing Agency Limited and Novae Syndicates Limited. Under FSMA, any person proposing to acquire "control" over a U.K. authorized insurance company must give prior notification to the PRA of his intention to do so. The PRA, which will consult with the FCA, would then have 60 working days to consider that person's application to acquire "control" (although this 60 working day period can be extended by up to 30 additional working days in certain circumstances where the regulators have questions relating to the application). Failure to make the relevant prior application could result in action being taken against AXIS Managing Agency Limited or Novae Syndicates Limited by the PRA. A person who is already deemed to have "control" will require prior approval of the PRA if such person increases their level of "control" beyond certain percentages. These percentages are 20%, 30% and 50%. Similar requirements apply in relation to the acquisition of control of a U.K. authorized person which is an insurance intermediary (such as AXIS Underwriting Limited or Contessa Limited) except that the approval must be obtained from the FCA rather than the PRA and the threshold triggering the requirement for prior approval is 20% of the shares or voting power in the insurance intermediary or its parent company. The approval of the Council of Lloyd's is also required in relation to the change of control of a Lloyd's managing agent or member. Broadly, Lloyd's applies the same tests in relation to control as are set out in FSMA (see above) and in practice coordinates its approval process with that of the PRA.

While our bye-laws limit the voting power of any shareholder to less than 9.5%, there can be no assurance that the applicable regulatory body would agree that a shareholder who owned 10% or more of our shares did not, because of the limitation on the voting power of such shares, control the applicable Insurance Subsidiary. These laws may discourage potential acquisition proposals and may delay, deter or prevent a change of control of the Company, including transactions that some or all of our shareholders might consider to be desirable.

Anti-takeover provisions in our bye-laws could impede an attempt to replace our directors or to effect a change in control, which could diminish the value of our common shares.

Our bye-laws contain provisions that may make it more difficult for shareholders to replace directors and could delay or prevent a change of control that a shareholder might consider favorable. These provisions include a staggered board of directors, limitations on the ability of shareholders to remove directors other than for cause, limitations on voting rights and restrictions on transfer of our common shares. These provisions may prevent a shareholder from receiving the benefit from any premium over the market price of our shares offered by a bidder in a potential takeover. Even in the absence of an attempt to effect a change in management or a takeover attempt, these provisions may adversely affect the prevailing market price of our shares if they are viewed as discouraging takeover attempts in the future.

We may become subject to taxes in Bermuda after March 31, 2035, which may have a material adverse effect on our results of operations.

The Bermuda Minister of Finance, under the Exempted Undertakings Tax Protection Act 1966 of Bermuda, as amended, has given each of our Bermuda resident companies an assurance that if any legislation is enacted in Bermuda that would impose tax computed on profits or income, or computed on any capital asset, gain or appreciation, or any tax in the nature of estate duty or inheritance tax, then the imposition of any such tax will not be applicable to our Bermuda resident companies or any of their respective operations, shares, debentures or other obligations until March 31, 2035. Given the limited duration of the Minister of Finance’s assurance, we cannot be certain that we will not be subject to any Bermuda tax after March 31, 2035.

Our non-U.S. companies may be subject to U.S. tax that may have a material adverse effect on our results of operations.

We intend to manage our business so that each of our non-U.S. companies, apart from our Lloyd's operations with U.S. effectively connected income, will operate in such a manner that none of these companies should be subject to U.S. tax (other than U.S. excise tax on (re)insurance premium income attributable to insuring or reinsuring U.S. risks and U.S. withholding tax on some types of U.S. source investment income), because none of these companies should be treated as engaged in a trade or business within the U.S. However, because there is considerable uncertainty as to the activities that constitute being engaged in a trade or business within the U.S., we cannot be certain that the U.S. Internal Revenue Service will not contend successfully that any of our non-U.S. companies is/are engaged in a trade or business in the U.S. If any of our non-U.S. companies were considered to be engaged in a trade or business in the U.S., it could be subject to U.S. corporate income and additional branch profits taxes on the portion of its earnings effectively connected to such U.S. business. If this were to be the case, our results of operations could be materially adversely affected.

Our non-U.K. companies may be subject to U.K. tax that may have a material adverse effect on our results of operations.

We intend to operate in such a manner so that none of our non-U.K. companies are resident in the U.K. for tax purposes and that none of our non-U.K. resident companies, other than AXIS Specialty Europe and AXIS Specialty U.S. Services, Inc., should have a permanent establishment in the U.K. Accordingly, we expect that none of our non-U.K. resident companies, other than AXIS Specialty Europe and AXIS Specialty U.S. Services, Inc., should be subject to U.K. tax. Nevertheless, because neither case law nor U.K. statutes conclusively define the activities that constitute trading in the U.K. through a permanent establishment, the U.K. tax authority might contend successfully that any of our non-U.K. companies, in addition to AXIS Specialty Europe and AXIS Specialty U.S. Services, Inc., is/are trading in the U.K. through a permanent establishment in the U.K. and therefore subject to U.K. tax.

In addition, there are circumstances in which companies that are neither resident in the U.K., nor entitled to the protection afforded by a double tax treaty between the U.K. and the jurisdiction in which they are resident, may be exposed to income tax in the U.K. (other than by deduction or withholding) on the profits of a trade carried on there even if that trade is not carried on through a permanent establishment. We intend to operate in such a manner that none of our companies will be subject to U.K. income tax in this respect.

If any of our non-U.K. resident companies were treated as being resident in the U.K. for U.K. corporation tax purposes, or if any of our non-U.K. companies, other than AXIS Specialty Europe or AXIS Specialty U.S. Services, Inc., were to be treated as carrying on a trade in the U.K., whether or not through a permanent establishment, our results of operations could be materially adversely affected.

The U.K. diverted profits tax ("DPT") is separate from U.K. corporation tax and is charged at a higher rate. It is an anti-avoidance measure aimed at protecting the U.K. tax base against the artificial diversion of profits that are being earned by activities carried out in the U.K. but which are not otherwise being taxed in the U.K., in particular as a result of arrangements between companies in the same multinational group. The U.K. network of double tax treaties does not offer protection from a DPT charge. In the event that the rules apply to certain arrangements, upfront payment of the U.K. tax authority's estimate of the deemed tax liability may be required. If any of our non-U.K. companies is liable to DPT, this could have a material adverse effect on our results.

Our U.K. operations may be affected by future changes in U.K. tax law.

AXIS Specialty Europe, AXIS Specialty U.S. Services, Inc. and our U.K. resident companies should be treated as taxable in the U.K. Any change in the basis or rate of U.K. corporation tax could materially adversely affect the operations of these companies.

Our U.K. operations may be adversely affected by a transfer pricing adjustment in computing U.K. taxable profits.

Any arrangements between our U.K. resident companies, AXIS Specialty Europe or AXIS Specialty U.S. Services, Inc., and other members of the group are subject to the U.K. transfer pricing regime. Consequently, if any arrangement (including any reinsurance or financing arrangements) between such U.K. tax paying company and any of our other companies is found not to be on arm’s length terms and as a result a U.K. tax advantage is being obtained, an adjustment will be required to compute U.K. taxable profits as if such arrangement were on arm’s length terms. Any transfer pricing adjustment could adversely impact the tax charge suffered by the relevant U.K. tax paying company.

With effect from January 1, 2016, the U.K. has implemented country by country reporting ("CBCR") whereby multinational groups are required to report details of their operations and intra-group transactions in each jurisdiction. It is possible that our approach to transfer pricing may become subject to greater scrutiny from the tax authorities in the jurisdictions in which we operate, which may lead to transfer pricing audits in the future.

In April 2016, the E.U. issued proposals to require all E.U. entities (including branches) to publish their CBCR reports. The proposals, if implemented, are likely to cause increased audit activity from E.U. tax authorities. U.K. legislation has been enacted giving power to introduce regulations requiring public disclosure of U.K. CBCR reports, although this power has not yet been exercised.

Our non-Irish companies may be subject to Irish tax that may have a material adverse effect on our results of operations.

We intend to operate our non-Irish resident companies in such a manner so that none of our non-Irish resident companies should be resident in Ireland for tax purposes and that they should not be treated as carrying on a trade through a branch or agency in Ireland.

Accordingly, we expect that none of our non-Irish resident companies should be subject to Irish corporation tax. Nevertheless, since the determination as to whether a company is resident in Ireland is a question of fact to be determined based on a number of different factors and since neither case law nor Irish legislation conclusively defines the activities that constitute trading in Ireland through a branch or agency, the Irish Revenue Commissioners might contend successfully that any of our non-Irish companies is resident in or otherwise trading through a branch or agency in Ireland and therefore subject to Irish corporation tax. If this were the case, our results of operations could be materially adversely affected.

If corporate tax rates in Ireland increase, our results of operations could be materially adversely affected.

Trading income derived from the (re)insurance businesses carried on in Ireland by AXIS Specialty Europe and AXIS Re SE is generally taxed in Ireland at a rate of 12.5%. Over the past number of years, various E.U. member states have, from time to time, called for harmonization of the corporate tax base within the E.U. Ireland, along with other member states, has consistently resisted any movement towards standardized corporate tax rates or tax base in the E.U. The Government of Ireland has also made clear its commitment to retain the 12.5% rate of corporation tax. If, however, tax laws in Ireland change so as to increase the general corporation tax rate in Ireland, our results of operations could be materially adversely affected.

If investments held by AXIS Specialty Europe SE or AXIS Re SE are determined not to be integral to the (re)insurance businesses carried on by those companies, additional Irish tax could be imposed and our business and financial results could be materially adversely affected.

Based on administrative practice, taxable income derived from investments made by AXIS Specialty Europe and AXIS Re SE is generally taxed in Ireland at the rate of 12.5% on the grounds that such investments either form part of the permanent capital required by regulatory authorities, or are otherwise integral to the (re)insurance businesses carried on by those companies. AXIS Specialty Europe and AXIS Re SE intend to operate in such a manner so that the level of investments held by such companies does not exceed the amount that is integral to the (re)insurance businesses carried on by AXIS Specialty Europe and AXIS Re SE. If, however, investment income earned by AXIS Specialty Europe or AXIS Re SE is deemed to be non-trading income, Irish corporation tax could apply to such investment income at a higher rate (currently 25%) instead of the general 12.5% rate, and our results of operations could be materially adversely affected.

Changes in U.S. federal income tax law could materially adversely affect us.

The recently enacted U.S. Tax Reform included certain provisions that were intended to eliminate some perceived tax advantages of companies (including (re)insurance companies) that have legal domiciles outside the U.S., but have certain U.S. connections, will significantly alter existing U.S. federal domestic and international income tax law. Among other things, the U.S. Tax Reform reduced the U.S. corporate tax rate, made extensive changes to the international tax system, eliminated the corporate alternative minimum tax system, modified the loss reserve discounting methodology, and changed the proration percentage on tax-favored investments. Furthermore, under the U.S. Tax Reform, certain U.S. corporations that make deductible payments, including reinsurance premiums, to foreign affiliates in excess of certain amounts will now be required to pay a base erosion minimum tax. Currently, there are only proposed regulations regarding the application of the base erosion minimum tax; and new regulations or pronouncements interpreting or clarifying U.S. federal income tax laws relating to (re)insurance companies may be forthcoming. We cannot be certain if, when, or in what form, such regulations or pronouncements may be provided, and whether such guidance will have a retroactive effect.

Changes in tax laws resulting from the recommendations of the Organization for Economic Corporation and Development ("OECD") could materially adversely affect us.

The OECD has launched a global initiative among member and non-member countries on measures to limit harmful tax competition, known as the "Base Erosion and Profit Shifting" ("BEPS") project and, in 2015, published reports containing a suite of recommended actions. These measures are largely directed at counteracting the effects of tax havens and preferential tax regimes in countries around the world, including expanding the definition of permanent establishment and updating the rules for attributing profits to permanent establishments, tightening transfer pricing rules to ensure that outcomes are in line with value creation, neutralizing the effect of hybrid financial instruments and limiting the deductibility of interest costs for tax purposes and preventing double tax treaty abuse. We expect many countries to change their tax laws in response to the BEPS project, and several countries have already changed or proposed changes to their tax laws. Changes to tax laws and additional reporting requirements could increase the tax burden and the complexity and cost of tax compliance.

Legislation enacted in Bermuda in response to the European Union’s review of harmful tax competition could adversely affect our operations and financial condition.

During 2017, the European Union ("EU") Economic and Financial Affairs Council ("ECOFIN") released a list of non-cooperative jurisdictions for tax purposes. The stated aim of this list, and accompanying report, was to promote good governance worldwide in order to maximize efforts to prevent tax fraud and tax evasion. Bermuda was not on the list of non-cooperative jurisdictions, but did feature in the report (along with approximately 40 other jurisdictions) as having committed to address concerns relating to economic substance by December 31, 2018. In accordance with that commitment, Bermuda has enacted legislation that requires certain entities in Bermuda engaged in "relevant activities" to maintain a substantial economic presence in Bermuda and to satisfy economic substance requirements. The list of "relevant activities" includes carrying on as a business any one or more of: banking, insurance, fund management, financing, leasing, headquarters, shipping, distribution and service center, intellectual property and holding entities. Any entity that must satisfy economic substance requirements but fails to do so could face automatic disclosure to competent authorities in the EU of the information filed by the entity with the Bermuda Registrar of Companies in connection with the economic substance requirements and may also face financial penalties, restriction or regulation of its business activities and/or may be struck off as a registered entity in Bermuda.

At present, the impact of these new economic substance requirements is unclear, and it is not possible to accurately predict the effect of these requirements on us and our business. The requirements may increase the complexity and costs of carrying on our business and could adversely affect our operations and financial condition.

Future changes in current accounting practices may materially impact our reported financial results.

Future changes in accounting practices may result in significant additional expenses and may affect the calculation of financial statement line items. For example, this could occur if we are required to prepare information relating to prior periods or if we are required to apply new requirements retroactively.

The price of our common shares may be volatile.

There has been significant volatility in the market for equity securities in recent years. During 2018, 2017, and 2016 the price of our common shares fluctuated from a low of $47.43 to a high of $60.69, a low of $49.42 to a high of $71.06 and a low of $51.01 to a high of $66.23, respectively. The price of our common shares may not remain at or exceed current levels. The following factors, in addition to those described in other risk factors above, may have an impact on the market price of our common stock:

- actual or anticipated variations in our quarterly results, including as a result of catastrophes or our investment performance;
- any share repurchase program;
- changes in market valuation of companies in the insurance and reinsurance industry;
- changes in expectations of future financial performance or changes in estimates of securities analysts;
- fluctuations in stock market processes and volumes;
- issuances or sales of common shares or other securities in the future;
- the addition or departure of key personnel;
- changes in tax law; and
- announcements by us or our competitors of acquisitions, investments or strategic alliances.

Stock markets in the U.S. continue to experience volatile price and volume fluctuations. Such fluctuations, as well as the general political situation, current economic conditions or interest rate or currency rate fluctuations, could adversely affect the market price of our stock.

ITEM 1B. UNRESOLVED STAFF COMMENTS

At December 31, 2018, the Company has no outstanding, unresolved comments from the SEC staff.

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ITEM 2. PROPERTIES

We maintain office facilities in Bermuda, the U.S., Europe, Canada, Singapore, Latin America and the Middle East. We own the property in which our office is located in Dublin, Ireland, and we lease office space in the other countries. We renew and enter into new leases in the ordinary course of business as required. Our global headquarters is located at 92 Pitts Bay Road, AXIS House, Pembroke HM 08, Bermuda. We believe that our office space is sufficient for us to conduct our operations for the foreseeable future.

ITEM 3. LEGAL PROCEEDINGS

From time to time, the Company is subject to routine legal proceedings, including arbitrations, arising in the ordinary course of business. These legal proceedings generally relate to claims asserted by or against the Company in the ordinary course of insurance or reinsurance operations. Estimated amounts payable related to these proceedings are included in the reserve for losses and loss expenses in the Company's consolidated balance sheets.
The Company is not party to any material legal proceedings arising outside the ordinary course of business.

ITEM 4. MINE SAFETY DISCLOSURES

Not Applicable.

PART II

ITEM 5. MARKET FOR REGISTRANT’S COMMON EQUITY, RELATED STOCKHOLDER MATTERS AND ISSUER PURCHASES OF EQUITY SECURITIES

Our common shares are listed on the New York Stock Exchange under the symbol "AXS".

On February 20, 2019, the number of holders of record of our common shares was 17. This figure does not represent the actual number of beneficial owners of our common shares because shares are frequently held in "street name" by securities dealers and others for the benefit of beneficial owners who may vote the shares.

We have a history of paying quarterly cash dividends. While we expect to continue paying comparable cash dividends in the foreseeable future, the declaration and payment of future dividends will be at the discretion of our Board of Directors and will depend upon many factors, including our net income, financial condition, business needs, capital and surplus requirements of our operating subsidiaries and regulatory and contractual restrictions, including those set forth in our credit facilities. Refer to Item 7 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Liquidity and Capital Resources' for additional information regarding our liquidity and capital resources.

Issuer Purchases of Equity Securities

Common Shares

Information regarding the number of common shares we repurchased in the quarter ended December 31, 2018 is shown in the following table:

Period	Total number of shares purchased[a] [b]	Average price paid per share	Total number of shares purchased as part of publicly announced plans or programs	Maximum number (or approximate dollar value) of shares that may yet be purchased under the plans or programs[b]
October 1-31, 2018	17	$57.45	—	—
November 1-30, 2018	4	$52.54	—	—
December 1-31, 2018	3	$54.93	—	—
Total	24		—	—

(a) In thousands.

(b) Shares are repurchased from employees to satisfy withholding tax liabilities that arise upon the vesting of restricted stock units.

ITEM 6. SELECTED FINANCIAL DATA

The following table shows selected consolidated financial information for the last five years. This data should be read in conjunction with Item 7 'Management's Discussion and Analysis of Financial Condition and Results of Operations' and Item 8 'Consolidated Financial Statements and the accompanying notes'.

	At and for the year ended December 31,				
	2018	2017	2016	2015	2014
	(in thousands, except per share amounts)				
Selected Statement of Operations Data:					
Gross premiums written	$6,910,065	$5,556,273	$4,970,208	$4,603,730	$4,711,519
Net premiums earned	4,791,495	4,148,760	3,705,625	3,686,417	3,870,999
Net investment income	438,507	400,805	353,335	305,336	342,766
Net investment gains (losses)	(150,218)	28,226	(60,525)	(138,491)	132,108
Net losses and loss expenses	3,190,287	3,287,772	2,204,197	2,176,199	2,186,722
Acquisition costs	968,835	823,591	746,876	718,112	737,197
General and administrative expenses	627,389	579,428	602,717	596,821	621,876
Interest expense and financing costs	67,432	54,811	51,360	50,963	74,695
Preferred share dividends	42,625	46,810	46,597	40,069	40,088
Net income (loss) available (attributable) to common shareholders[(1) (2) (3) (4) (5)]	$396	$(415,779)	$465,462	$601,562	$770,657
Per Common Share Data:					
Earnings (loss) per common share	$—	$(4.94)	$5.13	$6.10	$7.38
Earnings (loss) per diluted common share	—	(4.94)	5.08	6.04	7.29
Cash dividends declared per common share	$1.57	$1.53	$1.43	$1.22	$1.10
Weighted average common shares outstanding	83,501	84,108	90,772	98,609	104,368
Weighted average diluted common shares outstanding	84,007	84,108	91,547	99,629	105,713
Operating Ratios:[(6)]					
Net loss and loss expense ratio	66.6%	79.2%	59.5%	59.0%	56.5%
Acquisition cost ratio	20.2%	19.9%	20.2%	19.5%	19.0%
General and administrative expense ratio	13.1%	14.0%	16.2%	16.2%	16.1%
Combined ratio	99.9%	113.1%	95.9%	94.7%	91.6%
Selected Balance Sheet Data:					
Investments	$13,155,560	$14,784,210	$13,459,507	$13,386,118	$13,778,911
Cash and cash equivalents	1,830,020	1,363,786	1,241,507	1,174,751	1,209,695
Reinsurance recoverable on unpaid and paid losses	3,781,902	3,338,840	2,334,922	2,096,104	1,926,145

Total assets	24,132,566	24,760,177	20,813,691	19,981,891	19,955,736
Reserve for losses and loss expenses	12,280,769	12,997,553	9,697,827	9,646,285	9,596,797
Unearned premiums	3,635,758	3,641,399	2,969,498	2,760,889	2,735,376
Senior notes and notes payable	1,341,961	1,376,529	992,950	991,825	990,790
Total shareholders’ equity attributable to AXIS Capital	$5,030,071	$5,341,264	$6,272,370	$5,866,882	$5,821,121
Book value per common share(7)(8)	$50.91	$54.91	$59.54	$55.32	$52.23
Book value per diluted common share(7)(8)	$49.93	$53.88	$58.27	$54.08	$50.63
Common shares outstanding(8)	83,586	83,161	86,441	94,708	99,426
Diluted common shares outstanding(8)	85,229	84,745	88,317	96,883	102,577

(1) During 2018 and 2017, the Company recognized transaction and reorganization expenses of $67 million and $27 million, respectively, related to its transformation program which was launched in 2017. This program encompasses the integration of Novae Group plc ("Novae") which commenced in the fourth quarter of 2017, the realignment of our accident and health business, together with other initiatives designed to increase our efficiency and enhance our profitability while delivering a customer-centric operating model. During 2015, the Company implemented a number of profitability enhancement initiatives which resulted in recognition of transaction and reorganization expenses of $46 million and general and administrative expenses of $5 million.

(2) During 2017, the Company recognized a tax expense of $42 million due to the revaluation of net deferred tax assets pursuant to the U.S. Tax Reform. Refer to Item 8, Note 18 to the Consolidated Financial Statements 'Income Taxes' for further details.

(3) During 2018 and 2017, the Company recognized amortization of value of business acquired ("VOBA") of $171 million and $50 million, respectively, related to the acquisition of Novae. Refer to Item 8, Note 3 and Note 5 to the Consolidated Financial Statements 'Business Combinations' and 'Goodwill and Intangible Assets' for further details.

(4) During 2015, the Company accepted a request from PartnerRe Ltd., a Bermuda exempted company ("PartnerRe") to terminate the Agreement and Plan of Amalgamation (the "Amalgamation Agreement") with the Company. PartnerRe paid the Company a termination fee of $280 million.

(5) During 2015, the Company early adopted the Accounting Standard Update ("ASU") 2015-02 "Consolidation (Topic 810) Amendments to the Consolidation Analysis", issued by the Financial Accounting Standards Board. The adoption of this accounting guidance resulted in the Company concluding that it was no longer required to consolidate the results of operations and the financial position of Ventures Re. The Company adopted this accounting guidance using the modified retrospective approach and ceased to consolidate Ventures Re effective January 1, 2015. For the year ended December 31, 2014, net income available to common shareholders included an amount attributable from noncontrolling interests of $6,181.

(6) Operating ratios are calculated by dividing the respective operating expenses by net premiums earned.

(7) Book value per common share and book value per diluted common share are based on total common shareholders' equity divided by common shares and diluted common share outstanding, respectively.

(8) Calculations and share amounts at December 31, 2015 include 1,358,380 additional shares delivered to the Company in January 2016 under the Company's Accelerated Share Repurchase ("ASR") agreement entered into on August 17, 2015. Refer to Item 8, Note 14 to the Consolidated Financial Statements 'Shareholders' Equity' for further details.

ITEM 7. MANAGEMENT’S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS

The following is a discussion and analysis of our results of operations for the years ended December 31, 2018, 2017 and 2016 and our financial condition at December 31, 2018 and 2017. This should be read in conjunction with Item 8 'Consolidated Financial Statements and the accompanying notes' of this report. Tabular dollars are in thousands, except per share amounts. Amounts in tables may not reconcile due to rounding differences.

2018 FINANCIAL HIGHLIGHTS

2018 Consolidated Results of Operations

- Net income available to common shareholders of $0.4 million
- Operating income(1) of $161 million, or $1.92 per diluted common share(1)
- Gross premiums written of $6.9 billion
- Net premiums written of $4.7 billion
- Net premiums earned of $4.8 billion
- Estimated pre-tax catastrophe and weather-related losses, net of reinstatement premiums, of $430 million (insurance: $204 million and reinsurance: $226 million), or 9.0 points on current accident year loss ratio related to the California Wildfires, Hurricanes Michael and Florence, Typhoon Jebi as well as U.S. and European weather-related events
- Net favorable prior year reserve development of $200 million
- Underwriting income(2) of $124 million and combined ratio of 99.9%
- Net investment income of $439 million
- Net investment losses of $150 million
- Amortization of value of business acquired ("VOBA") of $172 million
- Transaction and reorganization expenses of $67 million
- Foreign exchange gains of $29 million

2018 Consolidated Financial Condition

- Total cash and investments of $15.0 billion; fixed maturities, cash and short-term securities comprise 89% of total cash and investments and have an average credit rating of AA-
- Total assets of $24.1 billion
- Reserve for losses and loss expenses of $12.3 billion and reinsurance recoverable on unpaid and paid losses of $3.8 billion
- Total debt of $1.3 billion and a debt to total capital ratio of 21.1%
- Total common shares repurchased were 0.2 million for $10 million
- Common shareholders’ equity of $4.3 billion; diluted book value per common share of $49.93

(1) Operating income (loss) and operating income (loss) per diluted common share are non-GAAP financial measures as defined in Item 10(e) of SEC Regulation S-K. The reconciliations of non-GAAP measures to the most comparable GAAP financial measures (net income (loss) available (attributable) to common shareholders and earnings per diluted common share, respectively) are provided in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

(2) Consolidated underwriting income (loss) is a non-GAAP financial measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to net income (loss) before income taxes and interest in income (loss) of equity method investments, the most comparable GAAP measure, is presented in the 'Management's Discussion and Analysis of Financial Condition – Executive Summary – Results of Operations.'

EXECUTIVE SUMMARY

Business Overview

AXIS Capital Holdings Limited ("AXIS Capital"), through its operating subsidiaries, is a global provider of specialty lines insurance and reinsurance products with operations in Bermuda, the U.S., Europe, Singapore, Canada, Latin America and the Middle East. Our underwriting operations are organized around our global underwriting platforms, AXIS Insurance and AXIS Re.

We provide our clients and distribution partners with a broad range of risk transfer products and services and meaningful capacity, backed by significant financial strength. We manage our portfolio holistically, aiming to construct the optimum consolidated portfolio of funded and unfunded risks, consistent with our risk appetite and development of our franchise. We nurture an ethical, entrepreneurial and disciplined culture that promotes outstanding client service, intelligent risk taking and the achievement of superior risk-adjusted returns for our shareholders. We believe that the achievement of our objectives will position us as a global leader in specialty risks. Our execution of this strategy in 2018 included the following:

- increasing our relevance in a select number of attractive specialty insurance and global reinsurance markets and continuing the implementation of a more focused distribution strategy;
- continuing to grow a leadership position in business lines with strong growth potential including U.S. excess and surplus lines, and North America professional lines;
- increasing our presence at Lloyd's of London ("Lloyd's") achieved through our acquisition of Novae Group plc ("Novae") in 2017 which provides us with access to Lloyd's worldwide licenses and an extensive distribution network;
- continuing to re-balance our portfolio towards less volatile lines of business that carry attractive rates;
- launching a new phase of our transformation efforts, an enterprise-wide program to enhance all of our functions and position us to lead in a transforming industry;
- continuing to improve in the effectiveness and efficiency of our operating platforms and processes;
- increasing investment in data and analytics; and
- broadening risk-funding sources and the development of vehicles that utilize third-party capital.

Reinsurance Agreement with Alturas Re Ltd ("Alturas")

In January 2019, we obtained protection for our insurance and reinsurance segments through a reinsurance agreement with Alturas. In connection with the reinsurance agreement, Alturas issued notes on December 19, 2018 to unrelated investors in an amount equal to the full $130 million of coverage provided under the reinsurance agreement covering a one year period. At the time of the agreement, we concluded that we do not have a variable interest in Alturas as the variability in results is expected to be absorbed entirely by the investors in Alturas. Accordingly, the results of Alturas are not included in our consolidated financial statements.

Outlook

We are committed to leadership in specialty insurance risk and global reinsurance, areas where we have depth of talent and expertise and have earned a strong reputation for client service and intelligent risk-taking. As a mid-sized player that is both sophisticated and agile, we believe we are well-positioned to thrive in the rapidly evolving insurance and reinsurance marketplace. Through our hybrid strategy, we have developed substantial platforms in insurance and reinsurance, providing us with both balance and diversification. We believe our market positioning, underwriting expertise, best-in-class claims management capabilities, and strong relationships with our distributors and clients will provide opportunities for profitable growth in 2019 and beyond, with variances among our lines driven by our tactical response to market conditions.

Since late 2017, rates across most insurance lines have generally improved, with catastrophe exposed property insurance lines, U.S. excess casualty and U.K. professional liability experiencing the most upward rate momentum. Market conditions will likely remain competitive in the near term. However, we would expect many specialty segments will experience improved market conditions as carriers assess pricing, portfolio construction and account preferences. In this competitive market environment with mixed market conditions, we are focusing on lines of business and market segments that are adequately priced, and we are trading off growth for profitability in other areas. In addition, our acquisition of Novae increases our leadership and relevance in the London marketplace, and we expect to be well-positioned to capitalize on new opportunities and benefit from improved market conditions emerging through the international specialty insurance market, including Lloyd's.

The reinsurance market is also experiencing increased momentum in rates (stable supply with increasing demand). Given the above average market losses in the last couple of years; we continue to emphasize underwriting discipline to actively manage our portfolios. At the same time, we also see opportunities to support clients in a world of changing exposures, regulation and reinsurance panels. We believe that there is a real opportunity to achieve more relevance by focusing on our clients to produce new streams of income in the future while still defending the quality of our existing portfolio. We are also focused on managing the volatility and capital efficiency of our portfolio by further expanding our already strong group of strategic capital partners. Taken together, we balance short term needs and long term priorities, with the ultimate goal of adding value to our clients and to our communities.

Non-GAAP Financial Measures

We present our results of operations in a way we believe will be most meaningful and useful to investors, analysts, rating agencies and others who use our financial information to evaluate our performance. Some of the measurements we use are considered non-GAAP financial measures under SEC rules and regulations. In this Management's Discussion and Analysis of Financial Condition and Results of Operations ("MD&A"), we present underwriting-related general and administrative expenses, consolidated underwriting income (loss), operating income (loss) (in total and on a per share basis), operating return on average common equity ("operating ROACE"), amounts presented on a constant currency basis, pre-tax total return on cash and investments excluding foreign exchange movements, ex-PGAAP operating income (loss) (in total and on a per share basis) and ex-PGAAP operating ROACE which are non-GAAP financial measures as defined in Item 10(e) of SEC Regulation S-K. We believe that these non-GAAP financial measures, which may be defined and calculated differently by other companies, better explain and enhance the understanding of our results of operations. However, these measures should not be viewed as a substitute for those determined in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP").

Underwriting-Related General and Administrative Expenses
Underwriting-related general and administrative expenses include those general and administrative expenses that are incremental and/or directly attributable to our individual underwriting operations. While this measure is presented in Item 8, Note 4 to the Consolidated Financial Statements 'Segment Information', it is considered a non-GAAP financial measure when presented elsewhere on a consolidated basis.

Corporate expenses include holding company costs necessary to support our worldwide insurance and reinsurance operations and costs associated with operating as a publicly-traded company. As these costs are not incremental and/or directly attributable to our individual underwriting operations, these expenses are excluded from underwriting-related general and administrative expenses and, therefore, consolidated underwriting income (loss). General and administrative expenses, the most comparable GAAP financial measure to underwriting-related general and administrative expenses, also includes corporate expenses.

The reconciliation of underwriting-related general and administrative expenses to general and administrative expenses, the most comparable GAAP measure, is presented in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

Consolidated Underwriting Income (Loss)
Consolidated underwriting income (loss) is a pre-tax measure of underwriting profitability that takes into account net premiums earned and other insurance related income (losses) as revenues and net losses and loss expenses, acquisition costs and underwriting-related general and administrative expenses as expenses. While this measure is presented in Item 8, Note 4 to the Consolidated Financial Statements 'Segment Information', it is considered a non-GAAP financial measure when presented elsewhere on a consolidated basis.

We evaluate our underwriting results separately from the performance of our investment portfolio. As such, we believe it is appropriate to exclude net investment income and net investment gains (losses) from our underwriting profitability measure.

Foreign exchange losses (gains) in our consolidated statements of operations primarily relate to the impact of foreign exchange rate movements on our net insurance-related liabilities. However, we manage our investment portfolio in such a way that unrealized and realized foreign exchange losses (gains) on our investment portfolio generally offset a large portion of the foreign exchange losses (gains) arising from our underwriting portfolio. As a result, we believe that foreign exchange losses (gains) are not a meaningful contributor to our underwriting performance, therefore, foreign exchange losses (gains) are excluded from consolidated underwriting income (loss).

Interest expense and financing costs primarily relate to interest payable on our senior notes and notes payable. As these expenses are not incremental and/or directly attributable to our individual underwriting operations, these expenses are excluded from underwriting-related general and administrative expenses, and therefore, consolidated underwriting income (loss).

Bargain purchase gain, recognized upon the acquisition of Compagnie Belge d'Assurances Aviation NV/SA ("Aviabel"), reflects the excess of the fair value of the net identifiable assets acquired over the fair value of consideration transferred and is not indicative of future revenues of the Company, therefore, this revenue is excluded from consolidated underwriting income (loss).

Transaction and reorganization expenses are primarily driven by business decisions, the nature and timing of which are not related to the underwriting process, therefore, these expenses are excluded from consolidated underwriting income (loss).

Amortization of intangibles including VOBA arose from business decisions, the nature and timing of which are not related to the underwriting process, therefore, these expenses are excluded from consolidated underwriting income (loss).

The revaluation of net deferred tax asset ("DTA") represents a tax expense recognized in the fourth quarter of 2017 related to the revaluation of our net DTA, due to the reduction in the U.S. corporate income tax rate from 35% to 21% enacted as part of the Tax Cuts and Jobs Act of 2017 ("U.S. Tax Reform"). The nature and timing of the tax expense associated with the U.S. Tax Reform is not related to the underwriting process, therefore, this expense is excluded from consolidated underwriting income (loss).

Loss on repurchase of preferred shares arose from capital transactions that are not reflective of underlying business performance, therefore, this expense is excluded from consolidated underwriting income (loss).
We believe that presentation of underwriting-related general and administrative expenses and consolidated underwriting income (loss) provides investors with an enhanced understanding of our results of operations, by highlighting the underlying pre-tax profitability of our underwriting activities. The reconciliation of consolidated underwriting income (loss) to income (loss) before income taxes and interest in income (loss) of equity method investments, the most comparable GAAP financial measure, is presented in the 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.
Operating Income (Loss)
Operating income (loss) represents after-tax operational results exclusive of net realized investment gains (losses), foreign exchange losses (gains), transaction and reorganization expenses, revaluation of net deferred tax asset and bargain purchase gain.
Although the investment of premiums to generate income and investment gains (losses) is an integral part of our operations, the determination to realize investment gains (losses) is independent of the underwriting process and is heavily influenced by the availability of market opportunities. Furthermore, many users believe that the timing of the realization of investment gains (losses) is somewhat opportunistic for many companies.
Foreign exchange losses (gains) in our consolidated statements of operations primarily relate to the impact of foreign exchange rate movements on net insurance related-liabilities. However, this movement is only one element of the overall impact of foreign exchange rate fluctuations on our financial position. In addition, we recognize unrealized foreign exchange losses (gains) on our available-for-sale investments in other comprehensive income (loss) and foreign exchange losses (gains) realized upon the sale of these investments in net investments gains (losses). These unrealized and realized foreign exchange gains (losses) generally offset a large portion of the foreign exchange losses (gains) reported separately in net income (loss) available (attributable) to common shareholders, thereby minimizing the impact of foreign exchange rate movements on total shareholders' equity. As such, foreign exchange losses (gains) in our Statements of Operations in isolation are not a fair representation of the performance of our business.

Transaction and reorganization expenses are primarily driven by business decisions, the nature and timing of which are not related to the underwriting process, therefore, these expenses are excluded from operating income (loss).

The revaluation of net deferred tax asset represents a tax expense recognized in the fourth quarter of 2017 related to the revaluation of our net DTA, due to the reduction in the U.S. corporate income tax rate from 35% to 21% enacted as part of the Tax Cuts and Jobs Act of 2017 ("U.S. Tax Reform"). The nature and timing of the tax expense associated with the U.S. Tax Reform is not related to the underwriting process, therefore, this expense is excluded from operating income (loss).

Bargain purchase gain, recognized upon the acquisition of Compagnie Belge d'Assurances Aviation NV/SA ("Aviabel"), reflects the excess of the fair value of the net identifiable assets acquired over the fair value of consideration transferred and is not indicative of future revenues of the Company, therefore, this revenue is excluded from operating income (loss).

Loss on repurchase of preferred shares arose from capital transactions that are not reflective of underlying business performance and therefore, is excluded from operating income (loss).

Certain users of our financial statements evaluate performance exclusive of after-tax net investment gains (losses), foreign exchange losses (gains), transaction and reorganization expenses, revaluation of net deferred tax asset, bargain purchase gain and loss on repurchase of preferred shares to understand the profitability of recurring sources of income. We believe that showing net income (loss) available (attributable) to common shareholders exclusive of after-tax net investment gains (losses), foreign exchange losses (gains), transaction and reorganization expenses, bargain purchase gain, revaluation of net deferred tax asset and loss on repurchase of preferred shares reflects the underlying fundamentals of our business. In addition, we believe that this presentation enables investors and other users of our financial information to analyze performance in a manner similar to how our management analyzes the underlying business performance. We also believe this measure follows industry practice and, therefore, facilitates comparison of our performance with our peer group. We believe that equity analysts and certain rating agencies that follow us, and the insurance industry as a whole, generally exclude these items from their analyses for the same reasons. The reconciliation of operating income (loss) to net income (loss) available (attributable) to common shareholders, the most comparable GAAP measure, is presented in the 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

We also present operating income (loss) per diluted common share and operating ROACE, which are derived from the operating income (loss) measure and are reconciled to the most comparable GAAP financial measures, earnings per diluted common share and return on average common equity ("ROACE"), respectively, in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

Constant Currency Basis

We present gross premiums written, net premiums written and net premiums earned on a constant currency basis in this MD&A. The amounts presented on a constant currency basis are calculated by applying the average foreign exchange rate from the current year to the prior year amounts. We believe this presentation enables investors and other users of our financial information to analyze growth in gross premiums written, net premiums written and net premiums earned on a constant basis. The reconciliation to gross premiums written, net premiums written and net premiums earned on a GAAP basis is presented in the 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Underwriting Results – Consolidated'.

Pre-Tax Total Return on Cash and Investments excluding Foreign Exchange Movement

Pre-tax total return on cash and investments excluding foreign exchange movements measures net investment income (loss), net investments gains (losses), interest in income (loss) of equity method investments and change in unrealized investment gains (losses) generated by average cash and investment balances. The reconciliation of pre-tax total return on cash and investments excluding foreign exchange movements to pre-tax total return on cash and investments, the most comparable GAAP financial measure, is presented in the 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Net Investment Income and Net Investment Gains (Losses)'. We believe this presentation enables investors and other users of our financial information to better analyze the performance of our investment portfolio.

Ex-PGAAP Operating Income (Loss)

Ex-PGAAP operating income (loss) represents operating income (loss) exclusive of amortization of VOBA and intangible assets, net of tax and amortization of acquisition costs, net of tax associated with Novae's balance sheet at October 2, 2017 (the "closing date" or "acquisition date"). The reconciliation of ex-PGAAP operating income (loss) to net income (loss) available (attributable) to common shareholders, the most comparable GAAP financial measure, is presented in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

We also present ex-PGAAP operating income (loss) per diluted common share and ex-PGAAP operating ROACE, which are derived from the ex-PGAAP operating income (loss) measure and are reconciled to the most comparable GAAP financial measures, earnings per diluted common share and ROACE, respectively, are also presented in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

We believe the presentation of ex-PGAAP operating income (loss), ex-PGAAP operating income (loss) per diluted common share and ex-PGAAP operating ROACE enables investors and other users of our financial information to better analyze the performance of our business.

Acquisition of Novae

On October 2, 2017, we acquired Novae. We identified VOBA which represents the present value of the expected underwriting profit within policies that were in-force at the closing date of the transaction. In addition, the allocation of the acquisition price to the assets acquired and liabilities assumed of Novae based on estimated fair values at the acquisition date, resulted in the write-off of the deferred acquisition cost asset on Novae's balance sheet at the acquisition date as the value of policies in-force on that date are considered within VOBA. Consequently, underwriting income (loss) in 2018 and 2017 included the recognition of premium attributable to Novae's balance sheet at the acquisition date without the recognition of the associated acquisition costs.

Results of Operations

Year ended December 31,	2018	% Change	2017	% Change	2016
Underwriting revenues:					
Net premiums earned	$4,791,495	15%	$4,148,760	12%	$3,705,625
Other insurance related income (losses)	10,622	nm	(1,240)	nm	7,222
Underwriting expenses:					
Net losses and loss expenses	(3,190,287)	(3%)	(3,287,772)	49%	(2,204,197)
Acquisition costs	(968,835)	18%	(823,591)	10%	(746,876)
Underwriting general and administrative expenses [1]	(519,168)	16%	(449,483)	(7%)	(482,701)
Underwriting Income (Loss)	$123,827		$(413,326)		$279,073
Corporate expenses [1]	(108,221)	(17%)	(129,945)	8%	(120,016)
Net investment income	438,507	9%	400,805	13%	353,335
Net investment gains (losses)	(150,218)	nm	28,226	nm	(60,525)
Other (expenses) revenues, net	(38,267)	(80%)	(189,548)	nm	69,935
Transaction and reorganization expenses	(66,940)	nm	(26,718)	nm	—
Amortization of value of business acquired	(172,332)	nm	(50,104)	nm	—
Amortization of intangible assets	(13,814)	nm	(2,543)	nm	—
Bargain purchase gain	—	nm	15,044	nm	—
Income (loss) before income taxes and interest in income (loss) of equity method investments	12,542		(368,109)		521,802
Income tax (expense) benefit	29,486	nm	7,542	nm	(6,340)
Interest in income (loss) of equity method investments	993	nm	(8,402)	nm	(2,094)
Net income (loss)	43,021		(368,969)		513,368
Preferred share dividends	(42,625)	(9%)	(46,810)	—%	(46,597)
Loss on repurchase of preferred shares	—	nm	—	nm	(1,309)
Net income (loss) available (attributable) to common shareholders	$396	nm	$(415,779)	nm	$465,462
Net investment (gains) losses, net of tax [2]	138,576	nm	(26,204)	nm	62,355
Foreign exchange losses (gains), net of tax [3]	(33,496)	nm	126,960	nm	(119,181)
Transaction and reorganization expenses, net of tax[4]	55,904	nm	23,879	nm	—
Revaluation of net deferred tax [5]	—	nm	41,629	nm	—
Bargain purchase gain [5]	—	nm	(15,044)	nm	—
Loss on repurchase of preferred shares [5]	—	nm	—	nm	1,309
Operating income (loss)[6]	$161,380	nm	$(264,559)	nm	$409,945

nm – not meaningful

55

(1) Underwriting-related general and administrative expenses is a non-GAAP measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to total general and administrative expenses, the most comparable GAAP measure, also included corporate expenses of $108,221, $129,945 and $120,016 for the years ended December 31, 2018, 2017 and 2016, respectively. Refer to 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Other (Expenses) Revenues, Net' for additional information related to the corporate expenses. Refer to 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Financial Measures' for additional information.

(2) Tax cost (benefit) of ($11,642), $2,022 and $1,830 for the years ended December 31, 2018, 2017 and 2016, respectively. Tax impact is estimated by applying the statutory rates of applicable jurisdictions, after consideration of other relevant factors including the ability to utilize capital losses.

(3) Tax cost (benefit) of ($4,331), ($7,777) and $2,114 for the years ended December 31, 2018, 2017 and 2016, respectively. Tax impact is estimated by applying the statutory rates of applicable jurisdictions, after consideration of other relevant factors including the tax status of specific foreign exchange transactions.

(4) Tax cost (benefit) of ($11,036), ($2,839) and $nil for the year ended December 31, 2018, 2017 and 2016, respectively. Tax impact is estimated by applying the statutory rates of applicable jurisdictions.

(5) Tax impact is $nil.

(6) Operating income (loss) is a non-GAAP financial measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliations to the most comparable GAAP financial measures (net income (loss) available (attributable) to common shareholders) is provided in the table above, and a discussion of the rationale for the presentation of this item is included in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Financial Measures'.

Non-GAAP Financial Measures

We also present operating income per diluted common share and operating return on average common equity ("operating ROACE"), which are derived from the operating income measure and can be reconciled to the most comparable GAAP financial measures as follows:

Year ended December 31,	2018	2017	2016
Net income (loss) available (attributable) to common shareholders	$396	$(415,779)	$465,462
Operating income (loss)	$161,380	$(264,559)	$409,945
Weighted average diluted common shares outstanding[(1)]	84,007	84,108	91,547
Earnings (loss) per diluted common share	$—	$(4.94)	$5.08
Operating income (loss) per diluted common share[(2)]	$1.92	$(3.15)	$4.48
Average common shareholders' equity	$4,410,668	$4,856,280	$5,192,668
Return on average common equity[(3)]	— %	(8.6 %)	9.0 %
Operating return on average common equity[(4)]	3.7 %	(5.4 %)	7.9 %

(1) Refer to Item 8, Note 13 to the Consolidated Financial Statements 'Earnings Per Common Share' for further details on the dilution calculation.

(2) Operating income (loss) per diluted common share is a non-GAAP financial measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to the most comparable GAAP financial measures (earnings per diluted common share) is provided in the table above, and a discussion of the rationale for the presentation of this item is included in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Financial Measures'.

(3)

Return on average common equity ("ROACE") is calculated by dividing net income (loss) available (attributable) to common shareholders for the year by the average common shareholders' equity determined by using the common shareholders' equity balances at the beginning and end of the year.

(4) Operating ROACE, a non-GAAP measure as defined in Item 10(e) of SEC Regulation S-K, is calculated by dividing operating income (loss) for the year by the average common shareholders' equity. The reconciliation to ROACE, the most comparable GAAP measure, is presented in the table above. Refer to 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Financial Measures' for additional information.

Ex-PGAAP Operating Income

We also present ex-PGAAP operating income (loss), ex-PGAAP operating income (loss) per diluted common share and ex-PGAAP operating ROACE which are derived from the operating income measure and can be reconciled to the most comparable GAAP financial measures as follows:

Year ended December 31,	2018		% Change	2017		% Change	2016	
Net income (loss) available (attributable) to common shareholders	$396		nm	$(415,779	)	nm	$465,462	
Net investment (gains) losses, net of tax	138,576		nm	(26,204	)	nm	62,355	
Foreign exchange losses (gains), net of tax	(33,496	)	nm	126,960		nm	(119,181	)
Transaction and reorganization expenses, net of tax	55,904		nm	23,879		nm	—	
Revaluation of net deferred tax	—		nm	41,629		nm	—	
Bargain purchase gain	—		nm	(15,044	)	nm	—	
Loss on repurchase of preferred shares	—		nm	—		nm	1,309	
Operating income (loss)	$161,380		nm	$(264,559	)	nm	$409,945	
Amortization of VOBA and intangible assets, net of tax (2)	149,470		nm	42,644		nm	—	
Amortization of acquisition costs, net of tax (3)	(101,628	)	nm	(26,443	)	nm	—	
Ex-PGAAP operating income (loss)(1)	$209,222			$(248,358	)		$409,945	
Earnings (loss) per diluted common share	$—			$(4.94	)		$5.08	
Net investment (gains) losses, net of tax	1.65			(0.31	)		0.68	
Foreign exchange losses (gains), net of tax	(0.40	)		1.51			(1.29	)
Transaction and reorganization expenses, net of tax	0.67			0.28			—	
Revaluation of net deferred tax asset	—			0.49			—	
Bargain purchase gain	—			(0.18	)		—	
Loss on repurchase of preferred shares	—			—			0.01	
Operating income (loss) per diluted common share	1.92			(3.15	)		4.48	
Amortization of VOBA and intangible assets, net of tax(2)	1.78			0.51			—	
Amortization of acquisition cost, net of tax(3)	(1.21	)		(0.31	)		—	
Ex-PGAAP operating income (loss) per diluted common share(1)	$2.49			$(2.95	)		$4.48	
Weighted average diluted common shares outstanding	84,007			84,108			91,547	
Average common shareholders' equity	$4,410,668			$4,856,280			$5,192,668	
Return on average common equity	—	%		(8.6	)%		9.0	%
Operating return on average common equity	3.7	%		(5.4	)%		7.9	%
Ex-PGAAP operating return on average common equity(1)	4.7	%		(5.1	)%		n/a	

(1) Ex-PGAAP operating income (loss), ex-PGAAP operating income (loss) per diluted common share and ex-PGAAP operating return on average common equity are non-GAAP financial measures as defined in SEC Regulation S-K. Ex-PGAAP operating ROACE, is calculated by dividing ex-PGAAP operating income (loss) for the year by the average common shareholders' equity. The reconciliation of ex-PGAAP operating income (loss), ex-PGAAP operating income (loss) per diluted common share and ex-PGAAP operating return on average common equity to the most comparable GAAP financial measures, (net income (loss) available (attributable) to common shareholders, earnings (loss) per diluted common share, and ROACE, respectively) are provided in the table above, and a discussion of the rationale for the presentation of these items is included in 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Non-GAAP Financial Measures'.

(2) Tax cost (benefit) of $(35,061), $(10,003) and $nil for the years ended December 31, 2018, 2017 and 2016, respectively. Tax impact is estimated by applying the statutory rates of applicable jurisdictions.

(3) Tax cost (benefit) of $23,839, $6,203 and $nil for the years ended December 31, 2018, 2017 and 2016, respectively. Tax impact is estimated by applying the statutory rates of applicable jurisdictions.

Underwriting Results

2018 versus 2017: Total underwriting income increased by $537 million in 2018, compared to 2017, primarily driven by a decrease in catastrophe and weather-related losses and a decrease in the current accident year loss ratio excluding catastrophe and weather-related losses.

Our insurance segment underwriting income increased by $319 million in 2018, compared to 2017. The increase in underwriting income was primarily driven by a decrease in catastrophe and weather-related losses, a decrease in the current accident year loss ratio excluding catastrophe and weather-related losses, an increase in net favorable prior year reserve development and a decrease in the general and administrative expense ratio, partially offset by an increase in the acquisition cost ratio.

Our reinsurance segment underwriting income increased by $218 million in 2018, compared to 2017. The increase in underwriting income was primarily driven by a decrease in catastrophe and weather-related losses, a decrease in the current accident year loss ratio excluding catastrophe and weather-related losses and an increase in other insurance related income, partially offset by a decrease in net favorable prior year reserve development.

2017 versus 2016: Total underwriting income decreased by $692 million in 2017, compared to 2016, primarily driven by an increase in catastrophe and weather-related losses, an increase in the current accident year loss ratio excluding catastrophe and weather-related losses and a decrease in net favorable prior year reserve development, partially offset by a decrease in general and administrative expenses.

Our insurance segment underwriting income decreased by $264 million in 2017, compared to 2016. The decrease in underwriting income was primarily driven by an increase in catastrophe and weather-related losses, an increase in acquisition costs and an increase in the current accident year loss ratio excluding catastrophe and weather-related losses.

Our reinsurance segment underwriting income decreased by $428 million in 2017, compared to 2016. The decrease in underwriting income was primarily driven by an increase in catastrophe and weather-related losses, a decrease in net favorable prior year reserve development and an increase in the current accident year loss ratio excluding catastrophe and weather-related losses, partially offset by a decrease in general and administrative expenses and acquisition costs.

Net Investment Income

The variability in net investment income from 2016 through 2018 was largely attributable to the performance of our other investments portfolio. Income from this portfolio decreased by $28 million in 2018, compared to 2017, attributable to lower returns from hedge funds due to lower returns from equity markets and a decrease in our hedge fund holdings, together with lower returns from direct lending funds due to lower returns from credit markets. Comparatively, income from this portfolio increased by $34 million in 2017, compared to 2016, attributable to higher returns from investments in hedge funds and direct lending funds due to the strong performance of global equity and credit markets.

In addition, net investment income increased by $43 million in 2018 compared to 2017, attributable to contributions from fixed income, due to an increase in yields as well as the larger investment base associated with the acquisitions of Novae and Aviabel. Comparatively, net investment income increased by $13 million in 2017 compared to 2016, attributable to contributions from fixed income following the acquisitions of Novae and Aviabel.

Net Investment Gains (Losses)

During 2018, net investment losses were $150 million compared to net investment gains of $28 million in 2017 and net investment losses of $61 million in 2016. Net investment losses in 2018 were primarily attributable to net realized investment losses on the sale of agency RMBS, U.S. government and corporate debt securities, and net unrealized investment losses on equity securities of $67 million which were reported in net investment gains (losses) as opposed to other comprehensive income following the adoption of Accounting Standards Update ("ASU") 2016-01 "Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities," in the first quarter of 2018.

Net investment gains in 2017 were primarily attributable to net realized investments gains associated with the sale of ETFs, due to the strong performance of global equity markets. Net investment losses in 2016 were primarily due to foreign exchange losses on non-U.S. denominated fixed maturities, due to the strengthening of the U.S. dollar. Other than temporary impairment ("OTTI") charges were $10 million, $14 million and $26 million in 2018, 2017 and 2016, respectively.

Other Expenses (Revenues), Net

Corporate expenses decreased to $108 million in 2018 from $130 million in 2017. The decrease was primarily driven by an increase in the allocation of corporate costs to our insurance and reinsurance segments, together with a decrease in personnel costs, partially offset by an increase in information technology project costs. Corporate expenses also increased to $130 million in 2017 from $120 million in 2016. The increase was primarily driven by higher personnel costs including senior executive transition costs as well as executive retirement costs, and information technology project costs, partially offset by a decrease in performance-related compensation costs.

The foreign exchange gains of $29 million in 2018 were driven primarily by the impact of the strengthening of the U.S. dollar on the re-measurement of net insurance-related liabilities mainly denominated in pound sterling and euro. Foreign exchange losses of $135 million in 2017 were driven primarily by the impact of the weakening of the U.S. dollar on the re-measurement of net insurance-related liabilities mainly denominated in pound sterling and euro, and foreign exchange gains of $121 million in 2016 were driven primarily by the strengthening of the U.S. dollar against the pound sterling.

Interest expense and financing costs increased to $67 million in 2018 from $55 million in 2017. The increase was primarily attributable to costs associated with the 4.0% Senior Notes issued in the fourth quarter of 2017. Interest expense and financing costs increased by $4 million in 2017 compared to 2016, primarily attributable to costs associated with Dekania Notes issued by Novae in 2004.

The financial results for 2018 resulted in a tax benefit of $29 million primarily attributable to the geographic distribution of pre-tax losses with the benefit being driven by losses in our U.K. and European operations, partially offset by income in our U.S. operations.

The tax benefit of $8 million in 2017 was primarily driven by the geographic distribution of pre-tax losses with the benefit being driven by losses in our U.K. and U.S. operations, largely offset by a tax charge of $42 million related to the revaluation of net deferred tax assets associated with the reduction in the U.S. corporate income tax rate from 35% to 21% enacted as part of the U.S. Tax Reform.

The tax expense of $6 million in 2016 was primarily by attributable to the geographic distribution of pre-tax income with the expense being driven by income in our European and partially offset by losses in our U.S. operations.

Transaction and Reorganization Expenses

Transaction and reorganization expenses were $67 million and $27 million for 2018 and 2017, respectively, related to the transformation program launched in 2017. This program encompasses the integration of Novae which commenced in the fourth quarter of the prior year, the realignment of our accident and health business, together with other initiatives designed to increase our efficiency and enhance our profitability while delivering a customer-centric operating model. Pre-tax transaction and reorganization charges of $94 million have been incurred since the third quarter of 2017. These expenses are not included in operating income.

We expect to achieve annual run-rate pre-tax cost savings of approximately $100 million with effect from 2020. These expense savings will be achieved through the elimination of redundant roles, efficiencies introduced through organizational redesign, operating efficiency improvements, integration of systems and the rationalization of third party contracts and professional fees.

Amortization of Value of Business Acquired

On October 2, 2017, we acquired Novae, a diversified property and casualty (re)insurance business which operates through Syndicate 2007 at Lloyd's. The acquisition of Novae was undertaken to accelerate the growth strategy of our international insurance business, and to significantly scale up its capabilities to enable us to even better serve our clients and brokers. At the acquisition date, we identified VOBA, which represents the present value of the expected underwriting profit within policies that were in-force at the closing date of the transaction, of $257 million.

VOBA is amortized over its economic useful life and this expense is included in amortization of value of business acquired in the consolidated statement of operations.

Bargain Purchase Gain

On April 1, 2017, we acquired Aviabel, a general aviation insurer and reinsurer. The purchase price was allocated to the assets acquired and liabilities assumed of Aviabel based on estimated fair values on the closing date and a bargain purchase gain of $15 million was recognized.

Interest in Income (Loss) of Equity Method Investments

Interest in income (loss) of equity method investments represents our share of income (loss) related to investments where we have significant influence over the operating and financial policies of the investee.

Interest in income (loss) of equity method investments of $1 million in 2018 related to our share of income in an investee.

Interest in loss of equity method investments of $8 million in 2017 included impairment losses of $9 million related to an investment in a U.S. based insurance company, partially offset by income of $1 million related to our share of income of another investee.

Interest in loss of equity method investments of $2 million in 2016 represented our share of losses of an investee.

Financial Measures

We believe that the following financial indicators are important in evaluating our performance and measuring the overall growth in value generated for our common shareholders:

Year ended and at December 31,	2018	2017	2016
ROACE	— %	(8.6 %)	9.0 %
Operating ROACE	3.7 %	(5.4 %)	7.9 %
Ex-PGAAP operating ROACE	4.7 %	(5.1 %)	n/a
Book value per diluted common share[(1)]	$49.93	$53.88	$58.27
Cash dividends declared per common share	1.57	1.53	1.43
Increase (decrease) in book value per diluted common share adjusted for dividends	$(2.38)	$(2.86)	$5.62

(1) Book value per diluted common share represents total common shareholders' equity divided by the number of common shares and diluted common share outstanding, determined using the treasury stock method. Cash settled awards are excluded.

Return on Equity

Our objective is to generate superior returns on capital that appropriately reward our common shareholders for the risks we assume and to grow revenue only when we expect the returns will meet or exceed our requirements. We recognize that the nature of underwriting cycles and the frequency or severity of large loss events in any one year may challenge the ability to achieve a profitability target in any specific period, therefore our goal is to achieve top-quintile industry operating ROACE and growth in book value per diluted common share adjusted for dividends, with volatility consistent with the industry average across underwriting cycles.

ROACE reflects the impact of net income (loss) available (attributable) to common shareholders including net investment gains (losses), foreign exchange losses (gains), transaction and reorganization expenses, revaluation of net deferred tax assets, bargain purchase gain and loss on repurchase of preferred shares.

ROACE increased in 2018, compared to 2017, primarily driven by the underwriting income generated and foreign exchange gains in 2018 compared to the underwriting loss generated and foreign exchange losses in 2017. An increase in net investment income and a decrease in corporate expenses, also contributed to the increase in ROACE. These benefits were partially offset by an increase in amortization of VOBA and intangible assets associated with the acquisition of Novae, net investment losses, as well as transaction and reorganization expenses. In addition, ROACE in 2018 was impacted by a decrease in average common equity due to net unrealized investment losses reported in other comprehensive income and common share dividends declared.

ROACE decreased in 2017, compared to 2016, which was primarily driven by the underwriting loss generated and foreign exchange losses in 2017 compared to underwriting income generated and foreign exchange gains in 2016. Transaction and reorganization expenses, together with amortization of VOBA and intangible assets associated with the acquisition of Novae incurred in 2017, also contributed to the decrease in ROACE. In addition, ROACE in 2017 was negatively impacted by a tax charge associated with the revaluation of net deferred tax assets. These expenses were partially offset by an increase in net investment income and net realized investment gains together with the benefit of the bargain purchase gain.

Operating ROACE excludes the impact of net investment gains (losses), foreign exchange losses (gains), transaction and reorganization expenses, revaluation of net deferred tax assets, bargain purchase gain and loss on repurchase of preferred shares.

The increase in operating ROACE in 2018, compared to 2017, was primarily driven by the underwriting income generated in 2018, an increase in net investment income, an increase in the tax benefit, as well as a decrease in corporate expenses, partially offset by an increase in the amortization expenses associated with the acquisition of Novae.

The decrease in operating ROACE in 2017, compared to 2016, was primarily driven by the underwriting loss generated in 2017, as well as the amortization expenses associated with the acquisition of Novae partially offset by an increase in net investment income and a tax benefit in 2017 compared to a tax expense in 2016.

Ex-PGAAP operating ROACE excludes the impact of amortization of VOBA and intangible assets, net of tax and amortization of acquisition costs, net of tax both associated with Novae's balance sheet at October 2, 2017.

Ex-PGAAP operating ROACE for the years ending 2018 and 2017 was 4.7% and (5.1)%, respectively.

Book Value per Diluted Common Share

We consider book value per diluted common share to be an appropriate measure of our returns to common shareholders, as we believe growth in our book value on a diluted basis will ultimately translate into appreciation of our stock price.

In 2018, our book value per diluted common share decreased by 7%, driven primarily by an increase in net unrealized investment losses reported in other comprehensive income and common dividends declared. The net unrealized investment losses in 2018 reflected a widening of credit spreads which negatively impacted the market values of fixed maturity securities.

In 2017, our book value per diluted common share decreased by 8%, driven by net loss attributable to common shareholders of $416 million and common dividends declared, partially offset by net unrealized investment gains. The net unrealized investment gains in 2017 reflected a tightening of credit spreads and the weakening of the U.S. dollar against the euro and pound sterling which positively impacted the market values of non-U.S. government and corporate debt securities.

Cash Dividends Declared per Common Share

We believe in returning excess capital to our shareholders by way of dividends as well as share repurchases. Accordingly, our dividend policy is an integral part of the value we create for our shareholders. Our cumulatively strong earnings have permitted our Board of Directors to approve fifteen successive annual increases in quarterly common share dividends.

Book Value per Diluted Common Share Adjusted for Dividends

Taken together, we believe that growth in book value per diluted common share and common share dividends declared represent the total value created for our common shareholders. As companies in the insurance industry have differing dividend payout policies, we believe that investors use the book value per diluted common share adjusted for dividends metric to measure comparable performance across the industry.

Book value per diluted common share adjusted for dividends decreased in 2018, due to net unrealized investment losses reported in other comprehensive income.

In 2017, the decrease in book value per diluted common share adjusted for dividends was due to the net loss attributable to common shareholders, partially offset by net unrealized investment gains included in other comprehensive income.

UNDERWRITING RESULTS – CONSOLIDATED

The following table provides our underwriting results for the years indicated. Underwriting income is a pre-tax measure of underwriting profitability that takes into account net premiums earned and other insurance related income (loss) as revenues and net losses and loss expenses, acquisition costs and underwriting-related general and administrative expenses as expenses.

Year ended December 31,	2018	% Change	2017	% Change	2016
Revenues:					
Gross premiums written	$6,910,065	24%	$5,556,273	12%	$4,970,208
Net premiums written	4,658,962	16%	4,027,143	7%	3,752,974
Net premiums earned	4,791,495	15%	4,148,760	12%	3,705,625
Other insurance related income (losses)	10,622	nm	(1,240)	nm	7,222
Expenses:					
Current year net losses and loss expenses	(3,389,949)		(3,487,826)		(2,496,574)
Prior year reserve development	199,662		200,054		292,377
Acquisition costs	(968,835)		(823,591)		(746,876)
Underwriting-related general and administrative expenses(1)	(519,168)		(449,483)		(482,701)
Underwriting income (loss)(2)	$123,827	nm	$(413,326)	nm	$279,073
General and administrative expenses(1)	$627,389		$579,428		$602,717
Income (loss) before income taxes and interest in income (loss) of equity method investments(2)	$12,542		$(368,109)		$521,802

nm – not meaningful

(1) Underwriting-related general and administrative expenses is a non-GAAP measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to total general and administrative expenses, the most comparable GAAP measure, is presented in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operations'.

(2) Consolidated underwriting income (loss) is a non-GAAP financial measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to income (loss) before income taxes and interest in income (loss) of equity investments, the most comparable GAAP measure, is presented in 'Management's Discussion and Analysis of Financial Condition and Results of Operations – Executive Summary – Results of Operation'.

Underwriting Revenues

Gross and net premiums written by segment were as follows:

	Gross premiums written				
Year ended December 31,	2018	% Change	2017	% Change	2016
Insurance	$3,797,592	35%	$2,814,918	16%	$2,432,475
Reinsurance	3,112,473	14%	2,741,355	8%	2,537,733
Total	$6,910,065	24%	$5,556,273	12%	$4,970,208
% ceded					
Insurance	39 %	2 pts	37 %	(1) pts	38 %
Reinsurance	25 %	7 pts	18 %	6 pts	12 %
Total	33 %	5 pts	28 %	4 pts	24 %

	Net premiums written				
	2018	% Change	2017	% Change	2016
Insurance	$2,324,747	31%	$1,775,825	17%	$1,519,559
Reinsurance	2,334,215	4%	2,251,318	1%	2,233,415
Total	$4,658,962	16%	$4,027,143	7%	$3,752,974

Gross Premiums Written:

2018 versus 2017: Gross premiums written in 2018 increased by $1,354 million or 24% compared to 2017 due to increases in our insurance and reinsurance segments.

The increase in our insurance segment's gross premiums written of $983 million or 35% included $923 million attributable to property, marine, professional lines, and credit and political risk lines associated with our acquisition of Novae. In addition, gross premiums written increased by $60 million or 2% ($45 million or 2% on a constant currency basis) primarily attributable to professional lines and liability lines, partially offset by a decrease in property, marine, and accident and health lines.

The increase in our reinsurance segment's gross premiums written of $371 million or 14% included $100 million attributable to catastrophe, and marine and aviation lines associated with our acquisition of Novae. In addition, gross premiums written increased by $271 million or 10% ($192 million or 7% on a constant currency basis[(1)]) primarily attributable to credit and surety, motor, accident and health, and catastrophe lines.

2017 versus 2016: Gross premiums written in 2017 increased by $586 million or 12% compared to 2016 due to increases in our insurance and reinsurance segments.

The increase in our insurance segment's gross premiums written of $382 million or 16% compared to 2016 was driven by an increase in gross premiums written of $241 million associated with our acquisition of Novae. In addition, gross premiums written increased by $141 million or 6% ($137 million or 6% on a constant currency basis) primarily attributable to accident and health, liability, professional lines and aviation lines. These increases were partially offset by a decrease in property and marine lines.

The increase in our reinsurance segment's gross premiums written of $204 million or 8% was attributable to catastrophe, agriculture, property and motor lines, partially offset by a decrease in credit and surety lines. The increase in gross premiums written was driven by new business, favorable premium adjustments and reinstatement premium, partially offset by the impact of foreign exchange movements and a lower level of premiums written on a multi-year basis in 2017, compared to 2016.

(1) Amounts presented on a constant currency basis are non-GAAP financial measures as defined in Item 10(e) of SEC Regulation S-K. The constant currency basis is calculated by applying the average foreign exchange rate from the current year to the prior year balance.

Ceded Premiums Written:
Ceded premiums written in 2018 were $2,251 million, or 33% of gross premiums written, compared to $1,529 million, or 28%, in 2017. The increase in the ceded premiums written was attributable to our insurance and reinsurance segments.
Ceded premiums written in 2017 were $1,529 million, or 28% of gross premiums written, compared to $1,217 million, or 24%, in 2016. The increase in the ceded premiums written was mainly attributable to our reinsurance segment due to an increase in premiums ceded to retrocessional treaties which cover catastrophe, credit and surety, and agriculture lines.

2018 Reinsurance Agreement with Northshore Limited ("Northshore")

In July 2018, we obtained catastrophe protection for our insurance and reinsurance segments through a reinsurance agreement with Northshore. In connection with the reinsurance agreement, Northshore issued notes to unrelated investors in an amount equal to the full $200 million of coverage provided under the reinsurance agreement covering a three year period. At the time of the agreement, we performed an evaluation of Northshore to determine if it meets the definition of a variable interest entity ("VIE"). We concluded that Northshore is a VIE. In addition, we concluded that we do not have a variable interest in the entity, as the variability in results is expected to be absorbed entirely by the investors in Northshore. Accordingly, the results of Northshore are not included in our consolidated financial statements. The premium ceded to Northshore for the year ended December 31, 2018 was $44 million.

2017 Reinsurance Agreement with Northshore

In June 2017, we obtained catastrophe protection for our insurance and reinsurance segments through a reinsurance agreement with Northshore. In connection with the reinsurance agreement, Northshore issued notes to unrelated investors in an amount equal to the full $350 million of coverage provided under the reinsurance agreement covering a three year period. At the time of the agreement, we performed an evaluation of Northshore to determine if it meets the definition of a VIE. We concluded that Northshore is a VIE. In addition, we concluded that we do not have a variable interest in the entity, as the variability in results is expected to be absorbed entirely by the investors in Northshore. Accordingly, Northshore is not consolidated in our consolidated financial statements. The premium ceded to Northshore for the year ended December 31, 2017 was $27 million.

Net Premiums Earned:

Net premiums earned by segment were as follows:

Year ended December 31,	2018		2017		2016		% Change 2017 to 2018	% Change 2016 to 2017
Insurance	$2,362,606	49 %	$1,816,438	44 %	$1,534,282	41 %	30%	18 %
Reinsurance	2,428,889	51 %	2,332,322	56 %	2,171,343	59 %	4 %	7 %
Total	$4,791,495	100%	$4,148,760	100%	$3,705,625	100%	15%	12 %

Changes in net premiums earned reflect period to period changes in net premiums written and business mix, together with normal variability in premium earning patterns.

2018 versus 2017: Net premiums earned in 2018 increased by $643 million or 15% compared to 2017 due to increases in our insurance and reinsurance segments.

Net premiums earned in our insurance segment in 2018 increased by $546 million or 30% compared to 2017. The increase in net premiums earned included $575 million primarily attributable to property, marine, credit and political risk, and professional lines associated with our acquisition of Novae. Excluding the impact of Novae, net premiums earned decreased by $29 million or 2% ($40 million or 2% on a constant currency basis) attributable to property lines, partially offset by an increase in liability lines.

Net premiums earned in our reinsurance segment in 2018 increased by $97 million or 4% compared to 2017. The increase in net premiums earned included $50 million primarily attributable to catastrophe, and marine and aviation lines associated with our acquisition of Novae. In addition, net premiums earned increased $47 million or 2% ($27 million or 1% on a constant currency basis) attributable to our motor, liability and property lines, partially offset by decreases in marine and other, and agriculture lines.

2017 versus 2016: Net premiums earned in 2017 increased by $443 million or 12%, compared to 2016 due to increases in our insurance and reinsurance segments.

Net premiums earned in our insurance segment in 2017 increased by $282 million or 18%, compared to 2016. The increase in net premiums earned included $162 million attributable to our acquisition of Novae. In addition, net premiums earned increased by $120 million or 8% ($110 million or 7% on a constant currency basis) attributable to accident and health, property and aviation lines.

Net premiums earned in our reinsurance segment in 2017 increased by $161 million or 7%, compared to 2016. The increase in net premiums earned was driven by an increase in gross premiums earned attributable to agriculture, motor and property lines partially offset by an increase in ceded premium earned in professional lines, agriculture and property lines together with a decrease in gross premiums earned in professional lines.

Other Insurance Related Income (Loss):

Other insurance related income in 2018 of $11 million compared to other insurance related loss in 2017 of $1 million, an increase of $12 million, was primarily driven by our reinsurance segment.

Other insurance related loss in 2017 of $1 million compared to other insurance related income in 2016 of $7 million, a decrease of $8 million, was primarily driven by our reinsurance segment.

Underwriting Expenses

The following table provides details of the components of our combined ratio:

Year ended December 31,	2018	% Point Change	2017	% Point Change	2016
Current accident year loss ratio excluding catastrophe and weather-related losses	61.7%	(2.0)	63.7 %	1.9	61.8%
Catastrophe and weather-related losses	9.0 %	(11.4)	20.4 %	14.8	5.6 %
Current accident year loss ratio	70.7%	(13.4)	84.1 %	16.7	67.4%
Prior year reserve development	(4.1 %)	0.8	(4.9 %)	3.0	(7.9 %)
Net loss and loss expense ratio	66.6%	(12.6)	79.2 %	19.7	59.5%
Acquisition cost ratio	20.2%	0.3	19.9 %	(0.3)	20.2%
General and administrative expense ratio[1]	13.1%	(0.9)	14.0 %	(2.2)	16.2%
Combined ratio	99.9%	(13.2)	113.1%	17.2	95.9%

(1) The general and administration expense ratio includes corporate expenses not allocated to underwriting segments of 2.3%, 3.1% and 3.2% for 2018, 2017 and 2016, respectively. These costs are further discussed in the 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Other Expenses (Revenues), Net' section.

Current Accident Year Loss Ratio:

2018 versus 2017: The current accident year loss ratio decreased to 70.7% in 2018 from 84.1% in 2017. The decrease was primarily due to a decrease in catastrophe and weather-related losses. During 2018, we incurred pre-tax catastrophe and weather-related losses, net of reinstatement premiums, of $430 million or 9.0 points, attributable to the California Wildfires, Hurricanes Michael and Florence, Typhoon Jebi as well as U.S. and European weather-related events. Comparatively, in 2017 we incurred $835 million or 20.4 points of losses attributable to catastrophe and weather-related events.

After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio decreased to 61.7% in 2018 from 63.7% in 2017. The decrease in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to changes in business mix predominately related to the acquisition of Novae, together with favorable impact of rate and trend, partially offset by elevated loss experience in reinsurance property lines.

2017 versus 2016: The current accident year loss ratio increased to 84.1% in 2017 from 67.4% in 2016. The increase was primarily due to an increase in catastrophe and weather-related losses. During 2017, we incurred pre-tax catastrophe and weather-related losses, net of reinstatement premiums, of $835 million or 20.4 points, attributable to Hurricanes Harvey, Irma and Maria, the two earthquakes in Mexico, the wildfires in Northern and Southern California, and other U.S. weather-related events. Comparatively, in 2016 we incurred $204 million or 5.6 points of losses attributable to catastrophe and weather-related events.

After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio increased to 63.7% in 2017 from 61.8% in 2016. The increase in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to elevated loss experience in insurance and reinsurance property lines, together with the impact of the Ogden Rate change on reinsurance motor lines, and adverse impact of the rate and trend, partially offset by favorable changes in business mix in accident and health lines.

For further discussion on current accident year loss ratios, refer to the insurance and reinsurance segment discussions below.

Estimates for Significant Catastrophe Events:

Our December 31, 2018 net reserve for losses and loss expenses includes estimated amounts for numerous catastrophe events. We caution that the magnitude and/or complexity of losses arising from these events, in particular California Wildfires, Hurricanes Michael and Florence which occurred in 2018 as well as Hurricanes Harvey, Irma and Maria and the two earthquakes in Mexico which occurred in 2017 inherently increase the level of uncertainty and, therefore, the level of management judgment involved in arriving at our estimated net reserve for losses and loss expenses. As a result, our actual losses for these events may ultimately differ materially from our current estimates.

Our estimated net losses in relation to the catastrophe events described above were derived from ground-up assessments of our in-force contracts and treaties providing coverage in the affected regions. These assessments take into account the latest information available from clients, brokers and loss adjusters. In addition, we consider industry insured loss estimates, market share analyses and catastrophe modeling analyses, when appropriate. Our estimates remain subject to change as additional loss data becomes available.

We continue to monitor paid and incurred loss development for catastrophe events of prior years and update our estimates of ultimate losses accordingly.

Prior Year Reserve Development:

Our net favorable prior year reserve development arises from changes to losses and loss expense estimates related to loss events that occurred in previous calendar years. The following table presents prior year reserve development by segment:

Year ended December 31,	2018	2017	2016
Insurance	$92,806	$60,459	$48,978
Reinsurance	106,856	139,595	243,399
Total	$199,662	$200,054	$292,377

Overview

Short-tail business

Short-tail business includes the underlying exposures in the property and other, marine and aviation reserve classes within our insurance segment and the property and other reserve class within our reinsurance segment.

These reserve classes contributed net favorable prior year development of $86 million in 2018 primarily reflecting the recognition of overall better than expected loss emergence related to the 2017 catastrophe events. These reserve classes contributed net favorable prior year reserve development of $60 million and $148 million in 2017 and 2016, respectively, reflecting the recognition of better than expected loss emergence.

Medium-tail business

Medium-tail business consists primarily of our insurance and reinsurance professional reserve classes, our insurance credit and political risk reserve class and our reinsurance credit and surety reserve class.

Our insurance professional reserve class recorded net favorable prior year development of $32 million, $26 million and $14 million in 2018, 2017 and 2016, respectively. Our reinsurance professional reserve class recognized $21 million, $44 million and $30 million of net favorable prior year development in 2018, 2017 and 2016, respectively. The net favorable prior year

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loss development on these reserve classes continued to reflect the generally favorable experience on older accident years as we continued to transition to more experience based methods.
Reinsurance credit and surety reserve class recorded net favorable prior year reserve development of $33 million, $33 million and $10 million in 2018, 2017 and 2016, respectively, due to the recognition of generally better than expected loss emergence.
Long-tail business
Long-tail business consists primarily of our insurance and reinsurance liability reserve classes and our reinsurance motor reserve class.
Our insurance liability reserve class recorded net adverse prior year development of $22 million, $8 million and $8 million in 2018, 2017 and 2016, respectively. The net adverse prior year reserve development on our insurance liability reserve class in 2018 was primarily related to reserve strengthening within our U.S. excess casualty book of business. The net adverse prior year reserve development in 2017 and 2016 was primarily attributable to reserve strengthening within our run-off Bermuda excess casualty book of business.
Our reinsurance liability reserve class contributed net favorable prior year reserve development of $23 million, $43 million and $44 million in 2018, 2017 and 2016, respectively. The net favorable prior year reserve development for 2018 was due to progressively increased weight given by management to experience based indications on older accident years. Net favorable prior year reserve development in 2017 and 2016 was also primarily due to the progressively increased weight given by management to experience based indications on older accident years, which have generally been favorable.
Our reinsurance motor reserve class contributed net favorable prior year reserve development of $23 million, $1 million and $55 million in 2018, 2017 and 2016, respectively. The net favorable prior year reserve development on our motor reserve class in 2018 was primarily attributable to non proportional treaty business on older accident years. Net favorable prior year development in 2017 was adversely impacted by the decrease in the discount rate used to calculate lump sum awards in U.K. bodily injury cases, known as the Ogden Rate, which changed from plus 2.5% to minus 0.75% effective March 20, 2017. The net favorable prior year reserve development on the motor reserve class in 2016 related to favorable loss emergence trends on several classes of business spanning multiple accident years.
At the acquisition date, the fair value of reserves for losses and loss expenses for Syndicate 2007 was established giving weight to the observable value of these reserves based on a Reinsurance to Close ("RITC") transaction of the Syndicate’s 2015 and prior years of account, which was completed prior to the allocation of purchase price. Management made no change to the initial estimate when establishing its best estimate of reserves for losses and loss expenses at December 31, 2017 (refer to 'Critical Accounting Estimates – Reserve for Losses and Loss Expenses' for further details).
We caution that conditions and trends that impacted the development of our reserve for losses and loss expenses in the past may not recur in the future.

The following tables map our lines of business to reserve classes and the expected claim tails:
Insurance segment

	Reserve class and tail					
	Property and other	Marine	Aviation	Credit and political risk	Professional lines	Liability
	Short	Short	Short/Medium	Medium	Medium	Long
Reported lines of business						
Property	X					
Marine		X				
Terrorism	X					
Aviation			X			

Credit and political risk		X		
Professional lines			X	
Liability				X
Accident and health	X			
Discontinued lines - Novae	X		X	X

Reinsurance segment

	Reserve class and tail				
	Property and other	Credit and surety	Professional lines	Motor	Liability
	Short	Medium	Medium	Long	Long
Reported lines of business					
Catastrophe	X				
Property	X				
Credit and surety		X			
Professional lines			X		
Motor				X	
Liability					X
Engineering	X				
Agriculture	X				
Marine and other	X				
Accident and health	X				
Discontinued lines - Novae	X			X	X

The following sections provide further details on prior year reserve development by segment, reserving class and accident year.

Insurance Segment:

Year ended December 31,	2018	2017	2016
Property and other	$64,781	$11,815	$27,857
Marine	17,913	28,206	12,068
Aviation	(2,938)	1,895	3,113
Credit and political risk	3,609	70	(242)
Professional lines	31,687	26,248	14,005
Liability	(22,246)	(7,775)	(7,823)
Total	$92,806	$60,459	$48,978

In 2018, we recognized $93 million of net favorable prior year reserve development, the principal components of which were:

- $65 million of net favorable prior year reserve development on property and other lines business primarily due to overall better than expected loss emergence related to the 2017 catastrophe events.

- $32 million of net favorable prior year reserve development on professional lines business due to the recognition of better than expected loss experience, particularly on the 2014 and 2015 accident years.

- $18 million of net favorable prior year reserve development on marine business primarily due to better than expected loss emergence on more recent accident years.

- $22 million of net adverse prior year reserve development on liability business primarily due to reserve strengthening within our U.S. excess casualty book of business mainly driven by a higher frequency of large auto and general liability claims mainly related to the 2015 accident year.

In 2017, we recognized $60 million of net favorable prior year reserve development, the principal components of which were:

- $28 million of net favorable prior year reserve development on marine business due to better than expected loss emergence on more recent accident years including a large case reserve reduction on a 2013 accident year claim.

- $26 million of net favorable prior year reserve development on professional lines business due to the recognition of better the expected emerging loss experience, particularly on the 2013 and 2014 accident years.

- $12 million of net favorable prior year reserve development on property and other business primarily due to overall better than expected loss emergence related to the 2016 accident year.

- $8 million of net adverse prior year reserve development on liability business due to reserve strengthening on several large claims within our run-off Bermuda excess casualty book of business and limited reserve strengthening within our U.S. excess casualty book of business.

In 2016, we recognized $49 million of net favorable prior year reserve development, the principal components of which were:

- $28 million of net favorable prior year reserve development on property and other business driven by better than expected loss emergence primarily related to accident years 2012 through 2015.

- $14 million of net favorable prior year reserve development on professional lines business driven by better than expected development related to various accident years, partially offset by reserve strengthening relating to updated information on specific claims impacting accident years 2010 and 2011.

- $12 million of net favorable prior year reserve development on marine business driven by better than expected loss emergence primarily driven by reductions in mid-size loss estimates impacting accident year 2015.

- $8 million of net adverse prior year reserve development on liability business primarily related to reserve strengthening on certain claims within our excess casualty book of business.

Reinsurance Segment:

Year ended December 31,	2018	2017	2016
Property and other	$6,012	$18,564	$104,618
Credit and surety	33,497	32,791	10,488
Professional lines	21,310	44,164	29,592
Motor	22,932	1,155	55,106
Liability	23,105	42,921	43,595
Total	$106,856	$139,595	$243,399

In 2018, we recognized $107 million of net favorable prior year reserve development, the principal components of which were:

- $33 million of net favorable prior year reserve development on credit and surety business primarily due to generally better than expected loss emergence, primarily related to accident years 2013 and 2014.

- $23 million of net favorable prior year reserve development on motor business primarily due to non proportional treaty business related to older accident years.

- $23 million of net favorable prior year reserve development on liability business due to progressively increased weight given by management to experience based indications on older accident years.

- $21 million of net favorable prior year reserve development on professional lines business reflecting the generally favorable experience on older accident years as we continue to transition to more experience based methods.

In 2017, we recognized $140 million of net favorable prior year reserve development, the principal components of which were:

- $44 million of net favorable prior year reserve development on professional lines business, reflecting the generally favorable experience on older accident years, particularly 2009 through 2012, as we continue to transition to more experience based methods.

- $43 million of net favorable prior year reserve development on liability business due to progressively increased weight given by management to experience based indications on older accident years, particularly 2008 through 2010.

- $33 million of net favorable prior year reserve development on credit and surety business, due to better than expected loss emergence, primarily related to accident years 2012 through 2015.

- $19 million of net favorable prior year development on property and other business due to overall better than expected loss emergence across multiple accident years, partially offset by reserve strengthening related to accident year 2016.

- $1 million of net favorable prior year reserve development on motor business, due to better than expected loss emergence spanning multiple accident years, largely offset by the impact of the change in Ogden rate.

In 2016, we recognized $243 million of net favorable prior year reserve development, the principal components of which were:

- $105 million of net favorable prior year development on property and other business, primarily related to the 2010 through 2015 accident years driven by better than expected loss emergence.

- $55 million of net favorable prior year reserve development on motor business, primarily related to non-proportional business spanning multiple accident years, driven by better than expected loss emergence.

- $44 million of net favorable prior year reserve development on liability business, primarily related to the 2006 through 2011 accident years, for reasons discussed in the overview.

- $30 million of net favorable prior year reserve development on professional lines business, primarily related to the earlier accident years, for reasons discussed in the overview.

- $10 million of net favorable prior year reserve development on credit and surety business, spanning multiple accident years and driven by generally better than expected loss emergence.

Acquisition Cost Ratio:

The increase in the acquisition cost ratio to 20.2% in 2018 from 19.9% in 2017 was primarily due to an increase in our insurance segment primarily due to business mix attributable to the acquisition of Novae.

The decrease in the acquisition cost ratio to 19.9% in 2017 from 20.2% in 2016 was driven by a decrease in our reinsurance segment. The decrease in our reinsurance segment's acquisition cost ratio was primarily attributable to changes in business mix, together with favorable adjustments related to loss sensitive features and reinstatement premiums. This decrease was partially offset by an increase in our insurance segment's acquisition cost ratio driven by changes in business mix in accident and health lines.

General and Administrative Expense Ratio:

The decrease in general and administrative expense ratio to 13.1% in 2018 from 14.0% in 2017 was primarily driven by an increase in net premiums earned and fees associated with arrangements with strategic capital partners and a decrease in personnel costs and professional fees, partially offset by an increase in information technology expenses and an increase in general and administrative expenses associated with the acquisition of Novae.

The decrease in the general and administrative expense ratio to 14.0% in 2017 from 16.2% in 2016 was primarily driven by a decrease in performance-related compensation costs and an increase in fees from strategic capital partners.

RESULTS BY SEGMENT

Insurance Segment

Results from our insurance segment were as follows:

Year ended December 31,	2018		% Change	2017		% Change	2016	
Revenues:								
Gross premiums written	$3,797,592		35%	$2,814,918		16%	$2,432,475	
Net premiums written	2,324,747		31%	1,775,825		17%	1,519,559	
Net premiums earned	2,362,606		30%	1,816,438		18%	1,534,282	
Other insurance related income	3,460		18%	2,944		nm	89	
Expenses:								
Current year net losses and loss expenses	(1,587,129	)		(1,525,886	)		(1,026,749	)
Prior year reserve development	92,806			60,459			48,978	
Acquisition costs	(399,193	)		(270,229	)		(206,619	)
General and administrative expenses	(395,252	)		(325,368	)		(327,351	)
Underwriting income (loss)	$77,298		nm	$(241,642	)	nm	$22,630	
			% Point Change			% Point Change		
Ratios:								
Current accident year loss ratio excluding catastrophe and weather-related losses	58.5	%	(2.8)	61.3	%	2.3	59.0	%
Catastrophe and weather-related losses	8.7	%	(14.0)	22.7	%	14.8	7.9	%
Current year loss ratio	67.2	%	(16.8)	84.0	%	17.1	66.9	%
Prior year reserve development	(4.0	%)	(0.7)	(3.3	%)	(0.1)	(3.2	%)
Net loss and loss expense ratio	63.2	%	(17.5)	80.7	%	17.0	63.7	%
Acquisition cost ratio	16.9	%	2.0	14.9	%	1.4	13.5	%
General and administrative expense ratio	16.8	%	(1.1)	17.9	%	(3.4)	21.3	%
Combined ratio	96.9	%	(16.6)	113.5	%	15.0	98.5	%

nm – not meaningful

Gross Premiums Written:
The following table provides gross premiums written by line of business:

Year ended December 31,	2018		2017		2016		% Change 2017 to 2018	% Change 2016 to 2017
Property	$1,192,807	31 %	$738,373	25 %	$672,891	27 %	62 %	10 %
Marine	367,047	10 %	241,393	9 %	225,609	9 %	52 %	7 %
Terrorism	61,663	2 %	47,514	2 %	38,146	2 %	30 %	25 %
Aviation	89,673	2 %	83,906	3 %	53,173	2 %	7 %	58 %
Credit and political risk	190,433	5 %	91,316	3 %	49,930	2 %	nm	83 %
Professional lines	1,115,213	29 %	922,502	33 %	845,358	35 %	21 %	9 %
Liability	553,461	15 %	473,935	17 %	405,030	17 %	17 %	17 %
Accident and health	210,502	6 %	201,159	7 %	142,338	6 %	5 %	41 %
Discontinued lines - Novae	16,793	— %	14,820	1 %	—	— %	nm	— %
Total	$3,797,592	100 %	$2,814,918	100 %	$2,432,475	100 %	35 %	16 %

2018 versus 2017: Gross premiums written in 2018 increased by $983 million or 35% compared to 2017. The increase in gross premiums written included $923 million attributable to property, marine, professional lines and credit and political risk lines associated with our acquisition of Novae. In addition, gross premiums written increased by $60 million or 2% ($45 million or 2% on a constant currency basis) primarily attributable to professional lines and liability lines driven by new business opportunities, partially offset by a decrease in property, marine and accident and health lines. The decrease in property lines was due to our exit from onshore energy business in the fourth quarter of 2017 together with our exit from some U.S. retail insurance operations in the fourth quarter of 2016. The decrease in marine lines was due to non-renewals. The decrease in accident and health lines was due to the cancellation of certain program business.

2017 versus 2016: Gross premiums written in 2017 increased by $382 million or 16% compared to 2016. In 2017, the increase in gross premiums written included $241 million attributable to property, professional lines, marine as well as credit and political risk lines associated with our acquisition of Novae. In addition, gross premium written increased by $141 million or 6% ($137 million or 6% on a constant currency basis) primarily attributable to new business opportunities in accident and health, liability, and professional lines together with an increase in aviation lines associated with our acquisition of Aviabel. These increases were partially offset by a decrease in property lines following our exit from U.S. retail insurance operations last year and a decrease in marine lines largely driven by timing differences.

Ceded Premiums Written:

2018 versus 2017: Ceded premiums written in 2018 were $1,473 million, or 39%, of gross premiums written, compared to $1,039 million, or 37%, in 2017. The increase in ceded premiums written included $308 million primarily attributable to property, professional lines, marine, and credit and political risk lines associated with our acquisition of Novae. In addition, ceded premiums written increased by $126 million driven by our property, professional lines and liability lines.

2017 versus 2016: Ceded premiums written in 2017 were $1,039 million or 37% of gross premiums written, compared to $913 million, or 38% in 2016. The increase in ceded premiums written included $102 million primarily attributable to property and professional lines associated with our acquisition of Novae. In addition, ceded premiums written increased by $25 million driven by liability lines, partially offset by a decrease in premiums ceded in property lines.

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Net Premiums Earned:
The following table provides net premiums earned by line of business:

Year ended December 31,	2018		2017		2016		% Change 2017 to 2018	% Change 2016 to 2017
Property	$796,945	34 %	$543,342	30 %	$426,918	28 %	47 %	27 %
Marine	300,944	13 %	181,533	10 %	150,046	10 %	66 %	21 %
Terrorism	49,150	2 %	36,084	2 %	33,279	2 %	36 %	8 %
Aviation	74,203	3 %	75,107	4 %	44,980	3 %	(1 %)	67 %
Credit and political risk	102,825	4 %	56,432	3 %	57,964	4 %	82 %	(3 %)
Professional lines	570,241	24 %	519,759	29 %	510,806	33 %	10 %	2 %
Liability	229,373	10 %	188,770	10 %	169,182	11 %	22 %	12 %
Accident and health	207,777	9 %	199,121	11 %	141,107	9 %	4 %	41 %
Discontinued lines - Novae	31,148	1 %	16,290	1 %	—	— %	nm	nm
Total	$2,362,606	100%	$1,816,438	100%	$1,534,282	100%	30 %	18 %

2018 versus 2017: Net premiums earned in 2018 increased by $546 million or 30% compared to 2017. The increase in net premiums earned included $575 million primarily attributable to property, marine, credit and political risk and professional lines associated with our acquisition of Novae. Excluding the impact of Novae, net premiums earned decreased by $29 million or 2% ($40 million or 2% on a constant currency basis) attributable to property lines, partially offset by an increase in liability lines.
The decrease was driven by an increase in ceded premiums earned in our liability and property lines, together with a decrease in gross premiums earned in property, partially offset by an increase in gross premiums earned in our liability lines.
2017 versus 2016: Net premiums earned in 2017 increased by $282 million or 18% compared to 2016. The increase in net premiums earned included $162 million primarily attributable to property and marine lines associated with our acquisition of Novae. In addition, net premiums earned increased by $120 million or 8% ($110 million or 7% on a constant currency basis) attributable to accident and health, property and aviation lines.
This increase was driven by an increase in gross premiums earned in accident and health lines due to strong premium growth in recent periods together with premium growth in aviation lines associated with our recent acquisition of Aviabel, partially offset by a decrease in ceded premiums earned in property lines.
Loss Ratio:
The table below shows the components of our loss ratio:

Year ended December 31,	2018	% Point Change	2017	% Point Change	2016
Current accident year	67.2%	(16.8)	84.0%	17.1	66.9%
Prior year reserve development	(4.0 %)	(0.7)	(3.3 %)	(0.1)	(3.2 %)
Loss ratio	63.2%	(17.5)	80.7%	17.0	63.7%

Current Accident Year Loss Ratio:
2018 versus 2017: The current accident year loss ratio decreased to 67.2% in 2018 from 84.0% in 2017. The decrease was primarily due to a decrease in catastrophe and weather-related losses. During 2018, we incurred pre-tax catastrophe and weather-related net losses of $204 million, or 8.7 points attributable to Hurricanes Michael and Florence, the California Wildfires as well as U.S. and European weather-related events. Comparatively, in 2017 we

incurred $412 million, or 22.7 points of losses attributable to catastrophe and weather-related events.

After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio decreased to 58.5% in 2018 from 61.3% in 2017. The decrease in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to favorable changes in business mix predominantly related to the acquisition of Novae together with favorable impact of rate and trend.

2017 versus 2016: The current accident year loss ratio increased to 84.0% in 2017 from 66.9% in 2016. The increase was primarily due to an increase in catastrophe and weather-related losses. During 2017 we incurred pre-tax catastrophe and weather-related net losses of $412 million, or 22.7% points attributable to Hurricanes Harvey, Irma and Maria, the two earthquakes in Mexico, the wildfires in Northern and Southern California and other U.S. weather-related events. Comparatively, in 2016 we incurred $121 million, or 7.9 points of losses attributable to catastrophe and weather-related events.

After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio increased to 61.3% in 2017 from 59.0% in 2016. The increase in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to an increase in attritional loss experience in property lines together with the adverse impact of rate and trend, partially offset by a decrease in mid-size loss experience in marine and credit and political risk lines and favorable changes in business mix (refer to 'Underwriting Results – Consolidated – Prior Year Reserve Development' for further details).

Acquisition Cost Ratio:

The increase in the acquisition cost ratio to 16.9% in 2018 from 14.9% in 2017 was primarily due to business mix attributable to the acquisition of Novae.

The increase in the acquisition cost ratio to 14.9% in 2017 from 13.5% in 2016, was primarily attributable to changes in business mix in accident and health lines.

General and Administrative Expense Ratio:

The decrease in the general and administrative expense ratio to 16.8% in 2018 from 17.9% in 2017, was primarily driven by to an increase in net premiums earned, a decrease in personnel costs and professional fees, partially offset by an increase in general and administrative expenses associated with the acquisition of Novae and in increase in the allocation of corporate costs to the segment.

The decrease in the general and administrative expense ratio to 17.9% in 2017 from 21.3% in 2016 was primarily driven by a decrease in performance-related compensation costs and an increase in net earned premium, partially offset by general and administrative expenses associated with the acquisition of Novae.

Reinsurance Segment

Results from our reinsurance segment were as follows:

Year ended December 31,	2018	% Change	2017	% Change	2016
Revenues:					
Gross premiums written	$3,112,473	14%	$2,741,355	8%	$2,537,733
Net premiums written	2,334,215	4%	2,251,318	1%	2,233,415
Net premiums earned	2,428,889	4%	2,332,322	7%	2,171,343
Other insurance related income (losses)	7,162	nm	(4,184)	nm	7,133
Expenses:					
Current year net losses and loss expenses	(1,802,820)		(1,961,940)		(1,469,825)
Prior year reserve development	106,856		139,595		243,399
Acquisition costs	(569,642)		(553,362)		(540,257)
General and administrative expenses	(123,916)		(124,115)		(155,350)
Underwriting income (loss)	$46,529	nm	$(171,684)	nm	$256,443
		% Point Change		% Point Change	
Ratios:					
Current accident year loss ratio excluding catastrophe and weather-related losses	64.8%	(0.8)	65.6%	1.8	63.8%
Catastrophe and weather-related losses	9.4%	(9.1)	18.5%	14.6	3.9%
Current year loss ratio	74.2%	(9.9)	84.1%	16.4	67.7%
Prior year reserve development	(4.4%)	1.6	(6.0%)	5.2	(11.2%)
Net loss and loss expense ratio	69.8%	(8.3)	78.1%	21.6	56.5%
Acquisition cost ratio	23.5%	(0.2)	23.7%	(1.2)	24.9%
General and administrative expense ratio	5.1%	(0.2)	5.3%	(1.8)	7.1%
Combined ratio	98.4%	(8.7)	107.1%	18.6	88.5%

nm – not meaningful

Gross Premiums Written:
The following table provides gross premiums written by line of business for the years indicated:

Year ended December 31,	2018		2017		2016		% Change 2017 to 2018	% Change 2016 to 2017
Catastrophe	$536,243	17 %	$436,707	17 %	$324,884	12 %	23 %	34 %
Property	342,789	11 %	352,609	13 %	282,535	11 %	(3 %)	25 %
Professional lines	268,181	9 %	252,272	9 %	268,403	11 %	6 %	(6 %)
Credit and surety	329,126	11 %	205,352	7 %	319,077	13 %	60 %	(36%)
Motor	499,727	16 %	391,923	14 %	346,087	14 %	28 %	13 %
Liability	438,767	14 %	420,701	15 %	422,489	17 %	4 %	— %
Agriculture	226,246	7 %	236,200	9 %	158,278	6 %	(4 %)	49 %
Engineering	60,358	2 %	77,134	3 %	68,892	3 %	(22%)	12 %
Marine and other	44,741	1 %	55,925	2 %	59,321	2 %	(20%)	(6 %)
Accident and health	365,660	12 %	312,919	11 %	287,767	11 %	17 %	9 %
Discontinued lines - Novae	635	— %	(387)	— %	—	— %	nm	nm
Total	$3,112,473	100%	$2,741,355	100%	$2,537,733	100%	14 %	8 %

2018 versus 2017: Gross premiums written in 2018 increased by $371 million or 14% compared to 2017. The increase in gross written premiums included $100 million attributable to catastrophe, and marine and aviation lines associated with our acquisition of Novae. In addition, gross premiums written increased by $271 million or 10% ($192 million or 7% on a constant currency basis) primarily attributable to credit and surety, motor, accident and health, catastrophe, professional lines and liability lines, partially offset by a decrease in marine and other lines.
The increase in credit and surety, and motor lines was largely due to restructuring of large quota share treaties which affected the timing of premium recognition, together with the favorable impact of foreign exchange movements as the weakening of the U.S. dollar drove comparative premium increases in treaties denominated in foreign currencies in the first quarter, and new business opportunities. In addition, the increase in credit and surety lines was due to favorable premium adjustments. The increase in motor lines was also attributable to rate increases in U.K. non-proportional motor business following the reduction in the Ogden Rate during the first quarter of 2017. The increase in accident and health, catastrophe, liability and professional lines was due to new business. Increased line sizes on a number of treaties also contributed to the increase in catastrophe and liability lines. These increases were partially offset by a decrease in marine and other lines due to the non-renewal of a large treaty.

2017 versus 2016: Gross premiums written in 2017 increased by $204 million or 8% compared to 2016. The increase in gross written premiums was attributable to catastrophe, agriculture, property and motor lines, partially offset by a decrease in credit and surety lines.

The increase in catastrophe and property lines was driven by new business spread across several cedants. Favorable premium adjustments and reinstatement premiums also contributed to the increase in premiums written in catastrophe, property and agriculture lines. The increase in motor lines was driven by new business and favorable premium adjustments, partially offset by the impact of foreign exchange movements and a lower level of premiums written on a multi-year basis during 2017, compared to 2016. The decrease in credit and surety lines was primarily due to a lower level of premiums written on a multi-year basis.

Ceded Premiums Written:

2018 versus 2017: Ceded premiums written in 2018 were $778 million, or 25%, of gross premiums written, compared to $490 million, or 18%, in 2017. The increase in ceded premiums written included $29 million primarily attributable to catastrophe, marine and aviation lines associated with the acquisition of Novae. In addition, ceded premiums written increased by $259 million, or 53% attributable to accident and health, credit and surety, and liability lines primarily due to an increase in premiums ceded to a new quota share retrocessional treaty which covers these lines of business. The increase in catastrophe lines was due to an increase in premiums ceded to our strategic capital partners and costs associated with purchasing catastrophe bond protection.

2017 versus 2016: Premiums ceded in 2017 were $490 million or 18%, of gross premiums written, compared to $304 million or 12% in 2016. The increase was due to an increase in premiums ceded to retrocessional treaties which cover catastrophe, credit and surety, and agriculture lines.

Net Premiums Earned:

The following table provides net premiums earned by line of business:

Year ended December 31,	2018		2017		2016		% Change 2017 to 2018	% Change 2016 to 2017
Catastrophe	$250,016	12 %	$209,470	10 %	$199,825	8 %	19 %	5 %
Property	317,038	13 %	304,376	13 %	272,403	13 %	4 %	12 %
Professional lines	220,687	9 %	226,622	10 %	289,868	13 %	(3 %)	(22%)
Credit and surety	250,276	10 %	244,186	10 %	252,210	12 %	2 %	(3 %)
Motor	438,693	18 %	371,501	16 %	318,863	15 %	18 %	17 %
Liability	363,292	15 %	351,940	15 %	332,479	15 %	3 %	6 %
Agriculture	176,435	7 %	195,391	8 %	142,501	7 %	(10%)	37 %
Engineering	67,932	3 %	66,291	3 %	62,833	3 %	2 %	6 %
Marine and other	35,570	1 %	64,449	3 %	57,322	3 %	(45%)	12 %
Accident and health	299,813	12 %	289,925	12 %	243,039	11 %	3 %	19 %
Discontinued lines - Novae	9,137	— %	8,171	— %	—	— %	12 %	nm
Total	$2,428,889	100%	$2,332,322	100%	$2,171,343	100%	4 %	7 %

2018 versus 2017: Net premiums earned in 2018 increased by $97 million or 4% compared to 2017. The increase in net premiums earned included $50 million primarily attributable to catastrophe, and marine and aviation lines associated with our acquisition of Novae. In addition, net premiums earned increased by $47 million or 2% ($27 million or 1% on a constant currency basis) driven by an increase in gross premiums earned in motor, liability and property lines, partially offset by an increase in ceded premiums earned in liability, agriculture and motor lines, together with a decrease in gross premiums earned in marine and other, and agriculture lines.

2017 versus 2016: Net premiums earned in 2017 increased by $161 million or 7% compared to 2016. The increase in net premiums earned was driven by an increase in gross premiums earned attributable to new business written in property and motor lines, as well as favorable premium adjustments impacting agriculture, motor and property lines, partially offset by decrease in gross premiums earned in professional lines.

The increase in gross premiums earned was partially offset by an increase in ceded premium earned reflecting the impact of the retrocessions to Harrington Reinsurance Ltd. ("Harrington Re") on professional lines and increased retrocessions in agriculture and property lines.

Other Insurance Related Income (Loss):
Other insurance related income in 2018 of $7 million compared to other insurance related loss in 2017 of $4 million, an increase of $11 million, primarily related to net realized losses on our weather and commodities derivative portfolio which were recognized in 2017.
Other insurance related loss in 2017 of $4 million compared to other insurance related income in 2016 of $7 million, a decrease of $11 million, primarily related to a decrease in realized gains on our weather and commodities derivative portfolio and a decrease in profit commissions associated with third party retrocessions, partially offset by fees from strategic capital partners and an increase in realized gains on economic hedges purchased to protect agriculture lines against fluctuations in commodity prices.

Loss Ratio:
The table below shows the components of our loss ratio:

Year ended December 31,	2018	% Point Change	2017	% Point Change	2016
Current accident year	74.2%	(9.9)	84.1%	16.4	67.7 %
Prior year reserve development	(4.4 %)	1.6	(6.0 %)	5.2	(11.2%)
Loss ratio	69.8%	(8.3)	78.1%	21.6	56.5 %

Current Accident Year Loss Ratio:
2018 versus 2017: The current accident year loss ratio decreased to 74.2% in 2018 from 84.1% in 2017. The decrease was primarily due to a decrease catastrophe and weather-related losses. During 2018, we incurred pre-tax catastrophe and weather-related losses, net of reinstatement premiums, of $226 million, or 9.4 points attributable to the California wildfires, Hurricanes Michael and Florence, Typhoon Jebi and other U.S. weather-related events. Comparatively, in 2017 we incurred $422 million or 18.5 points of net losses attributable to catastrophe and weather-related events.
After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio decreased to 64.8% in 2018 from 65.6% in 2017. The decrease in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to the impact of significant rate increases in U.K. non-proportional motor business following the reduction in the Ogden Rate during the first quarter of 2017, partially offset by elevated attritional and mid-size loss experience in property lines.
2017 versus 2016: The current accident year loss ratio increased to 84.1% in 2017 from 67.7% in 2016. The increase was primarily due to an increase in catastrophe and weather-related losses. During 2017, we incurred pre-tax catastrophe and weather-related losses, net of reinstatement premiums, of $422 million, or 18.5 points attributable to the Hurricanes Harvey, Irma and Maria, the two earthquakes in Mexico, the wildfires in Northern and Southern California and other U.S. weather-related events. Comparatively, in 2016 we incurred $83 million or 3.9 points of net losses attributable to catastrophe and weather-related events.
After adjusting for the impact of the catastrophe and weather-related losses, our current accident year loss ratio increased to 65.6% in 2017 from 63.8% in 2016. The increase in the current accident year loss ratio after adjusting for the impact of the catastrophe and weather-related losses was principally due to a large risk loss in property lines, the impact of the Ogden Rate change in motor lines and adverse impact of rate and trend (refer to 'Underwriting Results – Consolidated – Prior Year Reserve Development' for further details).
Acquisition Cost Ratio:
The acquisition cost ratio of 23.5% in 2018 was comparable to 23.7% in 2017.
The decrease in the acquisition cost ratio to 23.7% in 2017 from 24.9% in 2016 was primarily attributable to changes in business mix, together with a decrease in adjustments related to loss-sensitive features, the impact of favorable reinstatement premium adjustments, partially offset by the impact of retrocessional contracts with lower acquisition costs.

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General and Administrative Expense Ratio:
The general and administrative expense ratio of 5.1% in 2018 was comparable to 5.3% in 2017.
The decrease in the general and administrative expense ratio to 5.3% in 2017 from 7.1% in 2016, was primarily driven by a decrease in performance-related compensation costs, together with an increase in fees from our strategic capital partners.

OTHER EXPENSES (REVENUES), NET

The following table provides a summary of our other expenses (revenues), net:

Year ended December 31,	2018	% Change	2017	% Change	2016
Corporate expenses	$108,221	(17%)	$129,945	8%	$120,016
Foreign exchange losses (gains)	(29,165)	nm	134,737	nm	(121,295)
Interest expense and financing costs	67,432	23%	54,811	7%	51,360
Income tax (benefit) expense	(29,486)	nm	(7,542)	nm	6,340
Total	$117,002	nm	$311,951	nm	$56,421

nm-not meaningful

Corporate Expenses

Our corporate expenses include holding company costs necessary to support our worldwide insurance and reinsurance operations and costs associated with operating as a publicly-traded company. As a percentage of net premiums earned, corporate expenses were 2.3%, 3.1% and 3.2% in 2018, 2017 and 2016, respectively. The decrease in corporate expenses in 2018 compared to 2017 was primarily driven by an increase in the allocations of corporate costs to our insurance and reinsurance segments, together with a decrease in personnel costs, partially offset by an increase in information technology project costs.

The increase in corporate expenses during 2017 compared to 2016 was primarily driven by higher personnel costs including senior executive transition costs as well as executive retirement costs, and information technology project costs, partially offset by a decrease in performance-related compensation costs.

Foreign Exchange Losses (Gains)

Some of our business is written in currencies other than the U.S. dollar. Foreign exchange gains in 2018 were driven primarily by the impact of the strengthening of the U.S. dollar on the re-measurement of net insurance-related liabilities mainly denominated in pound sterling and euro.

Foreign exchange losses in 2017 were driven primarily by the impact of the weakening of the U.S. dollar on the re-measurement of net insurance-related liabilities mainly denominated in pound sterling and euro. In addition, foreign exchange losses included the reclassification of the cumulative translation adjustment balance of $24 million related to AXIS Specialty Australia from accumulated other comprehensive income in the consolidated balance sheet to foreign exchange losses (gains) in the consolidated statement of operations due to the wind-down of these operations which was substantially complete at March 31, 2017.

Foreign exchange gains in 2016 were driven primarily by the impact of the strengthening of the U.S. dollar on the re-measurement of net insurance-related liabilities mainly denominated in pound sterling.

Interest Expense and Financing Costs

Interest expense and financing costs are related to interest due on 5.875% Senior Notes issued in 2010, 2.65% Senior Notes and the 5.15% Senior Notes issued in 2014, and 4.0% Senior Notes issued in the fourth quarter of 2017. Interest expense and financing costs increased by $12 million in 2018 compared to 2017, primarily attributable to costs associated with the 4.0% Senior Notes which were executed to refinance the 2.65% Senior Notes that will mature and be repaid in 2019.

Interest expense and financing costs increased by $4 million in 2017 compared to 2016, primarily attributable to costs associated with the Dekania Notes issued by Novae on June 30, 2004.

Income Tax (Benefit) Expense

Income tax (benefit) primarily results from income (loss) generated by our foreign operations in the U.S. and Europe. Our effective tax rate, which is calculated as income tax (benefit) expense divided by income before tax including interest in loss of equity method investments, was (217.9)%, 2.0%, and 1.2%, in 2018, 2017, and 2016, respectively. This effective rate can vary between years depending on the distribution of net income (loss) among tax jurisdictions, as well as other factors.

The tax benefit of $29 million in 2018 was primarily attributable to the geographic distribution of pre-tax losses with the benefit being driven by losses in our U.K. and European operations, partially offset by income in our U.S. operations.

The tax benefit of $8 million in 2017 was primarily attributable to the geographic distribution of pre-tax losses with the benefit being driven by losses in our U.S. and U.K. operations, share based compensation excess tax benefits which were recognized in the year, a tax adjustment related to the bargain purchase gain recognized in connection with the acquisition of Aviabel, largely offset by a tax charge of $42 million related to the revaluation of net deferred tax assets associated with the reduction in the U.S. corporate income tax rate from 35% to 21% enacted as part of the U.S. Tax Reform.

The tax expense of $6 million in 2016 was primarily by attributable to the geographic distribution of pre-tax income with the expense being driven by income in our European and U.S. operations.

NET INVESTMENT INCOME AND NET INVESTMENT GAINS (LOSSES)

Net Investment Income

The following table provides details of income earned from our cash and investment portfolio by major asset class:

Year ended December 31,	2018	% Change	2017	% Change	2016
Fixed maturities	$356,273	14%	$312,662	2%	$305,459
Other investments	48,959	(36%)	76,858	81%	42,514
Equity securities	10,077	(32%)	14,919	(9%)	16,306
Mortgage loans	13,566	26%	10,780	35%	7,996
Cash and cash equivalents	27,566	nm	10,057	9%	9,209
Short-term investments	9,365	nm	2,718	32%	2,060
Gross investment income	465,806	9%	427,994	12%	383,544
Investment expense	(27,299)	—%	(27,189)	(10%)	(30,209)
Net investment income	$438,507	9%	$400,805	13%	$353,335
Pre-tax yield:(1)					
Fixed maturities	3.0%		2.7%		2.6%

nm - not meaningful

(1) Pre-tax yield is calculated by dividing net investment income by the average month-end amortized cost balances for the periods indicated.

Fixed Maturities
2018 versus 2017: Net investment income in 2018 was $356 million compared to net investment income of $313 million in 2017, an increase of $43 million or 14%, due to an increase in yields as well as a larger investment base associated with the acquisitions of Novae and Aviabel.
2017 versus 2016: Net investment income in 2017 was $313 million compared to net investment income of $305 million in 2016, an increase of $8 million or 2%, attributable to our acquisitions of Novae and Aviabel.
Other Investments
Other investments include hedge funds, direct lending funds, private equity funds, real estate funds, other privately held investments, indirect investments in CLO-Equities and overseas deposits. These investments are recorded at fair value, with changes in fair value and income distributions reported in net investment income. Consequently, the pre-tax return on other investments may vary materially period over period, particularly during volatile equity and credit markets.

The following table provides details of total net investment income from other investments:

Year ended December 31,	2018	2017	2016
Hedge, direct lending, private equity and real estate funds	$40,295	$69,740	$21,378
Other privately held investments	2,036	4,560	124
CLO-Equities	6,628	2,558	21,012
Total net investment income from other investments[1]	$48,959	$76,858	$42,514
Pre-tax return on other investments[2]	6.4 %	9.6 %	5.1 %

(1) Excluding overseas deposits.
(2) The pre-tax return on other investments is calculated by dividing total net investment income from other investments by the average month-end fair value balances held for the periods indicated, excluding overseas deposits.

2018 versus 2017: Pre-tax return on other investments decreased to 6.4% in 2018 compared to 9.6% in 2017. The decrease was due to lower returns from hedge funds reflective of lower returns from equity markets and a decrease in our hedge fund holdings, together with lower returns from direct lending funds reflective of lower returns from credit markets.
2017 versus 2016: Pre-tax return on other investments increased to 9.6% in 2017 compared to 5.1% in 2016. The increase was due to higher returns from hedge and direct lending funds as a result of the strong performance of global equity and credit markets.

Net Investment Gains (Losses)
Fixed maturities classified as available for sale are reported at fair value. The effect of market movements on fixed maturities is reported in net investment gains (losses) only when these securities are sold or impaired.
Equity securities are reported at fair value. The effect of market movements on equity securities is also reported in net investment gains (losses) when securities are sold or impaired. In addition, changes in the fair value of equity securities are reported in net investment gains (losses) as opposed to other comprehensive income following the adoption of ASU 2016-01 in the first quarter of 2018.
Changes in the fair value of investment derivatives, mainly foreign exchange forward contracts and exchange traded interest rate swaps, are recorded in net investment gains (losses).

The following table provides details of net investment gains (losses):

Year ended December 31,	2018	2017	2016
On sale of investments:			
Fixed maturities and short-term investments	$(96,086)	$(26,396)	$(48,193)
Equity securities	17,046	77,384	2,949
	(79,040)	50,988	(45,244)
OTTI charges recognized in net income	(9,733)	(14,493)	(26,210)
Change in fair value of investment derivatives	5,445	(8,269)	10,929
Change in fair value of equity securities	(66,890)	—	—
Net investment gains (losses)	$(150,218)	$28,226	$(60,525)

2018 versus 2017: Net investment losses in 2018 were $150 million compared to net investment gains of $28 million in 2017. Net investment losses reported in 2018 primarily reflected net realized investment losses on the sale of agency RMBS, U.S. government and corporate debt securities and net unrealized investment losses on equity securities of $67 million which were reported in net investment gains (losses) as opposed to other comprehensive income following the adoption of ASU 2016-01.

2017 versus 2016: Net investment gains in 2017 were $28 million compared to net investment losses of $61 million in 2016. Net investment gains reported in 2017 primarily reflected net realized investment gains on the sale of ETFs, as a result of the strong performance of global equity markets. This was partially offset by foreign exchange losses on non-U.S. denominated fixed maturities, as a result of the strengthening of the U.S. dollar during 2017.

On Sale of Investments

Generally, sales of individual securities occur when there are changes in the relative value, credit quality, or duration of a particular issue. We may also sell to re-balance our investment portfolio in order to change exposure to particular asset classes or sectors.

OTTI Charges

The following table provides details of the OTTI charge (refer to 'Critical Accounting Estimates – OTTI' for details of our impairment review process) recognized in net income by asset class:

Year ended December 31,	2018	2017	2016
Fixed maturities:			
Non-U.S. government	$4,697	$8,187	$3,557
Corporate debt	4,995	6,306	20,093
Non-Agency CMBS	41	—	—
	9,733	14,493	23,650
Equity securities:			
Exchange-traded funds	—	—	2,560
	—	—	2,560
Total OTTI charge recognized in net income	$9,733	$14,493	$26,210

2018 versus 2017: OTTI losses in 2018 were $10 million compared to $14 million in 2017 a decrease of $4 million. The decrease in 2018 compared to 2017 was mainly due to higher losses related to non-U.S. denominated securities due to the strengthening of the U.S. dollar against the pound sterling and the euro in 2017. The current year OTTI losses included impairments on non-U.S. denominated securities as a result of foreign exchange losses and non-investment grade corporate debt securities that have had a significant decline in value.

2017 versus 2016: OTTI losses in 2017 were $14 million compared to $26 million in 2016, a decrease of $12 million. The decrease in 2017 compared to 2016 was mainly due to higher losses related to non-U.S. denominated securities as a result of the decline in foreign exchange rates against the U.S. dollar in 2016. The current year OTTI losses included impairments on non-U.S. denominated securities as a result of foreign exchange losses and non-investment grade corporate debt securities that have had a significant decline in value.

Change in Fair Value of Investment Derivatives

From time to time, we economically hedge foreign exchange exposure and interest rate risk with derivative contracts. During 2018, our foreign exchange hedges resulted in $3 million of net gains which related primarily to securities denominated in euro and pound sterling as each of these currencies experienced volatility during 2018. We also recorded net gains of $2 million related to interest rate swaps.

During 2017, our foreign exchange hedges resulted in $7 million of net losses which related primarily to securities denominated in the Japanese yen, euro and pound sterling as each of these currencies experienced volatility during 2017. We also recorded net losses of $1 million related to interest rate swaps.

Given that none of our derivative instruments are designated as hedges under current accounting guidance, net unrealized gains (losses) on the hedged securities were recorded in accumulated other comprehensive income in the statement of changes in shareholders' equity.

Total Return

Our investment strategy is to take a long-term view by actively managing our investment portfolio to maximize total return within certain guidelines and constraints. In assessing returns under this approach, we include net investment income, net investment gains (losses), the change in unrealized investment gains (losses) on fixed maturities, and interest in income (loss) of equity method investments generated by our investment portfolio. The following table provides details of the total return on cash and investments for the periods indicated:

Year ended December 31,	2018	2017	2016
Net investment income	$438,507	$400,805	$353,335
Net investments gains (losses)	(150,218)	28,226	(60,525)
Change in net unrealized investment gains (losses) on fixed maturities[1]	(191,529)	177,259	70,588
Interest in income (loss) of equity method investments	993	(8,402)	(2,094)
Total	$97,753	$597,888	$361,304
Average cash and investments[2]	$15,361,287	$14,854,569	$14,491,830
Total return on average cash and investments, pre-tax:			
Including investment related foreign exchange movements	0.6%	4.0%	2.5%
Excluding investment related foreign exchange movements[3]	0.9%	3.5%	3.0%

(1) Change in net unrealized investment gains (losses) on fixed maturities is calculated by taking net unrealized investment gains (losses) at period end less net unrealized investment gains (losses) at the prior period end.

(2) The average cash and investments balance is calculated by taking the average of the month-end fair value balances held for the periods indicated.

(3) Pre-tax total return on average cash and investments excluding foreign exchange rate movements is a non-GAAP financial measure as defined in Item 10(e) of SEC Regulation S-K. The reconciliation to pre-tax total return on cash and investments, the most comparable GAAP financial measure, included foreign exchange gains (losses) of $(48) million, $80 million and $(79) million for the years ended December 31, 2018, 2017 and 2016, respectively.

CASH AND INVESTMENTS

The table below provides details of our cash and investments:

	December 31, 2018 Fair value	December 31, 2017 Fair value
Fixed maturities	$11,435,347	$12,622,006
Equity securities	381,633	635,511
Mortgage loans	298,650	325,062
Other investments	787,787	1,009,373
Equity method investments	108,103	108,597
Short-term investments	144,040	83,661
Total investments	$13,155,560	$14,784,210
Cash and cash equivalents(1)	$1,830,020	$1,363,786

(1) Includes restricted cash and cash equivalents of $597 million and $415 million for 2018 and 2017, respectively.

Overview

The fair value of total investments decreased by $1.6 billion in 2018, driven by the settlement of the RITC agreement of the 2015 and prior years of account of Syndicate 2007, funding of operating activities and the decline in market value of fixed maturities due to the widening of credit spreads and the rise in U.S. Treasury rates.

The following provides further analysis on our investment portfolio by asset class:
Fixed Maturities
The table below provides details of our fixed maturities portfolio:

	December 31, 2018			December 31, 2017		
	Fair value	% of total		Fair value	% of total	
Fixed maturities:						
U.S. government and agency	$1,515,697	13	%	$1,712,469	14	%
Non-U.S. government	493,016	4	%	806,299	6	%
Corporate debt	4,876,921	44	%	5,297,866	43	%
Agency RMBS	1,643,308	14	%	2,395,152	19	%
CMBS	1,092,530	10	%	777,728	6	%
Non-Agency RMBS	40,687	—	%	46,831	—	%
ABS	1,637,603	14	%	1,436,281	11	%
Municipals(1)	135,585	1	%	149,380	1	%
Total	$11,435,347	100	%	$12,622,006	100	%
Credit ratings:						
U.S. government and agency	$1,515,697	13	%	$1,712,469	14	%
AAA(2)	4,569,632	40	%	4,990,848	39	%
AA	874,932	8	%	1,050,631	8	%
A	1,769,686	15	%	2,090,632	17	%
BBB	1,678,962	15	%	1,758,291	14	%
Below BBB(3)	1,026,438	9	%	1,019,135	8	%
Total	$11,435,347	100	%	$12,622,006	100	%

(1) Includes bonds issued by states, municipalities, and political subdivisions.
(2) Includes U.S. government-sponsored agencies, Residential mortgage-backed securities ("RMBS") and Commercial mortgage-backed securities ("CMBS").
(3) Non-investment grade and non-rated securities.

At December 31, 2018, fixed maturities had a weighted average credit rating of AA- (2017: AA-), a book yield of 3.1% (2017: 2.5%), an average duration of 3.0 years (2017: 3.3 years) and duration inclusive of interest rate swaps of 2.8 years (2017: 3.2 years). At December 31, 2018, fixed maturities together with short-term investments and cash and cash equivalents (i.e. total investments of $13.4 billion), had a weighted average credit rating of AA- (2017: AA-), an average duration of 2.6 years (2017: 3.0 years), and duration inclusive of interest rate swaps of 2.5 years (2017: 2.9 years).

Our methodology for assigning credit ratings to our fixed maturities is in line with the methodology used for the Barclays U.S. Aggregate Bond index. This methodology uses the middle of Standard & Poor's (S&P), Moody's and Fitch ratings. When ratings from only two of these agencies are available, the lower rating is used. When only one agency rates a security, that rating is used.

To calculate the weighted average credit rating for fixed maturities, we assign points to each rating with 29 points for the highest rating (AAA) and 2 points for the lowest rating (D) and then calculate the weighted average based on the fair values of the individual securities. Securities that are not rated by S&P, Moody’s or Fitch are excluded from weighted average calculations. At December 31, 2018, the fair value of fixed maturities not rated was $55.9 million (2017: $53.1 million).

In addition to managing our credit risk exposure within our fixed maturities portfolio we also monitor the aggregation of country risk exposure on a group-wide basis (refer to Item 1 'Risk and Capital Management' for further details). Country risk exposure is the risk that events within a country, such as currency crises, regulatory changes and other political events, will adversely affect the ability of obligors within the country to honor their obligations. For corporate debt and structured

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securities, we measure the country of risk exposure based on a number of factors including, but not limited to, location of management, principal operations and country of revenues.
An analysis of our fixed maturities portfolio by major asset classes is detailed below.
Non-U.S. Government
Non-U.S. government securities include bonds issued by non-U.S. governments and their agencies along with supranational organizations (collectively also known as sovereign debt securities). The table below provides details of our exposures to governments in the eurozone and other non-U.S. government concentrations by fair value:

Country	December 31, 2018 Fair value	% of total		Weighted average credit rating	December 31, 2017 Fair value	% of total		Weighted average credit rating
Eurozone countries:								
Belgium	$10,983	2	%	AA-	$36,095	4	%	AA-
Netherlands	5,534	1	%	AA+	42,739	5	%	AAA
France	4,156	1	%	AA	34,386	4	%	AA
Supranationals[1]	3,849	1	%	AAA	19,196	2	%	AAA
Austria	2,309	—	%	AA+	—	—	%	—
Spain	1,629	—	%	A-	2,948	—	%	BBB+
Portugal	876	—	%	BBB-	—	—	%	—
Germany	—	—	%	—	35,332	4	%	AA+
Italy	—	—	%	—	7,366	1	%	BBB
Ireland	—	—	%	—	7,060	1	%	A
Total eurozone	$29,336	5	%	AA	$185,122	21	%	AA
Other concentrations:								
United Kingdom	$219,452	45	%	AA	$275,656	34	%	AA
Canada	90,187	18	%	AA+	151,027	19	%	AA+
Mexico	28,735	6	%	BBB+	37,021	5	%	BBB+
Other	125,306	26	%	A+	157,473	21	%	A
Total other concentrations	$463,680	95	%	AA+	$621,177	79	%	AA-
Total non-U.S. government	$493,016	100	%	AA-	$806,299	100	%	AA-

(1) Includes supranationals only within the eurozone.
At December 31, 2018, net unrealized investment losses on non-U.S. government debt was $15 million (2017: net unrealized investment gains of $8 million) which included gross unrealized foreign exchange losses of $13 million (2017: $8 million), mainly on U.K. government bonds.

Corporate Debt

Corporate debt securities consist primarily of investment-grade debt of a wide variety of corporate issuers and industries. The table below provides details of our corporate debt securities portfolio by sector:

	December 31, 2018				December 31, 2017			
	Fair value	% of total		Weighted average credit rating	Fair value	% of total		Weighted average credit rating
Financial institutions:								
U.S. banking	$1,075,998	22	%	A-	$1,169,750	22	%	A-
Foreign banking	433,182	9	%	A	600,114	11	%	A+
Corporate/commercial finance	305,896	6	%	BB	309,589	6	%	BB+
Insurance	134,537	3	%	A	147,446	3	%	A+
Investment brokerage	35,223	1	%	A	18,571	—	%	BBB+
Total financial institutions	1,984,836	41	%	A-	2,245,470	42	%	A-
Consumer non-cyclicals	584,248	12	%	BBB-	668,621	13	%	BBB
Consumer cyclical	468,250	10	%	BBB-	513,824	10	%	BBB-
Communications	420,511	9	%	BBB-	418,945	8	%	BBB-
Technology	328,101	7	%	BBB-	348,725	7	%	BBB
Industrials	321,306	7	%	BB	339,819	6	%	BB
Energy	267,644	5	%	BBB	277,129	5	%	BBB
Utilities	149,276	3	%	BBB+	156,544	3	%	BBB
Other	352,749	6	%	A+	328,789	6	%	A+
Total	$4,876,921	100	%	BBB+	$5,297,866	100	%	BBB+
Credit quality summary:								
Investment grade	$3,892,399	80	%	A-	$4,319,620	82	%	A-
Non-investment grade	984,522	20	%	B	978,246	18	%	B
Total	$4,876,921	100	%	BBB+	$5,297,866	100	%	BBB+

At December 31, 2018, our non-investment grade portfolio had a fair value of $985 million (2017: $978 million), a weighted average credit rating of B (2017: B) and duration of 2.4 years (2017: 2.0 years). At December 31, 2018, our total corporate debt portfolio, including non-investment grade securities, had a duration of 3.1 years (2017: 3.2 years).

Mortgage-Backed Securities

The table provides details of the fair value of our RMBS and CMBS portfolios by credit rating:

	December 31, 2018		December 31, 2017	
	RMBS	CMBS	RMBS	CMBS
Government agency	$1,643,308	$204,744	$2,395,152	$192,034
AAA	20,965	824,226	23,113	509,112
AA	3,066	52,875	109	63,217
A	1,459	9,943	1,913	12,608
BBB	3,218	742	6,896	757
Below BBB[(1)]	11,979	—	14,800	—
Total	$1,683,995	$1,092,530	$2,441,983	$777,728

(1) Non-investment grade securities

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Residential MBS
Agency RMBS consist of bonds issued by the Federal National Mortgage Association, the Federal Home Loan Mortgage Corporation and the Government National Mortgage Association which are primarily AAA rated and are supported by loans which are diversified across geographical areas. At December 31, 2018, our agency RMBS had an average duration of 3.9 years (2017: 4.3 years).
Non-Agency RMBS include mostly investment-grade bonds originated by non-agencies. At December 31, 2018, our non-agency RMBS had an average duration and weighted average life of 0.8 years (2017: 0.8 years) and 4.0 years (2017: 4.2 years), respectively.
Commercial MBS
CMBS include mostly investment-grade bonds originated by non-agencies. At December 31, 2018, approximately 99% (2017: 98%) of our CMBS were rated AA or better. At December 31, 2018, the weighted average estimated subordination percentage of the portfolio was 31% (2017: 29%), which represents the current weighted average estimated percentage of the capital structure subordinated to the investment holding that is available to absorb losses before the security incurs the first dollar loss of principal. At December 31, 2018, our CMBS had an average duration and weighted average life of 4.7 years (2017: 5.1 years) and 5.5 years (2017: 6.0 years), respectively.

Asset-Backed Securities

ABS include mostly investment-grade bonds backed by pools of loans with a variety of underlying collateral, including auto loans, student loans, credit card receivables and collateralized loan obligations ("CLOs") originated by a variety of financial institutions. The table below provides details of the fair value of our ABS portfolio by underlying collateral and credit rating:

	Asset-backed securities					
	AAA	AA	A	BBB	Below BBB	Total
At December 31, 2018						
CLO - debt tranches	$900,157	$27,492	$—	$9,938	$ 23,540	$961,127
Auto	365,685	7,872	4,231	—	—	377,788
Student loan	79,419	17,415	—	—	—	96,834
Credit card	33,219	—	—	—	—	33,219
Other	127,638	13,457	24,867	103	2,570	168,635
Total	$1,506,118	$66,236	$29,098	$10,041	$ 26,110	$1,637,603
% of total	92%	4%	2%	1%	1%	100%
At December 31, 2017						
CLO - debt tranches	$795,968	$38,621	$—	$3,617	$ 3,771	$841,977
Auto	308,991	7,093	9,476	8,731	—	334,291
Student loan	64,755	20,222	—	—	—	84,977
Credit card	26,674	—	—	—	—	26,674
Other	98,628	19,430	25,971	1,625	2,708	148,362
Total	$1,295,016	$85,366	$35,447	$13,973	$ 6,479	$1,436,281
% of total	90%	6%	2%	1%	1%	100%

At December 31, 2018, the average duration and weighted average life of our ABS portfolio was 0.7 years (2017: 0.7 years) and 3.6 years (2017: 3.8 years), respectively.

Municipals

Municipals comprise revenue and general obligation bonds issued by U.S. domiciled state and municipal entities and are primarily held within the taxable portfolios of our U.S. subsidiaries. The table below provides details of the fair value of our municipal debt portfolio by state and between Revenue bonds and General Obligation ("G.O.") bonds:

	G.O.	Revenue	Total	% of total fair value	Gross unrealized gains	Gross unrealized losses	Weighted average credit rating
At December 31, 2018							
New York	$9,805	$29,479	$39,284	29%	$ 67	$ (726)	AA
California	21,371	13,314	34,685	26%	518	(168)	AA-
Utah	—	9,507	9,507	7%	57	—	AA+
Florida	—	9,160	9,160	7%	19	(34)	AA
Michigan	—	9,147	9,147	7%	—	(136)	AA-
Other	4,326	29,476	33,802	24%	253	(333)	AA-
	$35,502	$100,083	$135,585	100%	$ 914	$ (1,397)	AA-
At December 31, 2017							
New York	$12,510	$29,211	$41,721	28%	$ 103	$ (569)	AA+
California	20,119	11,597	31,716	21%	663	(98)	AA-
Utah	—	11,626	11,626	8%	87	—	AA+
Michigan	—	9,247	9,247	6%	19	(83)	A+
Florida	—	7,702	7,702	5%	40	(2)	AA
Other	5,558	41,810	47,368	32%	273	(220)	AA-
	$38,187	$111,193	$149,380	100%	$ 1,185	$ (972)	AA

G.O. bonds are backed by the full faith and credit of the authority that issued the debt and are secured by the taxing powers of those authorities. Revenue bonds are backed by the revenue stream generated by the services provided by the issuer (e.g. sewer, water or utility projects). As issuers of revenue bonds do not have the ability to draw from tax revenues or levy taxes to fund obligations, revenue bonds may carry a greater risk of default than G.O. bonds. At December 31, 2018, 93% (2017: 90%) of our municipals are taxable with the remainder tax exempt.

Gross Unrealized Losses

At December 31, 2018, the gross unrealized investment losses on our fixed maturities portfolio were $215 million (2017: $91 million).

The table below provides information on the severity of the unrealized loss position as a percentage of amortized cost for all investment grade fixed maturities in an unrealized loss position and includes any impact of foreign exchange:

	December 31, 2018			December 31, 2017		
Severity of Unrealized Loss	Fair value	Gross unrealized losses	% of total gross unrealized losses	Fair value	Gross unrealized losses	% of total gross unrealized losses
0-10%	$7,496,064	$(151,333)	91 %	$6,790,123	$(71,076)	86 %
10-20%	88,447	(12,573)	8 %	78,348	(11,838)	14 %
20-30%	5,557	(1,522)	1 %	872	(229)	— %
30-40%	—	—	— %	—	—	— %
40-50%	—	—	— %	—	—	— %
> 50%	—	—	— %	—	—	— %
Total	$7,590,068	$(165,428)	100 %	$6,869,343	$(83,143)	100 %

The increase in gross unrealized losses on investment-grade fixed maturities reflected the impact of the widening of credit spreads on investment grade corporate debt and the increase in U.S. Treasury rates.

The table below provides information on the severity of the unrealized loss position as a percentage of amortized cost for all non-investment grade fixed maturities in an unrealized loss position and includes any impact of foreign exchange:

	December 31, 2018			December 31, 2017		
Severity of Unrealized Loss	Fair value	Gross unrealized losses	% of total gross unrealized losses	Fair value	Gross unrealized losses	% of total gross unrealized losses
0-10%	$779,812	$(31,179)	63 %	$270,281	$(5,137)	66 %
10-20%	107,931	(15,074)	31 %	9,549	(1,408)	18 %
20-30%	9,289	(2,931)	6 %	1,050	(314)	4 %
30-40%	370	(227)	— %	638	(287)	4 %
40-50%	—	—	— %	654	(584)	8 %
> 50%	—	—	— %	—	—	— %
Total	$897,402	$(49,411)	100 %	$282,172	$(7,730)	100 %

The increase in gross unrealized losses on non-investment grade fixed maturities is primarily due to the impact of the widening of credit spreads on non-investment grade high yield corporate debt.

Equity Securities

At December 31, 2018, net unrealized investment gains on equity securities were $16 million (2017: $83 million). The decrease was due to a decline in valuations reflective of the performance of the global equity markets.

Mortgage Loans

During 2018, our investment in commercial mortgage loans decreased to $299 million from $325 million, a decrease of $26 million. The commercial mortgage loans are high quality and collateralized by a variety of commercial properties and are

diversified geographically throughout the U.S. and by property type to reduce the risk of concentration. At December 31, 2018 and 2017, there were no credit losses or past due amounts associated with our commercial mortgage loans portfolio.

Other Investments

The table below provides details of our other investments portfolio:

	December 31, 2018			December 31, 2017		
Hedge funds						
Long/short equity funds	$26,779	3	%	$38,470	4	%
Multi-strategy funds	153,883	20	%	286,164	28	%
Event-driven funds	13,936	2	%	39,177	4	%
Total hedge funds	194,598	25	%	363,811	36	%
Direct lending funds	274,478	35	%	250,681	25	%
Private equity funds	64,566	8	%	68,812	7	%
Real estate funds	84,202	11	%	50,009	5	%
Total hedge, direct lending, private equity and real estate funds	617,844	79	%	733,313	73	%
CLO-Equities	21,271	2	%	31,413	2	%
Other privately held investments	44,518	6	%	46,430	5	%
Overseas deposits	104,154	13	%	198,217	20	%
Total other investments	$787,787	100	%	$1,009,373	100	%

During 2018, the fair value of total hedge funds decreased by $169 million in 2018 driven by $178 million of net redemptions offset by $9 million of price appreciation. Certain of these funds may be subject to restrictions on redemptions which may limit our ability to liquidate these investments in the short term. Refer to Item 8, Note 6(c) to the Consolidated Financial Statements 'Investments' for further details on these restrictions and details of unfunded commitments relating to our other investment portfolio.

Overseas deposits include investments in private funds held by Syndicate 2007 in which the underlying investments are primarily U.S. government, non-U.S. government and corporate debt securities. The funds do not trade on an exchange therefore are not included within the available for sale investments category.

Equity Method Investments

During 2016, we paid $108 million including direct transactions costs to acquire 19% of the common equity of Harrington Reinsurance Holdings Limited ("Harrington"), the parent company of Harrington Re, an independent reinsurance company jointly sponsored by AXIS Capital and The Blackstone Group L.P. ("Blackstone"). Harrington is not a VIE. Given that we exercise significant influence over this investee we account for our ownership in Harrington under the equity method of accounting.

During 2017, we recorded an impairment charge of $9 million, related to a U.S. based insurance company, which reduced the carrying value of the investment to $nil. This charge is included in interest in loss of equity method investments in the consolidated statement of operations.

Restricted Assets

Refer to Item 8, Note 6(g) to the Consolidated Financial Statements 'Investments'.

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LIQUIDITY AND CAPITAL RESOURCES

Liquidity

Liquidity is a measure of a company's ability to generate cash flows sufficient to meet the short-term and long-term cash requirements of its business operations. We manage our liquidity at both the holding company and operating subsidiary level.

Holding Company

As a holding company, AXIS Capital has no operations of its own and its assets consist primarily of investments in its subsidiaries. Accordingly, AXIS Capital's future cash flows depend on the availability of dividends or other statutorily permissible distributions, such as returns of capital, from its subsidiaries. The ability to pay such dividends and/or distributions is limited by the applicable laws and regulations of the various countries and states in which AXIS Capital's subsidiaries operate (refer to Item 8, Note 20 to the Consolidated Financial Statements 'Statutory Financial Information' for further details), as well as the need to maintain capital levels to adequately support insurance and reinsurance operations and to preserve financial strength ratings issued by independent rating agencies. During 2018, AXIS Capital received $200 million (2017: $768 million; 2016: $550 million) of distributions from its subsidiaries.

AXIS Capital's primary uses of funds are dividend payments to both common and preferred shareholders, share repurchases, interest and principal payments on debt, capital investments in subsidiaries and payment of corporate operating expenses. We believe the dividend/distribution capacity of AXIS Capital's subsidiaries, which was $1.0 billion at December 31, 2018, will provide AXIS Capital with sufficient liquidity for the foreseeable future.

Operating Subsidiaries

AXIS Capital's operating subsidiaries primarily derive cash from the net inflow of premiums less claim payments related to underwriting activities and from net investment income. Historically, these cash receipts have been sufficient to fund the operating expenses of these subsidiaries, as well as to fund dividend payments to AXIS Capital. The subsidiaries' remaining cash flows are generally reinvested in our investment portfolio or used to fund acquisitions, and they have also been used to fund common share repurchases in recent periods.

The (re)insurance business of our operating subsidiaries inherently provides liquidity, as premiums are received in advance (sometimes substantially in advance) of the time claims are paid. However, the amount of cash required to fund claim payments can fluctuate significantly from period to period, due to the low frequency/high severity nature of certain types of business we write.

The table below provides details of our consolidated cash flows from operating, investing and financing activities in the last three years:

Total cash provided by (used in)[(1)]	2018	2017	2016
Operating activities	$10,773	$259,229	$406,724
Investing activities	638,554	391,510	(129,036)
Financing activities	(186,207)	(545,688)	(201,587)
Effect of exchange rate changes on cash	3,114	17,228	(9,345)
Increase (decrease) in cash and cash equivalents	$466,234	$122,279	$66,756

(1) Refer to consolidated statements of cash flows included in Item 8, 'Financial Statements and Supplementary Data', for further details.

- Net cash provided by operating activities was $11 million in 2018, compared to $259 million in 2017 and $407 million in 2016. Our insurance and reinsurance operations typically receive cash inflows from premiums, net of policy acquisition costs, and reinsurance recoverables. Our cash outflows are principally for the payment of claims and loss adjustment expenses, premium payments to reinsurers and operating expenses. Cash provided by operating activities can fluctuate due to timing differences in the collection of premium receivable and reinsurance recoverables and the payment of losses and ceded premiums payable.

- Operating cash flows decreased in 2018 compared to 2017, primarily attributable to losses paid on short-tail lines of business related to the 2017 and 2018 catastrophe events, consideration paid for the RITC transaction of the 2015 and prior years of account of Syndicate 2007, the quota share retrocessional agreement with Harrington Re, (refer to Item 8, Note 9 to the Consolidated Financial Statements 'Reserve for Losses and Loss Expenses' for further details) and increased purchases of traditional reinsurance and retrocession covers, partially offset by an increase in premium collected due to higher gross premiums written in 2018, together with an increase in reinsurance recoveries, and an increase in interest and dividends received.

The decrease in operating cash flows in 2017 compared to 2016 was primarily attributable to increased purchases of reinsurance and retrocession covers, together with an increase in losses paid primarily in our property, catastrophe, marine as well as our accident and health lines, partially offset by an increase in premium collected due to higher gross premiums written in 2017, together with an increase in reinsurance recoveries.

- Investing cash inflows in 2018 principally related to the net proceeds from the sale and redemption of fixed maturities of $364 million (2017: $300 million, 2016: $221 million), net proceeds from the sale of equity securities of $173 million (2017: $342 million, 2016: $3 million) and the net proceeds from the sale of other investments of $181 million (2017: $108 million, 2016: $25 million).

- Financing cash outflows primarily related to dividends paid to common and preferred shareholders on a recurring basis of $176 million in 2018 (2017: $188 million, 2016: $172 million). Financing cash outflows also included common share repurchases of $10 million in 2018 (2017: $286 million and 2016: $510 million). We note that market share repurchases are discretionary; the timing and amount of the additional repurchase transactions will depend on a variety of factors including, but not limited to, global (re)insurance and financial market conditions and opportunities, capital management and regulatory considerations (refer to 'Capital Resources – Share Repurchases' below for further details).

In 2018, we also fully redeemed the Dekania Notes at par (refer to Item 8, Note 11(b) to the Consolidated Financial Statements 'Debt and Financing Arrangements' for further details).

In 2017, we redeemed our remaining Series C preferred shares, which resulted in a cash outflow of $351 million and issued senior notes, which resulted in cash inflows of $346 million (refer to Item 8, Note 11(a) to the Consolidated Financial Statements 'Debt and Financing Arrangements' for further details).We used a portion of the proceeds from the issuance of the senior notes to repay a Novae term loan of $67 million.

Our diversified underwriting portfolio has demonstrated an ability to withstand catastrophic losses. We have generated positive operating cash flows in all years since 2003, with the exception of 2009 which was impacted by the global financial crisis. These positive cash flows were generated notwithstanding the impacts of the global financial crisis and the recognition of significant natural catastrophe-related losses during the period.

Our net losses and loss expenses, gross of reinstatement premiums, included $327 million for Hurricanes Michael and Florence, the California Wildfires, and Typhoon Jebi in 2018; $744 million for Hurricanes Harvey, Irma and Maria, and the two earthquakes in Mexico and the wildfires in Northern and Southern California in 2017; $331 million for Super Storm Sandy in 2012; $944 million for numerous natural catastrophe and weather events in 2011; $256 million for the Chilean and New Zealand earthquakes in 2010; $408 million for Hurricanes Gustav and Ike in 2008; $1,019 million for Hurricanes Katrina, Rita and Wilma in 2005 and $266 million for Hurricanes Charley, Frances, Ivan and Jeanne in 2004. There remains significant uncertainty associated with our estimates of net losses for certain of these events (refer to 'Underwriting Results – Consolidated – Current Accident Year Loss Ratio' for further details), as well as the timing of the associated cash outflows.

Should claim payment obligations accelerate beyond our ability to fund payments from operating cash flows, we would utilize our cash and cash equivalent balances and/or liquidate a portion of our investment portfolio. Our investment portfolio is heavily weighted towards conservative, high quality and highly liquid securities. We expect that, if necessary, approximately $12.8 billion of cash and invested assets at December 31, 2018 could be available in one to three business days under normal market conditions; of this amount, $5.5 billion relates to restricted assets, which primarily support our obligations in regulatory jurisdictions where we operate as a non-admitted carrier (refer to Item 8, Note 6(g) to the Consolidated Financial Statements 'Investments' for further details). For context, our largest 1-in-250 year return period, single occurrence, single-zone modeled probable maximum loss (Southeast U.S.

Hurricane) is approximately $620 million, net of reinsurance; our claim payments pertaining to such an event would be paid out over a period spanning many months. Our internal risk tolerance framework aims to limit both the loss of capital due to a single event, and the loss of capital that would occur from multiple but perhaps smaller events, in any year (refer to Item 1 'Risk and Capital Management' for further details).

We continue to expect that cash flows generated from our operations, combined with the liquidity provided by our investment portfolio, will be sufficient to cover our required cash outflows and other contractual commitments through the foreseeable future. For further details about the anticipated amounts and timing of our contractual obligation and commitments (refer to 'Contractual Obligations and Commitments' below).

Capital Resources

In addition to common equity, we have utilized other external sources of financing, including debt, preferred shares and credit facilities to support our business operations. We believe that we hold sufficient capital to allow us to take advantage of market opportunities and to maintain our financial strength ratings, as well as to comply with various local statutory regulations. We monitor our capital adequacy on a regular basis and will seek to adjust our capital base (up or down) according to the needs of our business (refer to Item 1 'Risk and Capital Management' for further details).

The table below provides details of our consolidated capital position:

At December 31,	2018	2017
Debt	$1,341,961	$1,376,529
Preferred shares	775,000	775,000
Common equity	4,255,071	4,566,264
Shareholders’ equity	5,030,071	5,341,264
Total capital	$6,372,032	$6,717,793
Ratio of debt to total capital	21.1 %	20.5 %
Ratio of debt and preferred equity to total capital	33.2 %	32.0 %

We finance our operations with a combination of debt and equity capital. Our debt to total capital and debt and preferred equity to total capital ratios provide an indication of our capital structure, along with some insight into our financial strength.

At December 31, 2018, our consolidated balance sheet reflected a decrease in debt due to the full redemption of our Dekania Notes.

We believe that our financial flexibility remains strong.

Debt

Debt represents the 5.875% Senior Notes issued in 2010, which will mature in 2020, the 2.65% Senior Notes and the 5.15% Senior Notes issued in 2014, which will mature in 2019 and 2045, and the 4.0% Senior Notes issued in 2017, which will mature in 2027 (refer to Item 8, Note 11(a) of the Consolidated Financial Statements 'Debt and Financing Arrangements' for further details). The 4.0% Senior Notes issued in 2017 were executed to refinance the 2.65% Senior Notes that will mature and be repaid in 2019.

Preferred Shares

Series C Preferred Shares

On March 19, 2012, we issued $400 million of 6.875% Series C preferred shares. Dividends on the Series C preferred shares were non-cumulative. To the extent declared, dividends accumulated, with respect to each dividend period, in an amount per share equal to 6.875% of the liquidation preference per annum.

During October and November 2016, we repurchased 1,957,045 Series C preferred shares at an average purchase price of $25.67 per share for $50 million. On April 17, 2017, we redeemed the remaining $351 million of 6.875% Series C preferred shares.

Series D Preferred Shares
On May 20, 2013, we issued 9 million of 5.50% Series D preferred shares with a liquidation preference of $25.00 per share for gross proceeds of $225 million. Dividends on the Series D preferred shares are non-cumulative. To the extent declared, dividends will accumulate, with respect to each dividend period, in an amount per share equal to 5.50% of the liquidation preference per annum. We may redeem these shares on or after June 1, 2018 at a redemption price of $25.00 per share.

Series E Preferred Shares

On November 7, 2016, we issued $550 million of 5.50% Series E preferred shares. Dividends on the Series E preferred shares are non-cumulative. To the extent declared, dividends will accumulate, with respect to each dividend period, in an amount per share equal to 5.50% of the liquidation preference per annum. We may redeem these shares on or after November 7, 2021 at a redemption price of $2,500 per Series E preferred share.

Common Equity

Underlying movements in the value of our common equity over the past two years are outlined in the following table:

Year ended December 31,	2018	2017
Common equity - opening	$4,566,264	$5,146,296
Net income (loss)	43,021	(368,969)
Change in unrealized losses on available-for-sale investments, net of tax	(190,829)	172,285
Share repurchases	(10,080)	(285,858)
Common share dividends	(134,748)	(132,182)
Preferred share dividends	(42,625)	(46,810)
Share-based compensation expense recognized in equity	33,505	38,677
Currency translation adjustment	(11,165)	41,938
Other	1,728	887
Common equity - closing	$4,255,071	$4,566,264

Share Repurchases

A common share repurchase plan has not been authorized for 2019.

Credit and Letter of Credit Facilities
We routinely enter into agreements with financial institutions to obtain secured and unsecured credit and letter of credit facilities. These facilities are primarily used for the issuance of letters of credit, in the normal course of operations, to certain (re)insurance operations that purchase reinsurance protection from us. These letters of credit allow those operations to take credit, under local insurance regulations, for reinsurance obtained in jurisdictions where AXIS Capital’s subsidiaries are not licensed or otherwise admitted as an insurer. The value of our letters of credit outstanding is driven by, among other factors, the amount of unearned premium, loss development on existing reserves, the payment patterns of existing reserves, the expansion of our business and the loss experience of that business. A portion of these facilities may also be used for liquidity purposes.
Each of our existing facilities is described further below (refer to Item 8, Note 11(c) of the Consolidated Financial Statements 'Debt and Financing Arrangements' for further details).

Secured Letter of Credit Facility

On March 28, 2018, certain of AXIS Capital’s operating subsidiaries (the "Participating Subsidiaries") amended their existing $250 million secured letter of credit facility with Citibank Europe plc (the "$250 Million Facility") under their aggregate

$750 million secured letter of credit facility with Citibank Europe plc (the "$750 Million Facility") to extend the expiration date to March 31, 2019.

The terms and conditions of the $500 million secured letter of credit facility under the $750 Million Facility remain unchanged. The $500 million secured letter of credit facility expires December 31, 2019.

Letters of credit issued under the $750 Million Facility will principally be used to support the reinsurance obligations of the Participating Subsidiaries. The Participating Subsidiaries are subject to certain covenants, including the requirement to maintain sufficient collateral to cover the obligations outstanding under the $750 Million Facility. In the event of default, Citibank may exercise certain remedies, including the exercise of control over pledged collateral and the termination of the availability of the $750 Million Facility to any or all of the Participating Subsidiaries.
At December 31, 2018, we had $395 million outstanding under the LOC Facility.

Shelf Registrations
On November 22, 2016, we filed an unallocated universal shelf registration statement with the SEC, which became effective upon filing. Pursuant to the shelf registration, we may issue an unlimited amount of equity, debt, warrants, purchase contracts or a combination of those securities. Our intent and ability to issue securities pursuant to this registration statement will depend on market conditions at the time of any proposed offering.
Financial Strength Ratings
Our principal (re)insurance operating subsidiaries are assigned financial strength ratings from internationally recognized rating agencies, including Standard & Poor’s, A.M. Best and Moody’s Investors Service. These ratings are publicly announced and are available directly from the agencies, as well as on our website.
Financial strength ratings represent the opinions of the rating agencies on the overall financial strength of a company and its capacity to meet the obligations of its (re)insurance contracts. Independent ratings are one of the important factors that establish our competitive position in (re)insurance markets. The rating agencies consider many factors in determining the financial strength rating of an insurance company, including the relative level of statutory surplus necessary to support the business operations of the company. These ratings are based upon factors considered by the rating agencies to be relevant to policyholders, agents and intermediaries and are not directed toward the protection of investors. Ratings are not recommendations to buy, sell or hold securities.

The following are the most recent financial strength ratings from internationally recognized agencies in relation to our principal (re)insurance operating subsidiaries:

Rating agency	Agency’s description of rating	Rating and outlook	Agency’s rating definition	Ranking of rating
Standard & Poor’s	An "opinion about the financial security characteristics of an insurance organization, with respect to its ability to pay under its insurance policies and contracts, in accordance with their terms".	A+ (Stable) (1)	"Strong capacity to meet its financial commitments"	The ‘A’ grouping is the third highest out of ten major rating categories. The second through eighth major rating categories may be modified by the addition of a plus or minus sign to show relative standing within the major rating categories.
A.M. Best	An "opinion of an insurer’s financial strength and ability to meet its ongoing insurance policy and contract obligations".	A+ (Negative) (2)	"Superior ability to meet ongoing insurance obligations"	The ‘A+’ grouping is the second highest rating out of fourteen. Ratings outlooks (‘Positive’, ‘Negative’ and ‘Stable’) are assigned to indicate a rating’s potential direction over an intermediate term, generally defined as 36 months.
Moody’s Investors Service	"Opinions of the ability of insurance companies to pay punctually senior policyholder claims and obligations."	A2 (Stable) (3)	"Offers good financial security"	The ‘A’ grouping is the third highest out of nine rating categories. Each of the second through seventh categories are subdivided into three subcategories, as indicated by an appended numerical modifier of ‘1’, ‘2’ and ‘3’. The ‘1’ modifier indicates that the obligation ranks in the higher end of the rating category, the ‘2’ modifier indicates a mid-category ranking and the ‘3’ modifier indicates a ranking in the lower end of the rating category.

(1) On July 6, 2017, following the offer to acquire Novae, Standard & Poor's revised its outlook from stable to negative. The change in outlook reflects its concerns about the level of capital redundancy at the 'AAA' level on a pro-forma consolidated basis. On December 12, 2018, Standard & Poor's revised its outlook from negative to stable, which reflects their expectation that the Company's capital redundancy at the 'AAA' level will be restored by year-end 2019.
(2) On February 16, 2018, A.M. Best revised its outlook from stable to negative. The revised outlooks are based on unfavorable trends in the Group's operating performance, particularly from our insurance segment.
(3) Following the offer to acquire Novae, Moody's Investor Service re-affirmed our financial strength rating and outlook.

Contractual Obligations and Commitments

The table below provides details of our contractual obligations and commitments at December 31, 2018 by period due:

Contractual obligations and commitments	Payment due by period Total	Less than 1 year	1-3 years	3-5 years	More than 5 years
Operating activities					
Estimated gross loss and loss expense payments[1]	$12,280,769	$3,339,623	$3,823,196	$2,012,903	$3,105,047
Operating lease obligations[2]	250,906	28,240	52,356	51,813	118,497
Investing activities					
Unfunded investment commitments[3]	$510,666	$179,617	150,583	65,900	114,566
Financing activities					
Debt (principal payments)[4]	$1,350,000	$250,000	500,000	—	600,000
Debt (interest payments)[4][5]	$500,754	$46,688	68,438	53,750	331,879
Total	$14,893,095	$3,844,168	$4,594,573	$2,184,366	$4,269,989

(1) We are obligated to pay claims for specified loss events covered by the (re)insurance contracts that we write. Loss payments represent our most significant future payment obligation. In contrast to our other contractual obligations, our cash payments are not determinable from the terms specified

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within the underlying contracts. The total amount in the table above reflects our best estimate of our reserve for losses and loss expenses. Actual amounts and timing may differ materially from our best estimate. Refer to 'Critical Accounting Estimates – Reserve for Losses and Loss Expenses' for further details. We have not taken into account corresponding reinsurance recoverable amounts that would be due to us.

(2) In the ordinary course of business, we renew and enter into new leases for office space which expire at various dates.

(3) We have $507 million of unfunded investment commitments related to our other investments portfolio, which are callable by our investment managers. Refer to Item 8, Note 6(c) to the Consolidated Financial Statements 'Investments' for further details. In addition, we have $4 million of unfunded commitments related to our commercial mortgage loans portfolio.

(4) Refer to Item 8, Note 11(a) to the Consolidated Financial Statements 'Debt and Financing Arrangements' for further details.

(5) Debt (interest payments) includes $8 million of unamortized discount and debt insurance expenses.

CRITICAL ACCOUNTING ESTIMATES

The Company's consolidated financial statements include certain amounts that are inherently uncertain and judgmental in nature. As a result, the Company is required to make assumptions and best estimates in order to determine the reported values. The Company considers an accounting estimate to be critical if: (1) it requires that significant assumptions be made in order to deal with uncertainties and (2) changes in the estimate could have a material impact on the Company's results of operations, financial condition or liquidity.

The Company believes that the material items requiring such subjective and complex estimates are:

- reserves for losses and loss expenses;
- reinsurance recoverable on unpaid losses, including the provision for uncollectible amounts;
- gross premiums written;
- fair value measurements of financial assets and liabilities; and
- other-than-temporary impairments ("OTTI") in the carrying value of available-for-sale securities.

Significant accounting policies are also important to understanding the consolidated financial statements (refer to Item 8, Note 2 to the Consolidated Financial Statements 'Basis of Presentation and Significant Accounting Policies' for further details).

The Company believes that the amounts included in the consolidated financial statements reflect its best judgment. However, factors such as those described in Item 1A 'Risk Factors' could cause actual events or results to differ materially from the underlying assumptions and estimates which could lead to a material adverse impact on the Company's results of operations, financial condition or liquidity.

Reserve for Losses and Loss Expenses

Overview

We believe the most significant accounting judgment we make is the estimate of our reserve for losses and loss expenses ("loss reserves"). Our loss reserves represent management's estimate of the unpaid portion of our ultimate liability for losses and loss expenses ("ultimate losses") for (re)insured events that have occurred at or before the balance sheet date. Our loss reserves reflect both claims that have been reported ("case reserves") to us and claims that have been incurred but not reported ("IBNR") to us. Our loss reserves represent our best estimate of what the ultimate settlement and administration of claims will cost, based on our assessment of facts and circumstances known at that particular point in time.

Loss reserves are not an exact calculation of the liability but instead, are complex estimates. The process of estimating loss reserves involves a number of variables (refer to 'Selection of Reported Reserves – Management's Best Estimate' below for further details). We review our estimate of loss reserves each reporting period and consider all significant facts and circumstances then known. As additional experience and other data become available and/or laws and legal interpretations change, we may adjust our previous estimates of loss reserves. Adjustments are recognized in the period in which they are determined therefore they can impact that period's underwriting results either favorably (indicating that our current estimates are lower than our previous estimates) or adversely (indicating that our current estimates are higher than our previous estimates).

Case Reserves

With respect to our insurance business, we are generally notified of losses by our insureds and/or their brokers. Based on this information, our claims personnel estimate our ultimate losses arising from the claim, including the cost of administering the claims settlement process. These estimates reflect the judgment of our claims personnel based on general reserving practices, the experience and knowledge of such personnel regarding the nature of the specific claim and, where appropriate, the advice of legal counsel, loss adjusters and other relevant consultants.

With respect to our reinsurance business, we are generally notified of losses by ceding companies and/or their brokers. For excess of loss contracts, we are typically notified of insured losses on specific contracts and record a case reserve for the estimated ultimate liability arising from the claim. For contracts written on a proportional basis, we typically receive aggregated claims information and record a case reserve based on that information. However, our proportional reinsurance contracts typically require that losses in excess of pre-defined amounts be separately notified so we can adequately evaluate them. Our claims department evaluates each specific loss notification we receive and records additional case reserves when a ceding company’s reserve for a claim is not considered adequate.

In deciding whether to provide treaty reinsurance, we carefully review and analyze a cedant’s underwriting and risk management practices to ensure appropriate underwriting, data capture and reporting procedures. We also undertake an extensive program of cedant audits, using outsourced legal and industry experience where necessary. This allows us to review cedants’ claims administration practices to ensure that reserves are consistent with exposures, adequately established, and properly reported in a timely manner.

IBNR

The estimation of IBNR is necessary due to the time lags between when a loss event occurs and when it is actually reported, which is referred to as a reporting lag. Reporting lags may arise from a number of factors, including but not limited to: the nature of the loss, the use of intermediaries and complexities in the claims adjusting process. As we do not have specific information on IBNR, it must be estimated. IBNR is calculated by deducting incurred losses (i.e. paid losses and case reserves) from management’s best estimate of ultimate losses. In contrast to case reserves, which are established at the contract level, IBNR reserves are generally estimated at an aggregate level and cannot be identified as reserves for a particular loss event or contract (refer to 'Reserving for Significant Catastrophic Events' below for further details).

Reserving Methodology

Sources of Information

Our quarterly reserving process begins with the collection and analysis of paid and incurred claim data for each of our segments. The segmental data is disaggregated by reserve class and further disaggregated by underwriting year and accident year. We use underwriting year information to analyze our business and subsequently allocate reserves to the respective accident years. Our reserve classes are selected to ensure that the underlying contracts have homogeneous loss development characteristics, while remaining large enough to make the estimation of trends credible. We review our reserve classes on a regular basis and adjust them over time as our business evolves. The paid and incurred claim data, in addition to industry benchmarks, serves as a key input to many of the methods employed by our actuaries. The relative weights assigned to our own historical loss data versus industry data vary according to the length of the development profile for the reserve class being evaluated (refer to 'Claim Tail Analysis' below for further details).

Actuarial Analysis

Multiple actuarial methods are available to estimate ultimate losses. Each method has its own assumptions and its own advantages and disadvantages, with no single estimation method being better than the others in all situations and no one set of assumption variables being meaningful for all reserve classes. The relative strengths and weaknesses of the particular estimation methods when applied to a particular group of claims can also change over time.

The following is a brief description of the reserve estimation methods commonly employed by our actuaries including a discussion of their particular strengths and weaknesses:

- Expected Loss Ratio Method ("ELR Method"): This method estimates ultimate losses for an accident year or underwriting year by applying an expected loss ratio to the earned or written premium for that year. Generally, expected

loss ratios are based on one or more of (a) an analysis of historical loss experience to date, (b) pricing information and (c) industry data, adjusted as appropriate, to reflect changes in rates and terms and conditions. This method is insensitive to actual incurred losses for the accident year or underwriting year in question and is, therefore, often useful in the early stages of development when very few losses have been incurred. Conversely, the lack of sensitivity to incurred/paid losses for the accident year or underwriting year in question means that this method is usually inappropriate in later stages of an accident year or underwriting year's development.

- Loss Development Method (also referred to as the "Chain Ladder Method" or "Link Ratio Method"): This method assumes that the losses incurred/paid for each accident year or underwriting year at a particular development stage follow a relatively similar pattern. It assumes that on average, every accident year or underwriting year will display the same percentage of ultimate losses incurred/paid at the same point in time after the inception of that year. The percentages incurred/paid are established for each development stage (e.g. 12 months, 24 months, etc.) after examining historical averages from historical loss development data and/or external industry benchmark information. Ultimate losses are then estimated by multiplying the actual incurred/paid losses by the reciprocal of the established incurred/paid percentage. The strengths of this method are that it reacts to loss emergence/payments and that it makes full use of historical claim emergence/payment experience. However, this method has weaknesses when the underlying assumption of stable loss development/payment patterns is not valid. This could be the consequence of changes in business mix, claim inflation trends or claim reporting practices and/or the presence of large claims, among other things. Furthermore, this method tends to produce volatile estimates of ultimate losses where there is volatility in the underlying incurred/paid patterns. In particular, where the expected percentage of incurred/paid losses is low, small deviations between actual and expected claims can lead to very volatile estimates of ultimate losses. As a result, this method is often unsuitable at early development stages for an accident year or underwriting year.
- Bornhuetter-Ferguson Method ("BF Method"): This method can be seen as a combination of the ELR and Loss Development Methods, under which the Loss Development Method is given progressively more weight as an accident year or underwriting year matures. The main advantage of the BF Method is that it provides a more stable estimate of ultimate losses than the Loss Development Method at earlier stages of development, while remaining more sensitive to emerging loss development than the ELR Method. In addition, the BF Method allows for the incorporation of external market information through the use of expected loss ratios, whereas the Loss Development Method does not incorporate such information.

As part of our quarterly loss reserve review process, our actuaries employ the estimation method(s) that they believe will produce the most reliable estimate of ultimate losses, at that particular evaluation date, for each reserve class and accident year or underwriting year combination. Often, this is a blend (i.e. weighted average) of the results of two or more appropriate actuarial methods. These ultimate loss estimates are generally utilized to evaluate the adequacy of our ultimate loss estimates for previous accident or underwriting years, established in the prior reporting period. For the initial estimate of the current accident or underwriting year, the available claim data is typically insufficient to produce a reliable estimate of ultimate losses. As a result, our initial estimate for an accident or underwriting year is generally based on the ELR Method for longer tailed lines and a BF method for shorter tailed lines. The initial ELR for each reserve class is established collaboratively by our actuaries, underwriters and management at the start of the year as part of the planning process, taking into consideration prior accident years' or underwriting years' experience and industry benchmarks, adjusted after considering factors such as exposure trends, rate differences, changes in contract terms and conditions, business mix changes and other known differences between the current year and prior accident or underwriting years. The initial expected loss ratios for a given accident or underwriting year may be modified over time if the underlying assumptions, such as loss development or premium rate changes, differ from the original assumptions.

Key Actuarial Assumptions

The use of the above actuarial methods requires us to make certain explicit assumptions, the most significant of which are: (1) expected loss ratios and (2) loss development patterns.

In our earlier years, we placed significant reliance on industry benchmarks in establishing our expected loss ratios and selecting loss development patterns. Over time, we have placed more reliance on our historical loss experience in establishing these ratios and selecting these patterns where we believe the weight of our own actual experience has become sufficiently credible for consideration. The weight given to our experience differs for each of our three claim tail classes (refer to 'Claim Tail Analysis' below for further details). In establishing expected loss ratios for our insurance segment, we give consideration to a number of other factors, including exposure trends, rate adequacy on new and renewal business, ceded reinsurance costs, changes in claims emergence and our underwriters’ view of terms and conditions in the market environment. For our reinsurance segment, expected loss ratios are based on a contract-by-contract review, which considers information provided by clients together with estimates provided by our underwriters and actuaries about the impact of changes in pricing, terms and conditions and coverage. We also have considered the market experience of some classes of business as compiled and analyzed by an independent actuarial firm, as appropriate.

Claim Tail Analysis

The following table shows total loss reserves for each of our reportable segments, segregated between case reserves and IBNR and by significant reserve class. This table is presented on a gross basis and, therefore, does not include the benefit of reinsurance recoverables on unpaid losses ("reinsurance recoveries").

	2018			2017		
At December 31,	Case reserves	IBNR	Total	Case reserves	IBNR	Total
Insurance segment:						
Property and other	$757,546	$492,651	$1,250,197	$776,775	$500,039	$1,276,814
Marine	208,661	335,822	544,483	326,225	306,889	633,114
Aviation	102,954	41,554	144,508	99,135	51,480	150,615
Credit and political risk	(3,171)	127,098	123,927	(22,536)	120,287	97,751
Professional lines	666,486	1,937,326	2,603,812	672,262	1,876,326	2,548,588
Liability	302,462	1,308,564	1,611,026	367,981	1,218,207	1,586,188
Discontinued lines - Novae	60,982	87,374	148,356	457,991	260,744	718,735
Total Insurance	2,095,920	4,330,389	6,426,309	2,677,833	4,333,972	7,011,805
Reinsurance segment:						
Property and other	887,073	901,377	1,788,450	809,836	952,263	1,762,099
Credit and surety	125,560	229,218	354,778	132,305	250,296	382,601
Professional lines	432,213	702,442	1,134,655	340,516	831,047	1,171,563
Motor	649,471	513,416	1,162,887	649,706	499,178	1,148,883
Liability	373,178	958,199	1,331,377	312,450	916,423	1,228,873
Discontinued lines - Novae	62,789	19,524	82,313	215,012	76,715	291,727
Total Reinsurance	2,530,284	3,324,176	5,854,460	2,459,825	3,525,922	5,985,747
Total	$4,626,204	$7,654,565	$12,280,769	$5,137,659	$7,859,894	$12,997,553

In order to capture the key dynamics of our loss reserve development and potential volatility, our reserve classes should be considered according to their potential expected length of loss emergence and settlement, generally referred to as the "tail". We consider our business to consist of three claim tail classes: short-tail, medium-tail and long-tail. Favorable development on prior accident year reserves indicates that our current estimates are lower than our previous estimates, while adverse development indicates that our current estimates are higher than our previous estimates. Below is a discussion of the specifics of our loss reserve process as they apply to each claim tail class, as well as commentary on the factors contributing to our historical loss reserve development for each class.

Short-tail Business

Our short-tail business generally includes exposures for which losses are usually known and paid within a relatively short period of time after the underlying loss event has occurred. Our short-tail business primarily relates to property coverages and includes terrorism, accident and health, discontinued lines - Novae, marine and certain aviation business within our insurance segment, together with the property, catastrophe, engineering, agriculture, marine and other, accident and health, and discontinued lines - Novae business within our reinsurance segment.

The key actuarial assumptions for our short-tail business in our early accident years were primarily developed with reference to industry benchmarks for both expected loss ratios and loss development patterns. As our own historical loss experience amassed, it gained credibility and became relevant for consideration in establishing these key actuarial assumptions. As a

result, we gradually increased the weighting assigned to our own historical experience in selecting the expected loss ratios and loss development patterns utilized to establish our estimates of ultimate losses for an accident year.
Due to the relatively short reporting and settlement patterns for our short-tail business, we generally place more weight upon experience-based methods and other qualitative considerations in establishing reserves for recent and more mature accident years. As our experience developed more favorably than our initial expectations, we recognized favorable prior year development on short-tail business in recent years (refer to 'Underwriting Results – Consolidated – Prior Year Reserve Development' for further details).
Although our estimates of ultimate losses for our short-tail business are inherently less uncertain than for our medium and long-tail business, significant judgment is still required. For example, because much of our excess insurance and excess of loss reinsurance business has high attachment points, it is often difficult to estimate whether claims will exceed those attachment points. Also, the inherent uncertainties relating to catastrophe events previously discussed, together with our typically large line sizes, further add to the complexity of estimating our potential exposure. In addition, we use MGAs and other producers for certain business within our insurance segment; this can delay the reporting of loss information to us. We expect that the majority of development for an accident year or underwriting year will be recognized in the subsequent one to three years.
Medium-tail Business
Our medium-tail business primarily consists of insurance and reinsurance professional lines, reinsurance credit and surety and discontinued lines - Novae within our insurance segment. Certain other classes of business, including aviation hull are also considered to have a medium-tail. Claim reporting and settlement periods on these classes are generally longer than those of our short-tail reserve classes. We also consider our insurance credit and political risk business to have a medium tail, due to the complex nature of claims and the potential additional time that may be required to realize our subrogation assets.
For our earliest accident and underwriting years, our initial key actuarial expected loss ratio and loss development assumptions were established utilizing industry benchmarks. Due to the longer claim tail, the length of time required to develop our own credible loss history for use in the reserving process is greater for our medium-tail business than for our short-tail business. As a result, the number of years where we relied heavily on industry benchmarks to establish our key actuarial assumptions is greater for our medium-tail business. Our reserving approach for medium-tail business is tailored by line of business, with our significant lines being specifically addressed below.
•Insurance and Reinsurance Professional Lines
For our professional lines business and discontinued lines - Novae, claim payment and reporting patterns are typically medium to long-tail in nature. The underlying business is predominantly written on a claims-made basis. With respect to our key actuarial assumptions, we are progressively giving more weight to our own experience when establishing our expected loss ratios and our selected loss development patterns, though we continue to consider industry benchmarks.
Loss reporting patterns for professional lines business tend to be volatile, causing instability in actuarial indications based on incurred loss data until an accident year matures. Consequently, our initial loss reserves for an accident year or underwriting year are generally based upon an ELR method and the consideration of relevant qualitative factors. As accident years and underwriting years mature, we increasingly give more weight to methods that reflect our actual experience until our selections are based almost exclusively on experience-based methods. We evaluate the appropriateness of the transition to experience-based methods at the reserve class level, commencing this transition when we believe that our incurred loss development is sufficient to produce meaningful actuarial indications. The rate at which we transition fully to sole reliance on experience-based methods can vary by reserve class and by year, depending on our assessment of the stability and relevance of such indications. For some professional lines in our insurance segment, we also rely upon the evaluation of the open claim inventory in addition to the commonly employed actuarial methods when establishing reserves.
Our transition from the ELR method to experience-based methods began in 2008, when we commenced gradual transition for the 2004 and prior accident years. As our loss history continued to develop, the transition was expanded to include additional accident years. With the exception of the experience in our insurance professional lines during 2014 and 2015, our actual loss experience has generally been more favorable than or broadly in line with initial

expectations and the transition has generally led to the recognition of net favorable prior year reserve

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development in recent years. During 2014, management continued to rely upon experience-based methods, an evaluation of the open claims inventory and other qualitative factors in establishing the ultimate loss estimates for our insurance professional lines reserve class. During 2015, updated actuarial assumptions in our Australian book of business impacting accident years 2010 to 2014 resulted in strengthening of our insurance professional lines reserve class, partially offset by favorable development in certain U.S. professional lines business. Refer to 'Underwriting Results – Consolidated – Prior Year Development' for a discussion of the development recognized during the last three years.
We believe that there continues to be a relatively higher level of uncertainty around ultimate loss estimates for the business classes impacted by the global financial crisis in the 2007 to 2009 accident years. As a result, we continue to rely upon the evaluation of the open claims inventory in addition to the consideration of the actuarial indications, while exercising a greater degree of caution in recognizing potential favorable loss emergence, when establishing loss reserves for these accident years.

- Reinsurance Credit and Surety

For our reinsurance credit and surety business, our initial and most recent underwriting year loss projections are generally based on the ELR method, with consideration given to qualitative factors. Given that there is a quicker and more stable reporting pattern for trade credit business, we generally commence the transition to experience-based methods sooner than for the surety business.

- Insurance Credit and Political Risk

Refer to 'Reserving for Credit and Political Risk Business' below for a discussion of specific loss reserve issues related to this business. When considering prior year reserve development for this line of business, it is important to note that the multi-year nature of the credit business distorts loss ratios when a single accident year is considered in isolation. In recent years, the average term of these contracts has been four to five years. The premiums we receive are generally earned evenly over the contract term, thus spanning multiple accident years. In contrast, losses incurred on these contracts, which can be characterized as low in frequency and high in severity, are reflected in a single accident year. As previously described, the estimation of the value of our recoveries on credit and political risk business requires significant management judgment. At December 31, 2018, our estimated recoveries on credit insurance business were $24 million (2017: $57 million).

Long-tail Business
In contrast to our short and medium-tail business, the claim tail for our long-tail business is expected to be notably longer, as claims are often reported and ultimately paid or settled years, or even decades, after the related loss events occur. Our long-tail business primarily relates to liability business written in our insurance and reinsurance segments, as well as our reinsurance motor business and discontinued lines - Novae in our insurance and reinsurance segments. As a general rule, our estimates of accident year or underwriting year ultimate losses for our long-tail business are notably more uncertain than those for our short and medium-tail business. Factors that contribute additional uncertainty to estimates for our long-tail business include, but are not limited to:

- more significant weight given to industry benchmarks in forming our key actuarial assumptions;
- potential volatility of actuarial estimates, given the number of years of development it takes to produce a meaningful incurred loss as a percentage of ultimate losses;
- inherent uncertainties about loss trends, claims inflation (e.g. medical, judicial, social) and general economic conditions; and
- the possibility of future litigation, legislative or judicial change that may impact future loss experience relative to the prior industry loss experience relied upon in reserve estimation.

To date, our key actuarial assumptions for our long-tail business have been derived extensively from industry benchmarks supplemented with our own historical experience. Given our relatively short operating history in comparison to the development tail for this business, we do not believe that our own historical loss development for our long-tail business has amassed an appropriate volume to serve as a fully credible input into the key actuarial assumptions previously outlined.

While we consider industry benchmarks that we believe reflect the nature and coverage of our business, our actual loss experience may differ from the benchmarks based on industry averages.

Due to the length of the development tail for this business, our reserve estimates for most accident years and underwriting years are predominantly based on the BF or ELR method and the consideration of qualitative factors. As part of our quarterly reserving process, we monitor actual paid and incurred loss emergence relative to expected loss emergence based on our selected loss development patterns. The drivers of any unfavorable loss emergence are investigated and, as a result, have led to an immediate recognition of adverse development in some instances. Prior to the fourth quarter of 2012, we did not recognize any favorable loss emergence. As a result, during some periods, we recognized net adverse development for our insurance liability business in light of unfavorable loss emergence for certain reserve class and accident year combinations (refer to 'Underwriting Results – Consolidated – Prior Year Reserve Development' for further details).

Commencing with the fourth quarter 2012 reserving process, we began to give weight to actuarial methods that reflect our actual experience for liability business as we believed that our oldest accident years were at a stage of expected development where such methods would produce meaningful actuarial indications. In 2018, we continued to give weight to experience-based methods on the earlier years for our liability line of business leading to the recognition of some favorable experience on our reinsurance classes.

Reserving for Credit and Political Risk Business

Our insurance credit and political risk business consists primarily of credit insurance and confiscation, expropriation, nationalization and deprivation coverages ("CEND"). Claims for this business tend to be characterized by their severity risk, as opposed to their frequency risk therefore, claim payment and reporting patterns are anticipated to be volatile. Under the notification provisions of our credit insurance policies, we anticipate being advised of an insured event within a relatively short time period. Consequently, we generally estimate ultimate losses based on a contract-by-contract analysis which considers the contracts' terms, the facts and circumstances of underlying loss events and qualitative input from claims managers.

An important and distinguishing feature of many of these contracts is our contractual right, subsequent to payment of a claim to our insured, to be subrogated to, or otherwise have an interest in, the insured's rights of recovery under an insured loan or facility agreement. These estimated recoveries are recorded as an offset to our credit and political risk loss reserves. The lag between the date of a claim payment and our ultimate recovery from the corresponding security can result in negative case reserves at a point in time (as was the case at December 31, 2018 and 2017). The nature of the underlying collateral is specific to each transaction and we also estimate the value of this collateral on a contract-by-contract basis. This valuation process is inherently subjective and involves the application of management's judgment because active markets for the collateral often do not exist. Our estimates of values are based on numerous inputs, including information provided by our insureds, as well as third party sources including rating agencies, asset valuation specialists and other publicly available information. We also assess any post-event circumstances, including restructurings, liquidations and possession of asset proposals/agreements.

In some instances, upon becoming aware of a loss event related to our credit and political risk business, we negotiate a final settlement of all of our policy liabilities for a fixed amount. In most circumstances, this occurs when the insured moves to realize the benefit of the collateral that underlies the insured loan or facility and presents us with a net settlement proposal that represents a full and final payment by us under the terms of the policy. In consideration for this payment, we secure a cancellation of the policy, or a release of all claims, and waive our right to pursue a recovery of these settlement payments against the security that may have been available to us under the insured loan or facility agreement. In certain circumstances, cancellation by way of net settlement or full payment can result in an adjustment of the net premium to be received and earned on the policy.

Reserving for Significant Catastrophic Events

We cannot estimate losses from widespread catastrophic events, such as hurricanes and earthquakes, using the traditional actuarial methods described above. Loss reserves for such events are estimated by management after a catastrophe occurs by completing an in-depth analysis of individual contracts which may potentially have been impacted by the catastrophic event. This in-depth analysis may rely on several sources of information including:

- estimates of the size of insured industry losses from the catastrophic event and our corresponding market share;

- a review of our portfolio of contracts to identify those contracts which may be exposed to the catastrophic event;
- a review of modeled loss estimates based on information previously reported by customers and brokers, including exposure data obtained during the underwriting process;
- discussions of the impact of the event with our customers and brokers; and
- catastrophe bulletins published by various independent statistical reporting agencies.

We generally use a blend of these information sources to arrive at our aggregate estimate of the ultimate losses arising from the catastrophic event. In subsequent reporting periods, we review changes in paid and incurred losses in relation to each significant catastrophe and adjust our estimates of ultimate losses for each event if there are developments that are different from our previous expectations. Adjustments are recorded in the period in which they are identified.

There are additional risks affecting our ability to accurately estimate ultimate losses for catastrophic events. For example, the estimates of loss reserves related to hurricanes and earthquakes can be affected by factors including, but not limited to: the inability to access portions of impacted areas, infrastructure disruptions, the complexity of factors contributing to losses, legal and regulatory uncertainties, complexities involved in estimating business interruption losses and additional living expenses, the impact of demand surge, fraud and the limited nature of information available. For hurricanes, additional complex coverage factors may include determining whether damage was caused by flooding or wind, evaluating general liability and pollution exposures, and mold damage. The timing of a catastrophe, for example, near the end of a reporting period, can also affect the level of information available to us to estimate loss reserves for that reporting period.

Our results of operations for 2018, 2017 and 2016 were impacted by natural catastrophe activity (refer to 'Underwriting Results – Consolidated – Current Accident Year Loss Ratio' for further details).

Selection of Reported Reserves – Management’s Best Estimate

Our quarterly reserving process involves the collaboration of our underwriting, claims, actuarial, legal, ceded reinsurance and finance departments, includes various segmental committee meetings and culminates with the approval of a single point best estimate by our Group Reserving Committee, which comprises senior management. In selecting this best estimate, management considers actuarial estimates and applies informed judgment regarding qualitative factors that may not be fully captured in these actuarial estimates. Such factors include, but are not limited to: the timing of the emergence of claims, volume and complexity of claims, social and judicial trends, potential severity of individual claims and the extent of internal historical loss data versus industry information. While these qualitative factors are considered in arriving at the point estimate, no specific provisions for qualitative factors are established.

With regard to establishing the fair value of reserves for losses and loss expenses for Novae at the acquisition date, weight was given to the observable value of these reserves based on the RITC transaction of the 2015 and prior years of account of Syndicate 2007, which was completed prior to the allocation of purchase price. Management made no change to the initial estimate when establishing its best estimate of reserves for losses and loss expenses at December 31, 2017. This is consistent with our general approach of recognizing all or part of the anticipated cost of third party liability commutations if the transaction has either completed or is considered sufficiently likely to be completed in the near term.

Beginning in 2013, we significantly enhanced the capabilities and resources dedicated to the actuarial reserving function. Consequently, from the first quarter of 2014, management began to rely upon its internal actuarial reserving function for the quarterly reserve evaluation process rather than utilizing the services of an independent actuarial firm. On an annual basis, we use an independent actuarial firm to provide an actuarial opinion on the reasonableness of our loss reserves for each of our operating subsidiaries and statutory reporting entities: such actuarial opinions are required to meet various insurance regulatory requirements. The actuarial firm also discusses its conclusions from the annual review with management and presents its findings to our Board of Directors.

Sensitivity Analysis

While we believe that our loss reserves at December 31, 2018 are adequate, new information, events or circumstances may result in ultimate losses that are materially greater or less than provided for in our loss reserves. As previously noted, there are many factors that may cause our reserves to increase or decrease, particularly those related to catastrophe losses and long-tail lines of business.

Our expected loss ratios are a key assumption in our estimate of ultimate losses for business at an early stage of development. All else remaining equal, a higher expected loss ratio would result in a higher ultimate loss estimate, and vice versa. Our assumed loss development patterns are another significant assumption in estimating our loss reserves. All else remaining equal, accelerating a loss reporting pattern (i.e. shortening the claim tail) would result in lower ultimate losses, as the estimated proportion of losses already incurred would be higher. The uncertainty in the timing of the emergence of claims (i.e. the length of the development pattern) is generally greater for a company like ours with a relatively limited operating history which, therefore, must rely on industry benchmarks to a certain extent when establishing loss reserve estimates.

The following tables show the effect on our estimate of gross loss reserves of reasonably likely changes in the two key assumptions used to estimate our gross loss reserves at December 31, 2018.

INSURANCE			
Development pattern	Expected loss ratio		
Property and other	5% lower	Unchanged	5% higher
3 months shorter	$(83,761)	$(70,333)	$(57,175)
Unchanged	(15,736)	—	15,470
3 months longer	69,917	88,513	106,845
Marine	5% lower	Unchanged	5% higher
3 months shorter	$(45,676)	$(35,032)	$(24,385)
Unchanged	(12,209)	—	12,213
3 months longer	24,457	38,311	52,170
Aviation	5% lower	Unchanged	5% higher
3 months shorter	$(9,628)	$(8,211)	$(6,795)
Unchanged	(1,827)	—	1,827
3 months longer	12,365	14,939	17,513
Credit and political risk	10% lower	Unchanged	10% higher
3 months shorter	$(13,401)	$(384)	$7,634
Unchanged	(13,038)	—	8,038
3 months longer	(12,724)	332	8,388
Professional lines	10% lower	Unchanged	10% higher
6 months shorter	$(369,545)	$(113,092)	$143,361
Unchanged	(267,898)	—	267,829
6 months longer	(150,298)	130,827	411,783
Liability	10% lower	Unchanged	10% higher
6 months shorter	$(214,494)	$(39,013)	$136,468
Unchanged	(179,028)	—	178,403
6 months longer	(136,630)	46,198	229,027
Discontinued lines - Novae	10% lower	Unchanged	10% higher
6 months shorter	$(2,320)	$(2,175)	$(832)
Unchanged	(1,151)	—	1,430
6 months longer	3,464	4,748	6,308

REINSURANCE

Development pattern	Expected loss ratio		
Property and other	5% lower	Unchanged	5% higher
3 months shorter	$(95,611)	$(43,462)	$8,641
Unchanged	(56,063)	—	48,703
3 months longer	(3,133)	49,562	101,713
Credit and surety	10% lower	Unchanged	10% higher
6 months shorter	$(37,438)	$(22,042)	$(6,636)
Unchanged	(15,881)	—	16,587
6 months longer	29,131	48,067	67,071
Professional lines	10% lower	Unchanged	10% higher
6 months shorter	$(120,072)	$(46,366)	$33,877
Unchanged	(74,483)	—	78,611
6 months longer	(16,022)	60,957	141,594
Motor	10% lower	Unchanged	10% higher
6 months shorter	$(74,843)	$(29,048)	$18,894
Unchanged	(44,456)	—	48,246
6 months longer	22,705	73,345	124,669
Liability	10% lower	Unchanged	10% higher
6 months shorter	$(158,904)	$(36,767)	$92,761
Unchanged	(116,119)	—	124,328
6 months longer	(54,596)	61,157	181,848
Discontinued lines - Novae	10% lower	Unchanged	10% higher
6 months shorter	$(6,256)	$(4,485)	$(2,715)
Unchanged	(2,164)	—	2,164
6 months longer	3,368	6,040	8,712

The results show the cumulative increase (decrease) in our loss reserves across all accident years. For example, if our assumed loss development pattern for our insurance property and other business was three months shorter with no accompanying change in our ELR assumption, our loss reserves may decrease by approximately $70 million. Each of the impacts set forth in the tables is estimated individually, without consideration for any correlation among key assumptions or among reserve classes. Therefore, it would be inappropriate to take each of the amounts and add them together in an attempt to estimate total volatility. While we believe the variations in the expected loss ratios and loss development patterns presented could be reasonably expected, our own historical data regarding variability is generally limited and actual variations may be greater or less than these amounts. It is also important to note that the variations are not meant to be a "best-case" or "worst-case" series of scenarios and, therefore, it is possible that future variations in our loss reserves may be more or less than the amounts presented. While we believe that these are reasonably likely scenarios, we do not believe this sensitivity analysis should be considered an actual reserve range.

Reinsurance Recoverable on Unpaid Losses

In the normal course of business, we purchase reinsurance protection to limit our ultimate losses from catastrophic events and to reduce our loss aggregation risk. To the extent that reinsurers do not meet their obligations under the reinsurance agreements, we remain liable. Consequently, we are exposed to credit risk associated with reinsurance recoverable on unpaid and paid losses to the extent that any of our reinsurers are unable or unwilling to pay our claims.

The following table shows the composition of reinsurance recoverable on unpaid losses for each of our reportable segments, segregated between reinsurance recoverable on unpaid losses related to case reserves and reinsurance recoverable on unpaid losses related to IBNR and by line of business:

At December 31,	2018 Case reserves	IBNR	Total	2017 Case reserves	IBNR	Total
Insurance segment:						
Property and other	$253,798	$208,511	$462,309	$193,662	$194,288	$387,950
Marine	74,269	112,904	187,173	105,908	101,751	207,659
Aviation	8,123	6,187	14,310	7,356	6,918	14,274
Credit and political risk	(313)	24,849	24,536	1,963	13,115	15,078
Professional lines	250,214	736,368	986,582	238,450	652,223	890,673
Liability	180,410	774,281	954,691	208,965	712,054	921,019
Discontinued lines - Novae	24,714	37,937	62,651	173,673	110,996	284,669
Total Insurance	791,215	1,901,037	2,692,252	929,977	1,791,345	2,721,322
Reinsurance segment:						
Property and other	237,842	191,084	428,926	131,340	178,967	310,307
Credit and surety	9,621	26,719	36,340	2,561	10,500	13,061
Professional lines	10,076	71,546	81,622	1,930	35,892	37,822
Motor	41,112	78,305	119,417	1,481	2,185	3,666
Liability	20,073	112,251	132,324	8,314	58,378	66,692
Discontinued lines - Novae	8,343	2,445	10,788	5,435	1,209	6,644
Total Reinsurance	327,067	482,350	809,417	151,061	287,131	438,192
Total	$1,118,282	$2,383,387	$3,501,669	$1,081,038	$2,078,476	$3,159,514

At December 31, 2018, reinsurance recoverable on unpaid losses as a percentage of reserves for losses and loss expenses was 29% (2017: 24%). At December 31, 2018 and 2017, 89.5% and 88.8%, respectively, of our reinsurance recoverable on unpaid and paid losses (excluding the provision for uncollectible amounts) were collectible from reinsurers rated A- or better by A.M. Best. Refer to Item 8, Note 12 to the Consolidated Financial Statements 'Commitments and Contingencies' for an analysis of the credit risk associated with reinsurance recoverable on unpaid and paid losses at December 31, 2018.

The recognition of reinsurance recoverable on unpaid losses requires two key estimates. The first estimate is the amount of reserves for losses and loss expenses to be ceded to our reinsurers. This amount consists of two elements, amounts related to case reserves and amounts related to IBNR.

Reinsurance recoverable related to case reserves is estimated on a case-by-case basis by applying the terms of any applicable reinsurance cover to individual case reserve estimates. Reinsurance recoverable related to IBNR is generally developed as part of our loss reserving process, therefore, its estimation is subject to similar risks and uncertainties as the estimation of IBNR. Estimates of amounts to be ceded under non-proportional reinsurance contracts also take into account pricing information for those contracts and require greater judgment than estimates for proportional contracts.

The second estimate is the amount of reinsurance recoverable on unpaid and paid losses that we believe ultimately will not be recovered from reinsurers. We are selective in choosing our reinsurers, placing reinsurance principally with reinsurers with a strong financial condition and industry ratings. The amount we ultimately collect may differ from our estimate due to the ability and willingness of reinsurers to pay our claims, which may be negatively impacted by factors such as insolvency, contractual disputes over contract language or coverage and/or other reasons. In addition, economic conditions and/or operational performance of a particular reinsurer may deteriorate and this could also affect the ability and willingness of a reinsurer to meet their contractual obligations.

Consequently, we review reinsurance recoverable on unpaid and paid losses on a quarterly basis to estimate a provision for uncollectible amounts. Any adjustments to the provision for uncollectible amounts are recognized in the period in which they are determined.

We apply case-specific provisions against reinsurance recoverable on unpaid and paid losses that we deem unlikely to be collected in full. In addition, we use a default analysis to estimate our provision for uncollectible amounts on the remainder of the reinsurance recoverable balance. The principal components of the default analysis are reinsurance recoverable balances by reinsurer and default factors applied to estimate uncollectible amounts based on our reinsurers' credit ratings. The default factors are based on a model developed by a major rating agency.

At December 31, 2018 and 2017, the provision for uncollectible amounts was $21 million and $17 million, respectively. We have not written off any significant reinsurance recoverable balances in the last three years.

At December 31, 2018, the use of different assumptions within our approach could have a material effect on our provision for uncollectible amounts. To the extent the creditworthiness of our reinsurers deteriorates due to an adverse event affecting the reinsurance industry, such as a large number of major catastrophes, actual uncollectible amounts could be significantly greater than our provision for uncollectible amounts. Given the various considerations used to estimate our provision for uncollectible amounts, we cannot precisely quantify the effect a specific industry event may have on our provision for uncollectible amounts.

Gross Premiums Written

Our revenues primarily relate to gross premiums written generated by our underwriting operations. The basis for recognizing gross premiums written varies by contract type.

Insurance Segment

Insurance premiums written are recorded in accordance with the terms of the underlying policies.

For the majority of our insurance business, we receive a fixed premium which is identified in the policy and recorded as unearned premium at the inception of the contract. This premium is adjusted only if underlying insured values ultimately differ. We actively monitor underlying insured values and recognize any adjustments to gross premiums written in the period in which they are determined. Gross premiums written on a fixed premium basis accounted for approximately 88%, 88% and 89% of the segment's gross premiums written for the years ended December 31, 2018, 2017 and 2016, respectively. Some of this business is written through MGAs, third parties granted authority to bind risks on our behalf in accordance with our underwriting guidelines. For this business, we either record gross premiums written based on monthly statements received from MGAs or we record our best estimate based upon our historical experience. Due to inherent reporting delays, we generally record premiums associated with business written by MGAs one month in arrears.

A limited amount of our insurance business is written on a line slip or proportional basis, under which we assume a fixed percentage of the premiums and losses on a particular risk or group of risks along with numerous other unrelated insurers. Although premiums on this business are not contractually stated, we recognize gross premiums written based on estimates provided by clients through brokers (refer to 'Reinsurance Segment' below for further details). We review these premium estimates on a quarterly basis and recognize any adjustments to estimates in gross premium written in the period in which they are determined. Gross premiums written on a line slip/proportional basis comprised 12%, 12% and 11% of the segment's gross premiums written for the years ended December 31, 2018, 2017 and 2016, respectively, therefore the impact of these premium estimates on our pre-tax net income was immaterial.

In our credit and political risk line of business, we write certain policies on a multi-year basis. We record premiums in respect of these policies at the inception of the contract based on management's best estimate of total premiums to be received, including assumptions relating to prepayments/refinancing. These premiums are generally payable in installments. At December 31, 2018, the average duration of the outstanding unearned premiums written for our credit and political risk line of business was 5.7 years (2017: 5.5 years).

Reinsurance Segment

Reinsurance premiums are recorded at the inception of the contract and are estimated based on information received from ceding companies.

Our reinsurance segment provides cover to cedants (i.e. insurance companies) on an excess of loss and proportional basis. In most cases, cedants seek protection from us for business that they have not yet written at the time they enter into agreements with us, therefore, cedants must estimate their underlying premiums when purchasing reinsurance cover from us.

For multi-year contracts where reinsurance premiums are payable in annual installments, premiums are recorded at the inception of the contract based on management's best estimate of total premiums to be received. However, premiums are recognized on an annual basis for multi-year contracts where the cedant has the ability to unilaterally commute or cancel coverage within the term of the policy. The remaining annual premiums are included as written at each successive anniversary date within the multi-year term.

Our excess of loss reinsurance contracts with cedants typically include provisions for deposit or minimum premiums receivable, which are generally considered to be the best estimate of the excess of loss reinsurance gross premiums written at the inception of the contract. The minimum/deposit premium is normally adjusted at the end of the contract period to reflect changes in the underlying risks in force during the contract period. Any adjustments to deposit or minimum premiums are recognized in the period in which they are determined. Gross premiums written for excess of loss reinsurance contracts accounted for 38%, 32% and 37% of our reinsurance segment's gross premiums written for the year ended December 31, 2018 , 2017 and 2016, respectively.

Many of our excess of loss reinsurance contracts also include provisions that require an automatic reinstatement of coverage in the event of a loss. In a year of large loss events, reinstatement premiums will be higher than in a year in which there are no such events. Reinstatement premiums are recognized and earned at the time a loss event occurs and losses are recorded. While the reinstatement premium amount is defined by contract terms, our recognition of reinstatement premiums is dependent on our estimate of losses and loss expenses, which reflect management's best judgment (refer to 'Critical Accounting Estimates – Reserve for Losses and Loss Expenses' above for further details).

For proportional reinsurance contracts, we recognize gross premiums written based on estimates at the inception of the contract. We review these premium estimates on a quarterly basis and evaluate their reasonability in light of actual premiums reported by cedants. Factors contributing to changes in initial premium estimates may include:

- changes in renewal rates or rates of new business accepted by cedants (changes could result from changes in the relevant insurance market that could affect more than one of our cedants or could be a consequence of changes in the marketing strategy or risk appetite of an individual cedant);
- changes in underlying exposure values; and/or
- changes in rates being charged by cedants.

As a result of this review process, we recognize any adjustments to premium estimates in gross premiums written in the period in which they are determined. Changes in premium estimates could be material to gross premiums written and may directly and significantly impact net premiums earned favorably or unfavorably in the period in which they are determined as the adjustment may be substantially or fully earned. Gross premiums written for proportional reinsurance contracts, including adjustments to premium estimates established in prior years, accounted for 62%, 68% and 63% of our reinsurance segment's gross premiums written for the year ended December 31, 2018, 2017 and 2016, respectively.

Our premiums estimates for proportional reinsurance contracts incepting during the year were as follows:

Year ended December 31,	2018	2017	2016
Catastrophe	$12,944	$16,344	$4,418
Property	237,527	248,580	173,380
Professional lines	174,126	214,184	211,567
Credit and surety	221,260	223,184	188,365
Motor	361,471	318,494	239,056
Liability	246,554	263,790	272,390
Agriculture	205,116	202,234	141,994
Engineering	48,692	67,221	60,080
Accident and health	284,675	189,567	185,370
Other	11,360	51,211	56,283
Total estimated premiums	$1,803,725	$1,794,809	$1,532,903
Gross premiums written (reinsurance segment)	$3,112,473	$2,741,355	$2,537,733
As a % of total gross premiums written	58 %	65 %	60 %

Our historical experience has shown that cumulative adjustments to our annual initial premium estimates for proportional reinsurance contracts have ranged from 0% to 5% over the last 5 years. Giving more weight to recent years where premium volume was comparable to current levels, we believe that a reasonably likely change to our 2018 premiums estimate for proportional reinsurance contracts would be 3% in either direction. A change of this magnitude would result in a change in our gross premiums written of approximately $54 million, and after applying our current loss and expense ratios, would have an immaterial impact on our pre-tax net income. However, larger variations, positive or negative, are possible.

Earning Basis

Our premiums are earned over the period during which we are exposed to the underlying risk. Changes in circumstances subsequent to the inception of contracts can impact the earning periods. For example, when our exposure limit for a contract is reached, we fully earn any associated unearned premium. This can have a significant impact on net premiums earned, particularly for multi-year contracts such as those in our credit and political risk line of business.

Our fixed premium insurance and excess of loss reinsurance contracts are generally written on a "losses occurring" or "claims made" basis over the term of the contract. Consequently, we earn the premium evenly over the contract term, which is generally 12 months.

Line slip and proportional (re)insurance contracts are generally written on a "risks attaching" basis, covering claims that relate to the underlying policies written during the terms of such contracts. As the underlying business incepts throughout the contract term (typically one year) and typically has a one-year coverage period, we generally earn these premiums evenly over a 24-month period.

Fair Value Measurements of Financial Assets and Liabilities

Fair value is defined as the price to sell an asset or transfer a liability (i.e. the "exit price") in an orderly transaction between market participants. U.S. GAAP prescribes a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to quoted prices in active markets and the lowest priority to unobservable data. 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 hierarchy is broken down into three levels as follows:

- Level 1 – Valuations based on unadjusted quoted prices in active markets for identical assets or liabilities that we have the ability to access. Valuation adjustments and block discounts are not applied to Level 1 instruments.

- Level 2 – Valuations based on quoted prices in active markets for similar assets or liabilities, quoted prices for identical assets or liabilities in inactive markets, or for which significant inputs are observable (e.g. interest rates, yield curves, prepayment speeds, default rates, loss severities, etc.) or can be corroborated by observable market data.
- Level 3 – Valuations based on inputs that are unobservable and significant to the overall fair value measurement. The unobservable inputs reflect our judgments about assumptions that market participants might use.

Refer to Item 8, Note 7 to the Consolidated Financial Statements 'Fair Value Measurements' for further information on the valuation techniques including significant inputs and assumptions generally used in estimating the fair values of our financial instruments.

Our estimated fair value of a financial instrument may differ from the amount that could be realized if the security was sold in an immediate sale, e.g., a forced transaction. In addition, the valuation of financial instruments is more subjective when markets are less liquid due to the lack of available market based inputs, as was the case during the global financial market crisis in late 2008 and early 2009. This may lead us to change the selection of our valuation technique (from market to cash flow approach) or may cause us to use multiple valuation techniques to estimate the fair value of a financial instrument. This circumstance may require significant management judgment and could cause a financial instrument to be reclassified between levels of the fair value hierarchy.

Fixed Maturities and Equity Securities

At December 31, 2018, the fair value of 92% (2017: 93%) of total fixed maturities and equity securities was based on prices provided by globally recognized independent pricing services where we have a current and detailed understanding of how their prices were derived. The remaining securities were priced by either non-binding broker quotes or internal valuation models.

Generally, we obtain quotes directly from broker-dealers who are active in the corresponding markets when prices are unavailable from independent pricing services. This may also be the case if the pricing from pricing services is not reflective of current market levels, as detected by our pricing control tolerance procedures. Generally, broker-dealers value securities through their trading desks based on observable market inputs. Their pricing methodologies include mapping securities based on trade data, bids or offers, observed spreads and performance on newly issued securities. They may also establish pricing through observing secondary trading of similar securities.

At December 31, 2018 and 2017, we have not adjusted any pricing provided by independent pricing services (refer to 'Management Pricing Validation' below). In addition, our total Level 3 fixed maturities and equity securities amounted to $87 million (2017: $53 million), less than 1% of total fixed maturities and equity securities (refer to Item 8, Note 7 to the Consolidated Financial Statements 'Fair Value Measurements' for further information).

Management Pricing Validation

While we obtain pricing from pricing services and/or broker-dealers, management is ultimately responsible for determining the fair value measurements of all securities. To ensure fair value measurement is applied consistently and in accordance with U.S. GAAP, we annually update our understanding of the pricing methodologies used by the pricing services and broker-dealers.

We also challenge any prices we believe may not be representative of fair value under current market conditions. Our review process includes, but is not limited to: (i) initial and ongoing evaluation of the pricing methodologies and valuation models used by outside parties to calculate fair value; (ii) quantitative analysis; (iii) a review of multiple quotes obtained in the pricing process and the range of resulting fair values for each security, if available, and (iv) randomly selecting purchased or sold securities and comparing the executed prices to the fair value estimates provided by the independent pricing sources and broker-dealers.

Other Investments

Hedge Funds, Direct Lending Funds, Private Equity Funds and Real Estate Funds

The fair values of hedge funds, direct lending funds, private equity funds and real estate funds are estimated using net asset values (NAVs) as advised by external fund managers or third party administrators (refer to Item 8, Note 7 to the Consolidated Financial Statements 'Fair Value Measurements' for further information).

CLO-Equity Securities

At December 31, 2018 and 2017 we had invested indirectly (through a fund structure) in CLO-Equities, also known as "cash flow CLOs" in the industry. During 2018, the CLO-Equity market continued to be relatively inactive with only a small number of transactions being observed, particularly as it related to transactions involving our CLO-Equities. Our indirect investments in CLO-Equities are valued using a discounted cash flow model prepared by an external manager. At December 31, 2018 and 2017, the estimated fair value for indirect CLO-Equities was $21 million (2017: $29 million).

At December 31, 2017 we had also invested directly in CLO-Equities. Given that all of our direct investments in CLO-Equities were past their reinvestment period, there was uncertainty over the remaining time until maturity, therefore, fair values of our direct investments in CLO-Equities were estimated using a liquidation valuation. At December 31, 2017, the estimated fair value for direct CLO-Equities was $2 million.

The following significant inputs were used in our discounted cash flow models.

At December 31,	2018	2017
Default rates	3.0%	3.8%
Loss severity rate	35.0%	35.0%
Collateral spreads	3.0%	3.0%
Estimated maturity dates	7 years	7 years

The following significant inputs were used in the liquidation value.

At December 31,	2018	2017
Fair value of collateral	—	100%
Discount Margin	—	0.1% - 16.6%

The default and loss severity rates are the most judgmental unobservable market inputs to which the valuation of CLO-Equities is most sensitive.

As the significant inputs used to price CLO-Equities are unobservable, the fair values of these securities are classified as Level 3.

Other Privately Held Investments

Other privately held securities include convertible preferred shares, convertible notes and notes payable. These securities are initially valued at cost which approximates fair value. In subsequent measurement periods, the fair values of these securities are determined using an income approach valuation technique, specifically an internally developed discounted cash flow model.

The following significant inputs were used in our discounted cash flow models.

At December 31, 2018	2017

Discount rate	3.0% - 8.0%	6.0% - 8.5%

As the significant inputs used to price other privately held securities are unobservable, the fair value of these securities are classified as Level 3.

Overseas Deposits

Overseas deposits include investments in private funds held by Syndicate 2007 in which the underlying investments are primarily U.S. government, Non-U.S. government and corporate debt securities. The funds do not trade on an exchange, therefore are not included within available for sale investments. As the significant inputs used to price the underlying investments are observable market inputs, the fair values of overseas deposits are classified as Level 2.

Other-Than-Temporary Impairments ("OTTI")
A fixed maturity or equity security is impaired if the fair value of the investment is below amortized cost. On a quarterly basis, we review all impaired securities to determine if impairments are other-than-temporary. The OTTI assessment is inherently judgmental, especially when securities have experienced severe declines in fair value over a short period. Our impairment review process begins with a quantitative analysis to identify securities to be evaluated for potential OTTI. For identified securities, fundamental analysis is performed that considers the following quantitative and qualitative factors:

a. The length of time and extent to which the fair value is less than the amortized cost.
b. The financial condition, near-term and long-term prospects for the issuer of the security, including relevant industry conditions and trends, and the implications of rating agency actions, and offering prices.
c. the reason for the decline (e.g. credit spread widening, credit event, foreign exchange rate movements);
d. The historical and implied volatility of the fair value.
e. The collateral structure and credit support of the security, if applicable.

The following discussion provides further details regarding our processes for identification of impairments that are other-than-temporary for fixed maturities, and equity securities prior to the adoption of Accounting Standards Update ("ASU") 2016-01 "Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities," and the recognition of the related OTTI charges.
During 2018, we recorded an OTTI charge in net income of $10 million (2017: $14 million; 2016: $26 million) (refer to 'Net Investment Income and Net Investment Gains (Losses)' for further details).
Fixed Maturities
Fixed maturities classified as available for sale are reported at fair value at the balance sheet date. Our available for sale ("AFS") investment portfolio is the largest component of our consolidated total assets and it is a multiple of our shareholders’ equity. As a result, an OTTI charge could be material to our financial condition and operating results particularly during periods of dislocation in financial markets.
If a fixed maturity is impaired and we intend to sell the security or it is more likely than not that we will be required to sell the security before its anticipated recovery, the full amount of the impairment (i.e. the difference between the security’s fair value and its amortized cost) is charged to net income and is included in net investment gains (losses) in our consolidated statements of operations. In instances where the Company intends to hold the impaired fixed maturity, and we do not anticipate to recover fully the amortized cost based on projected cash flows to be collected (i.e. a credit loss exists), we recognize the credit loss component (i.e. the amount representing the decrease in cash flows we expected to collect) of the OTTI charge in net income with a corresponding adjustment to amortized cost (new cost basis) of the security. The new cost basis is adjusted for subsequent increases in fair value where the difference between the new cost basis and the expected cash flows is accreted on a quarterly basis to net investment income over the remaining life of the fixed maturity. The non-credit component (e.g. interest rates, market conditions, etc.) of the OTTI charge is recognized in other comprehensive income.

From time to time, we may sell fixed maturities subsequent to the balance sheet date that we did not intend to sell at the balance sheet date. Conversely, we may not sell fixed maturities that we intended to sell at the balance sheet date. Such changes in intent may arise due to events occurring subsequent to the balance sheet date. The types of events that may result in a change in intent include, but are not limited to, significant changes in the economic facts and circumstances related to the specific issuer, changes in liquidity needs, or changes in tax laws or the regulatory environment.

For impaired investment-grade securities (i.e. rated BBB- or above) that we do not intend to sell and it is more likely than not that we will not be required to sell, we have established some parameters for identifying securities with potential credit losses. Our parameters focus primarily on the duration and the extent of the decline, including but not limited to:

- declines in value greater than 20% for nine consecutive months, and
- declines in value greater than 10% for twelve consecutive months.

For impaired securities in our high yield portfolios, we have established separate parameters for our credit loss assessment. Due to the additional volatility inherent in high yield securities relative to investment-grade securities, we focus on the severity of the impairment and work closely with our external high yield investment managers to identify securities with significant potential credit losses.

If a security meets one of the above parameters, we perform a fundamental analysis that considers the quantitative and qualitative factors noted above to determine whether an impairment charge should be recognized in the period under review.

Our credit impairment review process excludes fixed maturities guaranteed (either explicitly or implicitly) by the U.S. government and its agencies (U.S. Government, U.S. Agency and U.S. Agency RMBS) because we anticipate these securities will not be settled below amortized cost. These securities are still evaluated for intention to sell at a loss.

The credit loss component of an OTTI charge recognized in net income is calculated based on the difference between the amortized cost of the security and the net present value of its projected future cash flows discounted at the effective interest rate implicit in the debt security prior to the impairment. The significant inputs and the methodology used to estimate credit losses are disclosed in Item 8, Note 6 (f) to the Consolidated Financial Statements 'Investments'.

Equity Securities

Following the adoption of Accounting Standards Update ("ASU") 2016-01 "Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities"

Equity securities are recognized at fair value. Effective January 1, 2018, following the adoption of ASU 2016-01 the change in the fair values (net unrealized investment gains (losses)) of equity securities, net of tax is recognized in net investments gains (losses) in the consolidated statements of operations.

Prior to the Adoption of ASU 2016-01

Equity securities are recognized at fair value. Prior to the adoption of ASU 2016-01, the change in the fair values (net unrealized investment gains (losses)) of equity securities, net of tax were recognized in AOCI in the consolidated statement of changes in shareholders’ equity.

An equity security is impaired if the fair value of the investment was below cost. On a quarterly basis, the Company assessed whether unrealized losses on equity securities represented impairments that are other-than-temporary and recognized impairments on equity securities in an unrealized loss position when the Company did not have the ability and intent to hold the security for a reasonable period of time to allow for a full recovery. The full amount of the impairment was charged to net income and was included in net realized investment gains (losses) in the consolidated statements of operations. Upon recognition of an other-than-temporary impairment ("OTTI") charge, the new cost basis for the security was the cost for an equity security less the OTTI charge recognized in net income. The new cost basis was not adjusted for subsequent recoveries in fair value.

As part of our impairment review process, we considered our ability and intent to hold an equity security in an unrealized loss position for a reasonable period of time to allow for a full recovery. As an equity security does not have a maturity date, the forecasted recovery for an equity security was inherently more judgmental than for a fixed maturity security.

In light of the volatility of global equity markets experienced in recent years, we generally impaired an equity security where we did not forecast a recovery to cost within two years. Further, we generally impaired an equity security if its fair value was 15% below its cost. We also had established parameters in place for identifying potential impaired equity securities for fundamental analysis based on the severity, in either percentage or absolute dollar terms, of the unrealized loss position.

From time to time, we may have sold our equity securities subsequent to the balance sheet date that were considered temporarily impaired at the balance sheet date. This would have occurred due to events occurring subsequent to the balance sheet date that resulted in a change in our intent or ability to hold an equity security. Such subsequent events that would have resulted in a sale included significant deterioration in the financial condition of the issuer, significant unforeseen changes in our liquidity needs, or changes in tax laws or the regulatory environment.

RECENT ACCOUNTING PRONOUNCEMENTS

Refer to Item 8, Note 2(m) to the Consolidated Financial Statements 'Basis of Presentation and Significant Accounting Policies' for a discussion of recently issued accounting pronouncements that the Company has not yet adopted.

OFF-BALANCE SHEET AND SPECIAL PURPOSE ENTITY ARRANGEMENTS

At December 31, 2018, the Company is not party to any off-balance sheet arrangements, as defined by Item 303(a)(4) of Regulation S-K to which an entity unconsolidated with the Company is a party that management believes is reasonably likely to have a current or future effect on its financial condition, revenues or expenses, results of operations, liquidity, capital expenditures or capital resources that the Company believes is material to investors.

ITEM 7A. QUANTITATIVE AND QUALITATIVE DISCLOSURE ABOUT MARKET RISK

Market risk represents the potential for an economic loss due to adverse changes in the fair value of financial instruments. Refer to Item 1 'Risk and Capital Management' for further details on how we manage market risk relating to our financial instruments.

We own a substantial amount of assets whose fair values are subject to market risks. Our fixed maturities are classified as available-for-sale and, as such, changes in fair value caused by changes in interest rates and foreign currency exchange rates will have an immediate impact on our comprehensive income, shareholders’ equity and book value but may not have an immediate impact on net income. Changes in these market risks will only impact our net income when, and if, securities are sold or an OTTI charge is recorded. Our equity securities are reported at fair value, with changes in fair value recognized as part of net income. At December 31, 2018 and 2017, we also invested in alternative investments including hedge funds, direct lending funds, private equity funds, real estate funds, CLO-Equities, other privately held investments and overseas deposits. These investments are also exposed to market risks, with the change in fair value reported immediately in net income.

The following is a sensitivity analysis of our primary market risk exposures at December 31, 2018 and 2017. Our policies to address these risks in 2018 were not materially different from 2017. We do not currently anticipate significant changes in our primary market risk exposures or in how those exposures are managed in future reporting periods based upon what is known or expected to be in effect in future reporting periods.

Sensitivity Analysis

Interest Rate and Credit Spread Risk

Interest rate risk includes fluctuations in interest rates and credit spreads that have a direct impact on the fair value of our fixed maturities. As interest rates rise and credit spreads widen, the fair value of fixed maturities falls, and the converse is also true.

We monitor our sensitivity to interest rate and credit spread changes by revaluing our fixed maturities using a variety of different interest rates (inclusive of credit spreads). We use duration and convexity at the security level to estimate the change in fair value that would result from a change in each security’s yield. Duration measures the price sensitivity of an asset to

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changes in yield rates. Convexity measures how the duration of the security changes with interest rates. The duration and convexity analysis take into account changes in prepayment expectations for MBS and ABS securities. The analysis is performed at the security level and aggregated up to the asset category levels for reporting in the tables below.

The following table presents the estimated pre-tax impact on the fair value of our fixed maturities due to an instantaneous increase in the U.S. yield curve of 100 basis points and an additional 100 basis point credit spread widening for corporate debt, non-agency residential and commercial MBS, ABS and municipal bond securities.

		Potential adverse change in fair value		
	Fair value	Increase in interest rate by 100 basis points	Widening of credit spreads by 100 basis points	Total
At December 31, 2018				
U.S. government and agency	$1,515,697	$(36,818)	$—	$(36,818)
Non-U.S. government	493,016	(17,219)	—	(17,219)
Agency RMBS	1,643,308	(63,612)	—	(63,612)
Securities exposed to credit spreads:				
Corporate debt	4,876,921	(149,896)	(167,165)	(317,061)
CMBS	1,092,530	(51,005)	(54,608)	(105,613)
Non agency RMBS	40,687	(315)	(1,321)	(1,636)
ABS	1,637,603	(10,966)	(54,226)	(65,192)
Municipals	135,585	(4,838)	(5,316)	(10,154)
	$11,435,347	$(334,669)	$(282,636)	$(617,305)
At December 31, 2017				
U.S. government and agency	$1,712,469	$(59,896)	$—	$(59,896)
Non-U.S. government	806,299	(24,443)	—	(24,443)
Agency RMBS	2,395,152	(102,736)	—	(102,736)
Securities exposed to credit spreads:				
Corporate debt	5,297,866	(168,711)	(153,920)	(322,631)
CMBS	777,728	(39,572)	(42,817)	(82,389)
Non agency RMBS	46,831	(378)	(1,681)	(2,059)
ABS	1,436,281	(9,632)	(29,517)	(39,149)
Municipals	149,380	(5,156)	(5,830)	(10,986)
	$12,622,006	$(410,524)	$(233,765)	$(644,289)

U.S. government agencies have a limited range of spread widening, therefore, 100 basis points of spread widening for these securities is highly improbable in normal market conditions. Our non-U.S. government debt obligations are highly-rated and we believe the potential for future widening of credit spreads would also be limited for these securities. Further, certain of our holdings in non-agency RMBS and ABS have floating interest rates, which mitigate our interest rate risk exposure.
The above sensitivity analysis reflects our view of changes that are reasonably possible over a one-year period. Note this should not be construed as our prediction of future market events, but rather an illustration of the impact of such

events.

Our investment in CLO-Equities is also exposed to interest rate risk, but it would have an insignificant impact to its fair value in the event the risk free yield curve increase by 100 basis points.

In addition, our investment in bond mutual funds is exposed to interest rate risk; however, this exposure is largely mitigated by the short duration of the underlying securities.

Equity Price Risk

Our portfolio of equity securities, excluding the bond mutual funds, has exposure to equity price risk. This risk is defined as the potential loss in fair value resulting from adverse changes in stock prices. The global equity portfolio is managed to a benchmark composite index, which consists of a blend of the S&P 500 and MSCI World indices. Changes in the underlying indices have a corresponding impact on the overall portfolio. At December 31, 2018, the fair value of our equity securities was $237 million (2017: $453 million). At December 31, 2018, the impact of a 20% decline in the overall market prices of our equity exposures would be $47 million (2017: $91 million), on a pre-tax basis.

Our investment in hedge funds has significant exposure to equity strategies with net long positions. At December 31, 2018, the impact of an instantaneous 15% decline in the fair value of our investment in hedge funds would be $29 million (2017: $55 million), on a pre-tax basis.

Foreign Currency Risk

The following table presents a sensitivity analysis of our total net foreign currency exposures.

	AUD	NZD	CAD	EUR	GBP	JPY	Other	Total
At December 31, 2018								
Net managed assets (liabilities), excluding derivatives	$56,992	$(5,943)	$110,394	$(329,761)	$(166,396)	$(8,944)	$64,523	$(279,135)
Foreign currency derivatives, net	(38,383)	3,020	(128,266)	329,708	20,138	(8,663)	(939)	176,615
Net managed foreign currency exposure	18,609	(2,923)	(17,872)	(53)	(146,258)	(17,607)	63,584	(102,520)
Other net foreign currency exposure	1	—	82	(33)	379	—	52,924	53,353
Total net foreign currency exposure	$18,610	$(2,923)	$(17,790)	$(86)	$(145,879)	$(17,607)	$116,508	$(49,167)
Net foreign currency exposure as a percentage of total shareholders' equity	0.4%	(0.1%)	(0.4%)	—%	(2.9%)	(0.4%)	2.3%	(1.0%)

Pre-tax impact of net foreign currency exposure on shareholders' equity given a hypothetical 10% rate movement(1)	$1,861	$(292)	$(1,779)	$(9)	$(14,588)	$(1,761)	$11,651	$(4,917)
At December 31, 2017								
Net managed assets (liabilities), excluding derivatives	$31,278	$(8,923)	$118,972	$(258,664)	$166,871	$15,044	$102,662	$167,240
Foreign currency derivatives, net	(5,468)	7,095	(117,945)	279,481	(82,488)	13,946	(4,739)	89,882
Net managed foreign currency exposure	25,810	(1,828)	1,027	20,817	84,383	28,990	97,923	257,122
Other net foreign currency exposure	1	—	(20)	99	(54)	—	80,669	80,695
Total net foreign currency exposure	$25,811	$(1,828)	$1,007	$20,916	$84,329	$28,990	$178,592	$337,817
Net foreign currency exposure as a percentage of total shareholders' equity	0.5%	—%	—%	0.4%	1.6%	0.5%	3.3%	6.3%
Pre-tax impact of net foreign currency exposure on shareholders' equity given a hypothetical	$2,581	$(183)	$101	$2,092	$8,433	$2,899	$17,859	$33,782

10% rate movement[1]

(1) Assumes 10% change in underlying currencies relative to the U.S. dollar.

Net Managed Foreign Currency Exposure

Our net managed foreign currency exposure is subject to our internal risk tolerance standards. For significant foreign currency exposures, defined as those where our net asset/liability position exceeds the greater of 1% of our shareholders' equity or $50 million, the value of assets denominated in those currencies should fall within a range of 90 - 110% of liabilities denominated in the same currency. In addition, our aggregate foreign currency exposure is subject to the same tolerance range. We may use derivative instruments to maintain net managed foreign currency exposures within our risk tolerance levels.

Other Net Foreign Currency Exposure

Other net foreign currency exposure includes those assets managed by specific investment managers who have the discretion to hold foreign currency exposures as part of their total return strategy. At December 31, 2018, other net foreign currency exposure primarily consisted of our emerging market debt securities portfolio. Refer to Item 7 'Management’s Discussion and Analysis of Financial Condition and Results of Operations – Cash and Investments' for further details on these portfolios.

ITEM 8. FINANCIAL STATEMENTS AND SUPPLEMENTARY DATA

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM
To the Board of Directors and Shareholders of AXIS Capital Holdings Limited

Opinion on the Financial Statements
We have audited the accompanying consolidated balance sheets of AXIS Capital Holdings Limited and subsidiaries (the "Company") as of December 31, 2018 and 2017, the related consolidated statements of operations, comprehensive income, changes in shareholders' equity, and cash flows, for each of the three years in the period ended December 31, 2018, and the related notes and the schedules listed in the Index at Item 15 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of December 31, 2018 and 2017, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2018, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2018, based on criteria established in Internal Control - Integrated Framework (2013) issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 26, 2019 expressed an unqualified opinion on the Company's internal control over financial reporting.
Basis for Opinion
These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB. We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Deloitte Ltd.
Hamilton, Bermuda
February 26, 2019

We have served as the Company's auditor since 2001.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED BALANCE SHEETS
DECEMBER 31, 2018 AND 2017

	2018	2017
	(in thousands)	
Assets		
Investments:		
Fixed maturities, available for sale, at fair value (Amortized cost 2018: $11,616,312; 2017: $12,611,219)	$11,435,347	$12,622,006
Equity securities, at fair value (Cost 2018: $365,905; 2017: $552,867)	381,633	635,511
Mortgage loans, held for investment, at amortized cost and fair value	298,650	325,062
Other investments, at fair value	787,787	1,009,373
Equity method investments	108,103	108,597
Short-term investments, at amortized cost and fair value	144,040	83,661
Total investments	13,155,560	14,784,210
Cash and cash equivalents	1,232,814	948,626
Restricted cash and cash equivalents	597,206	415,160
Accrued interest receivable	80,335	81,223
Insurance and reinsurance premium balances receivable	3,007,296	3,012,419
Reinsurance recoverable on unpaid losses	3,501,669	3,159,514
Reinsurance recoverable on paid losses	280,233	179,326
Deferred acquisition costs	566,622	474,061
Prepaid reinsurance premiums	1,013,573	809,274
Receivable for investments sold	32,627	11,621
Goodwill	102,003	102,003
Intangible assets	241,568	257,987
Value of business acquired	35,714	206,838
Other assets	285,346	317,915
Total assets	$24,132,566	$24,760,177
Liabilities		
Reserve for losses and loss expenses	$12,280,769	$12,997,553
Unearned premiums	3,635,758	3,641,399
Insurance and reinsurance balances payable	1,338,991	899,064
Senior notes and notes payable	1,341,961	1,376,529
Payable for investments purchased	111,838	100,589
Other liabilities	393,178	403,779
Total liabilities	19,102,495	19,418,913
Commitments and Contingencies		
Shareholders' equity		
Preferred shares	775,000	775,000
Common shares (shares issued 2018: 176,580; 2017: 176,580 shares outstanding 2018: 83,586; 2017: 83,161)	2,206	2,206
Additional paid-in capital	2,308,583	2,299,166
Accumulated other comprehensive income (loss)	(177,110)	92,382
Retained earnings	5,912,812	5,979,666
Treasury shares, at cost (2018: 92,994; 2017: 93,419)	(3,791,420)	(3,807,156)
Total shareholders’ equity	5,030,071	5,341,264

Total liabilities and shareholders’ equity	$24,132,566	$24,760,177

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED STATEMENTS OF OPERATIONS
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016

	2018	2017	2016
	(in thousands, except for per share data)		
Revenues			
Net premiums earned	$4,791,495	$4,148,760	$3,705,625
Net investment income	438,507	400,805	353,335
Other insurance related income (losses)	10,622	(1,240)	7,222
Bargain purchase gain	—	15,044	—
Net investment gains (losses):			
Other-than-temporary impairment ("OTTI") losses	(9,733)	(14,493)	(26,210)
Other realized and unrealized investment gains (losses)	(140,485)	42,719	(34,315)
Total net investment gains (losses)	(150,218)	28,226	(60,525)
Total revenues	5,090,406	4,591,595	4,005,657
Expenses			
Net losses and loss expenses	3,190,287	3,287,772	2,204,197
Acquisition costs	968,835	823,591	746,876
General and administrative expenses	627,389	579,428	602,717
Foreign exchange losses (gains)	(29,165)	134,737	(121,295)
Interest expense and financing costs	67,432	54,811	51,360
Transaction and reorganization expenses	66,940	26,718	—
Amortization of value of business acquired	172,332	50,104	—
Amortization of intangible assets	13,814	2,543	—
Total expenses	5,077,864	4,959,704	3,483,855
Income (loss) before income taxes and interest in income (loss) of equity method investments	12,542	(368,109)	521,802
Income tax (expense) benefit	29,486	7,542	(6,340)
Interest in income (loss) of equity method investments	993	(8,402)	(2,094)
Net income (loss)	43,021	(368,969)	513,368
Preferred share dividends	42,625	46,810	46,597
Loss on repurchase of preferred shares	—	—	1,309
Net income (loss) available (attributable) to common shareholders	$396	$(415,779)	$465,462
Per share data			
Earnings (loss) per common share:			
Earnings (loss) per common share	$—	$(4.94)	$5.13
Earnings (loss) per diluted common share	$—	$(4.94)	$5.08
Weighted average common shares outstanding	83,501	84,108	90,772
Weighted average diluted common shares outstanding	84,007	84,108	91,547

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME (LOSS)
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016

	2018	2017	2016
	(in thousands)		
Net income (loss)	$43,021	$(368,969)	$513,368
Other comprehensive income (loss), net of tax:			
Available for sale investments:			
Unrealized investment gains (losses) arising during the year	(291,731)	205,419	5,072
Adjustment for reclassification of net realized investment (gains) losses and OTTI losses recognized in net income (loss)	100,902	(33,134)	62,190
Unrealized investment gains (losses) arising during the year, net of reclassification adjustment	(190,829)	172,285	67,262
Foreign currency translation adjustment	(11,165)	41,938	(638)
Total other comprehensive income (loss), net of tax	(201,994)	214,223	66,624
Comprehensive income (loss)	$(158,973)	$(154,746)	$579,992

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED STATEMENTS OF CHANGES IN SHAREHOLDERS' EQUITY
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016

	2018	2017	2016
	(in thousands)		
Preferred shares			
Balance at beginning of year	$775,000	$1,126,074	$627,843
Shares issued	—	—	550,000
Shares repurchased	—	(351,074)	(51,769)
Balance at end of year	775,000	775,000	1,126,074
Common shares (par value)			
Balance at beginning of year	2,206	2,206	2,202
Shares issued	—	—	4
Balance at end of year	2,206	2,206	2,206
Additional paid-in capital			
Balance at beginning of year	2,299,166	2,299,857	2,241,388
Common shares issued	—	—	220
Treasury shares reissued	(24,088)	(39,368)	(19,303)
Settlement of accelerated share repurchase	—	—	60,000
Costs associated with issuance of preferred shares	—	—	(18,055)
Share-based compensation expense	33,505	38,677	35,607
Balance at end of year	2,308,583	2,299,166	2,299,857
Accumulated other comprehensive income (loss)			
Balance at beginning of year	92,382	(121,841)	(188,465)
Unrealized gains (losses) on available-for-sale investments, net of tax:			
Balance at beginning of year	89,962	(82,323)	(149,585)
Cumulative effect of adoption of ASU No. 2018-02	2,106	—	—
Cumulative effect of adoption of ASU No. 2016-01, net of taxes	(69,604)	—	—
Unrealized gains (losses) arising during the year, net of reclassification adjustment	(190,829)	172,285	67,262
Balance at end of year	(168,365)	89,962	(82,323)
Cumulative foreign currency translation adjustments, net of tax:			
Balance at beginning of year	2,420	(39,518)	(38,880)
Foreign currency translation adjustment	(11,165)	41,938	(638)
Balance at end of year	(8,745)	2,420	(39,518)
Balance at end of year	(177,110)	92,382	(121,841)
Retained earnings			
Balance at beginning of year	5,979,666	6,527,627	6,194,353
Cumulative effect of adoption of ASU No. 2018-02	(2,106)	—	—
Cumulative effect of adoption of ASU No. 2016-01, net of taxes	69,604	—	—
Net income (loss)	43,021	(368,969)	513,368
Preferred share dividends	(42,625)	(46,810)	(46,597)
Loss on repurchase of preferred shares	—	—	(1,309)
Common share dividends	(134,748)	(132,182)	(132,188)
Balance at end of year	5,912,812	5,979,666	6,527,627

Treasury shares, at cost			
Balance at beginning of year	(3,807,156)	(3,561,553)	(3,010,439)
Shares repurchased	(10,080)	(285,858)	(571,805)
Shares reissued	25,816	40,255	20,691
Balance at end of year	(3,791,420)	(3,807,156)	(3,561,553)
Total shareholders' equity	$5,030,071	$5,341,264	$6,272,370

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED STATEMENTS OF CASH FLOWS
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016

	2018	2017	2016
	(in thousands)		
Cash flows from operating activities:			
Net income (loss)	$43,021	$(368,969)	$513,368
Adjustments to reconcile net income (loss) to net cash provided by operating activities:			
Net investment (gains) losses	144,297	(28,226)	60,525
Net realized and unrealized gains on other investments	(45,153)	(72,763)	(38,669)
Amortization of fixed maturities	24,663	43,292	65,921
Interest in income (loss) of equity method investments	495	8,402	2,094
Amortization of value of business acquired	172,332	50,104	—
Other amortization and depreciation	9,795	31,367	24,573
Share-based compensation expense, net of cash payments	34,346	12,667	52,211
Non-cash foreign exchange losses	—	24,149	—
Bargain purchase gain	—	(15,044)	—
Changes in:			
Accrued interest receivable	(3,184)	(4,353)	(885)
Reinsurance recoverable balances on unpaid and paid losses	(766,690)	(131,160)	(176,532)
Deferred acquisition costs	(98,329)	(35,076)	33,212
Prepaid reinsurance premiums	(212,654)	(56,377)	(158,809)
Reserve for loss and loss expenses	442,839	1,004,578	54,476
Unearned premiums	29,760	(56,603)	198,938
Insurance and reinsurance balances, net	208,783	(81,831)	(209,895)
Other items	26,452	(64,928)	(13,804)
Net cash provided by operating activities	10,773	259,229	406,724
Cash flows from investing activities:			
Purchases of:			
Fixed maturities	(8,464,140)	(8,714,990)	(9,176,728)
Equity securities	(73,107)	(106,136)	(302,554)
Mortgage loans	(106,171)	(31,077)	(148,450)
Other investments	(180,126)	(153,150)	(190,370)
Equity method investments	—	(1,000)	(107,913)
Short-term investments	(305,670)	(41,609)	(190,747)
Proceeds from the sale of:			
Fixed maturities	7,586,536	7,004,973	7,905,316
Equity securities	246,196	448,058	305,642
Other investments	361,030	260,943	215,578
Short-term investments	178,983	49,280	54,165
Proceeds from redemption of fixed maturities	1,241,214	2,009,982	1,492,588
Proceeds from redemption of short-term investments	45,831	119,427	36,546
Proceeds from the repayment of mortgage loans	133,081	56,435	5,040
Purchase of other assets	(25,103)	(42,685)	(27,149)
Purchase of subsidiaries, net	—	(466,941)	—
Net cash provided by (used in) investing activities	638,554	391,510	(129,036)

Cash flows from financing activities:			
Net proceeds from issuance of debt	—	346,362	—
Repayment of notes payable	—	(67,242)	—
Net proceeds from issuance of preferred shares	—	—	531,945
Repurchase of common shares - open market	—	(261,180)	(495,426)
Taxes paid on withholding shares	(10,080)	(24,678)	(14,329)
Dividends paid - common shares	(133,502)	(135,032)	(132,323)
Repurchase of preferred shares	—	(351,074)	(51,769)
Dividends paid - preferred shares	(42,625)	(52,844)	(39,909)
Proceeds from issuance of common shares	—	—	224
Net cash used in financing activities	(186,207)	(545,688)	(201,587)

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
CONSOLIDATED STATEMENTS OF CASH FLOWS (CONTINUED)
FOR THE YEARS ENDED DECEMBER 31, 2018, 2017, AND 2016

Effect of exchange rate changes on foreign currency cash, cash equivalents and restricted cash	3,114	17,228	(9,345)
Increase in cash, cash equivalents and restricted cash	466,234	122,279	66,756
Cash, cash equivalents and restricted cash - beginning of year	1,363,786	1,241,507	1,174,751
Cash, cash equivalents and restricted cash - end of year	$1,830,020	$1,363,786	$1,241,507
Supplemental disclosures of cash flow information:			
Income taxes paid	$15,698	$—	$12,041
Interest paid	$64,822	$49,945	$48,875

Supplemental disclosures of cash flow information:

In 2018, total consideration paid for an agreement for the Reinsurance to Close ("RITC") of the 2015 and prior years of account of Syndicate 2007 was $819 million of which $600 million was settled by way of a transfer of securities and was treated as a non-cash activity in the consolidated statement of cash flows (refer to Note 9 'Reserve for Losses and Loss Expenses').

In 2017, non-cash foreign exchange losses were attributable to the reclassification of the cumulative translation adjustment balance related to AXIS Specialty Australia from accumulated other comprehensive income in the consolidated balance sheet to foreign exchange losses (gains) in the consolidated statement of operations due to the wind-down of that operation which was substantially complete at March 31, 2017 (refer to Note 9 'Reserve for Losses and Loss Expenses' and Note 19 'Other Comprehensive Income (Loss)').

In 2016, total consideration paid for a quota share and adverse development reinsurance cover was $170 million of which $92 million was settled by a transfer of securities and was treated as a non-cash activity in the consolidated statement of cash flows (refer to Note 9 'Reserve for Losses and Loss Expenses').

See accompanying notes to Consolidated Financial Statements.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

18. INCOME TAXES (CONTINUED)

1. HISTORY

AXIS Capital Holdings Limited ("AXIS Capital" and together with its wholly owned subsidiaries the "Company"), was incorporated on December 9, 2002, under the laws of Bermuda. The Company provides a broad range of (re)insurance products on a worldwide basis. The Company's principal operating subsidiaries, located in Bermuda, the United States (U.S.), Europe, Singapore and Canada are described below:

- AXIS Specialty Limited ("AXIS Specialty Bermuda"), a Bermuda domiciled company is licensed to provide specialty insurance and treaty reinsurance products on a worldwide basis. In addition, AXIS Specialty Bermuda conducts (re)insurance business through its branch in Singapore, AXIS Specialty Limited (Singapore Branch).

- AXIS Insurance Company, domiciled in Illinois and AXIS Reinsurance Company, domiciled in New York, together with AXIS Reinsurance Company (Canadian branch) are licensed to offer a range of specialty insurance and treaty reinsurance products to a variety of niche markets on a worldwide basis. AXIS Surplus Insurance Company, domiciled in the state of Illinois is eligible to write insurance on a surplus lines basis.

- AXIS Specialty Europe SE ("AXIS Specialty Europe") is a European public limited liability company, incorporated as a non-life insurer under the laws of Ireland. It is a Societas Europaea (SE), or European society company, and has been registered in accordance with company law of the E.U. AXIS Specialty Europe also conducts insurance business through its branch in the United Kingdom, AXIS Specialty Europe SE ("UK Branch"). Effective January 1, 2019, AXIS Specialty Europe will also conduct insurance business through new branches in Belgium and in the Netherlands.

- AXIS Re SE ("AXIS Re") is a European public limited liability company, incorporated as a reinsurer under the laws of Ireland. AXIS Re SE is also a Societas Europaea (SE). AXIS Re also conducts reinsurance business through its branch in Switzerland, AXIS Re SE, Dublin (Zurich Branch).

- The Company operates in the Lloyd's of London ("Lloyd's") market through AXIS Corporate Capital UK Limited which is the sole corporate member of AXIS Syndicate 1686 ("Syndicate 1686"). Effective August 4, 2017, AXIS Managing Agency Ltd. ("AXIS Managing Agency") assumed management of Syndicate 1686, replacing the Company's third-party managing agency agreement with Asta Managing Agency Limited, which had been in place since 2014. Effective January 1, 2019, AXIS Corporate Capital UK Limited and Novae Corporate Underwriting Limited ("NCUL") will provide 70% and 30%, respectively, of Syndicate 1686's capital support.

- On October 2, 2017, AXIS Specialty UK Holdings Limited, a wholly owned subsidiary of the Company, acquired a 100% ownership interest in Novae Group plc ("Novae"). Novae operates in the Lloyd's market through NCUL, the sole corporate member of Novae Syndicate 2007 ("Syndicate 2007") and owns Lloyd’s managing agency, Novae Syndicates Limited ("NSL") which operated in the Lloyd’s insurance market and managed Syndicate 2007 until January 1, 2018, when the Company received authorization from Lloyd’s for AXIS Managing Agency to commence management and oversight of Syndicate 2007.

AXIS Ventures Limited ("AXIS Ventures"), regulated by the BMA as an insurance manager, generates fee income from services provided to strategic capital partners. AXIS Ventures Reinsurance Limited ("Ventures Re") is a Bermuda domiciled insurer and is a registered segregated accounts company under the Bermuda Segregated Accounts Companies Act 2000, as amended. Ventures Re manages capital for investors interested in deploying funds directly into the property-catastrophe and other short-tail business.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES

Basis of Presentation
These consolidated financial statements have been prepared in accordance with accounting principles generally accepted in the United States of America ("U.S. GAAP") and the rules and regulations of the U.S. Securities and Exchange Commission ("SEC") and include AXIS Capital and its wholly-owned subsidiaries.
All inter-company accounts and transactions have been eliminated.
To facilitate comparison of information across periods, certain reclassifications have been made to prior year amounts to conform to the current year's presentation.

During the three months ended March 31, 2018, the Company realigned its accident and health business by integrating this business and its operations into the Company's insurance and reinsurance segments. Through this realignment, the Company's accident and health business benefited from the greater scale and market presence of the Company's property and casualty insurance and reinsurance businesses and operations. Financial results relating to the Company's accident and health lines of business were previously included in the Company's insurance segment. Effective January 1, 2018, accident and health results are included in the results of both the insurance and reinsurance segments of the Company. As a result of the realignment, gross premiums written for the year ended December 31, 2017 of $313 million (2016: $288 million) and underwriting income for the year ended December 31, 2017 of $14 million (2016: $15 million) were reclassified from the Company's insurance segment to the Company's reinsurance segment.

At December 31, 2018 the Company represented reinsurance recoverable on unpaid losses separately from reinsurance recoverable on paid losses in the consolidated balance sheets. This presentation was adopted to facilitate comparison to the reconciliation of beginning and ending net reserves for unpaid losses and loss expenses (refer to Note 9 'Reserve for Losses and Loss Expenses').

These reclassifications did not impact results of operations, financial condition or liquidity.
Tabular dollar and share amounts are in thousands, with the exception of per share amounts. All amounts are reported in U.S. dollars.
Use of Estimates
The preparation of these consolidated financial statements requires management to make estimates and assumptions that affect the reported amount of assets and liabilities and disclosure of contingent assets and liabilities at the date of the consolidated 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:

- reserve for losses and loss expenses;
- reinsurance recoverable on unpaid losses, including the provision for uncollectible amounts;
- gross and net premiums written and net premiums earned;
- fair value measurements of financial assets and liabilities; and
- other-than-temporary impairments ("OTTI") in the carrying value of available-for-sale securities.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

The Company's significant accounting policies are as follows:

a) Investments
Fixed Maturities, Available-for-sale, at Fair Value
Fixed maturities classified as available-for-sale are reported at fair value (refer to Note 7 'Fair Value Measurements'). The change in fair values (net unrealized investment gains (losses)) of fixed maturities, net of tax is recognized in accumulated other comprehensive income (loss) ("AOCI") in the consolidated statement of change shareholders' equity.
Net investment income includes interest income and the amortization of market premiums and discounts and is presented net of investment expenses. Investment income is recognized when earned. Purchases and sales of fixed maturities are recorded on a trade-date basis and realized investment gains (losses) on sales of fixed maturities are determined based on the specific identification method. Realized investment gains (losses) on fixed maturities are included in net investments gains (losses) in the consolidated statements of operations.
The Company recognizes investment income from fixed maturities based on the constant effective yield method, which includes an adjustment for estimated principal repayments, if applicable. The effective yield used to determine the amortization of fixed maturities subject to prepayment risk (e.g. asset-backed, mortgage-backed and other structured securities) is recalculated and adjusted periodically based upon historical and/or projected future cash flows. Adjustments to the yield for highly-rated prepayable fixed maturities are accounted for using the retrospective method. Adjustments to the yield for other prepayable fixed maturities are accounted for using the prospective method.
A fixed maturity is impaired if the fair value of the investment is below amortized cost. On a quarterly basis, the Company assesses whether unrealized investment losses on fixed maturities represent impairments that are other-than-temporary. The Company's impairment review process begins with a quantitative analysis to identify securities to be evaluated for potential OTTI. For identified securities, fundamental analysis is performed that considers the following quantitative and qualitative factors:
(i) the duration and the extent of the decline;
(ii) the financial condition, near-term and long-term prospects of the issuer of the security;
(iii) the reason for the decline (e.g. credit spread widening, credit event, foreign exchange rate movements);
(iii) the historical and implied future volatility of the fair value; and
(v) the collateral structure and credit support of the security, if applicable.
If a fixed maturity is impaired and the Company intends to sell the security or it is more likely than not that the Company will be required to sell the security before its anticipated recovery, the impairment is considered other-than-temporary. In these instances, the full amount of the impairment is charged to net income and is included in net investment gains (losses).
In instances where the Company intends to hold the impaired fixed maturity, the Company estimates the anticipated credit loss on the security and recognizes this component of the impairment in net income with a corresponding adjustment to amortized cost (new cost basis) of the security. The new cost basis is adjusted for subsequent increases in fair value where the difference between the new cost basis and the expected cash flows is accreted on a quarterly basis to net investment income over the remaining life of the fixed maturity.

The Company recognizes the non-credit component of the impairment (i.e. related to interest rates, market conditions, etc.) in other comprehensive income.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Equity Securities, at Fair Value

Following the adoption of Accounting Standards Update ("ASU") 2016-01 "Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities," (refer to 'New Accounting Standards Adopted in 2018' below)

Equity securities are reported at fair value (refer to Note 7 'Fair Value Measurements'). Effective January 1, 2018, following the adoption of ASU 2016-01, the change in the fair values (net unrealized investment gains (losses)) of equity securities, net of tax is recognized in net investments gains (losses) in the consolidated statements of operations.
Net investment income includes dividend income and is presented net of investment expenses. Investment income is recognized when earned. Purchases and sales of equity securities are recorded on a trade-date basis and realized investment gains (losses) on sales of equity securities are determined based on the specific identification method. Realized investment gains (losses) on equity securities are included in net investments gains (losses) in the consolidated statements of operations.

Prior to the Adoption of ASU 2016-01

Equity securities are reported at fair value. Prior to the adoption of ASU 2016-01, the change in the fair values (net unrealized investment gains (losses)) of equity securities, net of tax was recognized in AOCI in the consolidated statement of changes in shareholders' equity. An equity security is impaired if the fair value of the investment is below cost. On a quarterly basis, the Company assessed whether unrealized investment losses on equity securities represented impairments that are other-than-temporary and recognized impairments on equity securities in an unrealized loss position when the Company did not have the ability and intent to hold the security for a reasonable period of time to allow for a full recovery. The full amount of the impairment was charged to net income and was included in net realized investment gains (losses) in the consolidated statements of operations. Upon recognition of an other-than-temporary impairment ("OTTI") charge, the new cost basis for the equity security was the cost for an equity security less the OTTI charge recognized in net income. The new cost basis was not adjusted for subsequent increases in fair value.

Mortgage Loans Held-for-investment

Mortgage loans held-for-investment are reported at amortized cost which is calculated as the unpaid principal balance, adjusted for any unamortized premium or discount, deferred fees or expenses, and is net of valuation allowances. Interest income and prepayment fees are recognized when earned. Interest income is recognized based on an effective yield method which gives effect to the amortization of premiums and accretion of discounts.
Other Investments
Other investments are recorded at fair value (refer to Note 7 'Fair Value Measurements'), with both changes in fair value and realized investment gains (losses) reported in net investment income in the consolidated statements of operations.

Equity Method Investments

Investments in which the Company has significant influence over the operating and financial policies of the investee are classified as equity method investments and are accounted for using the equity method of accounting. In applying the equity method of accounting, investments are initially recorded at cost and are subsequently adjusted based on the Company's proportionate share of net income or loss of the investee. Adjustments are based on the most recently available financial information from the investee. Changes in the carrying value of these investments are recorded in net income as interest in income (loss) of equity method investments.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Short-term Investments
Short-term investments primarily comprise highly-liquid debt securities with maturities greater than three months but less than one year from the date of purchase. These investments are carried at amortized cost, which approximates fair value.

b) Cash and Cash Equivalents
Cash equivalents include money-market funds, fixed interest deposits and reverse repurchase agreements with a maturity of under 90 days when purchased. Cash and cash equivalents are recorded at amortized cost, which approximates fair value due to the short-term, liquid nature of these securities. Restricted cash primarily relates to funds held in trust to support of obligations in regulatory jurisdictions where the Company operates as a non-admitted carrier and to support the underwriting activities of Syndicate 1686 and Syndicate 2007 at Lloyd's.

c) Premiums and Acquisition Costs
Premiums
Insurance premiums written are recorded in accordance with the terms of the underlying policies.
Reinsurance premiums are recorded at the inception of the contract and are estimated based on information received from ceding companies. For multi-year contracts where (re)insurance premiums are payable in annual installments, premiums are recorded at the inception of the contract based on management’s best estimate of total premiums to be received. However, premiums are normally recognized on an annual basis for multi-year contracts where the cedant has the ability to unilaterally commute or cancel coverage within the term of the policy. The remaining annual premiums are included as written at each successive anniversary date within the multi-year term.
Any adjustments to insurance and reinsurance premium estimates are recognized in the period in which they are determined.
(Re)insurance premiums are earned evenly over the period during which the Company is exposed to the underlying risk, which is generally one to two years with the exception of multi-year contracts. Unearned premiums represent the portion of premiums written which relates to the unexpired risks under contracts in force.
Reinstatement premiums are recognized and earned at the time a loss event occurs, where the coverage limits for the remaining life of the contract are reinstated under pre-defined contract terms. The accrual of reinstatement premiums is based on estimates of losses and loss adjustment expenses, which reflects management’s judgment, as described in Note 2(d) 'Losses and Loss Expenses' below.

Premiums receivable balances are reviewed for impairment at least quarterly and an allowance is established for amounts considered uncollectible.
Acquisition Costs
Acquisition costs vary with and are directly related to the successful acquisition efforts of acquiring new or renewing existing (re)insurance contracts and consist primarily of fees and commissions paid to brokers and premium taxes. Acquisition costs are shown net of commissions earned on ceded reinsurance. Net acquisition costs are deferred and charged to expense as the related premium is earned. Insurance and reinsurance premiums balance receivable is presented net of acquisition costs when contract terms provide for the right of offset.

Anticipated losses and loss expenses, other costs and investment income related to these premiums are considered in assessing the recoverability of deferred acquisition costs. If deferred amounts are estimated to be unrecoverable, they are expensed. Compensation expenses for personnel involved in contract acquisition, as well as advertising costs, are expensed as incurred.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

d) Losses and Loss Expenses

Reserve for losses and loss expenses represents an estimate of the unpaid portion of the ultimate liability for losses and loss expenses for (re)insured events that have occurred at or before the balance sheet date. These amounts reflect both claims that have been reported ("case reserves") and claims that have been incurred but not yet reported ("IBNR") and are reduced for estimated amounts of salvage and subrogation recoveries.

The Company reviews its reserve for losses and loss expenses on a quarterly basis. Case reserves are primarily established based on amounts reported from insureds and/or their brokers. Management estimates IBNR after reviewing detailed actuarial analyses and applying informed judgment regarding qualitative factors that may not be fully captured in the actuarial estimates. A variety of actuarial methods are utilized in this process, including the Expected Loss Ratio, Chain Ladder and Bornhuetter Ferguson methods. The estimate is highly dependent on management's judgment as to which method(s) are most appropriate for a particular accident year and line of business. Historical claims data is often supplemented with industry benchmarks when applying these methodologies.

Any adjustments to reserve for losses and loss expenses estimates are recognized in the period in which they are determined. While the Company believes that its reserves for losses and loss expenses are adequate, this estimate requires significant judgment and new information, events or circumstances may result in ultimate losses that are materially greater or less than provided for in the consolidated balance sheets.

e) Reinsurance

In the normal course of business, the Company purchases reinsurance protection to limit its ultimate losses from catastrophic events and to reduce its loss aggregation risk. The premiums paid to reinsurers (i.e. ceded premiums written) are expensed over the coverage period. Prepaid reinsurance premiums represent the portion of premiums ceded which relate to the unexpired term of the contracts in force. Reinstatement premiums ceded are recognized and earned at the time a loss event occurs, where the coverage limits for the remaining life of the contract are reinstated under pre-defined contract terms.

Reinsurance recoverable related to case reserves is estimated on a case-by-case basis by applying the terms of any applicable reinsurance cover to individual case reserve estimates. Reinsurance recoverable related to IBNR is generally developed as part of our loss reserving process, therefore, its estimation is subject to similar risks and uncertainties as the estimation of IBNR.

Reinsurance recoverable is presented net of a provision for uncollectible amounts, reflecting the amount the Company believes ultimately will not be recovered due to reinsurer insolvency, contractual disputes and/or some other reason. The Company applies case-specific provisions against reinsurance recoverable on unpaid and paid losses that it deems unlikely to be collected in full. In addition, the Company uses a default analysis to estimate the provision for uncollectible amounts on the remainder of the reinsurance recoverable balance.

The estimates of reinsurance recoverable and the associated provision for uncollectible amounts require management's judgment and are reviewed in detail on a quarterly basis. Any adjustments to the provision for uncollectible amounts are recognized in the period in which they are determined.

Retroactive Reinsurance

Retroactive reinsurance reimburses a ceding company for liabilities incurred as a result of past insurable events covered under contracts subject to the reinsurance. In certain instances, reinsurance contracts cover losses both on a prospective basis and on a retroactive basis and where practical the Company bifurcates the prospective and retrospective elements of these reinsurance contracts and accounts for each element separately. Initial gains in connection with retroactive reinsurance contracts are deferred and amortized into income over the settlement period while losses are recognized immediately. When changes in the estimated amount recoverable from the reinsurer or in the timing of receipts related to that amount occur, a

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
DECEMBER 31, 2018, 2017 AND 2016

2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

cumulative amortization adjustment is recognized in net income in the period of the change so that the deferred gain reflects the balance that would have existed had the revised estimate been available at the inception of the reinsurance transaction.

f) Foreign Exchange

The functional currency of the Company and the majority of its subsidiaries is the U.S. dollar. All foreign currency transactions are initially measured and recorded in the Company’s functional currency using the rates of exchange prevailing at the transaction date.

Monetary assets and liabilities denominated in foreign currency are remeasured to functional currency at the rates of exchange in effect at the balance sheet date with the resulting foreign currency gains (losses) generally being recognized in the consolidated statements of operations. Foreign currency gains (losses) related to available-for-sale investments denominated in foreign currency represent an unrealized appreciation (depreciation) in the market value of the securities and are included in the relevant component of AOCI. Non-monetary assets and liabilities denominated in foreign currency are not subsequently remeasured.

The Company’s reporting currency is the U.S. dollar. Assets and liabilities of the Company's subsidiaries and branches where the functional currency is not the U.S. dollar, are translated into U.S. dollars using the rates of exchange in effect at the balance sheet date, and revenue and expenses are translated using the weighted average foreign exchange rates for the period. The effect of translation adjustments is reported as a separate component of AOCI in the consolidated statement of change shareholders’ equity.

g) Share-based Compensation

The Company is authorized to issue restricted shares, restricted stock units, performance units, stock options, stock appreciation rights and other equity-based awards to its employees and directors. The Company's plan includes both share-settled and cash-settled service and performance based awards.

The fair value of share-settled service and performance based awards is based on the market value of the Company's common share measured at the grant date and is expensed over the requisite service period.

The fair value cash-settled service and performance based awards is also based on the fair market value of Company's common shares at the grant date and is expensed over the requisite service period. In addition, the fair value of the cash-settled service and performance based awards is recognized as a liability in the consolidated balance sheet and is remeasured at the end of each reporting period.

Effective, January 1, 2017, the Company made an accounting policy election to account for forfeitures when they occur.

h) Derivative Instruments

The Company may enter into derivative instruments such as futures, options, interest rate swaps and foreign currency forward contracts as part of its overall foreign currency risk management strategy, to obtain exposure to a particular financial market or for yield enhancement.

During 2013, the Company began to write derivative based risk management products designed to address weather and commodity price risks, with the objective of generating profits on a portfolio basis. Effective July 1, 2017, the Company no longer writes derivative-based risk management products which address weather risks.

From time to time the Company may also enter into (re)insurance contracts that meet the Financial Accounting Standards Board's ("FASB") definition of a derivative contract.

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2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

The Company measures all derivative instruments at fair value (refer to Note 7 'Fair Value Measurements') and recognizes them as either assets or liabilities in the consolidated balance sheets. Subsequent changes in fair value and any realized gains or losses are recognized in the consolidated statements of operations.

i) Goodwill and Intangible Assets
The Company recognizes goodwill and other intangible assets in connection with certain acquisitions. Goodwill represents the excess of the purchase price paid over the fair value of the net assets acquired in these acquisition and is not amortized. Other intangible assets with a finite life are amortized over the estimated useful live of the intangible asset. Other intangible assets with an indefinite life are not amortized.

The Company tests goodwill and indefinite intangible assets for potential impairment during the fourth quarter each year and between annual tests if an event occurs or changes in circumstances indicate that the asset is impaired. Such events or circumstances may include an economic downturn in a geographic market or a change in the assessment of future operations.

For the purposes of evaluating goodwill for impairment, the Company may first perform a qualitative assessment to determine whether it is necessary to perform a quantitative goodwill impairment test. If determined to be necessary, the quantitative test compares the fair value of a reporting unit with its carrying amount, including goodwill. Subsequent to the adoption of ASU 2017-04, "Intangibles - Goodwill and Other (Topic 350) - Simplifying the Test for Goodwill Impairment" (refer to 'New Accounting Standards Adopted in 2018' below) if the fair value of a reporting unit exceeds its carrying amount, goodwill of the reporting unit is considered not impaired. If the carrying amount of the reporting unit exceeds the fair value, an impairment loss is recognized in an amount equal to that excess, limited to the total amount of goodwill allocated to that reporting unit.

For the purposes of evaluating indefinite lived intangibles for impairment, the Company may first perform a qualitative assessment to determine whether it is necessary to perform the quantitative impairment test. If the Company elects to perform a qualitative assessment, it first assesses qualitative factors to determine whether it is more likely than not that an indefinite lived intangible asset is impaired. If the Company determines that it is not more likely than not that the indefinite lived intangible asset is impaired, the Company does not calculate the fair value of the intangible asset and perform the quantitative impairment test.

For the purposes of evaluating goodwill and indefinite lived intangible assets for impairment, the Company has an unconditional option to bypass the qualitative assessment in any period and proceed directly to performing the quantitative impairment test. The Company may resume performing the qualitative assessment in any subsequent period.

For other definite lived intangible asset the Company tests for recoverability whenever events or changes in circumstances indicate its carrying amount may not be recoverable. The Company recognizes an impairment loss if the carrying amount of the asset is not recoverable and exceeds its fair value. The carrying amount of a definite lived intangible asset is not recoverable if it exceeds the sum of the undiscounted cash flows expected to result from the use and eventual disposition of the asset.

If goodwill or an intangible asset is impaired, the carrying value of the asset is reduced to fair value and a corresponding expense is recorded in the consolidated statements 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 in certain cases to AOCI, 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

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2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

sheets and those used in the various jurisdictional tax returns. When the assessment indicates that it is more likely than not that a portion of a deferred tax asset will not be realized in the foreseeable future, a valuation allowance against deferred tax assets is recorded. The Company recognizes the tax benefits of uncertain tax positions only when the position is more-likely-than-not to be sustained upon audit by the relevant taxing authorities.

k) Treasury Shares
Common shares repurchased by the Company and not subsequently canceled are classified as treasury shares and are recorded at cost. This results in a reduction of shareholders' equity in the consolidated balance sheets. When shares are reissued from treasury, the Company uses the average cost method to determine the cost of the reissued shares.

l) New Accounting Standards Adopted in 2018

Recognition and Measurement of Financial Assets and Financial Liabilities
Fixed maturities and equity securities are reported at fair value at the balance sheet date (refer to Note 7 'Fair Value Measurements'). Effective January 1, 2018, the Company adopted ASU 2016-01 "Financial Instruments - Overall (Subtopic 825-10) - Recognition and Measurement of Financial Assets and Financial Liabilities," which:

- requires equity investments (except those accounted for under the equity method of accounting, investments that are consolidated or those that meet a practicability exception) to be measured at fair value with changes in fair value recognized in net income;
- simplifies the impairment assessment of equity investments without readily determinable values by requiring a qualitative assessment to identify impairment, eliminates the requirement to disclose the methods and significant assumptions used to estimate the fair value for financial instruments measured at amortized cost,
- requires the use of the exit price notion when measuring the fair value of financial instruments for disclosure purposes;
- requires separate presentation in other comprehensive income of the portion of the total change in the fair value of a liability resulting from a change in the instrument-specific credit risk when the organization has elected to measure the liabilities in accordance with the fair value option;
- requires the separate presentation of financial assets and financial liabilities by measurement category and form of financial asset on the balance sheet or the accompanying notes to the financial statements; and
- clarifies that the reporting organization should evaluate the need for a valuation allowance on a deferred tax asset related to available for sale securities in combination with the organization's other deferred tax assets.

Upon adoption of this guidance, net unrealized investment gains on equity securities of $70 million, net of deferred income taxes of $13 million, were reclassified from accumulated other comprehensive income to retained earnings.

Revenue from Contracts with Customers

Effective January 1, 2018, the Company adopted Accounting Standards Update ("ASU") 2014-09 "Revenue from Contracts with Customers (Topic 606)," using the modified retrospective transition approach. This guidance affects any entity that either enters into contracts with customers to transfer goods or services or enters into contracts for the transfer of nonfinancial assets unless those contracts are within the scope of other standards, such as accounting for insurance contracts. The core principle of the guidance is that an entity should recognize revenue to depict the transfer of promised goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services.

The Company generated fee income of $32 million for the year ended December 31, 2018 which is within the scope of this ASU. These fees represent service fees earned by the Company's reinsurance segment related to services provided to

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2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

strategic capital partners and are recognized when the related services have been performed. Given that the timing and measurement of revenue associated with impacted contracts did not change, the adoption of this guidance did not have a material impact on the Company's results of operations, financial condition and liquidity.

Classification of Certain Cash Receipts and Cash Payments

Effective January 1, 2018, the Company adopted ASU 2016-15, "Statement of Cash Flows (Topic 230) - Classification of Certain Cash Receipts and Cash Payments," which addresses diversity in practice in how eight specific cash receipts and cash payments should be presented and classified on the statement of cash flows. The adoption of this guidance did not impact the Company's results of operations, financial condition and liquidity.

Restricted Cash

Effective January 1, 2018, the Company adopted ASU 2016-18, "Statement of Cash Flows (Topic 230) - Restricted Cash," which addresses diversity in practice in the classification and presentation of changes in restricted cash on the statement of cash flows. This guidance requires a statement of cash flows to explain the change during the period in the total of cash, cash equivalents, restricted cash and restricted cash equivalents. Transfers between cash and cash equivalents and restricted cash and restricted cash equivalents will no longer be presented on the statement of cash flows. To facilitate comparison of the Company's consolidated statements of cash flows, the Company adopted this guidance utilizing the full retrospective approach for all periods presented in the Company's consolidated financial statements. As a result, the Company's consolidated statements of cash flows now explains the change during the period in the total of cash, cash equivalents, and restricted cash. Therefore, restricted cash is now included with cash and cash equivalents in the reconciliation of the beginning of period and end of period total amounts shown on the statement of cash flows. The adoption of this guidance did not impact the Company's results of operations, financial condition and liquidity.

Stock Compensation - Scope of Modification Accounting

Effective January 1, 2018, the Company adopted ASU 2017-09 "Compensation - Stock Compensation (Topic 718) - Scope of Modification Accounting," which provides clarity and reduces diversity in practice of applying the guidance in Topic 718 to a change to the terms or conditions of a share-based payment award. This ASU provides guidance about which changes to the terms or conditions of a share-based payment award require an entity to apply modification accounting in Topic 718. The guidance states that an entity should account for the effects of a modification unless all the following are met:

1. the fair value of the modified award is the same as the fair value of the original award immediately before the original award is modified;
2. the vesting conditions of the modified award are the same as the vesting conditions of the original award immediately before the original award is modified; and the classification of the modified award as an equity instrument or a liability instrument is the same as the classification of the original award immediately before the

original award is modified.

The current disclosure requirements in Topic 718 apply regardless of whether an entity is required to apply modification accounting under the amendments in this Update. The adoption of this guidance did not impact the Company's results of operations, financial condition and liquidity.

Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income

Effective January 1, 2018, the Company adopted ASU 2018-02 "Income Statement - Reporting Comprehensive Income (Topic 220) - Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income" which was a response to a financial reporting issue that arose as a consequence of the U.S. federal government tax bill, H.R.1, An Act to Provide for

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2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

Reconciliation Pursuant to Titles II and V of the Concurrent Resolution on the Budget for Fiscal Year 2018 ("U.S. Tax Reform"), which was enacted on December 22, 2017.

U.S. GAAP currently requires deferred tax liabilities and assets to be adjusted for the effect of a change in tax laws or rates with the effect included in income from continuing operations in the reporting period that includes the enactment date. This guidance is applicable even in situations in which the related income tax effects of items in accumulated other comprehensive income were originally recognized in other comprehensive income rather than in income from continuing operations. As the adjustment of deferred taxes due to the reduction of the historical corporate income tax rate to the newly enacted corporate income tax rate is required to be included in income from continuing operations, the tax effects of items within accumulated other comprehensive income (referred to as stranded tax effects for purposes of this Update) do not reflect the appropriate tax rate.

The amendments in this Update allow a reclassification from accumulated other comprehensive income to retained earnings for stranded tax effects resulting from U.S. Tax Reform. Consequently, the amendments eliminate the stranded tax effects resulting from U.S. Tax Reform and will improve the usefulness of information reported to financial statement users. However, because the amendments only relate to the reclassification of the income tax effects of U.S. Tax Reform, the underlying guidance that requires that the effect of a change in tax laws or rates be included in income from continuing operations is not affected.

As a consequence of U.S. Tax Reform, the Company recognized a tax benefit of $2 million related to the revaluation of net deferred tax liabilities associated with the reduction in the U.S. corporate income tax rate from 35% to 21%, attributable to net unrealized investment gains associated with investments held by the Company's U.S. domiciled entities. Upon adoption of this guidance, the tax benefit of $2 million was reclassified from accumulated other comprehensive income into retained earnings.

Simplifying the Test for Goodwill Impairment

Effective October 1, 2018, the Company adopted ASU 2017-04, "Intangibles - Goodwill and Other (Topic 350) - Simplifying the Test for Goodwill Impairment" that eliminates the requirement to calculate the implied fair value of goodwill (i.e., Step 2 of the current goodwill impairment test) to measure a goodwill impairment charge. Instead, an impairment charge will be based on the excess of a reporting unit's carrying amount over its fair value (i.e., measure the charge based on Step 1 of the current goodwill impairment test). The adoption of this guidance did not impact the Company's results of operations, financial condition and liquidity.

m) Recently Issued Accounting Standards Not Yet Adopted

Leases

In February 2016, the FASB issued ASU 2016-02, "Leases (Topic 842)" which provided a new comprehensive model for lease accounting. Topic 842 will require a lessee to recognize a liability to make lease payments (the lease liability) and a right-of-use asset representing its right to use the underlying asset for the lease term.

In July 2018, the FASB issued ASU 2018-11, "Leases (Topic 842) - Targeted Improvements" which provides an additional (and optional) transition method to adopt the new lease guidance. A company electing this additional (and optional) transition method must provide the required Topic 840 disclosures for all periods that continue to be in accordance with Topic 840. However, these amendments do not change the existing disclosure requirements in Topic 840, in particular these amendments do not create interim disclosure requirements. This guidance is effective for interim and annual reporting periods beginning after December 15, 2018, with early adoption permitted.

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2. BASIS OF PRESENTATION AND SIGNIFICANT ACCOUNTING POLICIES (CONTINUED)

The Company will adopt Topic 842 effective January 1, 2019, by electing the additional transition method provided in ASU 2018-11. The Company will also elect the package of practical expedients permitted under the transition guidance of Topic 842, which must be elected as a package and applied consistently to all leases. The package of practical expedients permits the Company not to reassess the following:

1. whether any expired or existing contracts are or contain leases;
2. the lease classification for any expired or existing leases; and
3. initial direct costs for any existing leases.

In addition to electing the package of practical expedients, the Company will make an accounting policy election not to record leases with an initial term of 12 months or less (short-term) in the Company's consolidated balance sheets. The Company will recognize expense for short-term lease payments on a straight-line basis over the lease term in the Company's consolidated statements of operations. At December 31, 2018, the Company expects the adoption of this guidance will result in the recognition of lease assets and lease liabilities of approximately $149 million in the Company's consolidated balance sheets at January 1, 2019, related to existing office property and equipment leases. The adoption of this guidance will not impact the Company's results of operations and liquidity.

Measurement of Credit Losses on Financial Instrument

In June 2016, the FASB issued ASU 2016-13, "Financial Instruments - Credit Losses (Topic 326) - Measurement of Credit Losses on Financial Instruments" which replaces the "incurred loss" impairment methodology with an approach based on "expected losses" to estimate credit losses on certain types of financial instruments and requires consideration of a broader range of reasonable and supportable information to inform credit loss estimates. The guidance requires financial assets measured at amortized cost to be presented at the net amount expected to be collected. The allowance for credit losses is a valuation account that is deducted from the amortized cost of the financial asset to present the net carrying value at the amount expected to be collected on the financial asset. Credit losses relating to available-for-sale debt securities will be recorded through an allowance for credit losses. The guidance also provides for a simplified accounting model for purchased financial assets with credit deterioration since their origination. This guidance is effective for interim and annual periods beginning after December 15, 2019. Early adoption is permitted for interim and annual periods beginning after December 15, 2018. The Company is currently evaluating the impact of this guidance on its results of operations, financial condition and liquidity.

Premium Amortization on Purchased Callable Debt Securities

In March 2017, the FASB issued ASU 2017-08 "Receivables - Nonrefundable Fees and Other Costs (Subtopic 310-20) - Premium Amortization on Purchased Callable Debt Securities" which shortens the amortization period for certain purchased callable debt securities held at a premium. The Company plans to adopt this guidance effective January 1, 2019. The adoption of this guidance will not impact the Company's results of operations, financial condition and liquidity.

Changes to Disclosures on Fair Value Measurement

In August 2018, the FASB issued ASU 2018-13 "Fair Value Measurement (Topic 820) - Disclosure Framework - Changes to the Disclosure Requirements for Fair Value Measurement" to improve the effectiveness of fair value measurement disclosures. This guidance is effective for interim and annual reporting periods, beginning after December 15, 2019, with early adoption permitted. The Company plans to adopt this guidance effective January 1, 2019. As this guidance relates solely to financial statement disclosures, the adoption of ASU 2016-18, will not impact the Company's results of operations, financial condition and liquidity.

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3. BUSINESS COMBINATIONS

a) Acquisition of Novae Group plc

On October 2, 2017 (the "closing date" or the "acquisition date"), AXIS Specialty UK Holdings Limited, a wholly owned subsidiary of the Company, acquired a 100% ownership interest in Novae Group plc ("Novae") for an aggregate purchase price of $617 million. Novae is a diversified property and casualty (re)insurance business operating through Syndicate 2007 at Lloyd’s. The results of Novae are included in the results of the Company's insurance and reinsurance segments from that date. The acquisition of Novae was undertaken to accelerate the growth strategy of the Company's international insurance business, and to significantly scale up its capabilities to enable the Company to even better serve its clients and brokers.

The purchase price was allocated to the assets acquired and liabilities assumed of Novae based on estimated fair values at the closing date and the Company recognized goodwill of $54 million. The allocation of the purchase price was based on information included in Novae's audited financial statements at October 2, 2017.

In addition, the Company identified finite lived intangible assets of $385 million, including Value of Business Acquired ("VOBA") which represents the present value of the expected underwriting profit within policies that were in-force at the closing date of the transaction, of $257 million and finite lived intangible assets primarily related to distribution networks of $128 million. The Company also identified indefinite lived intangible assets related to Lloyd's syndicate capacity of $95 million (refer to Note 5 'Goodwill and Intangible Assets' for further information).

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3. BUSINESS COMBINATIONS (CONTINUED)

The fair value of the assets acquired and liabilities assumed and the allocation of the purchase price on the acquisition date are summarized in the following table:

Total purchase price paid	$	616,926
Assets		
Investments	1,733,611	
Cash and cash equivalents	191,337	
Insurance and reinsurance premium balances receivable	472,180	
Reinsurance recoverable on unpaid and paid losses	787,907	
Prepaid reinsurance premiums	197,907	
Other assets	42,696	
Total assets acquired	$	3,425,638
Liabilities		
Reserve for losses and loss expenses	2,125,634	
Unearned premiums	717,442	
Insurance and reinsurance balances payable	273,405	
Notes payable	101,846	
Other liabilities	124,585	
Total liabilities assumed	$	3,342,912
Fair value of identifiable intangible assets:		
Value of business acquired - definite lived intangible asset	256,942	
	128,463	

Identifiable definite lived intangible assets Identifiable indefinite lived intangible assets	94,748	
Excess purchase price over fair value of net assets acquired assigned to goodwill	$	54,047

Significant fair value adjustments are explained as follows:

- Deferred acquisition costs: To eliminate Novae's deferred acquisition costs;
- Prepaid reinsurance premiums: To reflect adjustments to align premium recognition accounting policies;
- VOBA: To establish the fair value of VOBA identifiable intangible asset related to the acquisition of Novae;
- Goodwill: To establish the fair value of goodwill related to the acquisition of Novae;
- Indefinite lived and finite lived intangible assets: To establish the fair value of identifiable intangible assets related to the acquisition of Novae and to eliminate Novae's pre-existing intangible assets;
- Other assets: To reflect an investment at fair value and deferred tax assets on fair value adjustments;

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3. BUSINESS COMBINATIONS (CONTINUED)

- Reserves for losses and loss expenses: To reflect adjustments arising from the alignment of premium recognition accounting policies and reserving methodologies, as well as the price associated with the Reinsurance to Close ("RITC") of the 2015 and prior years of account of Syndicate 2007;
- Unearned premiums: To reflect adjustments to align premium recognition accounting policies; and
- Other liabilities: To reflect deferred tax liabilities on fair value adjustments.

Identifiable intangible assets at the acquisition date are included in intangible assets in the consolidated balance sheets and are shown in the following table:

		Economic useful life
Indefinite lived intangible assets		
Lloyd's syndicate capacity	$94,748	Indefinite
Finite lived other intangible assets		
Distribution networks:		
Coverholders	63,565	12 years
Large brokers	46,641	15 years
Small & Mid-sized Enterprise ("SME") brokers	14,126	12 years
Managing General Agent ("MGA") Contract	4,131	7 years
Total	128,463	
Identifiable intangible assets at October 2, 2017	$223,211	

Identifiable intangible assets are explained as follows:

- Lloyd's syndicate capacity: The value of Lloyd's syndicate capacity, which represents Novae's right to underwrite a certain allocated limit of premium in the Lloyd's market.
- Distribution network:
- Coverholders: The value of sales of insurance policies that result directly from relationships with insurance intermediaries who are authorized by Novae's managing agent to enter into contracts of insurance to be underwritten by Syndicate 2007, in accordance with the terms of a binding authority.
- Large brokers: These relationships include Novae's large brokers and consideration was given to the expectation of the renewal of these relationships and the associated expenses.
- SME brokers: These relationships consist of Novae's brokers with the exception of the large brokers listed above and consideration was given to the expectation of the renewal of these relationships and the associated expenses.
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MGA contract: Represents the value of managing agent fees and profit commission Novae earns related to the provision of underwriting services to Special Purpose Arrangement, SPA 6129.

AXIS CAPITAL HOLDINGS LIMITED
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3. BUSINESS COMBINATIONS (CONTINUED)

Valuation methodologies applicable to identifiable intangible assets are explained as follows:

- Lloyd's syndicate capacity: Lloyd's syndicate capacity was valued using the Multi-Period Excess Earnings Method, an application of the Income Approach. Key inputs used in the valuation model used for this intangible asset included projected pre-tax operating profit attributable to syndicate capacity, contributory asset charges which represent the required return on and of intangibles assets utilized to generate future revenue and operating income, and an appropriate discount rate.

- Distribution network: Distribution network including coverholders, large broker and SME brokers was valued using the Distributor Method, an application of the Income Approach. Key inputs used in the valuation model used for this intangible asset included net premiums earned attributable to existing distributors, attrition rates, profit margins, projected pre-tax operating profit attributable to existing distributors, contributory asset charges which represent the required return on and of intangibles assets utilized to generate future revenue and operating income, and an appropriate discount rate.

- MGA contract: MGA contract was valued using the Multi-Period Excess Earnings Method, an application of the Income Approach. Key inputs used in the valuation model used for this intangible asset included SPA 6129's stamp capacity with Lloyd's, return on stamp capacity, fee income and profit commission associated with the managing agent contract for SPA 6129, profit margins, contributory asset charges which represent the required return on and of intangibles assets utilized to generate future revenue and operating income, and an appropriate discount rate.

- VOBA: VOBA was computed as the difference between the fair value of unearned obligations and the unearned premiums reserve recorded by Novae at the acquisition date. Key inputs used in the valuation model used for this intangible asset included the fair value of the unearned premium computed as the present value of future unearned cash flows, plus the present value of the costs associated with holding capital to support these exposures together with the fair value of reserves computed as the present value of future net losses and loss expense payments, plus the present value of the costs associated with holding capital to support those payments.

Financial Results

The following selected audited information is a summary of the results of Novae that has been included in the consolidated financial statements for the year ended December 31, 2017.

(in thousands)	From acquisition date to December 31, 2017
Net premiums written	$ 140,635
Total revenue	191,929
Total expenses	(197,895)
Net income	$ (5,966)

AXIS CAPITAL HOLDINGS LIMITED
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3. BUSINESS COMBINATIONS (CONTINUED)

Supplemental Pro Forma Information

The following selected unaudited pro forma financial information is a summary of the combined results of the Company and Novae, assuming the transaction had been effected on January 1, 2016. The unaudited pro forma data is for informational purposes only and does not necessarily represent results that would have occurred if the transaction had taken place on January 1, 2016.

The unaudited pro forma consolidated financial information does not consider the impact of possible revenue enhancements, expense efficiencies, or synergies that may result from the acquisition of Novae. In addition, the unaudited pro forma consolidated financial information does not include costs associated with restructuring or integration activities resulting from the acquisition of Novae.

In addition to the fair value adjustments and recognition of goodwill and identifiable intangible assets, other material pro forma adjustments directly attributable to the acquisition of Novae primarily included adjustments to recognize transaction and integration related expenses, to align accounting policies, to amortize identifiable indefinite lived intangible assets and to recognize related tax impacts.

	Years ended December 31,	
	2017	2016
(in thousands)	(unaudited)	(unaudited)
Net premiums earned	$4,728,700	$4,560,800
Net income	$(468,400)	$532,500

b) Acquisition of Compagnie Belge d'Assurances Aviation NV/SA

On April 1, 2017 (the "closing date" or the "acquisition date"), the Company acquired a 100% ownership interest in Compagnie Belge d'Assurances Aviation NV/SA ("Aviabel"). Aviabel is an insurer operating under Belgian law that has its head office in Belgium, a branch office in the Netherlands and a reinsurance company, Aviabel RE S.A. ("Aviabel RE"), in Luxembourg. The acquisition of Aviabel was undertaken to increase its scale and relevance in the global aviation market.

The purchase price was allocated to the assets acquired and liabilities assumed of Aviabel based on estimated fair values on the closing date. Consequently, the Company recognized investments with a fair value of $182 million, reserves for losses and loss expenses with a fair value of $79 million, and a bargain purchase gain of $15 million. The bargain purchase gain arose as the fair values of the net identifiable assets acquired exceeded the fair value of the consideration transferred at the acquisition date.

The allocation of the purchase price was based on information included in unaudited financial statements at March 31, 2017. The fair values of the assets acquired and liabilities assumed may be subject to adjustments, which may impact the amounts recorded for the assets acquired and liabilities assumed, as well as the bargain purchase gain.

The underwriting results of Aviabel are included in the underwriting results of the Company's insurance segment from the acquisition date.

c) Acquisition of Contessa

On September 6, 2017 (the "closing date"), the Company acquired a 100% ownership interest in Contessa Limited ("Contessa"). Contessa is a Managing General Agent that manages, underwrites, services and administers small and medium

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3. BUSINESS COMBINATIONS (CONTINUED)

sized commercial property and casualty business on behalf of the Company. The purchase price was allocated to the assets acquired and liabilities assumed of Contessa based on estimated fair values on the closing date. Consequently, the Company recognized goodwill of $1 million.

Transaction and Integration Expenses

In connection with the acquisition of Novae, the Company incurred transaction and integration related expenses of $26 million (2017: $27 million). The transaction and integration related expenses included due diligence, legal, accounting, investment banking fees and expenses, as well as integration expenses related to the integration of Novae into the Company's operations and compensation-related costs associated with the termination of certain employees. These expenses are included in transaction and reorganization expenses in the consolidated statement of operations.

4. SEGMENT INFORMATION

AXIS Capital's underwriting operations are organized around its global underwriting platforms, AXIS Insurance and AXIS Re. The Company has determined that it has two reportable segments, insurance and reinsurance. The Company does not allocate its assets by segment, with the exception of goodwill and intangible assets, as it evaluates the underwriting results of each segment separately from the results of its investment portfolio.

Insurance

The Company's insurance segment offers specialty insurance products to a variety of niche markets on a worldwide basis. The product lines in this segment are property, marine, terrorism, aviation, credit and political risk, professional lines, liability, accident and health, together with discontinued lines - Novae, which represents lines of business that Novae exited or placed into run-off in the three month periods ended December 31, 2016 and March 31, 2017.

Reinsurance

The Company's reinsurance segment provides treaty reinsurance to insurance companies on a worldwide basis. The product lines in this segment are catastrophe, property, professional lines, credit and surety, motor, liability, agriculture, engineering, marine and other, accident and health, together with discontinued lines - Novae, which represents lines of business that Novae exited or placed into run-off in the three month periods ended December 31, 2016 and March 31, 2017. The reinsurance segment also wrote derivative based risk management products designed to address weather and commodity price risks until July 1, 2017.

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4. SEGMENT INFORMATION (CONTINUED)

The following tables present the underwriting results of the Company's reportable segments, as well as the carrying amounts of allocated goodwill and intangible assets:

At and year ended December 31, 2018	Insurance	Reinsurance	Total
Gross premiums written	$3,797,592	$3,112,473	$6,910,065
Net premiums written	2,324,747	2,334,215	4,658,962
Net premiums earned	2,362,606	2,428,889	4,791,495
Other insurance related income	3,460	7,162	10,622
Net losses and loss expenses	(1,494,323)	(1,695,964)	(3,190,287)
Acquisition costs	(399,193)	(569,642)	(968,835)
General and administrative expenses	(395,252)	(123,916)	(519,168)
Underwriting income	$77,298	$46,529	123,827
Corporate expenses			(108,221)
Net investment income			438,507
Net investment losses			(150,218)
Foreign exchange gains			29,165
Interest expense and financing costs			(67,432)
Transaction and reorganization expenses			(66,940)
Amortization of value of business acquired			(172,332)
Amortization of intangible assets			(13,814)
Income before income taxes and interest in income (loss) of equity method investments			$12,542
Net loss and loss expense ratio	63.2%	69.8%	66.6%
Acquisition cost ratio	16.9%	23.5%	20.2%
General and administrative expense ratio	16.8%	5.1%	13.1%
Combined ratio	96.9%	98.4%	99.9%
Total intangible assets	$379,285	$—	$379,285

AXIS CAPITAL HOLDINGS LIMITED
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4. SEGMENT INFORMATION (CONTINUED)

At and year ended December 31, 2017	Insurance	Reinsurance	Total
Gross premiums written	$2,814,918	$2,741,355	$5,556,273
Net premiums written	1,775,825	2,251,318	4,027,143
Net premiums earned	1,816,438	2,332,322	4,148,760
Other insurance related income (loss)	2,944	(4,184)	(1,240)
Net losses and loss expenses	(1,465,427)	(1,822,345)	(3,287,772)
Acquisition costs	(270,229)	(553,362)	(823,591)
General and administrative expenses	(325,368)	(124,115)	(449,483)
Underwriting loss	$(241,642)	$(171,684)	(413,326)
Corporate expenses			(129,945)
Net investment income			400,805
Net investment gains			28,226
Foreign exchange losses			(134,737)
Interest expense and financing costs			(54,811)
Bargain purchase gain			15,044
Transaction and reorganization expenses			(26,718)
Amortization of value of business acquired			(50,104)
Amortization of intangible assets			(2,543)
Loss before income taxes and interest in income (loss) of equity method investments			$(368,109)
Net loss and loss expense ratio	80.7%	78.1%	79.2%
Acquisition cost ratio	14.9%	23.7%	19.9%
General and administrative expense ratio	17.9%	5.3%	14.0%
Combined ratio	113.5%	107.1%	113.1%
Total intangible assets	$566,828	$—	$566,828

AXIS CAPITAL HOLDINGS LIMITED
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4. SEGMENT INFORMATION (CONTINUED)

At and year ended December 31, 2016	Insurance	Reinsurance	Total
Gross premiums written	$2,432,475	$2,537,733	$4,970,208
Net premiums written	1,519,559	2,233,415	3,752,974
Net premiums earned	1,534,282	2,171,343	3,705,625
Other insurance related income	89	7,133	7,222
Net losses and loss expenses	(977,771)	(1,226,426)	(2,204,197)
Acquisition costs	(206,619)	(540,257)	(746,876)
General and administrative expenses	(327,351)	(155,350)	(482,701)
Underwriting income	$22,630	$256,443	279,073
Corporate expenses			(120,016)
Net investment income			353,335
Net investment losses			(60,525)
Foreign exchange gains			121,295
Interest expense and financing costs			(51,360)
Income before income taxes and interest in income (loss) of equity method investments			$521,802
Net loss and loss expense ratio	63.7%	56.5%	59.5%
Acquisition cost ratio	13.5%	24.9%	20.2%
General and administrative expense ratio	21.3%	7.1%	16.2%
Combined ratio	98.5%	88.5%	95.9%
Total intangible assets	$85,049	$—	$85,049

The following table presents gross premiums written by the geographical location of the Company's subsidiaries:

Year ended December 31,	2018	2017	2016
Bermuda	$606,452	$529,425	$465,980
Ireland	1,805,882	1,569,956	1,650,229
U.S.	2,811,537	2,814,933	2,562,789
Lloyd's of London	1,686,194	641,959	291,210
Total gross premium written	$6,910,065	$5,556,273	$4,970,208

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4. SEGMENT INFORMATION (CONTINUED)

The following table presents net premiums earned by segment and line of business:

Year ended December 31,	2018	2017	2016
Insurance			
Property	$796,945	$543,342	$426,918
Marine	300,944	181,533	150,046
Terrorism	49,150	36,084	33,279
Aviation	74,203	75,107	44,980
Credit and political risk	102,825	56,432	57,964
Professional lines	570,241	519,759	510,806
Liability	229,373	188,770	169,182
Accident and health	207,777	199,121	141,107
Discontinued lines - Novae	31,148	16,290	—
Total Insurance	2,362,606	1,816,438	1,534,282
Reinsurance			
Catastrophe	250,016	209,470	199,825
Property	317,038	304,376	272,403
Professional lines	220,687	226,622	289,868
Credit and surety	250,276	244,186	252,210
Motor	438,693	371,501	318,863
Liability	363,292	351,940	332,479
Agriculture	176,435	195,391	142,501
Engineering	67,932	66,291	62,833
Marine and other	35,570	64,449	57,322
Accident and health	299,813	289,925	243,039
Discontinued lines - Novae	9,137	8,171	—
Total Reinsurance	2,428,889	2,332,322	2,171,343
Total	$4,791,495	$4,148,760	$3,705,625

AXIS CAPITAL HOLDINGS LIMITED
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5. GOODWILL AND INTANGIBLE ASSETS

The table below provides details of goodwill and intangible assets related to the Company's insurance segment:

	Goodwill	Intangible assets with an indefinite life	Intangible assets with a finite life	Total
Balance at December 31, 2016				
Gross amount	$42,237	$ 26,036	$ 23,030	$91,303
Accumulated amortization	n/a	n/a	(9,356)	(9,356)
Accumulated translation adjustment	4,911	—	—	4,911
	47,148	26,036	13,674	86,858
Amortization	n/a	n/a	(1,809)	(1,809)
Balance at December 31, 2017				
Gross amount [1]	42,237	26,036	23,030	91,303
Accumulated amortization [1]	n/a	n/a	(11,165)	(11,165)
Accumulated translation adjustment	4,911	—	—	4,911
	47,148	26,036	11,865	85,049
Acquired during the year	54,855	94,748	387,545	537,148
Amortization	n/a	n/a	(55,369)	(55,369)
Balance at December 31, 2018				
Gross amount	$97,092	$ 120,784	$ 410,575	$628,451
Accumulated amortization	n/a	n/a	(66,534)	(66,534)
Accumulated translation adjustment	4,911	—	—	4,911
	102,003	120,784	344,041	566,828
Amortization	n/a	n/a	(184,043)	(184,043)
Impairment charge	—	—	(3,500)	(3,500)
	$102,003	$ 120,784	$ 156,498	$379,285

n/a – not applicable

Acquisitions in 2017

In connection with the acquisition of Novae, the Company identified finite lived intangible assets of $385 million, including Value of Business Acquired ("VOBA") which represents the present value of the expected underwriting profit within policies that were in-force at the closing date of the transaction, of $257 million and other finite lived intangible assets primarily related to distribution networks of $128 million. In addition, the Company identified indefinite lived intangible assets related to Lloyd's syndicate capacity of $95 million. The Company also recognized goodwill of $54 million.

In connection with the acquisition of Contessa, the Company recognized goodwill of $1 million.

Intangible Assets with an Indefinite Life

Intangible assets with an indefinite life include U.S. state licenses that provide a legal right to transact business indefinitely and the value of Lloyd's syndicate capacity, which represents Novae's right to underwrite a certain allocated limit of premium in the Lloyd's market.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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5. GOODWILL AND INTANGIBLE ASSETS (CONTINUED)

Impairment Review
The Company's impairment review of goodwill and indefinite lived intangibles resulted in the recognition of an impairment loss of $4 million for the year ended December 31, 2018, related to the termination of the MGA contract intangible asset identified in connection with the acquisition of Novae. The Company's impairment reviews of goodwill and indefinite lived intangibles did not result in the recognition of impairment losses for the years ended December 31, 2017 and 2016.

The tables below provide details of the gross amount and accumulated amortization by category of VOBA and intangible assets:

	VOBA and intangible assets		
Balance At December 31, 2018	Gross amount	Accumulated amortization and impairment	Total
U.S. state licenses	$26,036	n/a	$26,036
Customer lists, trademark and non-compete - Media Pro	9,700	(9,598)	102
Customer relationships and customers lists - Ternian	13,330	(4,999)	8,331
VOBA - Aviabel	2,140	(2,140)	—
VOBA - Novae	256,942	(221,228)	35,714
Syndicate capacity	94,748	n/a	94,748
Coverholders	63,565	(6,622)	56,943
Large brokers	46,641	(3,888)	42,753
SME brokers	14,126	(1,471)	12,655
MGA contract[1]	4,131	(4,131)	—
	$531,359	$ (254,077)	$277,282

(1) During the year ended December 31, 2018, an impairment charge of $3,500 was recognized related to the termination of the MGA contract intangible asset identified in connection with the acquisition of Novae.

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5. GOODWILL AND INTANGIBLE ASSETS (CONTINUED)

Balance At December 31, 2017	VOBA and Intangible assets Gross amount	Accumulated amortization	Total
U.S. state licenses	$26,036	n/a	$26,036
Customer lists, trademark and non-compete - Media Pro	9,700	(9,244)	456
Customer relationships and customers lists - Ternian	13,330	(3,666)	9,664
VOBA - Aviabel	2,140	(977)	1,163
VOBA - Novae	256,942	(50,104)	206,838
Syndicate capacity	94,748	n/a	94,748
Coverholders	63,565	(1,324)	62,241
Large brokers	46,641	(777)	45,864
SME brokers	14,126	(294)	13,832
MGA contract	4,131	(148)	3,983
	$531,359	$ (66,534)	$464,825

The table below provides details of estimated amortization expense of VOBA and intangible assets with a finite life:

	VOBA	Intangible assets	Total
2019	26,722	11,017	37,739
2020	5,139	10,916	16,055
2021	3,853	10,916	14,769
2022	—	10,916	10,916
2023	—	10,916	10,916
2024 and thereafter	—	66,103	66,103
Total remaining amortization expense	35,714	120,784	156,498
Indefinite lived intangible assets	—	120,784	120,784
Total intangible assets	$35,714	$241,568	$277,282

The estimated remaining useful lives of finite lived intangible assets range from 1 to 14 years.

AXIS CAPITAL HOLDINGS LIMITED
NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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6. INVESTMENTS

a) Fixed Maturities and Equity Securities

Fixed Maturities
The amortized cost and fair values of the Company's fixed maturities classified as available for sale were as follows:

	Amortized cost	Gross unrealized gains	Gross unrealized losses	Fair value	Non-credit OTTI in AOCI[5]
At December 31, 2018					
Fixed maturities					
U.S. government and agency	$1,520,142	$4,232	$(8,677)	$1,515,697	$ —
Non-U.S. government	507,550	1,586	(16,120)	493,016	—
Corporate debt	4,990,279	15,086	(128,444)	4,876,921	—
Agency RMBS[1]	1,666,684	6,508	(29,884)	1,643,308	—
CMBS[2]	1,103,507	2,818	(13,795)	1,092,530	—
Non-Agency RMBS	40,732	1,237	(1,282)	40,687	(857)
ABS[3]	1,651,350	1,493	(15,240)	1,637,603	—
Municipals[4]	136,068	914	(1,397)	135,585	—
Total fixed maturities	$11,616,312	$33,874	$(214,839)	$11,435,347	$ (857)
At December 31, 2017					
Fixed maturities					
U.S. government and agency	$1,727,643	$1,735	$(16,909)	$1,712,469	$ —
Non-U.S. government	798,582	17,240	(9,523)	806,299	—
Corporate debt	5,265,795	61,922	(29,851)	5,297,866	—
Agency RMBS[1]	2,414,720	8,132	(27,700)	2,395,152	—
CMBS[2]	776,715	4,138	(3,125)	777,728	—
Non-Agency RMBS	45,713	1,917	(799)	46,831	(853)
ABS[3]	1,432,884	5,391	(1,994)	1,436,281	—
Municipals[4]	149,167	1,185	(972)	149,380	—
Total fixed maturities	$12,611,219	$101,660	$(90,873)	$12,622,006	$ (853)

(1) Residential mortgage-backed securities ("RMBS") originated by U.S. government-sponsored agencies.
(2) Commercial mortgage-backed securities ("CMBS").
(3) Asset-backed securities ("ABS") include debt tranched securities collateralized primarily by auto loans, student loans, credit card receivables, collateralized debt obligations ("CDOs") and collateralized loan obligations ("CLOs").
(4) Municipals include bonds issued by states, municipalities and political subdivisions.
(5)

Represents the non-credit component of the other-than-temporary impairment ("OTTI") losses, adjusted for subsequent sales, maturities and redemptions. It does not include the change in fair value subsequent to the impairment measurement date.

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NOTES TO CONSOLIDATED FINANCIAL STATEMENTS
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6. INVESTMENTS (CONTINUED)

Equity Securities

The cost and fair values of the Company's equity securities were as follows:

	Cost	Gross unrealized gains	Gross unrealized losses	Fair value
At December 31, 2018				
Equity securities				
Common stocks	$790	$ 112	$(375)	$527
Exchange-traded funds	213,420	33,498	(10,079)	236,839
Bond mutual funds	151,695	—	(7,428)	144,267
Total equity securities	$365,905	$ 33,610	$(17,882)	$381,633
At December 31, 2017				
Equity securities				
Common stocks	$22,836	$ 3,412	$(590)	$25,658
Exchange-traded funds	356,252	71,675	(294)	427,633
Bond mutual funds	173,779	9,440	(999)	182,220
Total equity securities	$552,867	$ 84,527	$(1,883)	$635,511

In the normal course of investing activities, the Company actively manages allocations to non-controlling tranches of structured securities which are variable interests issued by Variable Interest Entities ("VIEs"). These structured securities include RMBS, CMBS and ABS. The Company also invests in limited partnerships including hedge funds, direct lending funds, private equity funds and real estate funds as well as CLO equity tranched securities, which are all variable interests issued by VIEs (refer to Note 6(c) 'Other Investments'). The Company does not have the power to direct the activities that are most significant to the economic performance of the VIEs therefore the Company is not the primary beneficiary of any of these VIEs. The maximum exposure to loss on these interests is limited to the amount of investment made by the Company. The Company has not provided financial or other support with respect to these structured securities other than the original investment.

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6. INVESTMENTS (CONTINUED)

Contractual Maturities
Expected maturities may differ from contractual maturities because borrowers may have the right to call or prepay obligations with or without call or prepayment penalties. The contractual maturities of fixed maturities are shown below:

	Amortized cost	Fair value	% of Total fair value	
At December 31, 2018				
Maturity				
Due in one year or less	$430,390	$426,142	3.7	%
Due after one year through five years	4,751,064	4,691,263	41.0	%
Due after five years through ten years	1,762,452	1,697,737	14.8	%
Due after ten years	210,133	206,077	1.8	%
	7,154,039	7,021,219	61.3	%
Agency RMBS	1,666,684	1,643,308	14.4	%
CMBS	1,103,507	1,092,530	9.6	%
Non-Agency RMBS	40,732	40,687	0.4	%
ABS	1,651,350	1,637,603	14.3	%
Total	$11,616,312	$11,435,347	100.0	%
At December 31, 2017				
Maturity				
Due in one year or less	$486,659	$484,663	3.8	%
Due after one year through five years	4,906,207	4,912,189	38.9	%
Due after five years through ten years	2,338,964	2,350,433	18.6	%
Due after ten years	209,357	218,729	1.7	%
	7,941,187	7,966,014	63.0	%
Agency RMBS	2,414,720	2,395,152	19.0	%
CMBS	776,715	777,728	6.2	%
Non-Agency RMBS	45,713	46,831	0.4	%
ABS	1,432,884	1,436,281	11.4	%
Total	$12,611,219	$12,622,006	100.0	%

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6. INVESTMENTS (CONTINUED)

Gross Unrealized Losses
The following table summarizes fixed maturities and equity securities in an unrealized loss position and the aggregate fair value and gross unrealized loss by length of time the security has continuously been in an unrealized loss position:

12 months or greater		Less than 12 months		Total
Fair value	Unrealized losses	Fair value	Unrealized losses	